

# Debt financing and firm performance: empirical evidence from the Pakistan Stock Exchange

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## Abstract

**Purpose** – The purpose of this study is to investigate the relationship between the listed firms' debt level and performance on the Pakistan Stock Exchange (PSX) during a five-year period.

**Design/methodology/approach** – This study uses pooled ordinary least squares regression and fixed- and random-effects models to analyse a cross-sectional sample of 30 Pakistani companies operating in the automobile, cement and sugar sectors during 2013–2017 ( $N = 150$ ).

**Findings** – The results indicate that both short- and long-term debt have negative and significant impacts on firm performance in profitability. This suggests that agency issues may lead to a high-debt policy, resulting in lower performance. However, both sales growth and firm size have positive effects on the profitability of non-financial sector companies.

**Research limitations/implications** – This study suggests that when debt financing significantly and negatively influences firm profitability, company owners and managers should focus on finding a satisfactory debt level. However, this study is limited to the automobile, cement and sugar sectors of Pakistan. Future studies could address other sectors, such as textiles, fertilizers and pharmaceuticals.

**Originality/value** – This study focusses on enhancing the existing empirical knowledge of debt financing's influence on the PSX's major sectors' profitability.

**Keywords** Debt financing, Firm performance, Pakistan Stock Exchange, Fixed- and random-effects models  
**Paper type** Research paper

## 1. Introduction

Any firm's capital structure is the essence of maximizing wealth and minimizing the cost of capital (Sheikh and Qureshi, 2017). In Pakistani manufacturing sectors, they play long-term financial stability because they are the third-largest economy sector, which contributes about 20% of the gross domestic product (GDP). However, due to the high inflation and interest cost, import-based economy, lower foreign investment and many other economic issues, manufacturing sectors face financial constraints to fulfil their investment needs. Manufacturing firms usually opt for debt financing, which has consequences related explicitly to the firm's profitability. Therefore, it is the most crucial decision for the management because, in any corporate firm, it is the management's job to make capital-structure decisions that ensure a balanced proportion of both equity and debt. In doing so, policymakers must consider the relevant costs and benefits of these capital instruments (Ahmed Sheikh and Wang, 2011). Capital structure is one of the primary corporate financing decisions because it has a vast influence on company financial performance. These facts encourage and motivate the research to explore the capital-structure decision's insights and its effects on profitability.

Numerous studies examine the relationship between debt financing and firm profitability, with mixed and divergent results. Ezeoha (2008) found that debt-taking negatively affects



businesses' profitability, confirming the pecking order theory. Companies prefer internal financing sources for raising funds, rather than resorting to external financing (Myers and Majluf, 1984). For a company that is a separate entity, both debentures and shares are forms of external borrowing. In the former case, the company owes interest to debenture holders. In the latter situation, the company accrues dividends to its shareholders. The directors of the firm must decide which source of financing is more cost-effective and act accordingly. Margaritis and Psillaki (2010) also found a positive relationship between debt and profitability.

On the contrary, Weill (2008) argues that debt financing can positively or negatively affect a firm's performance due to diversified industrial backgrounds, prevalent economic situations and other macroeconomic factors. Various studies find an association between financial performance and debt financing (Habib *et al.*, 2016; Margaritis and Psillaki, 2010). Others believe that a negative relationship exists between debts and profits (Habib *et al.*, 2016; Sadiq and Sher, 2016). A few studies, such as Habib *et al.* (2016) concentrate on non-financial firms.

Economic policies vary from sector to sector with regards to interest rate and tax relief in Pakistan. For example, Pakistan's government decided to lower interest rates for exporters, and the government will pay the difference. This study will add to the current literature in several ways. First, this study focusses on enhancing the existing empirical knowledge of debt financing's influence on profitability in the Pakistan Stock Exchange's (PSX) major sectors. Second, the present study investigates the debt–performance relationship amongst the manufacturing firms in Pakistan, from the perspective of the pecking order' theory (Myers and Majluf, 1984), exploring whether managers should prefer retained earnings short- and long-term debt.

The rest of the paper is organized as follows: Section 2 reviews the previous literature on the debt-profitability relation and the proposed hypotheses. Section 3 presents the data collection and analysis methodology; Section 4 explains the empirical results and Section 5 offers the conclusion and discussion, including future recommendations.

## 2. Theory and hypothesis development

### 2.1 Debt and financial performance

Putting debt into a capital structure to achieve its optimal level by minimizing the weighted average cost of capital can increase firm value (Modigliani and Miller, 1963). Managers set their target debt ratio to trade-off the benefits and debt-taking cost, namely, tax advantages and bankruptcy costs. Debt financing can provide a tax shield for profits with high financial risk and bankruptcy exposure; so, an answerable question for all companies is how much debt and equity they should maintain to take advantage of such trade-offs. Different studies support different capital structure theories that mainly correspond to various circumstances (Habib *et al.*, 2016). However, total debt to assets and interest coverage has a positive relationship with profitability, which means an increase in interest-based debts leads to higher profits, thus favouring debt financing (Chisti *et al.*, 2013).

Aziz and Abbas (2019) recently studied the profit-debt relation in the non-financial sector companies listed on the PSX. Their results claimed the negative but significant association between debt and profitability. Javed *et al.* (2014) tested different profitability ratios to determine the impact of debt and found the mixed results, as debt has not significantly affected all the profitability variables. It has only a negative effect on return on equity while a positive impact on return on assets (ROA). Lang *et al.* (1996) how that the positive effect of debt financing on profitability, due to the very low cost of debt in Ghana, inclines cement companies to get loans to meet their essential capital-structure cost requirements. Mun and Jang (2017) studied restaurant–business firms' behaviour regarding debt and equity

financing based on debt maturity and financial limitations. Food-business firms focus more on equity financing than on debt because of financial constraints and optimal equity versus debt ratio. [Zeitun and Saleh \(2015\)](#) examine the association between GCC firms' debt and financial performance during the financial crisis and recession of 2008. They found an inverse, remarkable influence of financial problems confirm performance.

[Shyam-Sunder and Myers \(1999\)](#) found a positive association between earnings and debt financing but refused earlier researchers' findings ([Ebel Ezeoha, 2008](#); [Rajan and Zingales, 1995](#); [Titman and Wessels, 1988](#)). [Akinlo and Asaolu \(2012\)](#) argue that profits are negatively associated with debt for Nigerian firms; as the debt increases, firm profitability decreases and vice versa. However, some sectors show the opposite results, indicating that their profitability increases with a reduction in the debt ratio. [Akinlo and Asaolu \(2012\)](#) and [Hamid et al. \(2017\)](#) suggest that short-term obligations, more than long-term commitments, tend to increase the probability of insolvency and financial distress. However, the company relying heavily on such obligations will not affect its risk-adjusted profits.

[Siegel and Shim \(2013\)](#) argue that we can access the company's competitiveness and operating efficiency and its pricing strategy compared with other industry companies by examining the profit margin. The higher the net profit margin (NPM) company earns, the better its operation is ([Riyanto, 2008](#)). Several studies show mixed results for NPM and firm performance ([Allozi and Obeidat, 2016](#); [Savitri and Haryanto, 2012](#)). This study extends the previous literature by exploring the relationship between long- and short-term debt and NPMs in the PSX's major sectors. Moreover, the present study will address the debt-performance relationship amongst the manufacturing firms from the pecking order' theory ([Myers and Majluf, 1984](#)). This will further strengthen investor confidence in the company building investment relationships.

All the above kinds of literature point out the linkage between profits and debt financing. However, there is ambiguity about the relation's direction, whether it is positive or vice versa in the Pakistani market. Furthermore, the behaviours of short- and long-term debt options with the performance of firms also induce the research to study separately due to the mixed results of the past studies.

In this regard, based on the literature, the following hypotheses are proposed to determine the debt-profit relation:

- H1a.* Short-term debt has a significantly negative association with return on firm assets.
- H1b.* Long-term debt has a significantly negative association with return on firm assets.
- H1c.* Short-term debt has a significantly negative association with the firm net profit margin.
- H1d.* Long-term debt has a significantly negative association with the firm net profit margin.

## 2.2 Tangibility and financial performance

Empirical evidence in previous studies shows that tangibility, the proportion of fixed assets over total assets, has a significant negative impact on firms' profitability. As [Zeitun and Saleh \(2015\)](#) argue, tangibility negatively affects firm profitability because firms assume high debt to finance long-term assets and the negative association between debt and profitability and the positive relation between debt and tangibility ([Ebel Ezeoha, 2008](#)). Tangibility will always have an inverse effect on profitability ([Zeitun and Saleh, 2015](#)). [Srivastava \(2017\)](#) also confirms this association, concluding that total company assets dominate tangible assets, and if businesses lack such investments and their management wants to increase tangible assets, they take on debt and have substantial tangible assets ([Srivastava, 2017](#); [Ullah et al., 2017](#)).

The results were significant in all cases. Tangibility is inversely and significantly associated with the financial performance of businesses. Manufacturing sectors cannot be operated without having huge physical assets such as plant and machinery. However, the question arises here, why such assets always have a terrible impact on profits that need to be explored in the Pakistan context. Most firms take long-term obligations to enhance and improve their physical assets to optimize their performance, but the past studies suggest vice versa. In this regard, the following hypotheses are assumed to find the relation between profitability and tangibility:

*H2a.* Tangibility has a significantly negative association with return on firm assets.

*H2b.* Tangibility has a significantly negative association with the firm net profit margin.

### *2.3 Sales growth and financial performance*

Tauseef *et al.* (2015) argue that sales growth directly correlates with profits and, thus, always enhances businesses' profits. They further state that firms with low debt ratios are good profit makers. Another study by Akinlo and Asaolu (2012) also confirms the relationship between sales growth and profitability. They argue that sales growth is a critical variable in enhancing business profits. However, the empirical results show direct, significant results and support the proposition that an increase in sales from the previous year will improve profits – ultimately, for the shareholders, in increasing dividends. Ghafoor and Rehman (2015) explored the relationship of sales growth with financial performance, according to the variables ROA, return on capital employed and NPM. Results confirm that sales growth is significantly positive for all the profitability measures. This portrays this study's proposition more robustly; namely, sales growth will substantially impact non-financial businesses' profitability. In this regard, the following hypotheses are proposed:

*H3a.* Sales growth has a significantly positive association with return on firm assets.

*H3b.* Sales growth has a significantly positive association with the firm net profit margin.

### *2.4 Firm size and financial performance*

Firm size is the primary determinant for restaurant–business firms of equity-debt decision-making, and restaurant–business firms take size into account to make such choices (Mun and Jang, 2017). More robust evidence supports the claim of firm size's positive impact on profitability (Habib *et al.*, 2016). The authors argue that large firms indulge less in external debt-taking. Thus, due to the negative effect of debt on profitability, less debt taken on by larger firms creates a positive relationship with profits. Empirical results also support this relationship. Another study by Babalola (2013), of listed companies on the Nigerian Stock Exchange for the period 2000–2009, determined the effect of firm size on profitability and concluded that firm size has a practical impact on profits of manufacturing companies, in terms of both total assets and total sales. In this regard, the following hypotheses are proposed to determine the effect of firm size on profitability:

*H4a.* Firm size has a significantly positive association with return on firm assets.

*H4b.* Firm size has a significantly positive association with the firm net profit margin.

## **3. Research method**

### *3.1 Data and sample size*

This study's data were collected from the 30 non-financial companies operating in the automobile, cement and sugar sectors of Pakistan during 2013–2017. Secondary data were

gathered from the firms' financial reports and the Standard Capital Database website ([www.scstrade.com](http://www.scstrade.com)). Pakistan is the 30th largest manufacturing country in the world. The manufacturing sector constitutes about 20% of the output produced in the national economy ([emergingpakistan.gov.pk](http://emergingpakistan.gov.pk)). In 2019, 23.67% of the workforce in Pakistan worked in the manufacturing sector ([www.statista.com](http://www.statista.com)). The automobile sector contributes nearly 3% of the GDP of Pakistan. Massive sales growth has been observed in the automobile sector, indicating improved income and living standards. The cement sector contributes nearly 5% of the total GDP. As the food sector's essence, the sugar industry contributes almost 1% of the country's GDP and 18% to large-scale industries. The sugar sector is nearly 3% of the value-added sector to agriculture and around 2.5% of Pakistan's total GDP. Therefore, these three sectors contribute almost half of the country's GDP. Hence, these manufacturing industries provide an enormous amount of economic development in Pakistan.

### 3.2 Variables

Table 1 shows the list of dependent and independent variables.

### 3.3 Research model

This study investigates the impact of short- and long-term financing on firm performance, based on modelling and adopting some variables suggested by researchers (Abor, 2005; Bokhari and Khan, 2013; Ebaid, 2009; Habib *et al.*, 2016). The model is modified to get better results by taking three determinants of profitability: ROA and NPM. Short-term debt (STDA), long-term debt (LTDA), sales growth (SG), tangibility (TNG) and firm size (FS) are independent variables (Bashir and Ghafoor Awan, 2016). The model is constructed as follows:

$$ROA_{it} = \alpha + \beta_1STDA_{it} + \beta_2LTDA_{it} + \beta_3TNG_{it} + \beta_4SG_{it} + \beta_5FS_{it} + \epsilon_{it} \quad (1)$$

$$NPM_{it} = \alpha + \beta_1STDA_{it} + \beta_2LTDA_{it} + \beta_3TNG_{it} + \beta_4SG_{it} + \beta_5FS_{it} + \epsilon_{it} \quad (2)$$

The key variables for the above estimations are defined in Table 1.

### 3.4 Statistical technique

We analysed the data using fixed and random effects models to test the effect of debt financing and firm performance. The difference between fixed effects (FE) and random effects (RE) addresses the unobserved behaviour of individual cross-sections and time. The fixed impact intercepts may differ in each cross-section due to historical change in the observations (Greene, 2012). To choose which of the two models is more precise, the Hausman test (1978) is employed. This test evaluates the significance level between estimators, in this case, FE or RE models.

Variable name	Variable abbreviation	Measurement
<i>Independent variables</i>		
Short-term debt	STDA	Short-term debt divided by total assets
Long-term debt	LTDA	Long-term debt divided by total assets
Tangibility	TNG	Net fixed assets divided by total assets
Sales growth	SG	Sales growth
Firm size	FS	Log of total sales
<i>Dependent variables</i>		
Return on assets	ROA	Net profit after tax divided by total assets
Net profit margin	NPM	Net profit after tax divided by total sales

**Table 1.**  
Variables description

This study is not limited to any specific industry. It explores the debt-profit relation on a cross-sectional of three different manufacturing sectors over several periods, suggesting the longitudinal data (panel data). If there were one sector, time-series data would be the concern, giving only one industry results. Cross-sectional data could be studied in more than one industry but only over one span of time (one-year data), which could only reflect the year's results. Therefore, it is appropriate to study the panel data to get the diversified sectors' multidimensional insights. This study uses panel data to consider both time- and industry-specific effects to get comprehensive results.

This study is also interested in knowing the firm-specific effect because of the diversified manufacturing sectors (automobile, cement, sugar); therefore, the FE model is also implied in the RE model's data. The effect size on different sectors may be different, which can be confirmed by the FE model.

#### 4. Findings of the study

##### 4.1 Descriptive analysis

Table 2 shows the description of the variables. Short-term debt (STDA) of listed companies in Pakistan is 32.67% of total assets; the long-term-financing variable (LTDA) shows, on average, 51.9% of total assets for listed companies. Furthermore, the STDA variable deviates more than other profitability-measurement variables. There is not much difference between the average ROA and NPM of manufacturing firms. Overall, data show that manufacturing sectors have relied more on short-term debt.

The correlation matrix shows the relationships amongst variables. As Table 3 indicates, ROA has a significant inverse association with long-term debt to assets (LTDAs), with a

	Min Statistic	Max Statistic	Mean Statistic	SD Statistic	Skewness		Kurtosis	
					Statistic	Std. error	Statistic	Std. error
ROA	-9	24	9.3869	6.9882	-0.141	0.198	-0.329	0.394
NPM	-12.23	31.44	9.3110	8.7113	0.707	0.198	0.159	0.394
STDA	5.3	76.27	32.6797	16.6681	0.253	0.198	-0.965	0.394
LTDA	0	43	12.3545	10.5923	0.625	0.198	-0.627	0.394
TNG	10.07	90.26	51.9146	19.5705	0.038	0.198	-0.546	0.394
SG	-56	145	10.66	26.8639	1.565	0.198	5.846	0.394
FS	5.296	8.05	7.0008	0.5117	-0.288	0.198	0.651	0.394
N	150	150	150	150	150	150	150	150

**Table 2.**  
Descriptive statistics

	ROA	ROE	NPM	STDA	LTDA	TNG	SG	FS
ROA	1.00							
ROE	0.869	1.00						
NPM	0.730	0.569	1.00					
STDA	-0.499	-0.191*	-0.686	1.00				
LTDA	-0.209*	0.004	0.132	-0.120	1.00			
TNG	-0.156	-0.205*	0.317	-0.451	0.704	1.00		
SG	0.254	0.336	0.153	-0.069	0.130	0.047	1.00	
FS	0.546	0.559	0.457	-0.205*	0.019	-0.223	0.229	1.00
N	150	150	150	150	150	150	150	150

**Note(s):** Correlation is significant at \* $p < 0.05$  (two-tailed)

**Table 3.**  
Pearson's correlation matrix

value of 20.9%, confirming a weak negative relationship. However, LTDA, TNG, SG and FS have no significant association with any other variable. Overall, the descriptive results in Table 1 confirm the inverse association between profitability and leverage, giving weight to our hypothesizing an inverse effect of debt-taking on firm performance. These results show the non-significant and low correlation of variables with each other, confirming the lack of multicollinearity amongst variables.

4.2 Hypothesis testing

Table 4 shows the estimated results of the regression between ROA and financial leverage. Model 3, the RE model, shows more reliable results than FEs' results, due to acceptance of the RE model's suitability according to Hausman results. In Model 3, STDA has a significant inverse effect on ROA; its coefficient has a negative sign and is significant at the 5% significance level. Similarly, LTDA also has an inverse impact on ROA, which supports our hypothesis that debt financing is negatively associated with business profits for short- and long-term debt. Tangibility (the ratio of fixed assets over assets) shows no association with ROA. Sales growth positively affects ROA, confirming its significance at the 5% significance (Tauseef et al., 2015). The RE model shows no impact on firm size on ROA. All the results are drawn at the 5% significance level. Adjusted R<sup>2</sup> shows a 39.41% variation in ROA, due to STDA, LTDA, TNG, SG and FS, a moderate prediction in ROA's overall estimation. Variance inflation factor (VIF) of variables is less than 5, which confirms no multicollinearity amongst variables.

In general, negative and significant relations exist between long- and short-term debt and ROA. These results support H1a and H1b, indicating that debt has a negative association with firm performance. The companies with more debt in emerging markets (including Pakistan) will experience decreased company profitability. This finding is in line with prior studies by Habib et al. (2016), Zeitun and Saleh (2015), Ebaid (2009) and Tauseef et al. (2015).

Table 5 shows the estimated regression results of the relationship between NPM and financial leverage. Model 2 is a FE model. The Hausman test shows more suitable than the RE model (Model 3) because the p-value of the Hausman test is lower than the 0.05 significance level. FE-model results show that STDA and LTDA both impact NPM negatively, as their coefficients are negative, but STDA is insignificant. The LTDA coefficient is significant at the 5% level. Negative coefficients of both debt categories are robust with our hypothesis.

Variable	Model 1 Pooled OLS	Model 2 Fixed effect	Model 3 Random effect	Collinearity statistics Tolerance VIF	
<i>Dependent variable: Return of assets (ROA)</i>					
C	-11.8677 (0.1326)	-29.040 (0.1420)	-19.461 (0.0721)		
Short-term debt	-0.2243* (0.0000)	-0.1747* (0.0003)	-0.1859* (0.0000)	0.561	1.781
Long-term debt	-0.0932 (0.1168)	-0.2255* (0.0008)	-0.1809* (0.0016)	0.377	2.655
Tangibility	-0.0812* (0.0344)	-0.079 (0.0836)	-0.0574 (0.1300)	0.266	3.757
Sales growth	0.0431* (0.0041)	0.0414* (0.0003)	0.0427* (0.00001)	0.932	1.073
Firm size	4.7840* (0.0000)	7.2327* (0.0094)	5.6684* (0.00001)	0.668	1.497
Adjusted R <sup>2</sup>	0.5500	0.8052	0.3941		
F-Statistics	37.4366*	19.1204* (0.0000)	20.3844* (0.0000)		
DW-Statistics	0.5814	1.6455	1.3111		
Hausman test $\chi^2$			4.1505		
Sig			(0.5279)		
N	150	150	150		

**Note(s):** Variables are significant at \*p < 0.05 (two-tailed)

**Table 4.**  
Pooled OLS, fixed and  
random effects  
regression results

Variable	Model 1 Pooled OLS	Model 2 Fixed effect	Model 3 Random effect	Collinearity statistics Tolerance VIF
<i>Dependent variable: Net profit margin (NPM)</i>				
C	-37.743* (0.0001)	-35.6860 (0.0688)	-38.7168* (0.0015)	
Short-term debt	-0.2532* (0.0000)	-0.0670 (0.1543)	-0.1312* (0.0010)	0.561 1.781
Long-term debt	-0.1176 (0.0969)	-0.1727* (0.0085)	-0.1405* (0.0164)	0.377 2.655
Tangibility	0.1296* (0.0049)	0.0105 (0.8162)	0.0665 (0.0908)	0.266 3.757
Sales growth	0.0094 (0.5944)	0.0193 (0.0835)	0.0159 (0.1251)	0.932 1.073
Firm size	7.1352* (0.0000)	6.9372* (0.0117)	7.2031* (0.0000)	0.668 1.497
Adjusted R <sup>2</sup>	0.5884	0.8773	0.2513	
F-Statistics	43.6116*	32.3448*	11.0038* (0.0000)	
DW-Statistics	0.6833	1.8250	1.4809	
Hausman test $\chi^2$ Sig			21.7542* (0.0006)	
N	150	150	150	

**Note(s):** Variables are significant at \* $p < 0.05$  (two-tailed)

**Table 5.**  
Pooled OLS, fixed and random effects regression results

Tangibility and sales growth are positive but insignificant at the 5% significance level. Firm size matters for company profits, which the positive and significant coefficient of FS at the 5% significance level supports. Adjusted  $R^2$  shows an 87.73% variation in NPM due to the very robust performance measurement variable in the overall estimation of NPM. VIF of variables is less than 5, which confirms no multicollinearity amongst variables.

The results in Table 5 support and are compatible with our proposition that debt financing inversely affects companies' profits, in terms of short- and long-term debt, as their coefficients are negative in all models (Chisti *et al.*, 2013; Sadiq and Sher, 2016). Only firm size is positive and significant in the model (Ghafoor and Rehman, 2015). However, tangibility and sales growth are insignificant in all the models except for Model 1, in which tangibility is positive and significant at the 5% significance level. Therefore, the FE model results show that industry-specific effects NPM and long-term debts depress the profit margin due to the cost of debt financing. However, firm size helps to enhance the profit margin.

## 5. Conclusion and recommendations

This study intended to investigate the influence of firm debt on financial performance and several other independent Pakistani manufacturing firms' independent variables from 2013 to 2017. A sample of 30 listed non-financial companies yielded a total of 150 balanced observations for the analysis. The findings indicate that both long- and short-term debt have negative and significant effects on firm performance. This suggests that agency issues may lead to a high-debt policy, resulting in lower performance, contrary to the agency-cost theory (Jensen and Meckling, 1976), suggesting that a high debt level can increase market value and performance. This study's overall results indicate that both short- and long-term debt is negatively and significantly associated with financial performance. These findings are in line with the "pecking order" theory (Myers and Majluf, 1984) and confirm the results of Yazdanfar and Ohman (2015), which suggest that debt financing negatively affects firm performance. These findings are also consistent with other studies (Ebaid, 2009; Habib *et al.*, 2016; Nadeem *et al.*, 2016). However, sales growth and firm size both have a positive effect on the profitability of non-financial sector companies. This shows that the greater the firm size, the better is the firm's performance. This finding is consistent with prior studies (Habib *et al.*, 2016; Tauseef *et al.*, 2015).

Theoretically, the results suggest that it badly affects their profitability whenever manufacturing companies take debts, supporting the pecking order theory. Tangibility also tends the profits downwards, which creates a linkage between tangibility, profits and debt.

It has been observed that high debts lead to high tangibility but lowers the profits. Companies having a large firm size should not increase their physical assets through debt because it will affect their earnings. Companies should focus on their sales growth to enhance their profits.

This study also offers insightful, practical managerial implications. First, the results suggest that company owners and managers should find a satisfactory debt level when debt financing significantly and negatively influences firm profitability. Second, this study's findings will help Pakistani manufacturing companies make rational decisions to ensure profit maximization and reduce costs associated with debt capital. This will ultimately lead to the maximization of shareholders' wealth in the PSX. The management should lower their debts as much as possible because of the high cost of debt in Pakistan and rely on their internal source of financing, e.g. retained earnings as much as possible. The external source should be the last financing option for management.

This study is not without limitations. Data were collected only for the PSX's major sectors, considered to be less informative compared with all listed firms in the stock market. So, further study should attempt to include other less-researched sectors for a more detailed analysis. Due to this study's limited duration, data were collected for only five years (2013–2017). Future research could consider covering a more extended period. Furthermore, this study was conducted only within the geographical borders of Pakistan, limiting its generalisability. The inclusion of other Asian countries might improve the results.

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