

EFFECT OF LBO ON THE CAPITAL STRUCTURE OF SELECT COMPANIES

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Abstract

This study examines the change in capital structure of the sample companies which have undergone Leveraged Buyout (LBO) during the period from 2005-06 to 2015-16. Event study approach has been adopted to measure the change in capital structure of the sample companies. Two variables viz, (1) Debt to Total Assets (DTA) ratio and (2) Debt as % of LBO year debt ratio have been computed for measuring the change in capital structure of the sample companies. It is found that LBO leads to change in capital structure as most of the circumstances two variables have been increased following the three years of LBO. Paired sample t test has been adopted on the variables to determine the statistically significant relationship between LBO and change in capital structure. Finally it is also found that LBO leads to statistically significant enhancement of leverage on the sample companies in order to take the advantage of tax shield even though the LBO firms have positive excess cash flows following buyout.

Key Words-Leveraged Buyout (LBO), capital Structure, Private equity, Value creation.

1. Introduction

Leveraged Buyout is the acquisition of two or more companies with the substantial portion of borrowed fund to meet the cost of acquisition. In a leveraged buyout (LBO), there is usually a ratio of 90% debt to 10% equity. Because of this high debt/equity ratio, the bonds issued in the buyout are usually referred to as junk bonds. Further, many scholars regard LBOs as an especially ruthless, predatory tactic. This is because it isn't usually sanctioned by the target company. LBOs are conducted for three main reasons such as (1) To take a public company private (2) To spin-off a portion of an existing business by selling it and (3) To transfer private property. We are interested in studying the change in capital structure after LBO. Capital Structure refers to the mix of long-term sources of funds, such as, debentures, long-term debts, preference share capital and equity share capital including reserves and surplus."(I. M. Pandey). Another author John J. Hampton has defined capital structure as the combination of debt and equity securities that comprise a firm's financing of its assets. There are a large number of research studies on LBO in abroad. Jensen (1980) has examined the operating improvement subsequent to LBO. Smith (1990) has also found improvement in operating performance after Leveraged Buyout (LBO). Following their research studies, Nikoskelainen & Wright (2007), Achleitner et al. (2010), Guo et al. (2011), Acharya et al. (2012) and Achleitner & Figge (2014) have focused on value creation on the transaction level by examining different samples of buyouts. These authors have also tried to measure the performance of the buyout firms which generate values following LBO. Nikoskelainen and Wright (2007) have measured the value of buyout firms from two dimension namely (1) Enterprise value and (2) Equity value. Achleitner et al. (2011) have examined value creation from shareholders perspective which has impact on the equity of the enterprise. However Muscarella and Vetsuypens (1990) have analyzed the value creating impact of operational improvements. Another scholar Kaplan (1989b) has explained value creation through tax benefit resulting from tax shield when the firm is financing through debt fund. Long, W. F & Ravenscraft, D. J. (1993) have pointed out the impact of debt on R&D intensity for firms undergoing a leveraged buyout (LBO). According to authors findings (1) pre-LBO R&D intensity is roughly one-half of the overall manufacturing mean and two-thirds of the firm's industry mean (2) LBOs cause R&D intensity to drop by 40

percent (3) large firms tend to have smaller LBO-related declines in R&D intensity and (4) R&D intensive LBOs outperform both their non-LBO industry peers and other LBOs without R&D expenditures. Roden et al. (1995) have focused on the role of agency cost, bankruptcy risk and tax consideration of the LBO firms which has impact on the degree of leverage employed in the buyout transaction. These impacts are manifest in the systematic relationship between the proportion of debt and type of debt in the buyout financing package and the target firms' earnings rate, earnings variability, growth prospect and its liquidity position. Loos (2005) has found that only direct operational drivers create value by improving the cash flows of the buyout firms. The author has explained that value creation of the buyout firms have taken place through change in leverage (debt /Equity). Therefore Leverage is a direct driver of value which is generated by interest payment deduction or tax benefits from the perspective of the buyout company. These benefits occur to the equity holder through tax shields that increase the return to investors in the firm. Higher returns are justified by an increased financial risk that comes with the issuance of large amount of debt (Modigliani & Miller 1958). Since tax shields increased free cash flow that is available to equity holders, leverage is likely to have a positive effect on firm value. Whereas no universally accepted ideal level of leverage exists. Tradeoff theory suggest that firms needs to balance the benefits of tax advantages, with the disadvantage if financial distress costs, which is also known as bankruptcy costs (Mayers 2001). Contrary, Free cash flow theory argues that cost of financial distress are negligible as long as a firm generates significant operating cash flows, after financing future investment opportunities with a substantial positive net present value. However Axelson et al. (2013) has suggested that capital structure in buyout is influenced by the conditions of the debt market depending on the price and availability of debt. Moreover, Achleitner et al. (2010) have suggested that private equity firms seem to be able to apply higher leverage ratios, due to their experience and standing in the market. Guo et al (2011) has found that increased leveraged yields higher tax shields, which in turn result in increased cash flows. These authors have also stated that target with a low debt ratio have higher potential for improvements in tax shields, since the higher the increase in leverage , the higher the improvements in cash flows. Even though the magnitude of the effect also highly depends on the maintenance of the higher debt ratio after Private Equity (PE) firm exited the investment.

On the contrary Bergstorm et al.(2007) have explained that leverage can form a societal perspective. According to the authors leverage is redistributing wealth through the creation of tax shield instead of creating new value. De Maeseneire et al. (2012) have found that determinants derived from classical capital structure theories do not explain leverage in LBOs, while they do drive leverage in a control group of comparable public firms. These authors found that leverage levels in LBOs are related to the prevailing conditions in the debt market According to authors, reputed private equity sponsors use more debt and that secondary buyouts have higher leverage levels. Yousfi, O. (2012) has analyzed the link between the financial capital structure in LBO and the agents' incentives under asymmetric information. According to the author, there are no debt-equity contracts that solve the debt sided moral hazard problem. The author has argued that financing the project through a mixture of debt and equity or solely through equity does not improve the incentive to provide efforts. Agents provide low level of efforts under taxation, but the owner is better off if the level of leverage is highest to take the advantage of tax deductibility of interest. Colla, et al. (2012) have shown that the structure and pricing of debt in LBOs mostly depend on a single characteristic of the target firm, pre-LBO profitability. These authors have found that there is a positive relationship between pre-LBO profitability and deal leverage that is consistent with a dynamic trade-off theory of capital structure in the presence of adjustment costs. Cohn et al (2014) have examined the evolution of firms' financial structure and performance after LBO. According to the authors LBO firms do not reduce leverage after LBOs, even if these firms generate excess cash flow.

2. Objective of the Study

The main objective of the study is to measure the change in capital structure of the sample companies after LBO. Beside other objectives are (1) to calculate debt to total assets ratio of the sample firms for determining the change in debt with respect to its total assets and (2) to compute the debt as percentage of LBO year debt ratio in order to determine the change in leverage following LBO.

3. Hypothesis of the Study

The following hypotheses have been framed for the study.

1. H_0 : There is no difference in debt to total assets ratio before and after LBO.
 H_1 : There is difference in debt to total assets ratio before and after LBO.
2. H_0 : There is no change in debt as percentage of LBO year debt.
 H_1 : There is change in debt as percentage of LBO year debt.

4. Database and Methodology

According to the objectives and the hypotheses of the study, as mentioned earlier, the sample companies are chosen which are listed in National Stock Exchange (NSE) during the period of 2002-2003 to 2018-2019. This period has been chosen for the study as most of the LBOs have taken place in the year 2005-06. Moreover the volume of transactions was very high and the availability of data is quite good during the study period. Further, this study is entirely dependent on the data collected from the secondary sources of information. To test our hypotheses we need a database comprising of sizeable sample companies drawn from different industries. At first we consider those industry whose companies have been considered to formulate CNX NIFTY. By surveying this, seven (07) companies have been taken into consideration. In the entire procedure of the sample selection, Alcoholic, coffee, steel, motor, detergent companies have been chosen which have undergone LBO during the study period. For the purpose of measuring the change in capital structure we have taken seven years, out of which three years are post LBO year denoted by year (t+1), (t+2) and (t+3) respectively and remaining three years are pre-LBO period which is denoted by year (t-1), (t-2) and (t-3) respectively. For measuring the change in capital structure we have taken two variables viz, (1) Debt to Total Assets (DTA) Ratio and (2) Debt as percentage of LBO year Debt Ratio. Debt to Total Assets Ratio is the ratio which is used to measure the change in debt with respect to total assets. The higher the DTA ratio indicates large volume of debt taken by the firm when total assets remains constant. If the DTA ratio of the sample companies increase following leveraged buyout, then it can be said that LBO results in enhancement of leverage. We have computed Debt to Total Assets (DTA) Ratio by using the following formula-

$$\text{Debt to Total Assets (DTA) Ratio} = \frac{\text{Long Term Borrowings}}{\text{Total Assets}}$$

On the other hand we have taken Debt as percentage of LBO year debt in order to determine the trend in change of leverage after LBO. That means debt as percentage of LBO year debt is used to measure the change in debt after LBO with respect to LBO year debt. The higher the debt as % of LBO year debt ratio indicates high amount of debt taken by the firm after LBO. We have calculated the debt as percentage of LBO year debt ratio by using the following formula-

$$\text{Debt as percentage of LBO year debt} = \frac{\text{Debt (t+i)}}{\text{Debt t}}$$

Hence we have calculated mean value of DTA ratio of the sample companies for pre and post LBO period separately in order to make a comparison between the two periods. We have also calculated coefficient of variation (CV) of the DTA ratio to compare the stability of the computed result for the two periods. If CV of DTA ratio of the sample company in post LBO period decrease in contrast to that of pre LBO period then it can be said that there is stability in enhancement of leverage after LBO. We have also tried to measure the trend in change of capital structure after LBO by calculating the debt as percentage of year t debt ratio. If the said ratio increases that implies LBO results in improvement of leverage and vice-versa.

Thus we have conducted paired sample t test on the above two variables at different time windows in order to check whether the computed results are statistically significant or not. If significant difference exists between two time windows then alternative hypothesis (H_1) is accepted and null hypothesis (H_0) is rejected. This implies LBO leads to change in capital structure of the sample companies.

5. Summary of major findings

Table1: Debt to total Assets of the Sample Companies for both Pre and Post LBO period

Name of company	Debt to total Assets							Pre LBO Period		Post LBO Period	
	(t-3)	(t-2)	(t-1)	t	(t+1)	(t+2)	(t+3)	Mean	CV	Mean	CV
UB Group	0.4594	0.5018	0.336	0.5919	0.6232	0.4639	0.4773	0.4324	19.92	0.5215	16.94
Tata Steel	0.4282	0.2796	0.205	0.4063	0.3976	0.4717	0.4183	0.3043	37.34	0.4292	8.91
Tata Motors	0.2598	0.3777	0.3466	0.3685	0.4448	0.5184	0.5258	0.3280	18.62	0.4963	9.02
Suzlon Energy	0.2284	0.2565	0.2576	0.1066	0.2349	0.3075	0.5269	0.2475	6.68	0.3564	42.65
United phosporus	0.5583	0.5365	0.4759	0.5279	0.6372	0.5618	0.5172	0.5236	8.15	0.5721	10.60
Tata Coffee	0.275	0.3377	0.2444	0.4276	0.3615	0.3685	0.3685	0.2857	16.64	0.3662	1.10
Nirma Ltd	0.3703	0.3888	0.28	0.2108	0.565	0.533	0.5288	0.3464	16.80	0.5423	3.65

Table2: Results of Paired Sample t test on Debt to Total Assets (DTA) ratio at Different Time Window

Time Window	Variables	Mean	t
(t-1) to (t+1)	Mean $DTA_{(t-1)}$.3065	-3.862***
	Mean $DTA_{(t+1)}$.4663	
(t-2) to (t+2)	Mean $DTA_{(t-2)}$.4112	-2.513**
	Mean $DTA_{(t+2)}$.4464	
(t-3) to (t+3)	Mean $DTA_{(t-3)}$	0.3685	-2.205*
	Mean $DTA_{(t+3)}$	0.4804	

Notes: *** implies significant at 1% level, ** implies significant at 5% level, * implies significant at 10% level.

Table3: Debts after LBO as percentage of year t debt of the Sample Companies

Name of company	Debt as % of year t debt		
	(t+1)	(t+2)	(t+3)
UB Group	112.32	129.44	140.99
Tata Steel	186.84	279.37	261.67
Tata Motors	156.66	328.39	413.92
Suzlon Energy	271.39	644.84	668.74
United phosporus	165.34	128.24	170.32
Tata Coffee	138.31	143.51	127.18
Nirma Ltd	544.47	523.23	518.56

Table4: Results of Paired Sample t test on Debt as % of year t debt (DD) ratio at Different Time Window

Time Window	Variables	Mean	t
(t) to (t+1)	Mean $DD_{(t)}$	100.00	-2.213*
	Mean $DD_{(t+1)}$	225.05	
(t) to (t+2)	Mean $DD_{(t)}$	100.00	-2.723**
	Mean $DD_{(t+2)}$	311.00	
(t) to (t+3)	Mean $DD_{(t)}$	100.00	-2.884**
	Mean $DD_{(t+3)}$	328.77	

Notes: *** implies significant at 1% level, ** implies significant at 5% level, * implies significant at 10% level.

6. Interpretation of Summary Results

6.1 Interpretation of Results on Debt to total assets ratio

6.1.1 UB Group

There is increased in debts of the firm after LBO Which is evident from Table 1 as average Debt to total assets of the company has increased in post LBO period (.5215) in contrast to that of pre LBO period (.4324). Year wise data on debt to total assets have shown that there is remarkably increase in this ratio after LBO year (t+1). Then it has decreased in year (t+2) and with mild increase in year (t+3). This ratio has reached to maximum in the year (t+1) (i.e 0.6232). It implies that firm has repayment its debts after two and three years of LBO. Whereas CV of the firm has decreased in the post LBO period (16.94) in contrast to that of pre LBO period (19.92) which implies more stability of this ratio following LBO.

6.1.2 Tata Steel

From Table 1 it is observed that the firm has taken new debts after LBO as Average Debt to total assets of the company has increased in post LBO period (.4292) in contrast to that of pre LBO period (.3043). It implies that the firm has able to take the benefit of trading on equity. Year wise data on debt to total assets ratio have shown that there is increasing trend in debt to total assets after LBO year (t+1) to (t+2) and then it has decreased in the year (t+3). On the other hand, CV of debt to total assets ratio has decreased remarkably in the post LBO period (8.91) as compared to that of pre LBO period (37.34) which is also a good indicator of stable improvement of leverage after LBO.

6.1.3 Tata Motors

From Table 1 it is depicted that the firm has taken adequate financial risk after LBO as Average Debt to total assets of the company has increased in post LBO period (.4963) in contrast to that of pre LBO period (.3280). That means the firm has able to take the benefit of trading on equity to increase profit. Year wise data on debt to total assets have shown that there is increasing trend in debt to total assets after leveraged buyout period from year (t+1) to (t+3). It indicates that leverage of the firm persist due to tax deduction on interest. CV of DTA ratio of the company has decreased remarkably in the post LBO period (9.02) in contrast to that of pre LBO period (18.62). This implies an improvement of leverage following buyout.

6.1.4 Suzlon Energy

It is observed from Table 1 that the firm has taken new debts after LBO as the Average Debt to total assets of the company has increased in post LBO period (.3564) in contrast to that of pre LBO period (.2475). It indicates that the firm has able to take the benefit of leverage for increasing profit. As a result of this, year wise data on debt to total assets ratio have shown that there is remarkably increasing trend in debt to total assets after leveraged buyout period from year (t+1) to (t+3). It indicates that firm has taken the advantage of leverage after buyout. Even though CV of DTA ratio of the company has increased notably in the post LBO period (42.65) as compared to that of pre LBO period (6.68).

6.1.5 United Phosphorus Limited

It is evident from Table 1 that Average Debt to total assets of the company has increased in post LBO period (.5721) in contrast to that of pre LBO period (.5236) which indicates there is enhancement of debts in the capital structure of the firm after LBO year (t+1) to (t+3). Year wise data on debt to total assets have shown that there is increasing trend in debt to total assets before the leveraged buyout year from (t-3) to (t-1). This ratio has reached to maximum after one year of LBO (i.e 0.6372). It implies that firm has taken debts after LBO for enhancement of profit. Then it has reduced the debt by repayment to minimise financial risk from year (t+1) to (t+3). CV of DTA ratio of the company has increased mildly in the post LBO period (10.6) as compared to that of pre LBO period (8.15). This implies more variability of this ratio following buyout.

6.1.6 Tata Coffee

From Table 1 it is observed that Average Debt to total assets of the company has increased in post LBO period (.3662) in contrast to that of pre LBO period (.2857) which indicates that the firm has increased its debts after LBO. Beside this the firm has able to take the benefit of trading on equity for increasing profit. Year wise data on debt to total assets have shown that there is increasing trend in debt to total assets after leveraged buyout period from year (t+1) to (t+3). The firm has taken the advantage of leverage after buyout as this ratio is increasing after LBO. There

is remarkably decrease in CV of DTA ratio of the company in the post LBO period (1.10) in contrast to that of pre LBO period (16.64) which indicates stable improvement in DTA ratio of the firm following buyout.

6.1.7 Nirma Limited

The average Debt to total assets of the company has increased in post LBO period (.5423) in contrast to that of pre LBO period (.3464) which is depicted by Table 1. It means that the firm has taken new debts after LBO. Therefore the firm has able to take the benefit of trading on equity for increasing profit. Year wise data on debt to total assets have shown that there is decreasing trend in debt to total assets after leveraged buyout period from (t+1) to (t+3). This ratio has reached to maximum after one year of LBO which means the firm does not reduce its leverage after LBO. Whereas CV of DTA ratio of the company has decreased notably in the post LBO period (3.65) in contrast to that of pre LBO period (16.80). This result indicates that there is stability in improvement of leverage after LBO.

6.1.i Interpretation of paired sample t test result on Debts to total assets ratio of sample companies at different time windows

Now we have conducted the paired sample t test in order to determine whether the computed results are statistically significant or not. This result has shown in Table 2. It is observed from Table 2 that t values on debt to total assets ratio of the sample companies at time window (t-1)-(t+1), (t-2)-(t+2) and (t-3)-(t+3) are significant at 1%, 5% and 10% level respectively. Hence (H_1) is accepted and (H_0) is rejected. That means, there is significant difference exists in capital structure of the sample companies between the two time windows. It implies that debts of the sample companies have been increased for taking the advantage of tax benefit. Thus we have considered the second variable, debt as percentage of year t debt ratio of the sample companies in order to determine the change in capital structure (leverage).

6.2 Interpretation of Results on Debts as % of year t debts ratio

6.3 6.2.1 UB group

From Table 3 it is evident that debts as % of year t debt of UB Group has increased remarkably in year (t+1) to (t+3) which indicates that the company has taken new debts after LBO. That means the company is relied upon its borrowed capital for increase its profit. It has taken the advantage of trading on equity. For this reason the company does not make repayment of debts after LBO.

6.2.2 Tata Steel

It is observed from Table 3 that the company has taken new debts after year (t+2) of leveraged buyout as debts as % of year t debt ratio of the firm has increased from year (t+1) to (t+2). Then the company has reduced its debt in the year (t+3) with respect to its LBO year (t) debt. It means that the company has taken conservative policy after three years of LBO in order to reduce financial risk.

6.2.3 Tata Motors

It has observed from Table 3 that there is substantial increased in Debt as % of year t debt of the company from year (t+1) to (t+3) which indicates that the firm has taken new debts after LBO. It indicates that the firm has been able to take the benefit of leverage for increasing profit. Beside this financial risk associated with the firm has also increased which result in enhancement of profit available to equity holders as interest on borrowed capital results in tax shield.

6.2.4 Suzlon Energy

It has observed from Table 3 that there is remarkably improvement in Debt as % of year t debt of Suzlon Energy in year (t+1) to (t+3) which indicates that the firm has taken new debts after LBO. It indicates that the firm has been able to increase profit by taking the advantage of trading on equity. However financial risk associated with the firm has also increased which result in enhancement of profit available to equity holders as interest on borrowed capital is tax deductible income.

6.2.5 United Phosphorus Limited (UPL)

It has observed from Table 3 that there is fluctuation in Debt as % of year t debt of United phosphorus Limited in year (t+1) to (t+3) which indicates that the firm has no stability of debts after LBO. Debts of the firm has reduced in year (t+2) as compared to year (t+1) by making payment of borrowed capital in order to reduce financial risk. However the firm has taken new debts in the year (t+3) in order to run the business operation.

6.2.6 Tata Coffee

The firm has taken large amount of borrowed capital after LBO which is depicted by Table 3 as there is enhancement of Debts as % of year t debts of Tata Coffee in year (t+1) to (t+2). It indicates that the company has taken the benefit of leverage. However this ratio has reduced in the year (t+3) for reducing the financial risk associated with the firm.

6.2.7 Nirma Limited

From Table 3 it is depicted that there is substantial decreased in Debt as % of year t debt of the company in year (t+1) to (t+3). This indicates that the firm has made payment of borrowed capital after LBO for reducing its financial leverage. It also implies that the firm is highly reliable on equity capital than debt capital for running its business operation as it has made repayment of debts over the study period from year (t+1) to (t+3).

6.2.i Interpretation of Results of paired sample t test on Debts as % of year t debts ratio of sample companies at different time windows

Now paired sample t tests have been applied to check whether the computed results of debts of three years after LBO as % of year t debts ratios are statistically significant or not. It is observed from Table 4 that t values are significant at 10% level on Debts as % of year t debts ratio of the sample companies for time window (t)-(t+1) and it is significant at 5% level for both the time windows (t)-(t+2) and (t)-(t+3) respectively. Hence alternative hypothesis (H_1) is accepted and null hypothesis is rejected. That implies there is significant difference exists in capital structure of the sample companies after LBO. It means that there are statistically significant increased in debts after LBO of the sample companies. Hence it justifies that sample companies have increased their debts after LBO to take the benefit of tax shield on interest.

7 Conclusion

This study aims to examine the change in capital structure of the select LBO companies which have undergone Leveraged Buyout (LBO) during the period from 2005-06 to 2015-2016. Our empirical findings shed light on the motives for LBO and its consequences on the capital structure. Analyzing the study it is found that leverage increases after LBO as the computed two ratios have increased following LBO period. Moreover, it is also found that paired sample t tests on the two variables have shown statistically significant results in the post LBO period. Therefore it is suggested that the primary effect of LBOs is to produce a sustained increase in financial leverage.

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