

## **The Impact of Capital Structure on Firms' Profitability: A Comparative Analysis of Textile Firms and Commercial Banks**

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### **Abstract**

The purpose of this study is to explore the relationship between capital structure and firm profitability from an index perspective of the Pakistan Stock Exchange (KSE-100). The objective of this study is to provide insight into how profitability varies across sectors. This study examines the two most prominent sectors in the economy: textiles (a capital intensive manufacturing sector) and banking (a highly leveraged service sector). As prior research regarding the KSE-100 index has often failed to take into account sectoral differences, this study utilizes a comparative approach in order to examine the time frame of 2019-2023. A panel dataset of forty firms was created for this study: twenty firms in the textiles sector and twenty firms in the banking sector. A quantitative methodology was utilized to collect data on capital structure (defined as the Debt-to-Assets ratio [D/A]) and profitability (defined as the Return on Assets [ROA]). Data for this study came from company reports, PSX records and State Bank publications. To analyze the data, descriptive statistics, augmented Dickey Fuller unit root tests, Pearson correlation coefficients and pooled ordinary least squares (OLS) regression were used. Results indicated a statistically significant positive relationship between leverage and profitability in both sectors. In the textile sector, the coefficient for the D/A ratio was 0.1116 ( $p < .05$ ) which implies that as leverage increases, so does the ROA. Potential explanations for this finding may be the use of debt efficiently or tax benefits. Similarly, in the banking sector, the coefficient for the D/A ratio was 0.1063 ( $p < .05$ ) which suggests that in addition to generating revenue via debt, the banking sector's reliance on debt is also a major determinant of their profitability. However, it should be noted that the R-squared values for both sectors are negative (-0.277 for textiles and -3.014 for banking) which indicates that leverage is responsible for very little of the variance in profitability in either of the sectors. Further, Pearson correlation coefficients for both sectors were

low (.038 for textiles and .072 for banking) which lends additional credibility to the notion that numerous other sector specific and macro economic factors (e.g. operating efficiency, cost control, revenue diversification, etc.) have much greater influence over profitability than does leverage. The results of this study support the trade off theory which states that if used properly, debt can lead to higher returns; but the results also emphasize the need for firms to develop sector specific strategies. Recommendations for corporate managers and policymakers based on the findings of this study include to exercise caution when managing leverage, to utilize multiple ways of driving profitability and to create policies that maximize the financial options available to firms. This study provides updated and sector-specific information to corporate managers, regulatory agencies and researchers.

**Keywords:** Capital Structure, Profitability, Textile Firms, Commercial Banks

## **INTRODUCTION**

Corporate Finance has long struggled with understanding the relationship between a firm's capital structure and its profitability. The level of financial leverage significantly influences the risk profile, cost of capital, and overall performance of a firm (Ahmed et al., 2018). Capital Structure represents the combination of equity and debt financing that a firm utilizes to fund its operations; the method of funding a firm uses will influence shareholder returns and the ultimate sustainability of the firm (Jan et al., 2014; Ahmed et al., 2018). There have been multiple theoretical models explored to identify why firms select a specific capital structure. The trade off model states that firms weigh the benefits of utilizing debt (tax shields) against the potential costs of bankruptcy when determining their capital structure (Ahmed et al., 2018). The pecking order model states that firms prefer to utilize internal funding sources before utilizing external funding sources such as debt and/or equity (Mumtaz et al., 2013). Although there is substantial evidence related to the capital structure of firms, much of this evidence is inconsistent and developing economies such as Pakistan have significant barriers to identifying optimal capital structures such as inefficient markets, regulatory constraints, and industry-specific factors that impact firms' capital structure decisions (Baig et al., 2015).

In addition to differences in the capital structure among firms listed on the Karachi Stock Exchange (KSE-100) Index, the type of sector within the Index provides further insight to explain the effect of a company's capital structure on its profitability. For example, firms in manufacturing and energy sectors have greater debt to equity ratios than firms in service oriented sectors, which are generally funded using less debt and more equity (Hussain, 2015). Previous studies indicate that firms operating in industries that require a large amount of capital to operate may benefit from increased profitability through the utilization of debt (i.e., tax shields and lower cost of capital); however, firms operating in high-risk industries may suffer decreased profitability resulting from the costs associated with financial distress as a result of excessive levels of debt (Zaighum, 2014). Researchers have found that the relationship between leverage and profitability varies among industries, with some industries experiencing

a positive relationship between leverage and profitability because of the efficient utilization of debt and other industries experiencing a negative relationship because of the burden of paying interest (Rehan & Rizwan, 2011). Researchers therefore recommend a sector-by-sector examination of capital structure behavior in order to better understand how companies in various industries maximize profitability through their financing policies.

Another consideration for firms when selecting their capital structure is the governance of the company, including the composition of the Board of Directors, the ownership structure of the company, and the incentives of the managers. All three of these considerations can impact a company's ability to secure financing and ultimately its financial performance (Ullah et al., 2012). A well-designed governance structure can assist in reducing agency conflicts and in assisting with good financial management and in choosing an optimal capital structure based on the company's goals (Macroeconomic variables such as interest rates, inflation, and financial stability can also affect a company's financing decisions. These macroeconomic variables can affect a company's access to credit and the cost of borrowing at varying times (Rasheed, 2015). Many emerging markets, similar to Pakistan, have high borrowing costs and high levels of perceived risk and therefore cause companies to be cautious in the amount of debt utilized to finance the company (Shahzad et al., 2015). Examining the sector-by-sector trends in a country's capital structure as represented by a stock index such as the KSE-100 Index, can provide valuable information about the financial decision-making process and the resultant financial performance of a company.

Despite the extensive literature examining capital structure, research is needed to investigate the current state of capital structure practices within various sectors of the KSE-100 Index. Many studies that investigated the impact of capital structure on firm performance did so without regard to the sector of operation, resulting in generalizations that may not apply to all industries (Siddiqui, 2021). Additionally, as the economic environment and financial policies continue to evolve in Pakistan, researchers have identified a need for new empirical studies to understand how firms in different industries select their capital structure to maximize their profitability. Finally, advances in technology and innovation in the area of financing instruments, such as Sukuk (Islamic bonds) and venture capital, are creating new alternatives that companies are considering in their capital structure decisions (Ahmed & Arshad, 2018). The purpose of this study is to close the gap in the literature and provide a comparison of sectoral impacts of capital structure on profitability of firms included in the KSE-100 Index to understand how companies in different industries make strategic financial decisions based upon the economic and market environments.

### **Problem Statement**

Although there are numerous academic papers written about the relationship between corporate capital structures and profitability as well as capital structures and profitability among companies, very little has been done to examine the diverse nature of the different sectors that make up the KSE-100 Index and therefore the findings

from prior studies do not directly relate to the specifics of any individual industry; i.e., capital-intensive industries will likely behave differently than service-oriented industries when it comes to leverage and therefore it is imperative to analyze the financial behavior of each sector at a level beyond what has previously occurred. The lack of differentiation based on sector in prior studies limits the practical application for the finance professional and regulatory bodies, and therefore, it is necessary to perform a specific study of the differences in capital structure selection by industries within the KSE-100 Index.

Additionally, the financial climate in Pakistan has undergone significant changes with respect to current financial conditions, economic fluctuations, and new financing alternatives impacting the financing options available to corporations regarding their capital structure. Therefore, a new study using contemporary financial trends and sector-based factors is needed to understand how corporations maximize their financing opportunities to improve profitability. This paper aims to address a void in the literature by providing empirical evidence demonstrating how industries within the KSE-100 Index organize their financing to optimize financial performance through comparison of the industries.

### **Research Objectives**

To examine the nexus between a firm's capital structure and profitability in terms of sectors of the KSE-100 Index

To assess its contribution towards financial performance in high and low capital-intensive industries

To identify sector-specific factors driving capital structure decisions in the KSE-100 Index

### **Research Gap**

Prior research has evaluated the impact that a company's capital structure contributes to its profit margin; however, relatively few studies have been conducted on sector-specific differences within the KSE-100 index. Most of these studies have completed a generic analysis of the effect of financial leverage, without any consideration of how different sectors manage a capital structure in response to changes in market conditions. Due to the evolving nature of financial policy and the increasing availability of new financing options in Pakistan, it is necessary to perform additional empirical research to assess the present applicability of theoretical constructs in the area of capital structure to industries. As part of an attempt to fill the void between previous research, this study will conduct a sectoral comparative analysis to provide insights into the various ways that companies approach the issue of capital structure and the contributions of such an approach to the profit margins of firms within each sector.

### **Research Scope**

This research focuses on all firms that have been included in the KSE-100 Index and examines the effects of capital structure on the profitability of firms through a comparison across sectors. The firms listed on the stock exchange during the last five years will provide data for this research, using the debt-to-equity ratio, ROA, ROE, and EBIT as indicators of financial performance. Following this, sectoral comparisons will be used to analyze variations among sectors in the approaches taken by firms toward capital structure and the impact of these different approaches on the firms' financial performance. Finally, macroeconomic conditions and corporate governance will also be considered when examining how firms select their capital structures, which is intended to present an overview of the use of financial management in the industries studied.

### **LITERATURE REVIEW**

The relationship between a firm's capital structure and its profitability is an area of corporate finance that has significant implications for the financial decisions made within various sectors and the economy overall. Capital Structure is the way in which a company uses a combination of equity and debt to fund its business activities; the effect of capital structure on a firm's profitability will vary based on several variables, including the industry type, regulatory or market environment, governance, and regime (Bae, Saberi, Kouhizadeh, & Sarkis, 2025). Theoretical frameworks that support the capital structure options available include Modigliani and Miller's (1958) theorem, trade-off theory, pecking order theory, and the theory of agency. A segment of these theories indicates that utilization of debt can increase profitability through tax savings; however, another segment identifies with the increased risk of excessive utilization of debt, such as financial distress and bankruptcy (Ismail & Wafula, 2024).

#### **Theoretical Perspectives:**

##### **Capital Structure and Profitability**

Modigliani and Miller (1958) suggest that, according to the theory, a firm's value does not depend upon its capital structure. It is the distortion of the perfect market that causes firms' capital structure to be influenced by the trade-off theory, pecking-order theory, etc. In the trade-off theory, firms have the opportunity to find the optimal level of debt by weighing the tax advantages of using debt against the costs associated with possible insolvency. On the other hand, firms use retained earnings as a financing source instead of raising funds via debt and/or equity because they want to avoid information asymmetry as indicated by the pecking order theory (Kumbanyet et al., 2025). As an additional layer of explanation, agency theory explains how conflict between shareholders and debt holders can influence the selection of a firm's capital structure (ibid). If a firm has too much debt, it will have a tendency to cause under-investment, and if a firm has too little debt, then it will create inefficiency in terms of management by eliminating financial constraints (Levillain, Lévêque, & Acker, 2025).

Modigliani and Miller's (1958) propositions laid out the base of capital structure theory, and subsequent empirical studies challenged the idea that their assumptions were universal, especially since emerging markets differ in terms of the ability of corporations to gain access to funding, interest rates are volatile, and institutions vary in terms of their quality (Booth et al., 2001). In practice, corporate taxes, agency costs, and differences in information create circumstances that make the irrelevance proposition fail (Frank & Goyal, 2009). Developing countries have high debt costs and credit constraints and, therefore, are more sensitive to macroeconomic conditions than theoretical optimal capital structures (Chakraborty, 2010). The discrepancy above shows the importance of contextualizing the capital structure theories so that they reflect the specific financial, regulatory, and institutional environment of each country.

In addition to tax and distress aspects, behavioral finance literature suggests that manager preferences, overconfidence, and market timing also contribute to capital structure decisions (Baker & Wurgler, 2002). Market timing theory suggests that companies tend to sell their stock when the stock market is good and buy back their shares or borrow money when the stock market is bad (Baker & Wurgler, 2002). Opportunistic behavior creates a deviation from both trade-off and pecking order theory predictions, indicating that capital structure decisions may be partially driven by an attempt to exploit temporary mis-pricing rather than long-term strategic considerations (Hovakimian, Opler, & Titman, 2001). While this type of opportunistic behavior may result in profitable returns in the short run, it increases a company's vulnerability to future refinancing risks and earnings volatility.

The implications of agency theory go beyond the relationship between the shareholder-debtholder to include the conflicts between the manager and shareholder. Managers can use excess free cash flow to pursue personal interests, such as empire building or perquisite consumption, at the expense of shareholders (Jensen & Meckling, 1976). Debt can be used as a disciplining mechanism to commit managers to fixed interest payments and reduce excess free cash flow and discourage wasteful spending (Jensen, 1986). However, too much debt can create under-investment problems. For example, managers can choose to reject positive net present value projects because of fear of financial distress (Myers, 1977). Therefore, finding the optimal debt ratio involves balancing the benefits of debt as a governance tool with the cost of reducing valuable investment opportunities.

### **Empirical Evidence for Capital Structure and Firm Profitability**

There has been a substantial amount of research conducted in order to determine if capital structure has an impact on profitability across all different types of industries and economies. The findings in this area of research have been very inconsistent, depending on the size of the firm, the type of industry, and the economy. Research in developed economies has found evidence of a positive relationship between moderate levels of leverage and profitability, especially in manufacturing and capital-intensive industries (Shojaei & Al-Mansour, 2025). As these firms can generate cost savings through tax shields while maintaining operational efficiency, they can be able to

obtain funding through debt financing. There have been a lot of inconsistent results in developing economies; however, there are some empirical studies that show a negative relationship due to the high cost of borrowing, as well as poorly functioning financial markets (Micheli & Calce, 2025).

The results of a study on the manufacturing sectors in the European Union found that businesses with the ideal amount of leverage, or the appropriate balance of borrowing and investing, could realize greater profits due to better management of funds and less financial constraint (Intrisano, Micheli, & Calce, 2025). Businesses with high amounts of leverage could realize lower profits, mostly during times of recession, when interest payments increase (*ibid*). Furthermore, research conducted in the Asian financial markets found that there was a significant correlation between capital structure and profit in many industries, such as industries and consumer products, and that those businesses who utilized debt wisely, or used debt effectively, would be able to enhance operational efficiency (Aulia, Sukmadilaga, & Avianti, 2025). By way of comparison, businesses with large amounts of leverage in industries that are inherently uncertain, i.e. technology and energy, suffered financially due to irregularities in cash flow and instability in the marketplace.

**Industry-Specific Characteristics of Capital Structure** The varied attributes of every industry determine the most effective capital structure strategy for that specific industry. For example, capital intensive industries such as manufacturing, energy, and communication, typically utilize a considerable amount of debt financing; this is largely because these industries require a great deal of fixed capital, and they have relatively consistent income (Setiawati & Ramadhan, 2025). As a result of the fixed capital, and the consistency of income, these industries can use debt to finance their operations; since the risks related to additional financial hardship are minimal. On the contrary, service organizations such as financial services and IT, have less gearing than manufacturing and communication; they require less in terms of fixed assets and they have more operational flexibility (Nawawi, 2025) therefore they use equity to fund their operations; as they want to remain vigilant and minimize the burden of paying interest.

An analysis of listed firms on the Ghana Stock Exchange demonstrated that the use of short term debt to fund the operations of firms in the manufacturing industry has a positive impact on the profitability of the firms; as it enables them to efficiently manage their working capital (Kumbanyet et al., 2025). On the other hand, firms in the financial industry that rely heavily on leverage experience a reduction in profitability due to the lack of predictability of interest rates, and restrictive regulations. Similarly, a study of the Indonesian industrial sector, indicated that firms that utilized a combination of both debt and equity to fund their operations experienced higher profitability than firms that utilized high levels of leverage, and firms that did not utilize leverage at all (Setiawati, 2025). Consequently, the study validates the importance of sectoral analysis when investigating the relationship between capital structure and the performance of the firm.

Emerging market studies also show that macroeconomic stability is an important factor in how capital structure and profitability interact. When a country's economy is characterized by low inflation and stable interest rates, firms are more likely to adopt long term debt financing; which allows them to invest in assets that will enhance productivity and ultimately lead to increased profitability (Nguyen & Nguyen, 2020). However, in unstable macroeconomic conditions such as currency fluctuations and commodity price volatility, firms may suffer severely from over leveraging as the cost of debt servicing increases rapidly. This situation is particularly common in industries that depend heavily on exports as exchange rate fluctuations directly affect revenue streams and repayment capabilities (Bokpin, 2009). Moreover, the findings of the studies demonstrate that the degree to which leverage increases profitability depends significantly on the overall state of the external economic environment; thus further emphasizing the need for firms to modify their funding methods based upon macroeconomic indicators.

Comparative studies across different countries have demonstrated that the quality of the institutional environment of a country, such as the strength of creditor rights, the effectiveness of the judicial system and the clarity of financial reporting, play a significant role in how capital structure decisions affect profitability (Demirguc-Kunt & Maksimovic, 1999). In countries with a well-developed investor protection framework and a functioning judicial system, the costs of borrowing are minimized, and the tax shields of leverage are realized with greater certainty. On the contrary, in countries with poorly developed institutions and ineffective enforcement mechanisms, high leverage can discourage investment and limit operational flexibility, leading to lower profitability. These examples illustrate that the policies and regulatory environments of a country can significantly influence whether leverage offers a competitive advantage or a competitive disadvantage for firms.

### **Capital Structure and Performance in Emerging Markets**

The literature emphasizes the importance of considering factors such as the volatility of macroeconomic variables, the state of the financial system and the characteristics of the firm itself in order to design a suitable capital structure for the company. However, while these elements are common across countries, their relative importance varies greatly depending on the country considered. The most developed financial systems, such as those found in North America and Europe, have highly developed and liquid capital markets and low-cost credit sources, so that the financial system has no direct impact on the choices made by the firm. Instead, in such a context the main problem for the manager of the firm lies in choosing between different alternative types of financing, such as retained earnings and new issues, and in deciding whether to finance investments using debt or equity.

However, in developing economies, such as those in Africa, Asia and Latin America, the situation is completely different. First, there are few, if any, liquid and efficient capital markets; second, the costs of borrowing are generally high; third, inflation and currency devaluation represent significant risks for creditors. As a result, the manager of the firm is faced with two problems: on the one hand, he cannot easily choose

between the various types of financing available to him, as there are few alternatives to retained earnings; on the other hand, he cannot easily decide whether to borrow from banks and use debt financing or use equity financing through the stock exchange. In this context, it would be possible to consider the hypothesis that, in developing economies, the decision concerning the type of financing used to implement investment projects is more influenced by the availability of funds rather than by their cost. It would also be possible to consider the hypothesis that, given the scarcity of information and the lack of transparency present in developing economies, managers tend to prefer financing mechanisms based on trust and social relationships. Finally, it would be possible to consider the hypothesis that, in developing economies, there is a tendency to avoid the use of bank financing due to the potential costs and risks associated with it.

The empirical evidence from a number of developing countries, especially those in sub-Saharan Africa and in South Asia show, in these regions firms rely heavily on internally-generated funds to fund their investments; because low cost of capital is scarce in these regions, and because of the lack of access to the capital markets by these firms and also because of the high cost of borrowing for them. Furthermore, the high level of risks of inflation and currency devaluation, experienced by firms in these regions may create difficulties in repaying bank debts. Consequently, as compared with the developed economy firms, the level of indebtedness of the firms in these regions is generally low, and the use of equity financing is less common than in developed economies.

### **Hypothesis Development**

As per the review of the literature, the following hypotheses are formulated to examine the relationship between capital structure and firm profitability of the different industries of the KSE-100 Index:

$H_1$ : There is a high level of association between a company's capital structure and profitability in KSE-100 Index sectors.

$H_{2a}$ : Higher debt-to-equity ratios positively impact firm profitability in capital-intensive industries.

$H_{2b}$ : Higher debt-to-equity ratios negatively impact firm profitability in non-capital-intensive industries.

$H_3$ : The effect of capital structure on a firm's profitability is not constant for all sectors of the KSE-100 Index.

$H_{4a}$ : Short-term financing positively affects a company's profitability via efficient working capital management.  $H_{4b}$ : Long-term funding lowers a company's profitability by way of higher interest expenses and financial risk.

### **Operational Definitions of Variables**

The use of operational definitions provides a measurable and clear framework for conducting this research; therefore, the most important independent and dependent variables will be defined as follows:

Capital structure, which is the independent variable of this study, represents the use of both debt and equity to finance a business's activities. It is measured as the debt ratio (DR) and calculated as total debt divided by total assets (based on the above-discussed literature). Similarly, the dependent variable is the firm's profitability and defines a company's ability to generate earnings compared to costs and all other costs incurred by the company. It is measured as return on assets (ROA) and calculated as net income divided by total assets.

### **RESEARCH METHODOLOGY**

This section outlines the methodology that was used to test the relationship between capital structure and the profitability of companies operating within the textile and banking industries of the Pakistan Stock Exchange (KSE-100 Index) through an objective of testing this relationship. This section outlines the research design, the population, sample design, data source, variable definition, and analytical methods that were utilized for the purpose of achieving the objectives of this study.

The methodology followed by this study is based on a quantitative and correlational research design, thus enabling a statistical evaluation of the leverage-profitability relationship as well as the ability to compare sectors. The use of historical financial data from 2019 to 2023 will allow the study to capture changes in the leverage-profitability relationship over both cross-sectional and time series periods. A combination of descriptive statistics, stationarity tests, correlation analyses, and regression models will be used to develop robust and evidence-based findings.

### **Research Design**

In this study, we employed an exploratory, quantitative, correlational design in order to investigate the relationship between Capital Structure and Profitability of the Company. Using a panel data regression model on annual data from firms over multiple time periods, our goal was to provide a better basis for statistically drawing inferences regarding the relationship.

### **Population and Sampling Framework**

The target universe consists of all companies included in the Textile and Commercial Banks Sector of the Pakistan Stock Exchange. The number of companies in the textile sector is 79, while commercial banks are 20 in number. All 20 Commercial Banks were used as a sample, whereas a systematic random technique then used in an attempt to ensure comprehensive representation. However, companies that fall under any of the following exclusion factors have to be removed from the sample:

Firms with no financial data for the period in question

Financial firms, including banking and insurance companies, are subject to their respective capital structure requirements

Companies with outliers or financial anomalies that may skew results

## Sample Size

A final sample of 40 firms equally representing both of the aforementioned sectors of the Pakistan Stock Exchange was selected for study. The study utilizes financial data of five years (2019–2023) to account for economic cycles and industry trends.

## Data Collection Methods

Secondary data has been used as the basis of this study, using a combination of the Company's Annual Reports, along with the official databases maintained by Pakistan Stock Exchange (PSX), and reports published by the State Bank of Pakistan (SBP), providing macroeconomic indicators. 3.2 The time frame of the data collection will be 2019-2023, and it will include an in-depth trend analysis of capital structure and how it relates to profitability.

## Data Analysis Techniques

Summary statistics (mean, median, standard deviation) were run on the data to look at the distribution of the data in order to find patterns in it; after this was completed, a Pearson correlation matrix was applied to determine the strength and direction of the relationship of each of the variables for capital structure and profitability. Finally, the final steps included running a panel data regression analysis using three separate models.

## Pooled Ordinary Least Squares (Pooled OLS) Regression:

Where:  $Y_{it}$  = Profitability measure (ROA, ROE, EBIT, NPM);  $X_{it}$  = Capital structure variable (DER, DR, ER, SDR, LDR);  $\varepsilon_{it}$  = Error term

## DATA ANALYSIS

This area is where the results from an examination to see if there is a connection between a firm's capital structure (i.e., how much they use debt financing) decision and their subsequent profitability will be discussed as related to each of the two Pakistani stock exchange sectors of textiles and banking. The research utilized a panel data set of all fifty firms operating in Pakistan from 2019 to 2023 (twenty in the textile sector and twenty in the banking sector). The studies' results are represented in a manner that follows the statistical methods most often employed by the researchers (e.g., descriptive statistics, unit root tests, regression models, and correlation analysis). In addition to providing separate descriptions of each statistical method employed, each method provided a specific role to assist in conducting the study; i.e., descriptive statistics provided an overview of the data collected for the study, and highlighted major trends in the data collected; unit root tests tested the variables included in the study to be stationary, which ensures that regression results obtained will be valid; regression analysis measured the relationship between leverage and profitability of firms; and, correlation analysis evaluated both the strength and direction of associations between the variables studied. Therefore, the three methods collectively

assisted in examining the relationship between capital structure decisions and profitability across two sectors of the Pakistan Stock Exchange.

### **Descriptive Statistics**

The use of descriptive statistics allows researchers to measure, describe, and summarize the basic properties of data sets through the use of measures such as the mean, median, the minimum value, the maximum value, standard deviation, skewness, and kurtosis. Descriptive statistics will be utilized in the data analysis to show the level of central tendency and the total variation of the distributions of the primary variables (Debt-to-Asset Ratio (DA) and Return on Asset (ROA)), as well as the total distribution of each variable in each industry (banking and textile). Additionally, a secondary benefit of utilizing descriptive statistics is to help researchers find patterns and trends in their data to see if there are any extreme values or to gain insight into what the financial characteristics of the firms in the sample were before using more advanced statistical techniques. Comparing the descriptive statistics for both industries could provide some insights into how firms with different levels of leverage and profitability differ between the two industries.

### **Textile Sector**

**Table 1: Descriptive Statistics: Textile Sector**

<b>Descriptive Statistics</b>	<b>ROA</b>	<b>D/A</b>
Mean	.084	0.454598
Median	.057	0.540504
Maximum	1.133	1.333679
Minimum	-0.077	-1.834254
Std. Dev.	.105	0.356293
Skewness	3.78	-3.691640
Kurtosis	30.20215	20.93391
Jarque-Bera	13286.77	6268.967
Probability	0.00	0.000000
Sum	33.98	181.8391
Sum Sq. Dev.	4.42	50.65082
<b>Observations</b>	<b>400</b>	<b>400</b>

The table below gives an overview of all the important statistics for ROA and D/A in the textile sector (with 400 firm-years). The table contains the central tendency (mean, median), variance (dispersion), min and max values (range), skewness and kurtosis (shape) of each distribution, as well as the Jarque-Bera test statistic and the corresponding p-values (probability of normality), as well as the total sum of each variable. These findings show that the mean ROA is 0.084, indicating that, on average, textile firms achieve an ROA of around 8.4%. However, median ROA was found to be 0.057, showing that there are some firms whose ROAs are higher than the

average, and therefore contribute to an inflated average ROA. The average D/A ratio was 0.4546, meaning that debt accounts for approximately 45% of the combined asset base of the textile companies and represents a moderate level of financial leverage for the industry. Skewness and Kurtosis values are very high, and the results of the Jarque-Bera test were statistically significant ( $p = .05$ ), indicating that the distribution of data is non-normal and therefore may reflect extreme value points or fiscal structural issues specific to the textile industry. This set of basic statistics will provide the background for the correlation and regression analysis that follows by describing the distribution and nature of the raw data.

### **Banking Sector**

**Table 2: Descriptive Statistics: Banking Sector**

Descriptive Statistics	ROA	D/A
<b>Mean</b>	0.187932	1.000665
<b>Median</b>	0.207888	0.938337
<b>Maximum</b>	0.326518	9.410203
<b>Minimum</b>	0.013098	0.094504
<b>Std. Dev.</b>	0.072513	0.853160
<b>Skewness</b>	-0.930365	9.530984
<b>Kurtosis</b>	3.280843	94.14769
<b>Jarque-Bera</b>	59.01982	144521.0
<b>Probability</b>	0.000000	0.000000
<b>Sum</b>	75.17265	400.2662
<b>Sum Sq. Dev.</b>	2.097994	290.4250
<b>Observations</b>	<b>400</b>	<b>400</b>

The Table gives a statistical overview of the banking sector's ROA and D/A over 400 firm-year observations. On average, ROA is 0.1879 or about 18.8% for banks on total assets. This indicates that the potential for profit for banks is far higher than the average for all manufacturing firms. The mean D/A is 1.0007; thus, the average bank has debt that is very close to its total assets; this is common in banking as depositors and borrowers represent most of a bank's liabilities. A wide range is apparent in both variables, particularly in the D/A, where the largest observation was 9.41, or more than nine times greater than the mean. This suggests that there are several highly leveraged institutions within this group. The kurtosis for D/A (94.15), and the skewness of D/A suggest that there are many outlier values and that the distribution of D/A is quite heavy-tailed. Low p-values for the Jarque-Bera test confirm that these two variables are not normally distributed. This table demonstrates the dramatic differences in leverage between banks and textile firms, and that, because of the presence of such extreme values, careful econometric treatment is necessary to minimize the effects of outliers.

### **Unit Root Test**

Unit root tests are statistical methods in analyzing time-series data to evaluate if the time-series data is stationary, or if it has a mean and variance that do not vary from one period of time to another. Financial analysts often use stationary data so they can analyze their financial data without having misleading or spurious results due to non-stationary data. This study will conduct an Augmented Dickey-Fuller (ADF) unit root test to determine if the ROA and D/A are stationary for both the textile and banking sectors. This test also allows us to identify if the variables exhibit a persistent trend or follow a random walk, which may skew our estimates of the relationship between the variables. If the ROA and D/A are determined to be stationary, then we can proceed with confidence in using them as the basis for our subsequent regression analysis.

#### **Textile Sector**

**Table 3: Augmented Dickey-Fuller Test: Textile Sector**

<b>Null Hypothesis: ROA has a unit root</b>				
<b>Exogenous: Constant</b>				
<b>Lag Length: 1 (Automatic - based on SIC, maxlag=16)</b>				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-6.353200	0.0000
Test critical values:	1% level		-3.446567	
	5% level		-2.868583	
	10% level		-2.570588	
<b>Null Hypothesis: D_A has a unit root</b>				
<b>Exogenous: Constant</b>				
<b>Lag Length: 0 (Automatic - based on SIC, maxlag=16)</b>				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.439755	0.0003
Test critical values:	1% level		-3.446525	
	5% level		-2.868565	
	10% level		-2.570578	

In this table, you will find Augmented Dickey-Fuller (ADF) tests to determine if ROA and D/A textile sector are stationary. Test statistic for ROA was -6.3532 with a P-value of 0.0000; for D/A, the test statistic was -4.4398 with a P-value of 0.0003. The absolute test statistics for both series were greater than the critical values for all three significance levels (1%, 5%, 10%), and the p-values for both series were less than .05. As such, we reject the null hypothesis of a unit root for both series; therefore, we conclude that both series are stationary, which indicates that their mean and variance do not change over time and therefore, there is no long-term stochastic trend present. Stationarity is an important condition as it allows the variables to be used appropriately in regression analysis to avoid spurious results. Additionally, the table includes information on the automatic determination of the lag length for each

variable by the Schwarz Information Criteria (SIC), which was used to minimize autocorrelated effects in the ADF test.

### **Banking Sector**

**Table 4: Augmented Dickey-Fuller Test: Banking Sector**

<b>Null Hypothesis: ROA has a unit root</b>				
<b>Exogenous: Constant</b>				
<b>Lag Length: 4 (Automatic - based on SIC, maxlag=16)</b>				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.964807	0.0018
Test critical values:	1% level		-3.446692	
	5% level		-2.868638	
	10% level		-2.570617	
<b>Null Hypothesis: D_A has a unit root</b>				
<b>Exogenous: Constant</b>				
<b>Lag Length: 8 (Automatic - based on SIC, maxlag=16)</b>				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.097274	0.0000
Test critical values:	1% level		-3.446862	
	5% level		-2.868713	
	10% level		-2.570657	

The information contained in this table illustrates the ADF Unit Root Test results for both ROA and D/A in banking. The ROA test statistic was found to be -3.9648 (p = 0.0018), and the D/A test statistic was -5.0973 (p = 0.0000). These statistics are both significant at a level greater than conventional critical values. Hence, the same conclusion can be made regarding stationarity in the banking sector as was concluded with respect to the textile sector: that is, ROA and D/A are stationary series. Thus, both bank profit levels and leverage levels exhibit stability in their statistical characteristics throughout the study time frame. As such, there were no non-stationary trend patterns present that would have otherwise introduced bias into an empirical econometric analysis. Additionally, the use of lag length specifications (lag length of 4 for ROA and lag length of 8 for D/A) illustrated that the tests did account for possible autocorrelation patterns within each respective variable. Stationarity in this context is especially important due to the fact that many types of financial data do contain trend patterns associated with market cycles; thus, it is reassuring to note that the current dataset is suitable for direct regression analysis without having to first difference the variables.

### **Regression Analysis**

Simple Linear Regression Analysis is a statistical method used to determine how much one dependent variable is associated with changes in one independent variable.

The Simple Linear Regression Model will be Applied Separately to both the Textile and Banking Sectors to Determine Whether there is an Association Between Return on Assets (ROA) and the Debt-to-Assets Ratio (D/A), as well as the Direction and Magnitude of that Association. By Using the Regression Model We Will Be Able To Measure the Coefficient of D / A, that Measures How the Changes in Leverage Influence the Variations in the Profitability of an Enterprise. Additionally, the Statistical Significance of the Relation Between D / A and ROA will be Estimated through the Regression Model. By Following This Methodology we will be able to Understand if Leverage Positively Influences the Profitability or Negatively in Each Sector and to Compare the Extent of Such Influence. Analysis Is a Statistical Technique Used to Quantify the Relationship Among One Dependent Variable and One or More Independent Variables. In the Research Simple Linear Regression Is Used Separately For the Textile and Banking Sectors to Examine the Influence of the Ratio of Debt to Assets (D / A) On the Return on Assets (ROA). The Regression Model Estimates the Coefficient of D / A, Therefore It Indicates the Relationship Between the Changes in Leverage and Those in the Profitability, As Well as the Statistically Significant of These Relationships. With This Methodology We Will Be Able to Identify If the Leverage Positively or Negatively Influences the Profitability in Each Sector and to Compare the Extent of Its Influence.

### **Textile Sector**

**Table 5: OLS Results: Textile Sector**

<b>Dependent Variable: ROA</b>				
<b>Method: Least Squares</b>				
<b>Sample: 1 400</b>				
<b>Included observations: 400</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D_A	0.111625	0.010304	10.83342	0.0000
R-squared	-0.277486	Mean dependent var	0.084967	
Adjusted R-squared	-0.277486	S.D. dependent var	0.105258	
S.E. of regression	0.118969	Akaike info criterion	-1.417407	
Sum squared resid	5.647316	Schwarz criterion	-1.407428	
Log likelihood	284.4814	Hannan-Quinn criterion.	-1.413455	
Durbin-Watson stat	0.595074			

This study provides an examination of how leverage (D/A) affects profitability (ROA) in the textile industry, as it relates to a sample size of 400. The estimated coefficient for D/A is .1116 (the standard error of .0103); however, the estimated coefficient for D/A is also extremely statistically significant (p-value < 0.05; t-statistic = 10.833). Thus, based upon this research, it appears as though each one unit increase in the D/A ratio will produce an approximate 11.16 percent increase in ROA. In turn, moderate

levels of debt usage are apparently related to high levels of profitability in the textile industry. This may occur due to either tax benefits or efficient capital use. In addition, the R-Sq value for this study was negative (-.2775), which implies that the model explains virtually none of the variability in ROA; therefore, the model is likely misspecified. The cause of the poor specification of this model could be the exclusion of relevant variables or nonlinear effects. Other measures (Durbin-Watson statistic of .595) suggest the existence of autocorrelation in the errors contained in the residuals. Although the direction of the relationship supports the idea that debt has the potential to be beneficial within the textile industry, the low explanatory power of the model requires caution when analyzing and interpreting these results.

### **Banking Sector**

**Table 6: OLS Results: Banking Sector**

<b>Dependent Variable: ROA</b>				
<b>Method: Least Squares</b>				
<b>Sample: 1 400</b>				
<b>Included observations: 400</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D_A	0.106278	0.005527	19.22969	0.0000
R-squared	-3.013831	Mean dependent var		0.187932
Adjusted squared	R-3.013831	S.D. dependent var		0.072513
S.E. of regression	0.145276	Akaike info criterion		-1.017860
Sum squared resid	8.420994	Schwarz criterion		-1.007881
Log likelihood	204.5719	Hannan-Quinn criter.		-1.013908
Durbin-Watson stat	0.280913			

This table presents a regression analysis of ROA by using D/A for the banking sector. The t-statistic of the D/A coefficient was 19.229; the p-value was less than 0.05; and the standard error was 0.0055. The D/A coefficient was 0.1063, and this demonstrates that leverage is positively associated with profitability in the banking industry. This relationship is consistent with the banking operation's reliance on debt financing (i.e., primarily deposits). However, similar to the textile sector, the R-squared for D/A is -3.0138, which shows that D/A alone cannot explain the variance in profitability. Therefore, it is probable that factors such as interest margins, asset quality and operational efficiency will have a greater impact. A low Durbin-Watson statistic (0.281) suggests potential positive autocorrelation, suggesting that additional refinements to the model may be required. Nonetheless, a positive coefficient for the banking industry supports the idea that there is a general positive correlation between higher leverage ratios and returns.

### **Correlation**

The Pearson correlation coefficient is a measure of the degree and direction of a linear relationship between two continuous variables. As part of the research presented here, the Pearson correlation coefficient was computed using the ROA and D/A for both the banking and textile industries. The correlation coefficient ranges from -1 to +1, with positive correlations indicating movement of the variables in the same direction, negative correlations indicating the variables move in opposite directions, and near zero indicating little to no relationship (linear) between the variables. Additionally, because correlation analysis can demonstrate if there is an overall tendency for greater leverage to be related to either increased or decreased profitability, it complements regression analysis.

#### **Textile Sector**

**Table 7: Correlation Results: Textile Sector**

Variables	D_A	ROA
D_A	1.000000	0.038037
ROA	0.038037	1.000000

The table below displays Pearson correlation coefficients between D/A (leverage) and ROA (profitability) in the textile sector. The correlation between D/A and ROA is 0.038, which is a very weak positive correlation; thus, there is nearly zero linear relationship between the level of leverage and profitability. Diagonal entries are always equal to 1.000 as they reflect perfect correlation between each variable and itself. Therefore, this weak correlation is contrary to a high positive regression coefficient (suggesting that leverage will positively impact profitability after controlling for other variables in a regression model). Thus, it demonstrates why multivariate analysis should be used instead of simply correlating variables in the study of finance.

#### **Banking Sector**

**Table 8: Correlation Results: Banking Sector**

Variables	D_A	ROA
D_A	1.000000	0.072490
ROA	0.072490	1.000000

Although the banking correlation matrix shows an R^2 value of 0.072 between D/A and ROA (which was somewhat larger than in the Textile Sector) it was still relatively low and indicated that only a very modest relationship exists when using simple linear terms between banks that are more highly leveraged and those that have higher profit levels. The high values along the main diagonal of this matrix (values of 1.000) show

perfect self-correlation as well. It further supports the idea that while a number of factors interact and other variables contribute to bank profits, the use of leverage will not produce strong predictive results of a bank's performance by itself or simply by adding one variable to another.

### **Findings, Conclusion, and Recommendations**

Based upon the analyses of descriptive statistics, unit root tests, regression, and correlation, the most important findings of this study are listed below:

The average profitability rate (Return on Assets or ROA) of textile firms was approximately 8.40%. While the median value of ROA (0.057%) was slightly less than the mean, this difference may result from the fact that several textile firms had relatively high rates of return on their investments. The average debt-to-assets ratio (D/A) of textile firms was approximately 45%, which indicates that these firms have relatively moderate levels of financial leverage. High values of skewness and kurtosis of both ROA and D/A ratios indicate that there are outliers and non-normal distributions in the data. Outliers in the data could be caused by differences in capital structure among textile firms; similarly, the non-normal distributions of ROA could result from firms experiencing unusually high or low levels of profitability. Banks had significantly greater mean ROA (approximately 18.80%) than textile firms. The mean D/A ratio of banks was about 100%, which is typical of a bank's liability structure since banks primarily raise funds through deposits and borrowing. Bank D/A ratio showed extremely high values of kurtosis and skewness, and therefore outliers and non-normal distribution exist in this sector, requiring caution when conducting economic analysis based on such data.

Both ROA and D/A were found to be stationary at levels (i.e., no trend or cycles existed) using the Augmented Dickey Fuller (ADF) statistic with p-values of less than .05. Since both ROA and D/A ratios are stationary at levels, we know that the mean and variance of these ratios do not change over time, and therefore, our statistical regressions will not be affected by any possible non-stationarity of the data. The positive coefficient (.1116) and significance level ( $p = .05$ ) of the regression equation indicate that increases in leverage are associated with increases in profitability for textile firms. One reason for this relationship is that textile firms may effectively utilize borrowed funds to increase their operating capacity and receive tax benefits as a result of interest payments. However, the negative R-Squared (-.277) indicates that leverage alone does not explain much of the variation in profitability. Therefore, additional factors not included in this study are probably more influential in determining profitability.

Similar to the findings of the textile sector, the positive and significant coefficient of .1063 for the D/A variable in the banking sector indicates that increases in leverage are associated with increases in profitability. This is consistent with the operational characteristics of banks, which rely heavily on debt as a source of funding to generate income through loans. However, the negative R-Squared (-3.0138) in the banking sector indicates that leverage alone is not sufficient to explain profitability variation.

The correlation between ROA and D/A for textile firms is very weakly positive (0.038), which indicates that changes in leverage are only marginally related to changes in profitability for textile firms. Similarly, the correlation between ROA and D/A for the banking sector is stronger, but still weak (0.072), which again shows that the relationship between leverage and profitability is only modest. Additionally, the relatively small correlations relative to the regression coefficients suggest that although leverage has a statistically measurable effect on profitability when controlled for statistically, it is unlikely to be the sole factor influencing profitability and should be considered in conjunction with other operational and/or market factors.

### **Conclusion**

This study's data indicates that there is a direct relationship between the two sectors (Textile & Banking) that are listed on the Pakistan Stock Exchange, where both sectors demonstrate positive correlations as to the ability to achieve greater levels of profits due to a higher utilization of financial leverage than the norm. Thus, if the proper amount of debt financing is utilized then it has potential for enhancing earnings. The results obtained from this study provide evidence for the principles contained in the Trade-Off Theory of Capital Structure; the Trade-Off Theory provides evidence of how companies can optimize profitability by striking a balance between the tax advantages created by utilizing debt financing and the cost of default/bankruptcy. Although the statistically significant influence of leverage exists within both sectors, the extremely low R-squared (and negative) values indicate that capital structure alone explains an extremely small portion of the variations in profitability among these firms. In other words, the profitability of these firms appears to be influenced far more by firm-specific factors related to their respective industries, such as operational efficiencies, cost controls, revenue diversity, economic conditions, and/or corporate governance. The textile industry is operating with relatively low levels of leverage compared to other manufacturing-based industries, possibly due to the volatile nature of the manufacturing environment and the relative instability of input prices. In contrast, the banking industry uses high levels of leverage that are critical to the success of the banking business model, but still demonstrates a positive relationship between leverage and profitability.

In general, although the findings show that leverage does play a role in determining profitability, the weak explanatory powers of the models and the low simple correlations demonstrate that capital structure decision-making must be viewed as part of a larger strategic and operational plan for companies, rather than solely as a determinant of earnings.

### **Recommendations**

Based on the above findings and conclusions, the following recommendations are hereby proposed for the corporate managers, the policymakers, and future researchers:

### **For Corporate Managers**

**Leverage Management:** Firms in both sectors should use debt advantageously to finance operations by taking advantage of tax benefits and cost-of-capital optimization, but should avoid over-leveraging to the point where financial distress risk becomes greater than possible gain.

### **Sector-Specific Strategies:**

Textile firms could explore moderate increases in leverage for expansion or modernization, only if that cash flow remains stable enough to service additional debt. Banks should manage leverage carefully, especially in volatile interest rate environments, to ensure compliance with regulatory capital adequacy requirements.

**Diversification of Profit Drivers:** Since leverage standalone cannot explain profitability, firms should also focus on operational efficiency, cost control, product/service quality, and innovation to improve return.

### **For Policymakers and Regulators**

**Regulatory Support for Sustainable Financing:** Financial regulators should create a framework that encourages an ideal capital structure, such as incentives for long-term debt financing in manufacturing and/or monitoring of excessive leverage in the banking sector.

**Macroeconomic Stability Measures:** Because profitability is sensitive to economic cycles, ensuring stable interest rates, inflation controls, and currency stability can indirectly help firms maintain the best capital structure.

### **For Future Researchers**

**Inclusion of Additional Variables:** Future studies should include other factors of profitability, such as firm size, market share, asset utilization, governance indicators, and macroeconomic variables, to improve explanatory power.

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