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RESEARCH ARTICLE

DEBT AND PROFITABILITY: EVIDENCE FROM INDIAN FIRMS

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ABSTRACT

Capital structure has been a database issue in financial economics ever since Modigliani and Miller showed in 1958 that given frictionless markets and homogeneous expectations, the capital structure decision of the firm is irrelevant because it does not contribute towards the firm's growth. The dilemma firms are faced with is making a decision on the capital structure choice to use. The purpose of this paper is to find out the effect of capital structure on financial performance of firms based on ROE, ROA, Tobin's Q and EPS for the companies listed both at BSE and NSE over the period 2011-2016, measured through a simple regression model. Results indicate that Capital Structure is significantly and positively associated with firm Performance when measured by Tobin s Q, however they report a negative relationship between capital structure with firms' performance when measured by ROA, and no significant relationship when measured by ROE as well as by EPS. Altogether, the study provides evidence which indicates firm performance is positively or even negatively related to capital structure. One important reason for this conflicting result can be the high cost of borrowing in developing countries like India. This study contributes to the empirical literature on the effect of capital structure on financial performance of Indian firms.

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INTRODUCTION

An organization's operations and growth are financed through various sources of funds. Basically, there are twosources of funds: Debt and Equity. Each form of organization employs different sources of funds and many types of combinations of debt and equity and thus every firm has different capital structure. Every element in capital structure adds upto the cost to the firm, depending on its type. A proprietorship employs funds supplied by owners; a company employs both debt and equity capital, a corporation also employs both types; but the ratio of debt to equity is a debatable issue for the growth of the organization. Thus, dividing the cash flows in fixed and residual component to meet various obligations is a crucial decision. The foundation ofthe modern approach towards capital structure lies on the Modigliani Miller theorem 1958, proposed by Franco Modigliani and Merton Miller. Irrespective of its disregard towards various important factors in the capital structure process, like fluctuations and uncertain situations that may arise gradually in the course of financing a firm, the theorem plays a pivotal role. The theorem states that in a perfect market, how a firm is financed is not relevant to its value. This forms a basis to examine real world reasons to the relevance of capital structure, like bankruptcy costs, agency costs, taxes, etc. An extension of this analysis can be to investigate the existence of optimal capital structure which has an impact on the firm's value (Modigliani and Miller, 1963). The firm value is an economic measure showing its market value. It is the summation of claims of all claimants like creditors and stockholders. It is one of the most crucial metric used in business valuation, financial modelling, risk analysis, accounting and portfolio analysis(Tripathy, S. and Rahman, A.,2013). There is a direct relationship between the value of a firm and profit maximization. So measuring or determining the present value is very important for the firm.The value of a firm measurement can be simplified by using time value of money principles. So in this case, a firm value is the present value of all expected future cash flows plus current cash flows assuming expected flows to be equal to expected profits of the firms. Many companies discount the expected future profits to today using a given interest rate and then adding in current profits, in order to calculate the firms' value. By using balance sheet format, the market value of the firm measures the assessment of the market for all the assets' value.

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Literature Review

The essence of financial management is the creation of shareholder value. According to Ehrhard and Brigham (2003), the value of a business is based on the going principle which states that the present value of all the expected future cash

flows to be generated by the assets should be discounted at the company's weighted average cost of capital (WACC). And this makes clear that WACC has a direct impact on the value of a business.

The choice between debt and equity aims to find the right capital structure that will maximize stockholder wealth. WACC is used to define a firm's value by discounting future cash flows. Minimizing WACC of any firm will maximize value of the firm. Debt policy and equity ownership structure "matter" and the way in which they matter differs between firms with many and firms with few positive net present value projects (McConnel and Servaes, 1995). Leland and Pyle (1977) propose that managers will take debt-equity ratio as a signal, by the fact that high leverage implies higher bankruptcy risk (and costs) for low quality firms. Since managers always have information advantage over the outsiders, the debt structure may be considered as a signal to the market. Ross's (1977) model suggests that the values of firms will rise with leverage, since it increases the market's perception of value. Traditionally experts believethat an increase in debt leads to increase in the value of the firm up to a point. Beyond that point, increase in leverage, increases the overall cost of capital and decreases the value of firm. Modigliani and Mill (1958) debate that Capital structure is irrelevant by considering reasonableness of other assumptions, such as: absence of tax, bankruptcy cost and other imperfections.

However, the available literature suggests that there is an optimal capital structure, but there is no specific methodology to ensure it achieves an optimal debt level. However, in their second research paper on corporate capital structure, Modigliani and Mill (1963) show in complete contradiction that firm value is an increasing function of leverage due to the tax deductibility ofinterest payments at the corporate level. For the last 50 years, an enormous research effort has gone into identifying the relevant costs associated with debt financing that firms presumably trade off against this substantial corporate tax benefit. Relevant costs associated with debt financing such as bankruptcy costs, personal tax, agency cost, asymmetric information, product/input market interactions, and corporate control considerations probably add up to less than corporate tax benefit (Miller, 1977; Bradley, et al., 1984; Harris and Raviv, 1991). In support of the previous research work, Bandyopadhyay and Barua (2016) investigate the linkage of corporate sector performance with the capital structure and macroeconomic environment. Their study suggests that the performance of any company hinges around its ability to operate on a capital structure (Tripathy and Pradhan, 2014). And further considering the Indian context, Sukhtankar (2016) studies the effect of firm ownership structure on firm behavior and the economic outcomes of upstream suppliers by comparing privately owned sugar mills to cooperatives and public mills, and found a positive outcome. Erenburg, et. al. (2016) assess the diverse roles of institutional investors in impacting survival and performance of chronically underperforming firms and contrast the results for consistently over performing firms. The results are negative for activist pension funds and long-term institutions, positive for activist hedge funds and short-term institutions, and mixed for institutional block holders.Also, by investigating the issue among institutional stockholdings and firms' performance and capital structure measures of Malaysia, Pirzada et.al. (2015) find a significant relationship between firms' performance and capital structure. The result from Chung et. al. (2013) supports the pecking-order hypothesis, including acquisition among potential financing sources, investigate relationship between capital structure choice and survival probability. Didier and Schmukler (2013) study the extent to which firms in China and India use capital markets to obtain financing and growth. The result shows that size distribution of issuing firms shifts more over time than the distribution of those that do not issue, suggesting little convergence in size among listed firms. Similarly, Margaritis and Psillaki (2010) investigate the relationship between capital structure, ownership structure and firm performanceby employing non-parametric data envelopment analysis (DEA) methods.EvenChowdhury and Chowdhury (2010) test the influence of debt-equity structure on the value of shares given different sizes, industries and growth opportunities with the companies incorporated in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) of Bangladesh. They find a strong positively correlated association evident from the empirical findings when stratified by industry.

King and Santor (2008) examine how family ownership affects the performance and capital structure of 613 Canadian firms from 1998 to 2005. They find that freestanding family owned firms with a single share class have similar market performance than other firms based on Tobin's q ratios, superior accounting performance based on ROA, and higher financial leverage based on debt-to-total assets. Also, Gedajlovic and Shapiro (2002) examine the relationship between the ownership structure and financial performance of 334 Japanese corporations. The result gives a positive relationship between ownership concentration and financial performance which is consistent with agency theory predictions. The study of Gorriz and Fumas (1996) tests 'managerial' and 'contractual' theories using ownership and performance data from a sample of Spanish family- and non-family-controlled firms. Their result supports the contractual theory of the firm, according to which firms choose their ownership structure maximizing economic value, net of contractual costs.

Objectives

There has been a considerable volume of academic papers and studies both in the developed economies, advanced developing economies and developing economies on the impact of capital structure on firms' performance and research is still going on to incorporate the existing theories. This work is one of such attempt and it aims at providing empirical evidence in confirming the validity of the theories to assist the firm's management in determining the best capital structure in the Indian Context. The primary objective is to find out the effect of capital structure on the financial performance of firms listed both at BSE and NSE. Further it has divided the firm's performance based on four different measures, like: ROE, ROA, Tobin's Q and EPS. More specifically, this paper also aims to:

- Know the return characteristics by means of a descriptive statistics to describe and to understand the basic features of the data that are used in this study.
- Find out the Correlation among different variables to describe the degree to which one variable is linearly related to another. Through conducting correlation analysis, this study shall be able to identify the degree of association among the variables.

- Analyze Capital structure of Indian listed Companies by examining the impact of capital structure on the firm's value measured by ROE.
- Analyze Capital structure of Indian listed Companies by examining the impact of capital structure on the firm's value measured by ROA.
- Analyze Capital structure of Indian listed Companies by examining the impact of capital structure on the firm's value measured by Tobin's Q.
- Analyze Capital structure of Indian listed Companies by examining the impact of capital structure on the firm's value measured by EPS.

Data and Methodology

The present study aims to examine empirically the relation between financing choices and firm performance over the period 2011-2015 in the Indian listed companies.Panel Data has been used for 1554 companies (from out of 4325 companies) registered with BSE and NSE. The company selection is made depending on data availability for the last 5 years (2011-2015). All data are collected from the financial database 'Prowess'. A Firm's performance is measured by four different parameters and further divided into two subgroups, namely based on accounting measurement (calculated from firm s financial statements): Return on Asset (ROA) and Return on Equity (ROE) (Majumdar and Chhibber, 1999; Abor, 2005, Saedi and Mahmoodi, 2011; Ebaid, 2009); Mixed market values with accounting values: Tobin s Q and Earning Per Share (EPS) (Zetun and Tian, 2007). ROE which is computed as net profit item from the balance sheet dividing with total equity item from also the balance sheet for each of the 1554 companies and for each of the years from 2011 to 2015 (Salim and Yadav, 2012); ROA which is computed as the ratio of operating earnings to total assets; Tobin's Q is computed as total assets plus market value of equity minus book value of equity whole divided by book value of total asset, i.e. (total assets + market value of equity - book value of equity)/total assets; and EPS is calculated as net income divided by a number of shares outstanding (King and Santor, 2008). On the other hand, Capital Structure is measured by three variables, namely:Short Term Debt (STD), Long Term Debt (LTD) and Total Debt (TOD) (Abor, 2005, Saedi,2011, Ebaid, 2009).STD is measured as the ratio of short term debt to total assets;LTD is the ratio of long term debt to total asset and TOD is the ratio of total asset minus total equity divided by total asset (Salim and Yadav, 2012; King and Santor, 2008).

The relationship between Capital Structure and firm's performance is measured by the following four regression models:

$$ROE_{1,t} = \beta_0 + \beta_1 LTD_{1,t} + \beta_2 STD_{1,t} + \beta_3 TOD_{1,t} + \varepsilon_{1,t} \ldots\ldots (1)$$
$$ROA_{1,t} = \beta_0 + \beta_1 LTD_{1,t} + \beta_2 STD_{1,t} + \beta_3 TOD_{1,t} + \varepsilon_{1,t} \ldots\ldots (2)$$
$$Tobin's\ Q_{1,t} = \beta_0 + \beta_1 LTD_{1,t} + \beta_2 STD_{1,t} + \beta_3 TOD_{1,t} + \varepsilon_{1,t} .(3)$$
$$EPS_{1,t} = \beta_0 + \beta_1 LTD_{1,t} + \beta_2 STD_{1,t} + \beta_3 TOD_{1,t} + \varepsilon_{1,t} \ldots\ldots (4)$$

Where, ROE: return on equity for firm I in year t; ROA: return of asset for firm I in year t; EPS: Earning per share for firm I in year t; LTD: Long term debt to total assets for firm I in year t; STD: short term debt to total assets for firm I in year t; and TOD: Total debt to total assets for firm I in year t.

These tests are done with the help of statistical software like MS Excel 2007, EViews 7.

The major scope of the present study will be to understand the general practices of capital structure in India including the sensitivity of Capital Structure on performance of firm; and it will act as a guide for the financial managers to design their optimum capital structure to maximize the market value of the firm and minimize the agency cost. Further, this research would educate readers on the effect of capital structure on firm performance for listed firms in both BSE and NSE, and it will also enable managers to understand how equity, debt (long and short) affects the firm performance and will then adopt a cheaper source of financing. This research would actually improve financing of most organizations in developing world countries like India, and hence provide a base for development. Also it will be useful to academicians as a source of knowledge for further research.

RESULTS AND DISCUSSION

The quantitative data obtained was analysed using both descriptive (means, standard deviations, frequencies and illustrations) and inferential statistics (Regression used for testing significant for determining relationships). Descriptive statistics provides the means and standard deviations of the scores relating to each of the variables used. Means and standard deviations for all the variables were also calculated in order to get an idea about the direction of all the variables. Table I presents a summary of descriptive statistics of the dependent and independent variables used in the study. Descriptive statistics show mean, median, minimum, maximum, standarddeviation, skewness and kurtosis. For independent variable, ROE has a minimum of -85.51 and maximum of 548.99 with the average value of 1.27 during the period 2011-2015.

Similarly ROA has a minimum of -4.36 and maximum of 2.73 with the average value of 0.007, Tobin's Q has a minimum of 0.003 and maximum of 34.88 with the average value of 0.29 and EPS has mean value of 6.1 with minimum value of -2714 and maximum value 5488.44, indicating the highest standard deviation of 101.98. It indicates that Indian companies' EPS is not consistent. It changes to a great extent. Likewise, for dependent variables (which is capital structures), the mean (STD, LTD and TOD) are about 19, 56 and 87, which indicates that Indian companies' finance their asset by using more of long term debts than short term debts. From this result, it shows that Indian companies use 77% debt to finance their assets. This confirms that they are in a more risky condition and something needs to be done to encourage companies to enhance their business by getting more equity to have an increase in their value. The data itself taken from 2011 to 2015 comprises of 1554 companies listed on both BSE and NSE, but the age and scale of the companies is different.Skewnessand Kurtosis are used to measure the shape of datadistribution and both are used for interval and ratio level data. For a normal distribution of datas kewness and kurtosis value are close to zero. Here all data are positive distribution except the sudden move for ROA, LTD and TOD. Moreover, for kurtosis, all variables have positive distribution that refer to the peaked distribution. And all variables are statistically significant because of their probability value is less than 0.05. The correlations between variables are presented in Table II. It may be observed that ROE, ROA and EPS are positively associated to LTD and TOD, but have negative impact on STD. Tobin's Q is positively related to both STD and LTD, but negatively related to TOD. There are no high correlations observed from the data, which allows the conclusion that there is no autocorrelation between the independent variables.

Table I. Descriptive Statistics

	ROE	ROA	TOBQ	EPS	STD	LTD	TOD
Mean	1.279	0.007	0.295	6.1	0.192	0.556	0.776
Median	0.335	0.0221	0.196	2.53	0.149	0.645	0.948
Maximum	548.99	2.731	34.885	5488.44	29.625	0.998	0.999
Minimum	-85.512	-4.365	0.003	-2714	0.000	-0.001	-6.856
Std. Dev.	9.758	0.178	0.7	101.984	0.503	0.331	0.266
Skewness	33.571	-9.685	32.181	20.032	37.403	-0.453	-10.504
Kurtosis	144.485	215.475	194.587	138.019	185.032	1.789	199.506
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	7759	7759	7759	7759	7759	7759	7759

Table II. Correlation matrix

	ROE	ROA	TOBQ	EPS	STD	LTD	TOD
ROE	1.000						
ROA	0.194	1.000					
TOBQ	-0.049	-0.537	1.000				
EPS	0.705	0.125	-0.029	1.000			
STD	-0.044	-0.317	0.198	-0.029	1.000		
LTD	0.048	0.009	0.034	0.015	-0.027	1.000	
TOD	0.058	0.422	-0.523	0.028	-0.406	0.345	1.000

Table III. Performance measured by ROE

Dependent Variable: ROE

Method: Least Squares
Date: 08/11/16 Time: 17:10
Sample: 1 7760
Included observations: 7760

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.261012	0.434829	-0.600264	0.5483
STD	-0.586362	0.242624	-2.416745	0.0157
LTD	1.058623	0.359013	2.948704	0.0032
TOD	1.213216	0.487663	2.487815	0.0129
R-squared	0.049904	Mean dependent var		1.278887
Adjusted R-squared	0.046009	S.D. dependent var		9.757411
S.E. of regression	9.734897	Akaike info criterion		7.389826
Sum squared resid	735022.3	Schwarz criterion		7.393412
Log likelihood	-28668.53	Hannan-Quinn criter.		7.391056
F-statistic	12.97676	Durbin-Watson stat		1.189246
Prob(F-statistic)	0.000000			

Source: Calculated from the data taken from Prowess websites for the selected period

Table IV. Performance measured by ROA

Dependent Variable: ROA

Method: Least Squares
Date: 08/11/16 Time: 17:11
Sample: 1 7760
Included observations: 7760

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.179112	0.007013	-25.53911	0.0000
STD	-0.055054	0.003913	-14.06872	0.0000
LTD	-0.072824	0.005790	-12.57661	0.0000
TOD	0.270831	0.007865	34.43330	0.0000
R-squared	0.219755	Mean dependent var		0.007214
Adjusted R-squared	0.219453	S.D. dependent var		0.177718
S.E. of regression	0.157011	Akaike info criterion		-0.864484
Sum squared resid	191.2049	Schwarz criterion		-0.860898
Log likelihood	3358.198	Hannan-Quinn criter.		-0.863255
F-statistic	728.1545	Durbin-Watson stat		1.532163
Prob(F-statistic)	0.000000			

Source: Calculated from the data taken from Prowess websites for the selected period

Table V. Performance measured by Tobin's Q

Dependent Variable: TOBQ

Method: Least Squares
Date: 08/11/16 Time: 17:12
Sample: 1 7760
Included observations: 7760

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.467329	0.025669	57.16425	0.0000
STD	-0.071615	0.014322	-5.000164	0.0000
LTD	0.529222	0.021193	24.97144	0.0000
TOD	-1.656771	0.028788	-57.55171	0.0000
R-squared	0.527698	Mean dependent var		0.295344
Adjusted R-squared	0.527438	S.D. dependent var		0.700728
S.E. of regression	0.574666	Akaike info criterion		1.730459
Sum squared resid	2561.348	Schwarz criterion		1.734045
Log likelihood	-6710.183	Hannan-Quinn criter.		1.731689
F-statistic	126.1603	Durbin-Watson stat		1.963327
Prob(F-statistic)	0.000000			

Source: Calculated from the data taken from Prowess websites for the selected period

Table VI. Performance measured by EPS

Dependent Variable: EPS				
Method: Least Squares				
Date: 08/11/16 Time: 17:13				
Sample: 1 7760				
Included observations: 7759				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.266775	4.554166	0.058578	0.9533
STD	-4.579551	2.540721	-1.802461	0.0715
LTD	2.752169	3.759686	0.732021	0.4642
TOD	5.912438	5.106987	1.157715	0.2470
R-squared	0.120018	Mean dependent var		6.100029
Adjusted R-squared	0.083002	S.D. dependent var		101.9842
S.E. of regression	101.9418	Akaike info criterion		12.08720
Sum squared resid	80591002	Schwarz criterion		12.09078
Log likelihood	-46888.28	Hannan-Quinn criter.		12.08843
F-statistic	3.152122	Durbin-Watson stat		1.134053
Prob(F-statistic)	0.023856			

Source: Calculated from the data taken from Prowess websites for the selected period

From the above regression result, it can be observed that LTD and TOD have a positive relationship to the performance of the companies when measured by ROE whereas, STD has a negative relationship that significantly influences the performance of the company. The main reason of the negative relationship with STD is because the company is confronted with the default risk of having a higher short term loan. From the adjusted coefficient of determination (R^2 = 0.046) about 5% of systematic variation in the dependent variable (firm value) is explained by the independent variables. This implies that the model is alow fit with average predictive power. The F-test which measures the existence of the linear relationship between the dependent and independent variable reveales that a low significant relationship exists between the variables. The F-calculated value of 12.98 is higher or greater than the Fcritical value of 0.10 at 5% level of significance. However, the fact that the observed value of DW is 1.19 which is far lower than 2.00, reveales that there is the presence of serial correlation in the OLS results. This implies that the result cannot be used to draw policy suggestion.

The Result of Table IV of the regression equationreveals that TOD has a positive relationship to the performance of the companies when measured by ROA whereas, both STD and LTD havesignificant negative influence on the performance of the company. The main reason for having the negative relationship with STD and LTD is because the company is confronted with the default risk of having a higher short term loan. From the adjusted coefficient of determination (R^2 = 0.22) about 22% of systematic variation in the dependent variable (firm value) is explained by the independent variables. This implies that the model is a below fit with average predictive power. The F-test which measures the existence of the linear relationship between the dependent and independent variable reveales that a low significant relationship exists between the variables. The F-calculated value of 728.15 is higher or greater than the F critical value of 0.10 at 5% level of significance. However, the observed value of DW is 1.53 which is far lower than 2.00. Thus reveales that there is the presence of serial correlation in the OLS results which in turn implies that the result cannot be used to draw policy suggestion. From the above regression result, it can be observed that LTD has a positive relationship to the performance of the companies when measured by Tobin's Q whereas, both STD and TOD have negatively influenced the performance of the company. The main reason for having a negative relationship with STD and TOD is because the company is confronted with the default risk of having a higher short term loan. From the adjusted coefficient of determination (R^2 = 0.527) about 53% of systematic variation in the dependent variable (firm value) is explained by the independent variables. This implies that the model is an average fit with average predictive power. The F-test which measures the existence of the linear relationship between the dependent and independent variablesreveales that a significant relationship exists between the variables. The F-calculated value of 126.16 is higher or greater than the F critical value of 0.10 at 5% level of significance. However, the observed value of DW is 1.96 which is closer to 2.00. This reveales that there is the absence of serial correlation in the OLS results which in turn implies that the result can be used to draw policy suggestion. From the above regression result, it can be observed that LTD and TOD have a positive relationship to the performance of the companies when measured by EPS whereas, STD has asignificant negative influences on the performance of the company. The main reason for having the negative relationship with STD is that the company is confronted with the default risk of having higher short term loan. From the adjusted coefficient of determination (R^2 = 0.083) about 8% of systematic variation in the dependent variable (firm value) is explained by the independent variables. This implies that the model is a below fit with average predictive power. The F-test which measures the existence of the linear relationship between the dependent and independent variable reveales that a low significant relationship exists between the variables. The F-calculated value of 3.15 is higher or greater than the F critical value of 0.10 at 5% level of significance. However, the observed value of DW is 1.13 which is far lower than 2.00. Thisreveales that there is the presence of a serial correlation in the OLS results which in turn implies that the result cannot be used to draw policy suggestion.

Conclusion

This research work has examined the capital structure theory and its relationship with the value of the firm in the Indian setting, taking into consideration of1554 firms. All other theories, except the M-M theory (1958), have attempted to resolve the capital structure puzzle enunciated by M-M (1958) propositions. Each of these theories relaxes conditions under which the M-M (1958) theorem is derived. Based on this and the findings of this study, we can conclusively state that: capital structure decisions have various implications and one of them is its effect on the value of the firm which formes the basis of our study. Results indicate that capital structure is significantly and positively associated with firm performance when measured by Tobin s Q, while reporting a negative relationship between capital structure (for STD and LTD) and ROA (Arbiyan and Safari (2009)). Moreover, there is no significant relationship between capital structure and ROE as well as Capital Structure and EPS. Altogether, the study provides evidence which indicates that a firm performance is positively or even negatively related to capital structure. One important reason for this conflicting result can be the high cost of borrowing in developing countries like India. The present study gives a picture to understand the general practices of capital structure in India including the sensitivity of Capital structure to the performance of firms; and it will act as a guide for finance managers to design their optimum capital structure to maximize the market value of the firm and minimize the agency cost. Further, this research would educate readers on the effect of capital structure on firm performance, and it will

also enable managers to understand how equity anddebt (long and short) affect firm performance and will then persuade them to adopt a cheaper source of financing. This research would actually improve financing of most organizations in developing world countries like India and hence provide a base for development.It will also be useful to academicians as a source of knowledge for further research. A study could be done based on Sector wise analysis and more independent variables could be considered to check the result. And finally, control variable (firm size) could be introduced.

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