

# Research on Returns Generated by Debt (Levered) and Zero Debt (Unlevered) Firms

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**Abstract:** *The Indian economy has changed over the last few decades and so has the thought process of investors. Today, the investors have become dynamic and are less risk averse. They are willing to experiment and put their money in hitherto less preferred avenues. This study has compared the returns generated by firms having debt in their capital structure and those not having debt in their capital structure. Theoretically, equity investors require more returns in a debt (levered) company as compared to the zero debt (unlevered) firm since they are taking more risk in leveraged companies. However, some studies in the past have found otherwise.*

*The objective of this study is to ascertain whether leveraged companies have outperformed the zero debt companies. For the same two sample t-test is used and proves that when the times are good, the firms with low cost debt funds generate superior EPS which ultimately gets converted into higher equity returns and vice-versa.*

**Key words:** *Leveraged, Zero Debt, Capital Structure and Annualized Returns.*

**JEL classification:** *G30, G32*

## I. INTRODUCTION

Investments in stock market are done with a view to earn higher returns than traditional debt based low risk instruments. On the flip side, investments in stock market are more risky. In finance, risk is defined as actual returns being different from the expected returns. Therefore it becomes imperative to study the stocks before investing. Various researchers have given importance to various parameters to assess the financial health of the company. Bhandari (1988)[4] studied the effect of total common equity, beta and debt equity ratio on the average returns generated by the stocks. Zaher (2009)[10] has studied the performance of debt free firms specifically. This paper compares the equity performances of leveraged and zero debt firms.

Zero debt firm implies that the firm is able to conduct business without borrowing and also that it has the borrowing capacity when need arises. This certainly does not mean that

the firms having debt in their capital structure are less performers. Having debt means having lower cost of funds

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because of its tax deductibility feature which leads to more earning per share (EPS). The only requirement is that the return on investment should be greater than the cost of debt funds. But there is a negative side too to the debt story. It involves outflow of cash at regular intervals which may stifle the net flow of cash (Zaher 2009)[10]. Both, being a zero debt firm or a leveraged firm have their own sets of pros and cons.

Capital structure of a firm comprises of various types of capital. The design of capital structure is a question that has intrigued the researchers since a long time. In 1958, Modigliani and Miller[8] published a theory which stated that with debt the equity returns should increase. The justification given was, increase in debt in a firm increased the risk of owning the stock. The higher risk should be rewarded in form of higher returns (Modigliani and Miller 1958)[8]. Bhandari (1988)[4] concluded that higher the debt equity ratio higher were the returns on stock. Andersson (2016)[3] studied the relationship between the stock returns and the capital structure of Swedish firms. In this research, however, it was concluded that there was negative relationship between the stock returns and leverage. Thus, the investors were not being rewarded for the leverage risk they were taking. Penman et al. (2007)[9] also found that there was negative relationship between leverage and stock returns.

Zaher (2009)[10] studied whether investors who preferred zero debt firms were rewarded more than those who invested in leveraged firms. The study found that portfolio comprising of debt free firms performed better than the portfolio comprising of leveraged firms. Deb and Banerjee (2015)[5] reported that firms which did not have debt showed superior equity performance on absolute as well as risk-adjusted basis especially if the holding period was more than two years.

Acheampong et al. (2014)[1] studied the relationship between leverage and stock returns of manufacturing firms on Ghana stock exchange. They reported negative relationship between the two. George and Hwang (2010)[7] reported that distress cost also influenced the choice of capital structure in a firm. They reported negative relationship between the stock returns and leverage & probability of distress. Adami et al. (2013)[2] reported with respect to UK listed companies that they showed consistent negative relationship between the stock returns and gearing

D’Mello and Sivaprasad (2015)[6] studied companies included in BSE 500 index and similar to other researchers reported negative relationship between stock returns and leverage.

In this paper effort is made to compare the equity performance of the leveraged and zero debt firms during bullish and bearish periods of market cycle.

**II. OBJECTIVE OF STUDY**

To find whether during bullish and bearish periods of market cycle, leveraged firms perform better than zero debt firms.

**III. HYPOTHESIS**

Leveraged firms perform better than zero debt firms on stock market.

**IV. RESEARCH DESIGN**

In this study, it is examined whether the leveraged firms are able to generate more equity returns as compared to zero debt firms in terms of absolute measure, that is, annualized returns.

The study is based on secondary data collected from the official website of NSE India. Closing prices of leveraged and zero debt firms having market capitalization more than Rs. 200000 million up to Rs. 3000000 million have been considered for the period from 8th January 2008 till 31st December 2018. Firms belonging to Finance sector and ultra large cap firms having market capitalization in excess of Rs. 3000000 million have not been considered for the study. The closing prices are adjusted for the stock splits and bonus issues that took place during the period. MS Excel is used to calculate the annualized returns for different bullish and bearish periods using the formula of XIRR. This formula uses specific dates of cash inflow and outflow to give the annualized rate of return. The specific dates used to consider the bullish and bearish periods are based on prices at which Nifty 500 was trading on those dates.

The annualized returns are then subjected to two sample t-test. For the test unequal variances are assumed since the firms belong to different categories of capital structure. One tail values are considered since the objective is to find whether the leveraged firms outperform the zero debt firms.

**V. RESULTS AND ANALYSIS**

**Table 1: Annualized Return for Period 8th January 2008 to 27th October 2008**

Leveraged Firms	AR+ (%)	Zero Debt Firms	AR+ (%)
ITC	-42.09	HUL	-12.96
ASIAN PAINTS	-31.03	INFOSYS	-29.76
GAIL	-52.11	HINDZIN	-75.48
ADANI PORTS & SEZ	-79.30	BOSCH	-51.61
GODREJ	-90.46	HERO MOTOCROP	1.49
EICHER MOTORS	-71.22	BAJAJ HOLDINGS	-92.74
TATA MOTORS	-88.13	SIEMENS	-81.43
HAVELLS	-83.80	COLGATE PALMOLIVE	-20.97
AMBUJA CEMENT	-73.06	P&G	-11.83
AUROBINDO PHARMA	-78.53	ORACLE	-75.55
CIPLA	-28.39	CONTAINER CORPORATION	-40.26
BIOCON LTD.	-71.59	ACC	-66.13
LUPIN	4.64	SUNTV	-74.97
DLF	-88.81	GILLETTE	-58.71
3M	-68.40		
ASHOK LEYLAND	-75.28		
ABB	-74.58		
BHARAT ELECTRONICS	-77.53		

\*AR – Annualized Return in Percentage

**Table 2: Two-Sample t-Test Assuming Unequal Variances (8th January 2008 to 27th October 2008)**

	Leveraged	Zero Debt
Mean	-64.981	-49.350
Variance	649.365	915.401
Observations	18	14
Hypothesized Mean Difference	0	
Df	25	
t Stat	-1.551	
P(T<=t) one-tail	0.066	
t Critical one-tail	1.708	
P(T<=t) two-tail	0.133	
t Critical two-tail	2.059	

Table 1 shows the annualized returns generated during the bearish period from 8th January 2008 to 27th October 2008. Table 2 shows the results of two sample t-test assuming unequal variances, conducted to find whether the equity performance of leveraged firms is better than that of zero debt firms. Based on the means of the annualized returns, the performance of leveraged firms is worse than their counterparts zero debt firms. Statistically also, since the one tail p-value is more than 0.05 (p-value 0.066), null hypothesis cannot be rejected. Thus it cannot be proved that leveraged firms have performed better than zero debt firms. On the



contrary, zero debt firms have performed better.

**Table 3: Annualized Return for Period 27th October 2008 to 5th November 2010**

Leveraged Firms	AR+ (%)	Zero Debt Firms	AR+ (%)
ITC	194.19	HUL	19.36
ASIAN PAINTS	69.28	INFOSYS	56.04
GAIL	30.11	HINDZIN	123.21
ADANI PORTS & SEZ	53.62	BOSCH	51.02
GODREJ	75.17	HERO MOTOCROP	61.45
EICHER MOTORS	204.48	BAJAJ HOLDINGS	73.47
TATA MOTORS	194.26	SIEMENS	26.93
HAVELLS	127.51	COLGATE PALMOLIVE	49.79
AMBUJA CEMENT	73.76	P&G	68.82
AUROBINDO PHARMA	189.93	ORACLE	120.72
CIPLA	47.56	CONTAINER CORPORATION	5.19
BIOCON LTD.	42.85	ACC	61.43
LUPIN	87.44	SUNTV	92.10
DLF	33.73	GILLETTE	76.87
3M	105.24		
ASHOK LEYLAND	110.20		
ABB	30.95		
BHARAT ELECTRONICS	68.00		

\*AR – Annualized Return in Percentage

**Table 4: Two-Sample t-Test Assuming Unequal Variances (27th October 2008 to 5th November 2010)**

	Leveraged	Zero Debt
Mean	96.571	63.314
Variance	3710.517	1158.227
Observations	18	14
Hypothesized Mean Difference	0	
Df	28	
t Stat	1.956	
P(T<=t) one-tail	0.030	
t Critical one-tail	1.701	
P(T<=t) two-tail	0.060	
t Critical two-tail	2.048	

Tables 3-4 show the results for the bullish period from 27th October 2008 to 5th November 2010. This was period immediately after the deep bearish period of financial markets meltdown. During this period the leveraged firms have performed better than their zero debt counterparts. The one tail p-value 0.03 proves the same statistically.

**Table 5: Annualized Return for Period 5th November 2010 to 20th December 2011**

Leveraged Firms	AR+ (%)	Zero Debt Firms	AR+ (%)
ITC	11.11	HUL	27.16
ASIAN PAINTS	-1.31	INFOSYS	-12.02
GAIL	-21.39	HINDZIN	-8.74
ADANI PORTS & SEZ	-22.72	BOSCH	2.01
GODREJ	-18.83	HERO MOTOCROP	-1.74
EICHER MOTORS	0.11	BAJAJ HOLDINGS	-23.38
TATA MOTORS	-26.98	SIEMENS	-22.61
HAVELLS	-9.12	COLGATE PALMOLIVE	10.93
AMBUJA CEMENT	-1.35	P&G	-13.71
AUROBINDO PHARMA	-61.64	ORACLE	-16.83
CIPLA	-6.11	CONTAINER CORPORATION	-34.55
BIOCON LTD.	-37.26	ACC	1.00
LUPIN	-4.70	SUNTV	-46.44
DLF	-44.21	GILLETTE	-4.21
3M	-10.64		
ASHOK LEYLAND	-41.70		
ABB	-33.53		
BHARAT ELECTRONICS	-18.01		

\*AR – Annualized Return in Percentage

**Table 6: Two-Sample t-Test Assuming Unequal Variances (5th November 2010 to 20th December 2011)**

	Leveraged	Zero Debt
Mean	-19.348	-10.223
Variance	354.706	347.685
Observations	18	14
Hypothesized Mean Difference	0	
Df	28	
t Stat	-1.367	
P(T<=t) one-tail	0.091	
t Critical one-tail	1.701	
P(T<=t) two-tail	0.182	
t Critical two-tail	2.048	

Tables 5-6 show the results for the next bearish period from 5th November 2010 till 20th December 2011. This period of correction once again proved that during bearish times zero debt companies perform better than the leveraged ones. The means of annualized returns show that leveraged firms have performed worse than the zero debt ones. The same is proved statistically. The one tail p-value of 0.09 shows that hypothesis of leveraged firms outperforming zero debt firms cannot be proved. Null hypothesis cannot be rejected. Thus zero debt firms have outperformed the leveraged ones.



**Table 7: Annualized Return for Period 20th December 2011 to 31st December 2018**

Leveraged Firms	AR+ (%)	Zero Debt Firms	AR+ (%)
ITC	11.26	HUL	24.17
ASIAN PAINTS	26.34	INFOSYS	-0.18
GAIL	11.46	HINDZIN	13.07
ADANI PORTS & SEZ	17.93	BOSCH	17.16
GODREJ	17.59	HERO	7.97
EICHER MOTORS	48.82	MOTOCROP	22.71
TATA MOTORS	-0.18	BAJAJ HOLDINGS	7.48
HAVELLS	37.36	SIEMENS	4.28
AMBUJA CEMENT	6.00	COLGATE	28.03
AUROBINDO PHARMA	48.93	P&G	9.87
CIPLA	6.72	ORACLE	13.89
BIOCON LTD.	32.80	CONTAINER CORPORATION	4.56
LUPIN	10.17	ACC	12.94
DLF	-0.60	SUNTV	10.63
3M	28.95	GILLETTE	
ASHOK LEYLAND	24.77		
ABB	13.61		
BHARAT ELECTRONICS	9.57		

\*AR – Annualized Return in Percentage

**Table 8: Two-Sample t-Test Assuming Unequal Variances (20th December 2011 to 31st December 2018)**

	Leveraged	Zero Debt
Mean	19.527	12.612
Variance	228.317	65.625
Observations	18	14
Hypothesized Mean Difference	0	
Df	27	
t Stat	1.659	
P(T<=t) one-tail	0.054	
t Critical one-tail	1.703	
P(T<=t) two-tail	0.108	
t Critical two-tail	2.051	

Tables 7-8 show the results for the bullish period from 20th December 2011 till 31st December 2018. There were some corrections during this period but not so significant to be called as bearish period. The means of annualized returns show that the leveraged firms have outperformed the zero debt firms. The one tail p-value 0.054 is just above the level of significance of 5%. Thus technically the null hypothesis cannot be rejected. However, corroborating with the means it can be said that the leveraged firms have performed better, even though marginally.

**VI. CONCLUSION**

The objective of the study was to confirm whether the theory of compensating equity holders investing in leveraged firms with higher returns proves. The performance of leveraged firms is compared vis-à-vis the zero debt firms. For the same annualized returns are calculated for different

bullish and bearish periods comprising of two market cycles. The results have shown that during bullish periods the leveraged firms have outperformed the zero debt firms. On the other hand, during bearish periods the zero debt firms have outperformed the leveraged ones.

Although the result of the study does not confirm the theory totally, yet it still proves that when the times are good, markets are bullish and the firms with low cost debt funds generate superior EPS which ultimately gets converted into higher equity returns. On the other hand when the times are not so good, investors prefer to invest in zero debt firms to avoid leverage risk leading to better equity returns in such firms.

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