

Impact of Financial Leverage on Return of Corporate Sector –A Study of Private Sector Companies during Post Liberalization



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Abstract

Leverage is one of the important component of capital structure. It is magnifying force or power, which is employed to achieve more output. In financial management it refers to investment in fix assets and designing of capital structure of a firm in such as way so that fixed costs are present. It may be defined as use of fixed charge securities in capitalization of company. Leverage not only tends to magnify shareholder's return under favorable conditions but also exposes to financial risk because the use of debt increases variability in shareholders return and profitability This paper is focused on impact of financial leverage on return of private sector companies in India after liberalization. Main objective of this paper is to measure the impact of financial leverage return of private sector companies during the period of post liberalization. Research is based on secondary data, which is collected from prowwess and annual reports of the companies.

Keywords: Financial Leverage, Liberalization, Return, Risk, Capital Structure.

Introduction

Financial leverage is the final component of return on equity. It is a measure how much firm uses equity and debt to finance its assets. As debt increases , financial leverage increases and the Management tends to prefer equity financing over debt since it carries less risk. It is calculated by dividing assets by shareholder equity (Matt, 2000). When the surplus increases and deficit decreases, the return on the owners' equity, referred to as a double-edged sword, financial leverage provides the potentials of increasing the shareholders' wealth as well as creating the risks of loss to them. It is a prerequisite for achieving optimal capital structure. An optimal capital structure can influence the value of firm and wealth of shareholder's through reduced cost of capital. Hence, determination of optimal debt level and its impact on the firm's over all capital structure is regarded as an integral part of a firm's financial decision (Franklin and Muthusamy, 2011). Financial leverage, or an increase in financial efficiency, called the variation of return on equity, depends on the return on assets and the cost of credit i.e., interest rate. It also expresses the impact of financial expenses due to loans on the return on equity of an enterprise (Brezeanu, 1999). Return can be defined to change value of an asset during a specified time period. This change is due to the price change plus interest or payments benefits. In other words, the return on investment in the common stock is achieved at a certain period according to price of the first and last time and benefits of ownership. Economically, the purpose of people from buying shares of companies and businesses is to obtain efficiency (karami, 2001).

Review of Literature

Banz (1980) has examine the relationship between return and total market value of NYSE common stocks. He found that the smaller firms have had high risk adjusted returns, on average, than larger firms. karami, (2001) defines the return on investment in the common stock is achieved at a certain period according to price of the first and last time and benefits of ownership. Yoon and Cheong (2003) did the work on the effect of financial leverages on profitability and risk of restaurants firms. The research result suggest that the during the period at least firm size had more dominate effect on ROE of restaurant firms than debt use, larger firm earnings significantly higher equity return. Henry (2003) has analyzed the

impact of equity market liberalization upon cost of capital. He stated that equity market liberalization was specific type of capital account liberalization, which was a decision to allow capital in all forms to move freely in and out domestic market. Gritta, Adams, and Adrangi (2004) have done work on the topic an analysis of the effects of operating and financial leverage on major U.S. air carriers rate of Return. Hovey (2005) has done the research work on Leverage, Profitability and the ownership structures of listed firms in china. He described the relationship between leverage, profitability and a firm's ownership structure in china. Chanderakumarmanglam and Govindasamy (2010) has done the work on leverage- an analysis and its impact on profitability to selected cement companies in India Adami, Gough, Murodoglu and Sirparsad (2010) has done the work on leverage effect on stock return, The source of all data is Thomson Reuters DataStream They examined the relation between abnormal stock returns and leverage. The findings indicate that returns are decreasing in firms leverage. tests this relation empirically with other risk factors and finds that the results remain robust. Singapurwoko and Mustafa (2011) has done the work on the impact of financial leverages to profitability study of non financial companies listed in Indonesia stock exchange. Main objective of the study was to know the impact of financial leverage to profitability. Rafique (2011) has investigated the effect of the profitability of the firm and its financial leverage on the capital structure of the automobile sector in Pakistan. Saleem and Naseem (2011) has analyzed the leverage and profitability of selected oil and gas companies of Pakistan The result also indicated that high levered firms were less risky in both market based and accounting based measured. Pachori and Totala (2012) did the work on influence of financial leverages on shareholders return and market capitalization: A study of automotive cluster companies of Pitahmpur MP India .Saini (2012) has done the research impact of financial leverage on shareholders return and market. Shabahang, (2012) examines the Rate of return on the investment portfolio is a set weighted average of return capitalization; An empirical evidence of telecommunication n sector companies in India. Singh (2013) has done on the work capital structure practices in Indian corporate sector. The main objectives of the study were to study existing capital structure practices in Indian corporate sector, to examine the impact of the capital structure decisions on cost of capital and to find out the leverage effect on earnings per share and market price per share. He found that capital structure positively related to MPS in traditional and combined data whereas negative in case modern industries. Muhammad, Ahmad, Rabia and; Khalil-Ur-Rehman (2015) has done the work on effect of leverage on financial health of the firm- A study of cement industry in Pakistan. They tried to measure the relationship between leverage and profitability of firms in the cement industry of Pakistan. Debt to equity is used to measure the leverage of the companies in the cement industry in Pakistan.The of the study shows negative and significant relationship

between leverage and profitability of the firm. Rudin , Djayani and ; Vita Yanti Fattah (2016) , has done the work on the topic , The effect of liquidity and leverage on profitability on property and real estate company on Indonesian stock exchange. Their result showed that the leverage and liquidity simultaneously have significant effect on profitability, liquidity have an effect partially on profitability, but the effect was not significant, leverage have a significant effect on profitability partially.

Objectives of Study

To measure the impact of leverage on return private sectors companies during the period of post liberalization

Research Methodology and Financial Tool

The present research is based on secondary data .In order to achieve the objective, a sample of 25 private sector companies has been obtained from annual reports of the different companies, PROWESS, Official directory of Bombay Stock Exchange etc. For the purpose of data analysis, a panel data analysis has been used. The reference period of study for post liberalization is 2000 to 2012.

Leverage (Financial Leverage).

Leverage analysis is the is technique, which is used to quantify risk and return relationship of different alternatives of capital structure. it refers to percentage of assets financed by debt. It is exposure of financial risk. A high level of financial leverage allowed the shareholders to obtain high return on equity , but exposed to higher significant of loss , if return on assets is lower, C.A Sachdanand Pachori and Dr Davindr Totla (2012).

- Leverage 1= Total debt/ Total assets
- Leverage 2= short term debt/equity
- Leverage 3= Debt/ equity
- Leverage4= long term debt /equity

Limitation of Research

It is based on secondary data and limited to availability of annual reports companies. Thus, the conclusion drawn are subject to correctness of data.

Analysis

1. Impact of Leverage on Return of Private Sector Companies during the period of Post Liberlization
2. Impact of Leverage On Return (ROA) of Private Sector Companies during the period of Post Liberlization

VIF table 6.1 shows value of all independent variable are below 3, of effect of leverage on return of private sector companies during the period of post liberalization, so multi collinearly cannot be problem for this model.

Table 6.1 VIF Table of Private Sector Companies for Leverage1 Post Liberalization

Variable	VIF	1/VIF
FS	2.72	0.367051
EBIT	2.22	0.450337
TANG	1.78	0.561088
NDTS	1.46	0.686172
LEV1	1.40	0.714771
CR	1.28	0.783068
GR	1.04	0.959003
Mean VIF	1.70	

The value of Hausman's chi square test shown in table 6.2 is 6.61 with p value 0.3582, being higher than .05 does not support rejection of null

hypothesis, hence random effect model is suitable for interpretation .

Table 6.2 Hausman's Test of Private Sector Companies for Leverage1 Post Liberalization

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LEV1	-0.2626453	-0.2844652	0.0218199	0.0219811
TANG	-0.1616051	-0.1268498	-0.0347554	0.0158146
FS	-0.0037642	-0.0117071	0.0079429	0.0046836
EBIT	1.29e-06	1.45e-06	-1.63e-07	2.05e-07
GR	-0.0007046	-0.0007535	0.000049	0.0001056
CR	-0.003611	-0.0031647	-0.0004463	0.0010731
NDTS	2.708378	2.413056	0.295322	0.2207595

Test: Ho: difference in coefficients not systematic

chi2 = 6.61

Prob>chi2 = 0.3582

Table 6.3 shows the result of random effect regression of private sector companies after liberalization. The value of Wald chi-square test is 100.51 with p value 0.0000, less than .05, hence

indicates data is statistically suitable for interpretation. The value of R square (overall) is 0.3649 , which indicates that model has explained 36.49 percent of variation in return. The empirical results shows that leverage measured by total debt to total assets have negative relation with return and relation have found statistically significant at one percent level.

Table 6.3 Random –effects Regression results for Effect of Financial Leverage (Leverage1) Return on Assets of Private Sector Companies Post Liberalization

Random-effects GLS regression		Number of obs = 325	
Group variable: company		Number of groups = 25	
R-sq: within = 0.2126		Obs per group: min = 13	
between = 0.4824		avg = 13.0	
overall = 0.3649		max = 13	
Random effects u_i ~ Gaussian		Wald chi2(7) = 100.51	
corr(u_i, X) = 0 (assumed)		Prob > chi2 = 0.0000	
roa	Coef.	z	P> z
LEV1	-0.2844652	-7.32	0.000
TANG	-0.1268498	-2.90	0.004*
FS	-0.0117071	-0.94	0.350
EBIT	1.45e-06	2.31	0.021**
GR	-0.0007535	-0.82	0.414
CR	-0.0031647	-1.11	0.267
NDTS	2.413056	5.29	0.000*
cons	0.2324899	4.27	0.000

*significant 1% level

**significant 5% level

From the other control variables earnings before interest and taxes, non debt tax shield have positive and insignificant relation with return and tangibility, firm size , current ration have negative and significant relation with return , whereas growth found to be insignificant.

The VIF test result in table no 6.4 reveals that values of all independent variables are below 3, which indicates there is no problem of multi co linearity in data.

Table 6.4 VIF Table of Private Sector Companies for Leverage2 Post Liberalization

Variable	VIF	1/VIF
FS	2.48	0.402860
EBIT	2.35	0.424850
NDTS	1.45	0.688676
TANG	1.41	0.710180
LEV2	1.29	0.775628
CR	1.24	0.808465
GR	1.02	0.977108
Mean VIF	1.61	

The Hausman's test result in table 6.5 shows value of chi square is 7.55 with p value 0.2733 , which is more than .05 level, hence does not support the null hypothesis and indicates random effect model is suitable for interpretation. Table 6.6 indicates value of Wald chi square test is 43.97 with p value 0.0000, which is less than .05 level hence support the goodness of fit for this modal. The R square value (overall) is 0.1080 which means 10.80 percent variation in return has been explained by this model.

Table 6.5 Hausman's Test of Private Sector Companies for Leverage2 Post Liberalization

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LEV2	-0.0005863	-0.0007641	0.0001777	0.0001272
TANG	-0.2304481	-0.2246075	-0.0058407	0.0146824
FS	0.0276703	0.0235305	0.0041397	0.0033386
EBIT	5.78e-07	7.06e-07	-1.28e-07	1.77e-07
GR	-0.0003708	-0.0005264	0.0001556	0.0000675
CR	-0.0041617	-0.0031272	-0.0010345	0.0009345
NDTS	2.61129	2.458946	0.1523444	0.1950264

Test: Ho: Difference in Coefficients not Systematic

chi2 = 7.55

Prob>chi2 = 0.2733

The empirical results shows that the leverage measured by short term debt to equity has negative relation with return and statistically found insignificant.

Table 6.6 Random-Effects Regression Results for Effect of Financial Leverage (Leverage2) Return On Assets of Private Sector Companies Post Liberalization

Random-effects GLS regression Group variable: company R-sq: within = 0.1252 between = 0.1028 overall = 0.1080 Random effects u_i ~ Gaussian corr(u_i, X) = 0 (assumed)		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 Wald chi2(7) = 43.97 Prob > chi2 = 0.0000	
roa	Coef.	z	P> z
LEV2	-0.0007641	-1.56	0.119
TANG	-0.2246075	-4.97	0.000*
FS	.0235305	1.89	0.058***
EBIT	7.06e-07	1.01	0.313
GR	-0.0005264	-0.54	0.589
CR	-0.0031272	-1.02	0.309
NDTS	2.458946	4.94	0.000*
cons	0.0492817	0.94	0.347

*significant 1% level

***significant 10% level

From the other control variables firm size and non debt tax shield found to be positive and significant relation with return, whereas tangibility found to be negative and significant relation and others variable found to be negative and insignificant relation with return.

Table 6.7 shows the values of VIF test are below 3, which indicates all independent variables are free from multi co linearity.

Table 6.7 VIF Table of Private Sector Companies for Leverage3 Post Liberalization

Variable	VIF	1/VIF
FS	2.49	0.401644
EBIT	2.31	0.432226
NDTS	1.45	0.688684
TANG	1.41	0.710199
LEV 3	1.28	0.780619
CR	1.24	0.808196
GR	1.02	0.977108
Mean VIF	1.60	

The results of Hausman's chi square test shown in table 6.8 is 6.09 with p value 0.4135 which is more than .05 level indicates random effect model is suitable for interpretation of data.

Table 6.8 Hausman's Test of Private Sector Companies for Leverage Post Liberalization

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LEV3	-0.0002564	-0.0003344	0.000078	0.0000634
TANG	-0.2304096	-0.2247034	-0.0057062	0.0146991
FS	0.0278602	0.0238872	0.003973	0.0033445
EBIT	5.65e-07	6.93e-07	-1.27e-07	1.77e-07
GR	-0.0003722	-0.0005258	0.0001536	0.0000741
CR	-0.0041739	-0.0031648	-0.0010091	0.0009351
NDTS	2.60847	2.458399	0.1500712	0.1951211

Test: Ho: difference in coefficients not systematic

chi2 = 6.09

Prob>chi2 = 0.4135

The result of random effect model has been shown in table 6.9. the table shows value of Wald chi

square test is 44.23 with p value 0.0000, less than .01 level, hence indicates model is statistically significant and fit for interpretation. The value of R square (overall) is 0.1103, which means model has explained 11.03 percent of variation in return.

The empirical results shows that leverage measured by total debt to equity has been negative

relation with return and has been found statistically significant. firm size, non debt tax shield found to be positive and significant relation with return. From the other control variables tangibility has negative and insignificant relation with return and others found to be negative and insignificant relation.

Table 6.9 Random-Effects Regression results for Effect of Financial Leverage (Leverage3) Return on Assets of Private Sector Companies Pre Liberalization

Random-effects GLS regression Group variable: company R-sq: within = 0.1254 between = 0.1061 overall = 0.1103 Random effects u _i ~ Gaussian corr(u _i , X) = 0 (assumed)		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 Wald chi2(7) = 44.23 Prob > chi2 = 0.0000	
roa	Coef.	z	P> z
LEV 3	-0.0003344	-1.63	0.104
TANG	-0.2247034	-4.98	0.000*
FS	0.0238872	1.93	0.054***
EBIT	6.93e-07	1.00	0.318
GR	-0.0005258	-0.54	0.590
CR	-0.0031648	-1.03	0.303
NDTS	2.458399	4.94	0.000*
cons	0.0483289	0.92	0.356

*significant 1% level

***significant 10% level

VIF test values in table no 6.10 are lower than 3, points out absence of high co linearity in model.

Table 6.10 VIF Table of Private Sector Companies for Leverage4 Post Liberalization

Variable	VIF	1/VIF
FS	2.49	0.401200
EBIT	2.30	0.435294
NDTS	1.45	0.688698
TANG	1.41	0.710152
LEV4	1.27	0.786005
CR	1.24	0.807882
GR	1.02	0.977064
Mean VIF	1.60	

The Hausman's specification test result in table 6.11 is 6.02 with p value 0.4213, which is more than .05 level, indicates presence of random effect in this model, therefore random effect model is used for interpretation of data.

Table 6.11 Hausman's Test of Private Sector Companies for Leverage 4 Post Liberalization

	(b) Fe	(B) re	(b-B) Difference	Sqrt (diag(V _b -V _B)) S.E.
LEV4	-0.000394	-0.0005415	0.0001475	0.0001209
TANG	-0.2304994	-0.2247517	-0.0057477	0.0147189
FS	0.0280285	0.0240184	0.0040101	0.0033603
EBIT	5.23e-07	6.58e-07	-1.34e-07	1.77e-07
GR	-0.0003722	-0.0005248	0.0001526	0.0000738
CR	-0.0041653	-0.0031629	-0.0010024	0.0009354
NDTS	2.612794	2.462679	0.1501148	0.1953672

Test: Ho: Difference in Coefficients not Systematic
chi2 = 6.02

Prob>chi2 = 0.4213

The value of Wald chi square test in table 6.12 is 43.91 with p value 0.0000 has been found statistically significant at .01 level, therefore this model can be used for this data. The R square value (overall) is 0.1107 indicates that 11.07 percent of variation in return has been expected to be explained by this model.

The empirical results also shows that leverage measured by long term debt to equity has negative relation with return and relation has been found statistically insignificant. firm size and non debt tax shield found to be positive and statistically significant relation with return, whereas tangibility found to be negative and significant relation and relation among the other control variables found to be negative and insignificant.

Table 6.12 Random –Effects Regression Results for Effect of Financial Leverage (Leverage4) Return On Assets Of Private Sector Companies Post Liberalization

Random-effects GLS regression Group variable: company R-sq: within = 0.1245 between = 0.1073 overall = 0.1107 Random effects u_i ~ Gaussian corr(u_i, X) = 0 (assumed)		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 Wald chi2(7) = 43.91 Prob > chi2 = 0.0000	
roa	Coef.	z	P> z
LEV4	-0.0005415	-1.54	0.124
TANG	-0.2247517	-4.98	0.000*
FS	0.0240184	1.94	0.053***
EBIT	6.58e-07	0.95	0.341
GR	-0.0005248	-0.54	0.591
CR	-0.0031629	-1.03	0.304
NDTS	2.462679	4.95	0.000*
Cons	0.0478908	0.91	0.360

*significant 1% level

***significant 10% level

Impact of Leverage (Total Debt to Total Assets) on Return (ROE) of Private Sector Companies During The Period of Post Liberalization

Table 6.13 shows the values of VIF test, which are below 3, hence, indicates all independent variables are free from multi co linearity. The Hausman's chi square test value in table 6.14 is 29.00 with p value 0.0001, which is less than .05 level, hence reject null hypothesis, difference in coefficient no systematic, indicates fixed effect model is suitable for data interpretation.

Table 6.13 VIF Table of Private Sector Companies For Leverage 1 Post Liberalization

Variable	VIF	1/VIF
FS	2.73	0.366771
EBIT	2.22	0.450158
TANG	1.78	0.561342
NDTS	1.46	0.685831
LEV1	1.40	0.713862
CR	1.28	0.783383
GR	1.04	0.959853
Mean VIF	1.70	

Table 6.14 Hausman's Test of Private Sector Companies for Leverage1 Post Liberalization

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
LEV1	-18.74152	-12.49179	-6.249734	4.427173
TANG	12.91913	7.254833	5.664293	2.80828
FS	6.201602	6.294306	-0.0927045	0.827488
EBIT	0.0001263	0.0001616	-0.0000353	0.0000342
GR	0.0273996	0.0407978	-0.0133982	.
CR	-1.486572	-0.9897341	-0.4968383	0.1937423
NDTS	-326.2254	-136.3391	-189.8863	43.42324

Test: Ho: Difference in Coefficients not Systematic

chi2 = 29.00

Prob>chi2 = 0.0001

Table 6.15 presents result of fixed effect regression of private sector companies during the

period of post liberalization. It shows the value of F statistics test is 7.23 with p value 0.0000, which is less than .01 level, hence indicate modal is fit for given period of study.

Table 6.15 Fixed–Effects Regression Results for Effect of Financial Leverage (Leverage1) Return on Assets of Private Sector Companies Post Liberalization

Fixed-effects (within) regression Group variable: company R-sq: within = 0.1474 between = 0.0362 overall = 0.0055 corr(u_i, Xb) = -0.4796		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 F(7,293) = 7.23 Prob > F = 0.0000	
roe	Std. Err.	t	P> t
LEV1	8.894809	-2.11	0.036
TANG	9.235274	1.40	0.163
FS	2.650704	2.34	0.020**
EBIT	0.0001316	0.96	0.338
GR	0.1851969	0.15	0.882
CR	0.6055535	-2.45	0.015**
NDTS	100.7082	-3.24	0.001*
cons	11.3853	-0.65	0.514

*significant 1% level
 **significant 5 % level

The R Square value(within) is 0.1474, which means 14.75 percent of variation to be expected in return has been explained by this modal. The empirical result shows that leverage measured by total debt to total assets has positive impact on return and has been found statistically significant. From the control variables firm size, current ratio and non debt tax shield found positive and significant relation with return, whereas remaining variables has been found positive and statistically insignificant relation with return.

The variation inflation factor test value in table 6.16 are below 3, hence multi co linearity cannot be problem for given variables.

Table 6.16 VIF Table of Private Sector Companies For Leverage2 Post Liberalization

Variable	VIF	1/VIF
FS	2.57	0.389534
EBIT	2.14	0.466363
TANG	1.47	0.677970
NDTS	1.45	0.687704
CR	1.23	0.813445
LEV 2	1.10	0.906093
GR	1.02	0.977763
Mean VIF	1.57	

The Hausman's chi square test value in table 6.17 is 21.23 with p value 0.0017, which is less than .05 level , hence reject null hypothesis difference in coefficient is not systematic, recommend fixed effect modal is suitable for data interpretation.

Table 6.17 Hausman's Test of Private Sector Companies For Leverage2 Post Liberalization

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
LEV2	-34.87383	-28.19637	-6.677463	1.742025
TANG	11.83593	5.796637	6.03929	3.148641
FS	6.508412	6.384758	0.1236538	0.6997136
EBIT	0.0001153	0.0001567	-0.0000414	0.0000316
GR	.0092288	0.0135677	-0.0043389	.
CR	-1.443631	-0.9211899	-0.5224413	0.1943908
NDTS	-362.8189	-154.2744	-208.5445	43.65966

Test: Ho: difference in coefficients not systematic
 chi2 = 21.23
 Prob>chi2 = 0.0017

The result of fixed effect regression has been shown in table 6.18. the value of F statistic is 7.58 with p value , 0.0000, which is less than .01 level,

Table 6.18 FIXED–effects Regression Results for Effect of Financial Leverage (Leverage2) Return on Assets of Private Sector Companies Post Liberalization

Fixed-effects (within) regression Group variable: company R-sq: within = 0.1534 between = 0.0471 overall = 0.0048 corr(u_i, Xb) = -0.4815		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 F(7,293) = 7.58 Prob > F = 0.0000	
roe	Coef.	t	P> t
LEV 2	-34.87383	-2.56	0.011**

TANG	11.83593	1.31	0.191
FS	6.508412	2.58	0.010**
EBIT	0.0001153	0.89	0.372
GR	0.0092288	0.05	0.960
CR	-1.443631	-2.39	0.017*
NDTS	-362.8189	-3.59	0.000*
Cons	-9.076715	-0.86	0.393

*significant 1% level

**significant 5 % level

The empirical results shows that leverage measured by short term debt to total asset has negative relation with return and statistically significant .The control variables firm size, have found positive and statistically significant relation with return and current ratio and non debt tax shield negative and significant relation with return. Whereas other control variables have been found positive and insignificant relation.

Table 6.19 shows the result of VIF test value, which are below 3, hence indicate the absence of severe co linearity .

Table 6.19 VIF Table of Private Sector Companies for Leverage3 Post Liberalization

Variable	VIF	1/VIF
FS	2.48	0.403485
EBIT	2.14	0.466342
NDTS	1.45	0.687765
TANG	1.41	0.710061
CR	1.23	0.814079
LEV3	1.03	0.971132
GR	1.02	0.978924
Mean VIF	1.54	

Table 6.20 shows the result of Hausman's specification test value 28.57 with p value 0.0000 is less than .05 level , hence reject null hypothesis and indicates fixed effect modal is suitable for data interpretation.

Table 6.20 Hausman's Test of Private Sector Companies For Leverage3 Post Liberalization

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LEV3	0.0014279	0.0015682	-0.0001402	.
TANG	8.054248	2.212058	5.84219	3.356995
FS	8.552176	7.752694	0.7994822	0.6271154
EBIT	0.0000571	0.0001227	-0.0000656	0.0000319
GR	0.0501678	0.0434775	0.0066903	.
CR	-1.525984	-0.8810799	-0.6449045	0.2071179
NDTS	-335.9158	-113.1666	-222.7492	46.17644

Test: Ho: Difference in coefficients not systematic

chi2 = 28.57

Prob>chi2 = 0.0000

The result of fixed effect regression has been shown in table 6.21 which shows F statistics value 6.55 with p value 0.000.The R square value (within) is 13.53 , which indicates 13.53 percent of variation in return has been explained by this model. The empirical results shows that leverage measured by

total debt to equity has positive and insignificant relation with return. From the control variables firm size, current ratio and tangibility has been found positive and statistically significant relation with return whereas tangibility, earnings before interest and taxes and growth have positive and insignificant relation other remaining control variables has been found negative and insignificant relation with return.

Table 6.21 FIXED-effects Regression results for effect of Financial Leverage (Leverage3) Return on Assets of Private Sector Companies Post Liberalization

Fixed-effects (within) regression		Number of obs = 325	
Group variable: company		Number of groups = 25	
R-sq: within = 0.1353		Obs per group: min = 13	
between = 0.0214		avg = 13.0	
overall = 0.0076		max = 13	
corr(u_i, Xb) = -0.4573		F(7,293) = 6.55	
		Prob > F = 0.0000	
roe	Coef.	t	P> t
LEV3	0.0014279	0.54	0.590
TANG	8.054248	0.89	0.372
FS	8.552176	3.53	0.000*
EBIT	0.0000571	0.45	0.656
GR	0.0501678	0.27	0.788
CR	-1.525984	-2.50	0.013**
NDTS	-335.9158	-3.31	0.001*
cons	-19.59987	-1.99	0.048

*significant 1% level

**significant 5 % level

The variation inflation factor test value in table 6.22 are below 3, hence indicates multi collinearity cannot be a problem for given independent variables.

Table 6.22 VIF Table of Private Sector Companies for Leverage4 Post Liberalization

Variable	VIF	1/VIF
FS	2.48	0.403579
EBIT	2.15	0.465028
NDTS	1.45	0.687722
TANG	1.41	0.710079
CR	1.23	0.814006
LEV4	1.04	0.964247
GR	1.02	0.978922
Mean VIF	1.54	

Table 6.23 shows the result of Hausman's chi square test value is 28.58 with p value 0.0000, which is less than .05 level, hence reject null hypothesis, difference in coefficient is not systematic, hence recommended fixed effect model is suitable for data interpretation.

Table 6.23 Hausman's Test of Private Sector Companies for Leverage 4 Post Liberalization

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LEV 4	0.0031014	0.0034006	-0.0002992	
TANG	8.062178	2.216066	5.846112	3.356527
FS	8.542967	7.745924	0.7970434	0.6275858
EBIT	0.0000592	0.0001249	-0.0000657	0.0000318
GR	0.0503251	0.0436382	0.0066869	
CR	-1.527183	-0.8826126	-0.6445704	0.2070799
NDTS	-336.3355	-113.5222	-222.8133	46.17391

Test: Ho: difference in coefficients not systematic
 $\chi^2 = 28.58$
 $\text{Prob} > \chi^2 = 0.0000$

Table 6.24 shows the result of fixed effect regression, which shows The value of F statistics is 6.56 with p value 0.0000. The R square value (within)

is 0.1356, which indicates 13.56 percent of variation in return has been explained by this model. The empirical result shows that leverage measured by long term debt to equity has positive relation with return and has been found statistically insignificant.

Table 6.24 Fixed-effects Regression results for effect of Financial Leverage (Leverage4) Return on Assets of Private Sector Companies Post Liberalization

Fixed-effects (within) regression Group variable: company R-sq: within = 0.1356 between = 0.0213 overall = 0.0076 corr(u_i, Xb) = -0.4570		Number of obs = 325 Number of groups = 25 Obs per group: min = 13 avg = 13.0 max = 13 F(7,293) = 6.56 Prob > F = 0.0000	
roe	Coef.	t	P> t
LEV 4	0.0031014	0.61	0.541
TANG	8.062178	0.89	0.372
FS	8.542967	3.53	0.000*
EBIT	0.0000592	0.46	0.645
GR	0.0503251	0.27	0.787
CR	-1.527183	-2.51	0.013**
NDTS	-336.3355	-3.32	0.001**
cons	-19.55635	-1.98	0.048

*significant 1% level
 **significant 5% level

From the other control variables firm size have found positive and significant relation with return, whereas current ratio and non debt tax shield has been negative and significant relation and remaining other variables has been found positive and insignificant relation with return.

Conclusion

The result of objective to measure the impact of leverage on return private sectors companies during the period of post liberalization shows that In case return measured by ROA in case of private

sector companies during the period of post liberalization shows only leverage 1 (total debt/ total assets) have significant relation with return. However in case of non debt tax shield have significant and positive relation with leverage 1, leverage2 and leverage 3 and leverage4 and significant and negative relation with tangibility. leverage2, leverage3 and leverage4 shows positive and significant relation firm size whereas leverage 1 shows positive and significant relation with earnings before interest and taxes. However in case return measured by ROE private sector companies during the period of post liberalization shows only leverage 1 (total debt/ total

assets), leverage₂ (short term debt /equity) have significant positive relation with return. It also shows that leverage₁, leverage₂ and leverage₃ and leverage₄ and significant positive relation with firm size. However in case of current ratio and non debt tax shield have significant and positive relation with leverage₁ and significant negative relation with leverage₂ and leverage₃ and leverage₄.

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