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## **Impact of Leverage on Firm Financial Performance: Evidence from Pakistan**

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doi.org/10.51505/IJEBMR.2024.8506

URL: <https://doi.org/10.51505/IJEBMR.2024.8506>

Received: Apr 23, 2024

Accepted: Apr 29, 2024

Online Published: May 13, 2024

### **Abstract**

Leverage, an important concept in corporate finance, has a significant impact on a company's financial performance and has generated significant academic attention. This article explores the intricate relationship between leverage and the financial performance of firms. Analyzing data from 2016 to 2023, including 184 observations across 23 companies in Pakistan's food and personal care products industry, this study provides insights into the influence of leverage on financial performance. The paper reveals distinctive insights into the relationship through comprehensive empirical analysis. The study provides evidence that supports the signaling theory paradigm, specifically showing a strong negative relationship between leverage and firms financial performance in Pakistan. The study also shows how capital structures vary among industries, emphasizing the complexity of financial decision-making in different company situations. This study also examines how corporate governance moderates the leverage-performance nexus. Leverage negatively impacts Return on Assets (ROA), especially in organizations with strict governance systems. These findings demonstrate the complex link between leverage strategies and governance mechanisms and the importance of strong governance frameworks in reducing leverage's negative effects on financial measures like ROA. This highlights the importance of robust governance to mitigate leverage's negative effects on corporate financial performance.

**Keywords:** Financial performance, Leverage, Corporate Governance, Signaling Theory, Pakistan

### **1. Introduction**

Academic research extensively examines the financial performance of companies, focusing on aspects such as their capital structure, profitability, leverage, and scale (Nguyen et al., 2023; Shamsi and Farjana, 2016; Chalise and Adhikari, 2022). Nguyen et al. (2023) analyze the influence of a company's capital structure on its profitability, whereas Shamsi and Farjana (2016) establish a connection between financial leverage and the dynamics of corporate performance. Chalise and Adhikari (2022) examine the influence of company size on financial performance, specifically focusing on its implications on profitability and operational efficiency. Furthermore, the intricate interaction between corporate governance, capital structure, and business success, as examined by Ronoowah and Seetanah (2022), deepens comprehension of the complexities of financial performance. Company evaluation is mostly based on financial performance measurements such as profitability, efficiency, liquidity, and solvency. These metrics are

essential for stakeholders to analyze a company's financial position and shareholder value (Minnema and Andersson, 2018; Dao and Ta, 2020). Furthermore, a company's financial success, evaluated through metrics like profitability, growth, and market value, showcases the management's economic interests and yields returns for shareholders (Shamsi and Farjana, 2016; Kisser and Soto, 2017). A company's efficiency and sustainability are dependent on its profitability. Researchers study profitability components such as working capital, financial ratios, and leverage. Debt and equity mix have an impact on capital structure, which is critical for firms' profitability. Some companies use equity funding only to avoid debt fees, while others use both. Financial leverage affects owners' equity and profits. Both fixed- and variable-cost operating leverage affect profitability. Effective leverage can boost profitability, but investors may be wary of heavily leveraged enterprises. The sales revenue-to-total assets ratio measures operational efficiency, which boosts profitability.

Financial leverage and firm performance are subjects of substantial research in the field of corporate finance. Due to firm size and market conditions, financial leverage, which uses debt financing to boost returns, affects a firm's capital structure and performance. Leverage doesn't improve performance for many firms, according to Hutten (2014), disputing the idea that debt reduces agency conflicts. Danso et al. (2021) discovered that leverage affects larger enterprises more than smaller ones, demonstrating the size-dependent nature of leverage-performance dynamics. Aharon and Yagil (2019) found that leverage affects a company's risk profile, underlining the need to consider risk when leveraging. Conversely, Ayaz et al. (2021) found that leverage ratios boost business performance and limit management empire-building. A positive leverage-firm performance relationship turned negative beyond the optimal level, demonstrating the nonlinear effect of debt on performance. Senan et al. (2021) found that leverage improves financial outcomes. The empirical evidence about the influence of leverage on corporate financial performance is complex leaving a gap for further investigations. Empirical research demonstrates leverage can boost returns but also raise financial risk and performance implications. To maximize capital structure and balance risk and return, firms must carefully manage their leverage.

Therefore, the purpose of this research study is to examine the effects of leverage on profitability in order to offer the management to choose appropriate level of debt to finance the firm's assets and improve firm financial performance in the food and personal care products industry in Pakistan. The reason behind this study is also to assess how leverage impacts the financial performance of Pakistan's food and personal care products industry, which holds significant importance in the nation's economy. The findings from this research hold potential to offer valuable insights for strategic decision-making within this sector. Additionally, understanding the relationship between leverage and financial performance can provide useful guidance for investors, legislators, and industry stakeholders seeking to enhance resource allocation and mitigate financial risks amid dynamic market conditions.

The purpose of this study is to examine the impact of leverage on profitability while controlling for firm size, capital structure, and working capital. We collected data from food and personal care products comprising 184 firm-year observations listed on the Pakistan Stock Exchange from 2016 to 2023. The study findings validate signaling theory by demonstrating a significant negative association between leverage and corporate financial performance in Pakistan. It

elucidates the diverse capital structures across industries, underscoring the intricate nature of financial decision-making within different firm contexts. Furthermore, the study investigates the moderating role of corporate governance on the leverage-performance relationship. It reveals that higher leverage tends to diminish Return on Assets (ROA), particularly within organizations with stringent governance practices. These findings underscore the complex interplay between leverage strategies and governance mechanisms, highlighting how robust governance frameworks can mitigate the adverse impacts of leverage on financial metrics like ROA. Therefore, maintaining robust governance practices is imperative to mitigate the adverse effects of leverage on corporate financial performance.

This study makes several significant contributions to the existing knowledge by examining the influence of debt on the profitability of enterprises. Examining the association between leverage and firm financial performance within Pakistan's food and personal care industry elucidates the impact of financial structures on industry dynamics. This study fills a crucial gap by scrutinizing financial management practices within these sectors, providing valuable insights into factors influencing their financial health and sustainability. Analyzing the optimal leverage levels tailored to Pakistan's food and personal care sectors has significant implications for industry stakeholders, policymakers, and investors. This research aids Pakistani organizations in identifying the most suitable leverage ratios, empowering them to optimize their capital structure, bolster financial performance, and elevate competitiveness. Additionally, it advances understanding of capital structure dynamics in developing economies like Pakistan, thereby facilitating the adoption of improved financial management practices.

Within this particular framework, the paper proceeds in the following manner: The second section provides an outline of the literature review and the creation of hypotheses. The third section outlines the research design. Section four provides the empirical findings of the investigation. Section five contains the derived conclusion.

## **2. Literature review and hypothesis development**

The financial performance of a corporation is a crucial factor in evaluating its success and has received significant focus in academic research. Researchers actively investigate a wide range of elements that affect financial performance, including capital structure, profitability, leverage, and business size (Nguyen et al., 2023). The relationships among capital structure and company profitability are of a central focus, with research investigating how the composition of a company's capital impacts its capacity to generate profits (Nguyen et al., 2023). The relationship between financial leverage and company performance has been a topic of attention, with studies showing connections between leverage, profitability, liquidity, and tangibility (Shamsi and Farjana, 2016). Furthermore, Research studies on the effect of company size on financial performance emphasizes the significance of organizational scale. in influencing the profitability and efficiency of firms (Chalise and Adhikari, 2022). The relationship between capital structure, corporate governance, and firm financial performance deepens our understanding about the intricacies involved in financial performance (Ronoowah and Seetanah, 2022). Assessing a company's financial performance is crucial to evaluating its business. This evaluation includes several metrics such as profitability, efficiency, liquidity, solvency, and overall financial well-being (Minnema and Andersson, 2018). This assessment is of utmost importance for individuals

or groups with an interest in a firm, as it offers valuable information regarding the company's capacity to earn profits, efficiently allocate resources, fulfill financial commitments, and enhance shareholder value (Dao and Ta, 2020). Firm performance encompasses a range of factors that go beyond financial indicators, including profitability, growth, market value, total return on shareholders, and economic value. It includes an evaluation of both numerical and descriptive factors, as well as financial and non-financial measures (Shamsi & Farjana, 2016). Commonly used financial Key indicators encompass revenue growth, profitability metrics such as return on sales, return on investment, and return on equity, and earnings per share. A corporation's financial performance reflects its level of competitiveness, capacity for growth, and the economic interests of its management, ultimately benefiting its shareholders (Kisser and Soto, 2017).

Profitability is a key to evaluating the firm's efficiency and performance and also to determining its proper level for a long-life span and success. Profitability varies from firm to firm, but researchers focused on the drivers behind it and provided a vast literature. From a business perspective, the researchers' goal is to focus on the factors that have direct or indirect impacts on profitability. Working capital, financial adequacy ratio, and firm size leverage have been identified as the most important factors that affect profitability, among others. The capital structure is included in the management perspective. An appropriate mix of equity and debt determines a firm's capital structure. Firms that wholly rely on equity financing for their businesses and avoid debt, due to which they don't pay any fixed charges arising from those borrowed funds, are regarded as leverage-free firms. Some firms make an appropriate mix of both debt and equity and pay a fixed amount to creditors. These firms are associated with financial leverage. It should keep in view the financial leverage, cost of capital, and their impacts on profitability. We differentiate between two types of leverage: operational and financial. Any firm that deploys financial leverage in their business can increase or often show adverse effects on profitability and owner's equity ultimately. (Samarakoon, Kumara, and Gunarathne, 2014).

Firms use operating leverage, which is the cost of assets comprised of fixed and variable costs. Operating costs are out of the control of the firm and can be changed with a change in volume, whereas fixed costs are controllable. Fixed costs might be beneficial if the management is capable of increasing the volume of production and sales. A high ratio of fixed costs also affects the profitability of a firm. Operational effectiveness expresses the impacts of leverage on the profitability of the firm, and as a result, investors might be reluctant to purchase the stocks of highly leveraged firms. However, the effective use of leverage can provide positive cash inflows, and thus profitability can be increased. Operational efficiency can be achieved through the ratio of sales revenue to total assets (Sari, 2007). Corporate finance has extensively studied the relationship between corporate performance and financial leverage. Financial leverage is defined as the use of debt financing to increase future investment returns. It is a vital component of the capital structure of a firm and plays a crucial role in determining its overall performance. The relationship is complex and diverse, shaped by a range of elements such as the size of the company, market conditions, and the economic climate.

Researchers have conducted a thorough investigation into the relationship between financial leverage and profitability. For instance, Abdussalam (2006) established a study to analyze the correlation between the profitability of a company and its capital structure. The researcher

studied the debt ratio, firm age, firm structure, and size of 48 Amman stock exchange enterprises. His analysis used return on equity and return on investment to determine profitability. The study found an increasing relationship between company size and profitability. Additionally, he demonstrated the existence of a significant connection between profitability and business size.

Signaling theory proposes that companies employ different signals, such as financial choices, to communicate information to investors. Signaling theory suggests that companies with stronger financial performance may be optimal for lower levels of leverage in order to communicate their financial strength and flexibility to investors (Zahid et al., 2023). High leverage can indicate a higher level of risk (Komara et al., 2020). Companies experiencing weak financial performance may choose to limit their use of excessive borrowing in order to reduce perceived risk and uphold investor trust. Companies with lower levels of debt may indicate their capacity to protect the interests of shareholders (Mamaro and Legotlo, 20210). Investors may perceive this as a favorable outcome, resulting in an inverse correlation between leverage and financial performance. The signaling theory proposes that companies strategically modify their leverage to communicate information about their financial well-being and level of risk, resulting in an inverse relationship between firm financial performance and leverage.

The study conducted by Hutten (2014) sought to examine the impact of leverage on company performance, with a specific emphasis on various types of organizations, such as regular firms, those susceptible to overinvestment, and very small firms. The study revealed that debt has no beneficial impact on firm performance, suggesting that decisions regarding capital structure may be inconsequential in relation to firm success. This conclusion contradicts the conventional belief that debt can have a favorable effect on corporate performance by mitigating agency conflicts through credit monitoring, particularly by banks. Previous research has also explored the relation between firm performance and leverage in relation to company size. Danso et al. (2021) found that corporate leverage more adversely affects larger enterprises than smaller firms. This indicates that the influence of leverage on the performance of a business is dependent upon its size, with larger companies experiencing a greater negative impact from leverage. A study by Aharon and Yagil (2019) has investigated the impact of financial leverage on the systemic risk of shareholders, revealing that leverage might change a company's risk profile. This highlights the significance of taking into account the risky consequences of leveraged actions.

The empirical evidence regarding the significance of leverage in company performance is multifaceted. Although leverage has the ability to provide benefits such as higher returns and tax advantages, it also carries hazards, particularly in terms of increased financial risk and potential adverse effects on corporate performance. Several factors, including company size, industrial sector, and market conditions, impact the correlation between leverage and performance. Therefore, companies must prudently control their leverage in order to maximize their capital structure and attain a harmonious equilibrium between risk and reward.

In the existing literature, some research studies reported positive impact of leverage on financial performance of a firm. For instance, Ayaz et al., (2021) reported that the leverage ratio enhances

company profitability, supporting the idea that leverage is a useful tactic in preventing managers from excessively expanding their personal influence. The authors also discovered a positive correlation between leverage and firm performance, but after the level of leverage exceeds the optimal threshold then this correlation becomes negative which indicate that debt has a dual effect on company's financial performance. Another study corroborated these findings, suggesting that an increase in leverage can enhance firm performance, supporting the notion that leverage serves as an effective mechanism for improving financial outcomes (Senan et al., 2021). Additionally, studies on the influence of capital structures have found that the leverage ratio positively affects firm performance, indicating that leveraging can contribute to better financial results (Ayaz et al., 2021). These empirical findings provide evidence that leveraging can impact positively on financial performance of a firm, suggesting that strategic use of leverage may leads to enhance profitability as well as overall firm financial health (Ibhagui and Olokoyo, 2018).

Many research findings indicated negative association in between corporate financial performance and leverage. For instance, Yuan and Kazuyuki (2011) examined Chinese listed company data to determine how investment decisions affect debt ratios. They reported a negative association among the ratio of debt and fixed investment, attributed to the capital structure's rising debt. This debt burden raises fixed payments to creditors, lowers share values, and increases business risk, deterring investors. Similarly, Pouraghajan and Bagheri (2012) found a negative correlation between financial performance and debt ratio among Tehran stock exchange-listed companies. In contrast, Nduati (2010) found no correlation between financial success and leverage in Nairobi Securities Exchange-listed companies.

Kunga (2015) found that financial leverage and liquidity negatively affected the profitability of Nairobi Securities Exchange-listed enterprises over five years. Similarly, Ahmad et al., (2015) found an inverse and statistically significant association between profitability and financial leverage in cement firms in Pakistan. In addition, Singapurwoko and El-Wahid (2011) found that debt, company size, operational decisions, and financial leverage increased profitability in Indonesian stock exchange-listed enterprises. Furthermore, Chen et al., (2019) reported a positive association among profitability and operating leverage but a negative relationship with financial leverage, contradicting the trade-off theory. On the basis of prior literature, we propose the following research hypothesis:

*H<sub>1</sub>. Leverage has negative and significant impacts on firm financial performance.*

### **3. Research design**

#### *3.1 Sample*

Well-defined problems and objectives render this research study both comprehensive and quantitative. The study aims to investigate the impact of leverage on the financial performance of Pakistan's food and personal care products industry. Data were gathered from 24 companies in this sector listed on the Pakistan Stock Exchange, spanning the years 2016 to 2023, resulting in 192 firm-year observations. Following the removal of incomplete, insufficient, and outlier data, a panel comprising 184 firm-year observations for 23 firms was obtained. Appendix-A contains a list of the companies included in this study.

### *3.2 Variables measurement*

#### *3.2.1 Explanatory variable*

Variable leverage refers to a firm's utilization of debt financing in its capital structure, which can fluctuate based on market conditions and managerial decisions. Academic research delves into the intricate relationship between leverage and firm performance (Shamsi and Farjana, 2016). This concept encompasses both fixed and variable-cost operating leverage, impacting shareholders' profitability and value (Shamsi and Farjana, 2016; Kisser and Soto, 2017). While strategic use of leverage can enhance returns, excessive reliance on debt may heighten financial risk (Shamsi and Farjana, 2016). Stakeholders utilize leverage ratios to assess a company's financial health and evaluate its sustainability over the long term (Minnema and Andersson, 2018). The notion of variable leverage underscores the dynamic nature of financial decision-making aimed at optimizing earnings while managing risk exposure.

We employed the total debt relative to total assets ratio, a widely used indicator for assessing the leverage of companies, as established in prior research (Nguyen et al., 2023; Ayaz et al., 2021; Senan et al., 2021; Ibhagui and Olokoyo, 2018). This financial ratio illustrates the proportionate combination of debt and equity that is utilized to finance the assets of the corporation.

#### *3.2.2 Dependent variable*

Firm financial performance refers to the financial metrics and indicators serve as crucial tools for evaluating a company's performance. Elements such as capital structure, profitability, leverage, and business size exert significant influence on a company's profit generation and resource management (Nguyen et al., 2023). Additionally, corporate governance and organizational scale play pivotal roles in shaping a firm's profitability and operational efficiency (Chalise and Adhikari, 2022; Ronoowah and Seetanah, 2022). Parameters related to financial performance, including profitability, liquidity, solvency, and overall financial well-being, offer valuable insights for stakeholders assessing a company's capacity to enhance shareholder value (Minnema and Andersson, 2018; Dao and Ta, 2020). Moreover, metrics such as growth, market value, and economic value signify the company's competitiveness and potential for expansion beyond traditional financial measures (Shamsi & Farjana, 2016; Kisser and Soto, 2017).

Companies frequently use return on assets as a proxy to evaluate their financial success. In line with previous research in this domain, we employed return on assets (ROA) as a metric for assessing firms' financial performance, drawing on studies by Nguyen et al. (2023), Chalise and Adhikari (2022), Ronoowah and Seetanah (2022), and Minnema and Andersson (2018). ROA, a financial indicator, evaluates a company's profitability by comparing its net income to its total assets. This calculation entails dividing the net income by the total assets.

#### *3.2.3 Control Variables*

To bolster the credibility of our model, the research integrates several control variables, building upon previous studies in this literature niche (Li et al., 2022; Sugiana and Hidayat, 2023; Baños-Caballero et al., 2014). This set of variables includes company size, sales growth, and working capital.

Table 1. provides variable’s measurement.

Variable	Acronym	Definition
Dependent variable	<i>ROA</i>	The return on assets in year t is calculated by dividing the net income by the total assets.
Independent variable	<i>LEV</i>	The proportion of the total debt to the total assets.
	<i>SIZE</i>	The firm size of company i in year t is calculated as the natural logarithm of its total assets.
Control variables	<i>GROWTH</i>	The sales growth in the year t (t - t-1 / t-1).
	<i>WC</i>	Working capital for the company i in the year t, measured as current assets minus current liabilities.

*3.3 Model specification*

This research investigates how leverage affects the financial performance of companies in Pakistan. We employ Model-3.1 to assess leverage's impact on the financial performance of firms in the food and personal care products sector. The foundational model we use for testing our hypothesis is outlined as follows:

$$ROA_{i,t} = \alpha + \beta_1 LEV_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 WC_{i,t} + \varepsilon_{it} \text{ -----}(3.1)$$

Where  $ROA_{i,t}$ , representing the return on assets (ROA) for company i in year t, is calculated as the net income divided by total assets. This metric serves as a proxy for assessing the company's performance.  $LEV_{i,t}$  denotes the leverage of firm i in year t, computed as the ratio of total debt to total assets, and is considered the primary independent variable. The variable "SIZE" signifies the firm's size, determined by the natural logarithm of its total assets. Additionally, "GROWTH" indicates the firm's sales growth in year t, calculated as the percentage change between year t and year t-1 in sales. Working capital (WC) is defined as current assets minus current liabilities.

In the equations provided above, 'i' represents companies, 't' represents time, and 'α' and 'β' denote coefficients. The term 'ε' represents the residual error.

**4. Empirical results**

*4.1 Descriptive statistics*

The descriptive statistics of the sample are displayed in Table 4.2. The average value of the dependent variable, return on assets (ROA), is 0.141. The minimum and maximum values of the data are -0.155 and 0.529, respectively. The ROA's standard deviation is 0.128. The mean return on assets is 14.1%, with a significant amount of fluctuation around this average (standard deviation of 12.8%). Some companies had negative returns, with the lowest observed return on assets (ROA) being -15.5%, while the highest ROA recorded was 14.1%. LEV represents the independent variable. The average leverage score for enterprises is 1.561, with a standard



deviation of 2.038, which suggests a moderate level of variability. The minimum score is 2.005, whereas the greatest is 25.985, indicating a significant variation in leverage levels between firms. Table (3) displays the average values of company size (size), sales growth (GROWTH), and WC (working capital) as 15.127, 0.092, and 0.845, respectively, regarding the control variables.

Table 4.2 Descriptive statistics

This table displays the descriptive summary of our primary variables.

Variables	Mean	Std. Dev.	Minimum	Maximum
ROA	0.141	0.128	-0.155	0.529
LEV	1.561	2.038	-2.005	25.985
SIZE	15.127	1.547	12.263	20.29
GROWTH	0.092	0.188	-1.269	0.618
WC	0.845	0.385	0.055	2.735

Note: Where  $ROA_{i,t}$ , representing the return on assets (ROA) for company  $i$  in year  $t$ , is calculated as the net income divided by total assets;  $LEV_{i,t}$  denotes the leverage of firm  $i$  in year  $t$ , computed as the ratio of total debt to total assets, and is considered the primary independent variable; the variable "SIZE" signifies the firm's size, determined by the natural logarithm of its total assets; "GROWTH" indicates the firm's sales growth in year  $t$ , calculated as the percentage change between year  $t$  and year  $t-1$  in sales; Working capital (WC) is defined as current assets minus current liabilities.

4.2 Correlation analysis

Table 4.3 illustrates a significant and inverse link between return on assets (ROA) and debts. Increased leverage levels have an adverse effect on the financial performance of a corporation. Moreover, there exists a direct relationship between return on assets (ROA) and the size of the company, the rate of sales growth, and the amount of working capital. Additionally, the correlation coefficients presented in Table 4.3 indicate that the variables in the model remain unaffected by the issue of multicollinearity. This observation is evident as the correlation coefficients among the independent variables are all below 0.80.

Table 4.3 Correlation analysis

This table displays the correlation matrix results for the variables utilized in the empirical analysis.

Variables	(1)	(2)	(3)	(4)	(5)
(1) ROA	1				
(2) LEV	-0.345***	1			
(3) SIZE	0.182***	0.214**	1		
(4) GROWTH	0.268***	0.039***	0.280***	1	
(5) WC	0.221***	0.067***	0.122***	0.310*	1

Note: Where  $ROA_{i,t}$ , representing the return on assets (ROA) for company  $i$  in year  $t$ , is calculated as the net income divided by total assets;  $LEV_{i,t}$  denotes the leverage of firm  $i$  in year  $t$ , computed as the ratio of total debt to total assets, and is considered the primary independent variable; the variable "SIZE" signifies the firm's size, determined by the natural logarithm of its total assets; "GROWTH" indicates the firm's sales growth in year  $t$ , calculated as the percentage change between year  $t$  and year  $t-1$  in sales; Working capital (WC) is defined as current assets minus current liabilities. Significance levels are denoted as: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

*4.3 Regression results*

Table 4.4 provides a clear and concise representation of the outcomes of the OLS regression. A negative and highly significant coefficient (-0.161,  $p < 0.001$ ) indicates that an increase in leverage has a strong and adverse impact on return on assets (ROA). The finding aligns with signaling theory, which posits that corporations use signals, such as high leverage, to raise the financial risk they face. Underperforming companies may restrict borrowing in order to mitigate risk and uphold investor trust. This, in turn, has the potential to positively impact investors' evaluations of the company's overall excellence and future financial success. Therefore, our research hypothesis confirms that a significant amount of debt reduces the company's financial performance. The findings here align with previous studies conducted by Ahmad et al. (2015), Singapurwoko and El-Wahid (2011), and Chen et al. (2019). The findings of our analysis of the control variables indicate that company size, sales growth, and working capital exhibit a positive relationship with return on assets (ROA). These effects are statistically significant, as evidenced by their respective coefficient values and significance levels (0.026,  $p < 0.001$ ; 0.086,  $p < 0.001$ ; 0.014,  $p < 0.001$ ).

Table 4.4 Regression results  
The table displays the results of the regression analysis.

VARIABLES	ROA
LEV	-0.161*** (-2.801)
SIZE	0.026*** (4.383)
GROWTH	0.086*** (2.685)
WC	0.014*** (2.915)
Constant	0.311*** (12.34)
Firm effect	Yes
Year effect	Yes
Observations	184
R-squared	0.562

Note: Where  $ROA_{i,t}$ , representing the return on assets (ROA) for company  $i$  in year  $t$ , is calculated as the net income divided by total assets;  $LEV_{i,t}$  denotes the leverage of firm  $i$  in year  $t$ , computed as the ratio of total debt to total assets, and is considered the primary independent variable; the variable "SIZE" signifies the firm's size, determined by the natural logarithm of its total assets; "GROWTH" indicates the firm's sales growth in year  $t$ , calculated as the percentage change between year  $t$  and year  $t-1$  in sales; Working capital (WC) is defined as current assets minus current liabilities. T-statistics are reported in parentheses. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

*4.4 Robustness checks*

4.4.1 Alternative measure of the firm financial performance

We applied alternative measures for the firm's financial performance to assess the reliability and robustness of our preliminary examination, which examined the impact of leverage on the firm's financial performance. We substituted the ROE (return on equity) measure for firm financial performance instead of ROA. The findings derived from the analysis are displayed in Table 4.5. It demonstrates that the use of leverage has a negative and highly significant effect on the financial performance of a company, specifically in terms of return on equity (ROE) at 1% level, which confirms the robustness of our preliminary regression model, is consistent with the main regression analysis of the study.

Table 4.5 Alternative measure of the firm financial performance

VARIABLES	ROE
LEV	-0.259*** (-2.25)
SIZE	0.074 (1.53)
GROWTH	0.017** (3.86)
WC	0.022*** (4.18)
Constant	0.294*** (8.68)
Company effect	Yes
Year effect	Yes
Observations	184
R-squared	0.458

4.4.2 Generalized method of moments

Panel fixed effects partially mitigate endogeneity's negative impact (Wooldridge, 2010). To address endogeneity and ensure reliable results from dynamic panel data, we utilize the generalized method of moments (GMM) estimator, pioneered by Arellano and Bond (1991) and

Blundell and Bond (1998). To assess the effect of past periods', return on assets (ROA) on the current period, our regression model employs a lagged financial variable (ROA), thus exploring dynamic impacts. Employing dynamic GMM panel data in our study effectively addresses various endogeneity types when investigating the leverage-ROA relationship. Diagnostic tests, including Arellano-Bond tests, evaluate serial correlation presence in first-differenced residuals. AR (1) and AR (2) tests show statistically insignificant p-values, suggesting no autocorrelation, validating the GMM model. Additionally, the Hansen test confirms the validity of instrument sets, with a p-value of 0.342, indicating exogeneity. The Wald Chi2 model yields statistically significant results, indicating collective independent factors' impact on the dependent variable in our empirical model.

Table 4.6 Results for the generalized method of moments (GMM)

VARIABLES	ROA
L.ROA	0.275*** (6.23)
LEV	-0.302** (-3.81)
SIZE	0.0128 (1.24)
GROWTH	0.0317** (2.48)
WC	0.345*** (4.64)
Constant	0.229 (6.412)
Company effect	Yes
Year effect	Yes
Wald Chi2	26.5
AR(1) (p-value)	0.285
AR(2) (p-value)	0.458
Hansen test (p-value)	0.342
Observations	184
Number of id	23

#### 4.5 Further Analysis

We extend our analysis to explore the relationship between firm financial performance and leverage, focusing on how corporate governance level influence this relationship. To achieve

this, based corporate governance, the sample is divided into two groups, distinguishing between low and high governance firm.

4.5.1 Moderating effect

Corporate governance promotes the values of honesty, efficiency, and long-term viability, which are essential for a company's long-term success. Empirical evidence indicates that corporate governance (CG) features have an impact on the financial performance of firms. The research identified an important and favorable relationship among specific corporate governance procedures, such as board independence, and the financial performance of the company (Masud et al., 2018). These findings indicate that companies that have more robust corporate governance systems are more inclined to provide detailed reports on their financial status, leading to enhanced financial performance. Hence, our objective is to examine how corporate governance acts as a moderating variable in relation to the effect of leverage on the financial performance of a company. Corporate governance is measured as corporate governance index. We divided the companies into low and high governance groups on the basis of median of corporate governance. The firms above the median corporate governance are high governance firms whereas firms below the median corporate governance are low governance firms. The results are reported below about the moderating influence of corporate governance.

The data presented in Table 4.7 demonstrates that leverage exerts a substantial and adverse influence on the financial performance of firms, particularly on their return on assets (ROA). The impact is greater for companies with high levels of governance than for those with low levels.

Table 4.7 Moderating effect based on low and high governance level

VARIABLES	Low governance	High governance
	ROA	ROA
LEV	-0.191 (-1.62)	-0.238*** (-2.86)
SIZE	0.07839*** (4.86)	0.373 (1.28)
GROWTH	0.071 (1.73)	0.076*** (4.56)
WC	0.535 (1.83)	0.073*** (2.64)
Constant	0.263*** (4.6)	0.306*** (8.27)
Company effect	Yes	Yes
Year effect	Yes	Yes
Observations	96	96
R-squared	0.421	0.528

Note: This table presents the outcomes regarding the moderating impact of corporate governance. In Column 1, the moderating influence of low governance is detailed, while Column 2 explores the impact of excellent governance on the relationship between leverage and a company's financial performance. Symbols \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. T-statistics are provided within parentheses to indicate significance levels.

## **5. Conclusion**

Due to its significant impact on firm financial performance, leverage is a key concept in corporate finance that has received extensive study. Over time, scholars have developed numerous theories that shed light on how leverage impacts a corporation's financial dynamics. Companies typically choose borrowed capital because it is more affordable than alternative forms of funding. Many factors influence the decision to use leverage and its amount, reflecting the intricate relationship between market conditions and financial strategy. Within the field of corporate finance, obtaining cash is essential for starting new businesses and enabling growth in corporate finance. Almost all company transactions, whether direct or indirect, require financial resources. Companies' financial needs increase as they expand and change, requiring bigger capital reserves to keep things running smoothly.

The main aim of this study is to examine the intricate relationship among a company's leverage and its financial performance. This research attempts to offer fresh insights on the association between leverage and the financial performance of companies, through thorough empirical investigation. This study provides strong evidence in support of the signalling theory paradigm, specifically demonstrating a significant negative relationship between leverage and financial performance in the context of Pakistan. The study's findings also emphasize the disparities in capital structures across different industries, underscoring the complicated nature of financial decision-making in diverse corporate environments.

Additionally, we explore how corporate governance moderates this relationship. The current research study investigated the association among the leverage and financial performance of a company at different levels of governance provides detailed insights into corporate dynamics. This analysis indicates that leverage significantly and negatively affects return on assets (ROA), particularly within companies operating under stringent governance frameworks. Specifically, the adverse impact on ROA is more pronounced among firms with elevated governance standards compared to those adhering to lower governance norms. The finding highlights the complex relationship between financial leverage tactics and the governance measures employed by companies. In general, the results show that leverage can negatively impact return on assets (ROA), but these effects intensify in firms under stricter governance supervision. This emphasizes the crucial importance of governance structures in regulating the connection between financial leverage and company performance. It highlights the necessity for strong governance frameworks to reduce the negative effects of leverage on financial indicators like ROA.

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**Appendix-A**

## Food and Personal Care Products

Symbol	Name
ASC	Al Shaheer Corporation Limited
BNL	Bunnys Limited
CLOV	Clover Pakistan Limited
FCEPL	Frieslandcampina Engro Pakistan Limited
FFL	Fauji Foods Limited
GIL	Good Luck Industries Ltd.
GLPL	Gillette Pakistan Limited
ISIL	Ismail Industries Limited
MFFL	Mitchells Fruit Farms Limited
MFL	Matco Foods Limited
MUREB	Murree Brewery Company Limited
NATF	National Foods Limited
NMFL	Nirala MSR Foods Limited
PREMA	At-Tahur Limited
QUICE	Quice Food Industries Limited
RMPL	Rafhan Maize Products Company Limited
SCL	Shield Corporation Limited
SHEZ	Shezan International Limited
TOMCL	The Organic Meat Company Limited
TREET	Treet Corporation Limited
UNITY	Unity Foods Limited
UPFL	Unilever Pakistan Foods Limited
ZIL	ZIL Limited