Firm Size as Moderator to Non-Linear Leverage-Performance Relation: An Emerging Market Review

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ABSTRACT

The purpose of this research was to investigate the leverage-performance relation with moderating firm size in developing countries like Pakistan. Data were collected from 304 Pakistani non-financial firms for the period of 2005-2013. It is found that overall leverage-performance relation is negative for all types of firms. However, such losses are more prominent for small size firms. Results also show that the leverage-performance relation is nonlinear for medium and large size firms. However, these firms are not targeting optimal level and over-leveraging that ultimately decrease their profits. So, financial managers of small size firms should avoid debt financing while for large and medium size firms, managers need to adjust their debt ratio to its optimal level.

Keywords: firm size, leverage, performance, emerging market

INTRODUCTION

Capital structure is one of most studied areas of corporate finance from last few decades (Gama & Galvão, 2012; Stretcher & Johnson, 2011). Despite the abundant literature of capital structure, researchers are failed to consent to a single generalized theory. Although Modigliani and Miller (1958) proposed irrelevancy theory and argued that firm value was not affected by capital structure decisions, the theory was only applicable to perfect market conditions which were not subsisted in the real world. Myers (1984) also argued that in the absence of perfect market conditions, the capital structure became more relevant. Consequently, following irrelevancy theory, various theories are devised to explain the leverage-performance relation in real world practices.

However, some researchers document different results and explain various rationales in this respect. Some find positive leverage-performance relation while others believe conversely and describe debt as negative connotation (Abor, 2010). Even some researchers find insignificant or inconsistent results

in this respect (Fama & French, 1998; Lemmon & Zender, 2001). The reason behind such contradictory and inconsistent results is contingency and situational factors (Jermias, 2008). O'Brien (2003) also suggested that studying direct leverage-performance relationship could portray misleading conclusions due to situational and contingency factors. The magnitude and even direction of leverage-performance relation can change due to these factors. Therefore, it is important to consider moderating factors while studying leverage-performance relation.

Previously, most of the researches explore direct leverage-performance relation while few articles consider moderating factors in this context. For instance, Jermias (2008) and O'Brien (2003) studied firm strategy and competitiveness, Simerly and Li (2000) explored environment dynamism, and McConnell and Servaes (1995) argued that the growth opportunities were as potential moderators to the leverage-performance relation. However, one of the firm specific less researched areas that can also moderate the leverage-performance relation is the firm size.

Firm size is viewed as significant factor that can affect the firm's relationship with its external environment (Ezeoha, 2008). Since larger firms have more capacity to influence their stakeholders, their role is more critical in corporate environment. Similarly, these firms play significant role in commercializing innovative ideas provided by small firms. From macroeconomic perspective, economic growth comes from the growth of large size concerns. Thus, with its increasing recognition to external business environment, firm size can be considered as important factor to internal corporate finance decisions (Voulgaris, Asteriou, & Agiomirgianakis, 2004).

If these arguments are true, capital structure decisions and their consequences can also be affected by firm size especially in developing countries where environment is more dynamic. The dynamic environment can variably affect the competitiveness of large and small firms that affect their capital structure decisions. The purpose of this research is also to investigate the leverage-performance relationship within contingency factor of firm size for Pakistani non-financial firms. In Pakistan, existing literature is vacant from study of leverage-performance relation in moderation of firm size. Hence, the first contribution of this research is contextual where underlying topic is investigated in case of developing countries like Pakistan for non-financial firms. However, some of the researches have explored firm size as moderator to the capital structure decisions in other countries (González & González, 2012; Ozenbas & Portes, 2011; Voulgaris *et al.*, 2004). They explore how different factors affect financing decisions in small and large firms while no attention is given to the consequences of these financing decisions. Meanwhile, they do not search whether financing decisions due to moderating effect of size is profitable or not. For instance, if large or small firm has more or less debt then it becomes more important to know whether this financing decision will increase their firm value or not. This research is intended to answer this successive research question and focuses on the firm value when small, or large firms deploy more or fewer debt. Therefore, novelty of this research revolves around twofold objectives which are contextual contribution and consequences of financing decisions for small and large firms.

Originally, it was Modigliani and Miller (1958) who first started the debate of leverage-performance relation. They argued that under efficient market hypotheses such as neutral tax, no agency cost, symmetric information and no transaction cost, the firm value was irrelevant of its capital structure. However, the implication of irrelevancy theory is questioned due to the non-existence of efficient market in real world (Harris & Raviv, 1991). After that, various researchers have established the rationales for the implication of leverage-performance relation in the absence of efficient market. Trade-off theory, pecking order theory, and agency theory are three most prominent relevancy theories.

According to trade-off theory, benefits and costs are associated with debt and firms should follow a targeted debt ratio where benefits are maximum against minimum loss (Graham, 2000; Kim & Sorensen, 1986). The benefit of debt is tax advantages. Conversely, increased debt level augments the chance of default and the cost of financial distress. Such costs are segregated into two categories of direct cost of financial distress and indirect cost of financial distress. However, firms can maximize their value to follow optimal debt ratio where its benefits are maximum with minimum cost (Kim & Sorensen, 1986).

Similarly, agency theory articulates debt as positive connotation in term of controlling mechanism of agency problems (Jensen & Meckling, 1976). Managers are the agent of their shareholders, and they should work in the best interest of their principal. However, conflict can arise between the objectives of managers and their shareholders especially regarding free cash flows (Jensen, 1986). It is argued that managers can use free cash flows for their personal benefits while deploying more debt can enforce them to invest such free cash flows to positive Net Present Value (NPV) projects to meet new-fangled obligations. Moreover, creditors also impose debt covenants that restrict managers to use these cash flows for their personal benefits. This implies that debt can act as monitoring mechanism and increase managerial performances.

Conversely, pecking order theory postulates negative leverage-performance relationship. The theory states that firms prefer the internal funds over debt and equity while financing the operations (Myers & Majluf, 1984). It suggests that firms follow hierarchy of financing options that start from retaining earnings to external debts to equity. Since asymmetric information prevails in the market, it believes that investors will underprice newly issued shares. To avoid such losses managers consider equity financing as a last resort. Thus, profitable firms prefer their internal funds to finance their operations that lead to negative leverage-performance relation.

However, according to Ezeoha (2008), these traditional capital structure theories do not endow with sufficient explanation of capital structure for small, medium or large firms. The implication of these theories can vary within these categories of firm size because small and large firms contain different characteristics which can direct to different financial decisions (Voulgaris *et al.*, 2004). Subsequent part explores how these categories of firm size differ from each other and affect capital structure decisions.

Previous literature has explored various factors between large and small size firms. The most prominent distinguishing factors are level of profits and their volatility (González & González, 2012). Larger firms generate high and less volatile profits while small firms do conversely. Similarly, small firms also document low liquidity than large firms. This indicates that small firms can be riskier due to low liquidity and volatile profits compared to larger firms. Moreover, larger firms hold more fixed tangible

assets than the small firms. Such characteristics make it easier for larger firms to access debt markets without difficulty. Thus, it is much possible that large firms deploy more debts than small firms.

However, the important thing is what will be the value of large and small firms if they deploy more debt. The purpose of this research is to investigate the role of firm size in the leverage-performance relation. Moderating effects of firm size in leverage-performance relation is found to be ignored previously, although, people can find research investigating leverage-performance relation for SMEs without comparing it with large firms. For instance, Abor (2010) studied leverage-performance relation for SMEs from Ghana and South Africa and found that in general debt and especially long term debts were negatively associated with firm profitability. On the contrary, Jaggi & Gul (1999) suggested there were moderating effects of size to the relationship between investment opportunities, free cash flow and debt. Their results revealed that there was a positive relationship between debt and free cash flows for low investment opportunity when firm size was high. They found that size was a significant moderator to the relation between investment opportunities, free cash flow and performance.

González and González (2012), and Voulgaris *et al.* (2004) examined determinants of capital structure to the contingency of firm size, but they did not consider it with leverage-performance relation. This research proposed that leverage-performance relation could vary within different firm size. Since large firms generated high and less volatile profits with strong liquidity, their risk was also lower comparatively.

Similarly, information is less asymmetric in large firms that also decrease their uncertainty level. Moreover, large firms hold high tangible assets that they can use as collateral for external debt. Consequently, these large firms access the debt market easily at lower cost to gain tax advantages. Thus, in accordance with the trade-off theory, one can anticipate positive leverage-performance relation for large size firms. Agency theory also describes such positive leverage-performance relationship for large firms. Since large firms generate more profits and hold high free cash flows, managers can use it for their benefits. To avoid such agency issue, debt can act as monitoring mechanism and enforce managers for better performances. Hence, the first hypothesis of this research is as follows.

H1: There is positive relation between debt ratio and firm profitability for larger firms.

On the contrary, small firms contain low liquidity and low profits with more volatility that increases its risk premium. Small firms show more exposure to market dynamism that increases its idiosyncratic risk, and ultimately excesses return comparatively. This argument can be more prominent in developing countries where the environment is more volatile. In Pakistan, high-risk premium that increases the cost of

debt for small firms can also be predicted. Moreover, information is more asymmetric for small firms that make it difficult to access the debt market at lower cost. Thus, it is possible that small firms can not surpass tax benefits against the high cost of debt. Hence, the second hypothesis of this research is as follows.

H2: There is negative relation between debt ratio and firm profitability for small firms.

METHODS

To conclude the proposed theory, 304 nonfinancial firms listed at KSE are selected for the period of 2005 to 2013. Selected panel data include 2.557 observations and are collected from annual publications of balance sheet analysis of nonfinancial firms published by State Bank of Pakistan. However, this selection of the sample is made after excluding financial firms, default firms, firms which report negative equity, and firms' observations which show zero sales. The financial sector is excluded because they have different characteristics especially its operations. Default firms are also excluded because these firms normally show continuous deteriorating performances due to financial distress. Their inclusion can affect the comparative analysis of debt financing on firm performances. The reason to exclude negative equity observations is due to accumulated losses more than share capital that can mislead the results. Moreover, with zero sales, no activity is performed and shows no value to their performances and should not be the part of analysis.

To assess the moderating effects of firm size on the leverage-performance relation, fixed effect model is used. Table 1 shows the detail of variables used in the proposed model. The dependent variable is Return on Assets (ROA) while independent variables include Debt Ratio (DR) and its cross effects with small and large firm size. Medium firm size is taken as the reference category, so its cross effect is not included. Firms are categorized as small, medium and large on the basis of natural log of their sales (ln (Sales)). Firms whose values lie within the first quartile of ln (Sales) are considered as small firms. Similarly, firms who lie in the fourth quartile are labeled as large firms while remaining second and third quartile are considered as medium size firm. This methodology is consistent with González and González (2012) who categorized firms on the basis of quartiles of ln (sales).

$$\text{ROA}_{it} = \alpha + \beta_1 \text{DR}_{it} + \beta_2 \text{DR}_{it}*\text{Small} + \beta_3 \text{DR}_{it}*\text{Large} + \beta_4 \text{STTA}it + \beta_5 \text{CR}_{it} + \beta_6 \text{RecTA}_{it} + U_t + V_i + \varepsilon_{it} \text{''} \quad (1)$$

Proposed model in Equation 1 also includes three control variables of Sales to Total Assets (STTA), Current Ratio (CR), and Receivables to Total Assets (RecTA). Ut and Vi represent the unobserved variations due to firm variants and time specific of dummy factors. STATA is used to execute proposed

models. To check the reliability of results, various diagnostics as proposed by Torres-Reyna (2007) are also conducted. It is notable that coefficient of DR (β_1) represents the slope of debt ratio for the reference category of medium firms. However, for small and large firms, DR becomes ($\beta_1 + \beta_2$) and ($\beta_1 + \beta_3$) respectively. β_2 and β_3 show marginal effects of debt when a firm is small and large respectively as compared to medium firms. These marginal effects and their slopes explore whether debt financing is optimal decision for small, medium and large firms or not. Consequently, hypotheses of this research could also be testified.

Table 1 Definition of Variables

Variable	Symbol	Formula
Dependent Variable	ROA	EBIT / Total Assets
Independent Variable	DR	Total Liabilities / Total Assets
Moderating Variables	Small	Equals to 1 if ln(Sales) lies in first quartile and 0 otherwise
	Large	Equals to 1 if ln(sales) lies in fourth quartile and 0 otherwise
Control Variables	STTA	Total Sales / Total Assets
	CR	Current Assets / Current Liabilities
	RecTA	Total Receivables / Total Assets

RESULTS AND DISCUSSIONS

Descriptive statistics for the sampled data are presented in Table 2. Data is categorized on size firms which are small, medium, and large. The descriptive analysis shows that small firms earned low profitability of only 3,9% as the average ROA compared to 10,4% and 14,1% ROA of medium and large firms respectively. Moreover, Standard Deviation (SD) of ROA for small firms is also high variations of 14% even with lower average returns. Thus, it can be concluded that comparatively small firms contain fewer profits with more variation that is consistent with prior discussion. However, not much difference is found between average Debt Ratio (DR) of small and large firms, but it is with more variations for small firms.

Results also describe usage of high Short Term Debt Ratio (STDR), calculated as the ratio of current liabilities to total assets) regardless the type of firm. One of the reasons behind the over reliance on current liabilities can be attributed to the inefficiencies of capital markets in Pakistan. Capital markets especially bond markets are not developed in Pakistan that confines the financing options to short term instruments generally (Raza, Aslam, & Farooq, 2013). The results also reveal that small firms have documented better liquidity (1,560) as than medium firm (1,327) and even large firms (1,494). This can be because more investment in current assets used by small firms as a short term debt ratio for both the categories does not differ significantly. STTA for small firms also shows low statistics and indicates that more investment in working capital is not utilized optimally. Hence, it can be concluded that small firms contain low and volatile profits, better liquidity, and low asset efficiencies than large firms in Pakistani non-financial firms.

Table 3 provides the results of the proposed model. Because the data is panel, it is important to decide that whether fixed effect model has appropriate or random effect. The researchers conduct Hausman test to examine the null hypothesis that estimations of both fixed and random effect models are same. Significant value shows that there are substantial differences in the coefficients estimated by fixed and random effect models and one should select fixed effect model.

Table 3 also shows that Hausman test is significant and confirms that fixed effect is more appropriate compared to random effect model. The researchers also conduct diagnostics test for fixed model as explained by Torres-Reyna (2007). To check

Table 2 Descriptive Statistic

		ROA	DR	STDR	STTA	CR	RecTA
Mean	Small	0,039	0,555	0,409	1,073	1,560	0,096
	Medium	0,104	0,593	0,423	1,253	1,327	0,095
	Large	0,141	0,560	0,416	1,450	1,494	0,110
SD	Small	0,140	0,237	0,215	1,928	1,867	0,123
	Medium	0,097	0,191	0,168	0,688	1,062	0,094
	Large	0,124	0,191	0,189	1,041	1,013	0,130
Max	Small	1,772	0,996	0,959	21,062	14,600	1,183
	Medium	0,604	1,046	0,956	4,525	9,579	0,565
	Large	0,633	0,999	0,972	7,021	12,229	0,704
Min	Small	-1,213	0,006	0,000	0,000	0,077	0,000
	Medium	-0,553	0,063	0,000	0,118	0,169	0,000
	Large	-1,236	0,024	0,024	0,182	0,214	0,000

(Source: Authors' calculation)

whether time dummies are important to be included, testparm test is used. Results show that f-value of testparm test is significant and using time dummies to the proposed model is more appropriate.

Because Hausman test is significant, there is no need to conduct Breusch-Pagan Lagrange Multiplier for the random effect model. The other important assumption of fixed effect model is cross sectional dependence of residuals. However, the cross section dependence assumption is important for the macro panel (Torres-Reyna, 2007). Panel data used is micro data with less number of years and high numbers of entities. Therefore, cross sectional dependency is not critical. The researchers use Pesaran CD test although the results are not calculated due to few number of years across a high number of entities. Similarly, another assumption of serial correlation is not critical for micro data (Torres-Reyna, 2007).

The assumption of heteroskedasticity is checked by modifying Wald test in STATA. It is found that chi2 is highly significant and rejects the null hypothesis with constant variances. This shows that the heteroskedasticity prevails and can affect t-values of each variable. However, to control this, the researchers use robust fixed effect model as proposed by Torres-Reyna (2007). Similarly, significant Model of f-value (44,80) concludes that overall model is significant variations in the dependent variable. So, verification of assumptions and taking appropriate measures accordingly indicates that results obtained are reliable. Subsequent part interprets the results obtained from proposed model.

Table 3 Size and Leverage-Performance Relation

ROA	β	t-value	Sig.
Intercept	0,127***	3,990	0,000
DR	-0,187***	-6,400	0,000
DR*Small	-0,030**	-2,250	0,025
DR*Large	0,036***	2,590	0,010
STTA	0,062***	5,510	0,000
RecTA	0,067*	1,800	0,072
CR	0,003	0,530	0,599
Time Dummy	Yes	Hausman	93,68***
Industry Dummies	Yes	Testparm F-Value	4,22***
Adjusted R2	16,40%	Modified Wald	1,0e+36***
Model F	21,54***		

Significance: *** 1%, ** 5% and * 10%

(Source: Authors' calculation)

Results reveal that all the variables except a control variable of CR provide significant results. It shows that for medium firms, a unit change in DR decreases its ROA by 18,7% or -0,187 on average. For small firms, these losses further decrease by 3% or -0,030. Consequently, DR in small firms becomes -0,217 (-0,187-0,030). Low and volatile earnings and more asymmetric information can be the main reason of this negative marginal effect. Ozenbas and Portes (2011) argued that cost of debt was high for small firms which credit was constrained due to asymmetric information. Voulgaris *et al.* (2004) also argued that asymmetric information made the lenders lend with high cost of debt or collateral.

Conversely, marginal effect of large firms is positive and shows the increase in DR also increase its profits by 3,6% compared to the medium firms. Then, DR for large firms is -0,151 (-0,187 + 0,036). The positive marginal effect can be from the better access to debt market with less asymmetric information. Thus, overall debt financing negatively affects the firms' profits for all three types of firms while such losses are more prominent for small firms. This negative leverage-performance relation can be explained with pecking order theory that argues the preference of internal funds. Similarly, Zeitun and Tian (2007) provided another argument that in developing countries, companies were often overleveraged to solve its problems which ultimately decreased the performances.

No study till date can define the optimal level of capital structure. This increases the probability that firms do not get the optimal level to gain its maximum benefits with the minimal cost of debt and become overleveraged. This argument appears to be more relevant to agency problem persists in developing countries, especially for large firms containing high free cash flows. Moreover, the implication of the pecking order theory can also be negated because of positive marginal effects of large firms containing more internal funds. If the argument of overleverage is accepted, the leverage-performance relation will be nonlinear. Some level of DR and its benefits exceed its cost while the level cost of debt also surpasses its benefits. Table 4 provides the results of fixed effect model with squares of cross effects of DR of three types of firms as proposed in the following model. The quadratic nonlinear leverage-performance relation is expected for the small, medium and large firm, so its squares are used. The equation is as follows.

$$ROA = \alpha + \beta_1 DR_{it}*Small + \beta_2 (DR*Small)^2 + \beta_3 DR*Med + \beta_4 (DR*Med)^2 + \beta_5 DR*Large + \beta_6 (DR*Large)^2 + \beta_7 STTA_{it} + \beta_8 CR_{it} + \beta_9 RecTA_{it} + U_i + V_i + \varepsilon_{it} \quad (2)$$

Results reveal that all cross effects of DR are significant except for small firms. Insignificant DR*Small accepts the null hypothesis that its beta equals to zero. Conversely, square of cross effect $(DR*Small)^2$ is significant and negative. Hence, the leverage-performance relation is linear and negative for small firms. It is consistent with the second hypothesis proposed in this research. Reasons behind this can be the volatile and low earnings with asymmetric information that make debt costly financing option for small firms as argued. Moreover, the implication

of pecking order theory can also be the reason of negative linear relation for small firms. Results from descriptive analysis indicate better liquidity position especially in term of current assets for small firms. It is much possible that small firms rely on its internal funds rather than external debt.

Nevertheless, the leverage-performance relation is found nonlinear for medium and large firms. It also shows that cross effects of DR for medium and large firms are positive while its squares are negative. These results are also significant. This proves that initially, the leverage-performance relation is positive for medium and large firms, and after a particular debt level, it becomes negative. Specifically, initially increase in DR, ROA of medium and large firms is increased by 0,174 and 0,220 respectively. However, after a particular DR increase, it decreases the ROA of medium and large firms by -0,314 and -0,332 respectively. That particular debt level is the optimal DR where profits are maximized. Therefore, the first hypothesis is partially accepted as for large firms that the leverage-performance relation is positive in a particular debt level.

Table 4 Nonlinear Leverage-Performance and Size

ROA	β	t-value	Sig.
Intercept	0,031	1,400	0,161
DR*Small	0,1	1,350	0,177
(DR*Small)2	-0,251***	-3,740	0,000
DR*Med	0,174**	2,530	0,011
(DR*Med) 2	-0,314***	-5,280	0,000
DR*Large	0,220***	2,860	0,004
(DR*Large) 2	-0,332***	-4,430	0,000
STTA	0,059***	14,880	0,000
RecTA	0,065**	2,360	0,019
CR	0,009***	3,490	0,000
Time Dummy	Yes	Model F	39,14***
Industry Dummy	Yes	Hausman	688,8***
Adjusted R2	17,65%		
Significance: *** 1%, ** 5% and * 10%			

(Source: Authors' calculation)

From the process of optimization, it can see the optimal DR. The process shows the step in the optimization process. Taking the derivative of proposed model regarding DR, the result is found.

$$\frac{\Delta ROA}{\Delta DR} = \beta_1 \text{ Small} + 2\beta_2 DR \text{ (Small)} + \beta_3 \text{ Med} + 2\beta_4 DR(Med)^2 + \beta_5 \text{ Large} + 2\beta_6 DR(Large)^2 \quad (3)$$

Since in optimal level f' (ROA) will be zero, the following equation is extracted for DR where ROA is at its optimal value.

$$DR = \frac{-\beta_1 \text{ Small} - \beta_3 \text{ Med} - \beta_5 \text{ Large}}{2\beta_2 (\text{Small})^2 + 2\beta_4 (\text{Med})^2 + 2\beta_6 (\text{Large})^2} \quad (4)$$

By using table 4, optimal level for small firms is as follows.

$$DR = \frac{-\beta_1}{2\beta_2} = \frac{0}{-0,251} = 0 \rightarrow$$

Relation is linear and no optimal level (5)

For medium size optimal level will be as follows.

$$DR = \frac{-\beta_3}{2\beta_4} = \frac{-0,174}{2(-0,314)} = 0,2771 \text{ or } 27,71\%$$

(6)

For large firms, optimal level will be

$$DR = \frac{-\beta_5}{2\beta_6} = \frac{-0,220}{2(-0,332)} = 0,3313 \text{ or } 33,13\%$$

(7)

Thus, for medium firms, its ROA will increase in line with the increase in DR till its value reaches to 0,2771, while after this, the level of DR profits starts to decrease. This implies that Pakistani medium non-financial firms should target 0,2771 of DR on average to maximize its value. However, in practice, the average DR for medium firms is 0,593 as found in Table 2 of descriptive statistics. Similarly, for large firms, the desired DR is 0,3313 while in practice its average DR is 0,560 as found in Table 2. Thus, in general, large firms are also far away from its optimal level. This indicates that on average medium and large firms are over-leveraged that could be the reason of overall negative relation found in Table 3.

These results also reveal an important implication of trade-off theory. Results show that optimal DR for the medium firm is 27,71% while for large firms is 33,31%. This proves that optimal level of DR changes for different types of firms. Therefore, modified trade-off theory proposed states that targeted optimal level under trade-off theory is not a general value, but it can depend on firm's specific moderators such as firm size. There are four important implications based on that. First, the leverage-performance relation is negative and linear for small firms. Second, the leverage-performance relation is nonlinear for medium and large firms. Third, in practice medium and large firms do not follow optimal level and over-leveraging that decrease its profits. Last, optimal DR is not a generalized value and depends on firm's specific moderations.

CONCLUSIONS

The research explores the comparative leverage-performance relation in Pakistani small, medium,

and large non-financial firms. It postulates that debt financing by large firms increase its profits while same financing decision by small firms does conversely. Regression analysis accepts both of the proposed hypotheses. Results show that debt by small firms affects its profits severely while for large size firms this adverse effect is found the minimum. It is argued that small firms contain more asymmetric information with low and volatile returns that make debt more costly. Conversely, large firms have better access to debt market with less asymmetric information so it deploys debt with less cost comparatively. Results also state that marginal effect of large firms is positive but overall DR still shows negative results. It is suggested that firms overleveraged in pursuit of the optimal level that decreases the overall profits.

Moreover, the leverage-performance relation is also found nonlinear for medium and large firms. Meanwhile, for small firms, it is linear and negative. Therefore, debt financing always affects the value of small size firms negatively. However, for medium and large firms, it affects a certain level while positively. After that, the profits start to decrease. Results describe that debt financing increases medium firms' profits till the DR reaches 0,2771. Then, these profits start to decrease. Similar results are found in large firms with the optimal level of 0,3313. However, descriptive statistics show that in real practice medium and large firms have the average debt ratio of 0,59 and 0,56 respectively. Thus, both large and medium firms should not target optimal level and be over-leveraged itself.

The outcome of this research has strong practical implications as it will help financial managers in choosing appropriate financing decisions for different types of firms in developing countries like Pakistan. It is recommended that financial managers of small firms should avoid debt. However, in medium and large firms, optimal targeted DR should be followed to avoid the overleveraging problem.

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