

The Influence of Moderate Leverage Impact of Liquidity Ratios on the Financial Performance of the Sugar Sector in Pakistan

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Abstract

The research investigates the performance of the sugar sector in Pakistan with debt ratio, operating cash flow ratio, current ratio, quick ratio and firm age with moderate leverage impact on the financial performance of the Sugar sector. Focusing specifically on Pakistan, the study collected data on 25 sugar companies from 2012 to 2022. Secondary data was gathered from annual reports and the Pakistan Stock Exchange. When leverage is maintained at a moderate level, the connections between debt ratio and leverage and operating cash flow and leverage ratio prove statistically significant. These findings carry valuable insights within the context of the regression study, suggesting that the extent of business leverage plays a pivotal role in shaping the relationship between these variables and earnings per share (EPS). In contrast, factors such as current ratio and leverage, quick ratio with leverage ratio, and firm age with leverage ratio lack statistical significance at a moderate leverage ratio. The practical effects of certain financial ratios on earnings per share are excessively high debt ratios, which suggests a significant dependence on debt financing, which may result in higher interest costs and greater financial risk, which could lower EPS. In contrast, high current ratios, quick ratios, and strong operational cash flow ratios are often considered positive indications of EPS. In planning for the future, companies must find a middle ground between debt and equity financing, aiming for a

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sustainable debt ratio that doesn't weigh down earnings with excessive interest expenses. Boosting operating cash flow through efficient operations and careful working capital management takes precedence, positively impacting earnings per share. It's equally crucial to maintain robust current and quick ratios, ensuring short-term liquidity and financial stability, especially in uncertain economic climates. Regularly monitoring and strategically adjusting these financial ratios in line with growth objectives and risk tolerance is key for long-term EPS and shareholder value growth.

Keywords: Current Ratio, Debt Ratio, Operating Cash Flow, Quick Ratio, Leverage Ratio, Sugar Sector, Earnings per Share, Pakistan Stock Exchange

1 Introduction

The availability of cash from investors to corporations through the company's capital market plays a significant role in the global economy, and investors can expect to receive a return on their deposits (Rahman et al., [2017](#)). Because the investors are anticipated to be able to forecast future stock prices for these investments accurately, the goal of the investors' investment rate of return is to acquire as much as possible with a minimal amount of risk. Analyzing the company's financial ratios can be done to determine the stock price. This study's goal was to investigate how the corporate financial performance of the sugar industries was impacted by the debt ratio (DR), operating cash flow (OCF), current ratio (CR), quick ratio (QR), and firm age.

Financial analysis fundamentally considers the effect of a company's debt ratio on profits per share (EPS) (Kirimi et al., [2017](#)). A corporation can increase earnings and raise EPS when it uses debt wisely to finance projects that produce returns on investment (ROI) that exceed the cost of debt (Yusrianti et al., [2016](#)). The debt ratio, which evaluates how much of a company's funding comes from debt compared to equity, significantly impacts the company's profitability and shareholder returns (Atidhira & Yustina, [2017](#)). This may indicate prudent financial management and suitable leverage, boosting the company's stock price and total worth (Sugiarto & Fachrurrozie, [2018](#)). On the other hand, a high debt-to-income ratio may result in higher interest costs and increased financial risk (Blanchard, [2019](#)). An increase in debt servicing costs or a company's inability to produce a profit could negatively influence net income and consequently lower EPS (Rahmadi, [2020](#)). The debt ratio is crucial in evaluating a company's financial health and long-term prospects. It is a crucial lever that can either strengthen or weaken the company's ability to reward its shareholders (Adenugba et al., [2016](#)).

A positive indicator for EPS is often the operating cash flow ratio (Gunanta et al., [2015](#)). It shows that the business efficiently turns in operating expenses without substantially relying on outside funding (Wiguna & Murwaningsari, [2022](#)). This financial security and independence can increase investor confidence and have a favourable effect on EPS (Ding et al., [2017](#)). An important factor in financial analysis is the operating cash flow ratio's impact on earnings per share (EPS), as it demonstrates a company's ability to generate cash from its core operations while affecting returns for its shareholders (Hamshari, [2020](#)). The operating cash flow ratio is a measure of a company's cash generation about its net income, showing how effectively the company is converting its profits into actual cash flow (Al Hayek, [2018](#)). An indication of trouble is a low operating cash flow ratio. It can imply that the business needs help converting profits into cash, which could cause cash flows to be delayed and have an unfavourable impact on EPS (Sayari & Mugan, [2013](#)). When a business relies on outside funding to fund its operations, its operating cash flow may need to be improved, resulting in interest costs that lower net income and, as a result, EPS (Dechow & Ge, [2006](#)).

The effectiveness of a company's working capital management is greatly influenced by the current ratio, which assesses a company's short-term liquidity by comparing current assets to current

liabilities (Afeef, [2011](#)). The current ratio, which shows that a business has enough current assets to cover short-term liabilities, frequently boosts investor confidence, which benefits EPS. The company's strong financial standing and capacity to invest in expansion projects benefit profitability. On the other hand, an extremely high current ratio can indicate wasted resources or lost investment possibilities, which might impede profitability and mean EPS (Abushammala & Sulaiman, [2014](#)). The current ratio highlights a company's financial health by highlighting the balance between liquidity and profitability necessary for creating and maintaining shareholder value. An essential part of financial research is determining how the current ratio affects earnings per share (EPS), particularly when evaluating a company's liquidity and capacity to produce shareholder returns (Saleh, [2023](#)).

An important part of financial research is the quick ratio's effect on earnings per share (EPS), which reflects a company's capacity to satisfy short-term financial obligations while producing shareholder returns (Siahaan et al., [2021](#)). The quick ratio, the acid-test ratio, is a stricter liquidity test than the current ratio because it only considers the most liquid assets and eliminates inventory from current assets. The quick ratio is typically seen as a good indicator of EPS. The company's highly liquid assets, such as cash and marketable securities, are significantly more than its short-term liabilities. This liquidity might boost investor confidence, which might have a favourable effect on EPS. The company presents a stable financial position that permits investment in growth projects, potentially increasing earnings, thanks to a robust and quick ratio that assures the company can comfortably fulfil its immediate obligations (Al-Tally, [2014](#)).

A low quick ratio, on the other hand, can mean that the company places much reliance on less liquid assets, such as inventory, to cover its short-term liabilities (Amanda, [2019](#)). This can be a less desirable circumstance because it might cause a delay in the production of cash. Earnings are impacted by the delay in recognizing revenue and profit, which can hurt EPS if the company needs help turning inventory into cash efficiently (Dechow & Schrand, [2004](#)). The quick ratio provides information on a company's liquidity and capacity to meet urgent financial needs (Hutabarat et al., [2023](#)). While a low quick ratio may indicate inefficiencies that could hurt profitability, a high quick ratio can benefit investor mood and lead to a more favourable EPS (Rahman & Shamsuddin, [2019](#)). When assessing the quick ratio's impact on EPS, it is critical to consider industry norms, the company's business model, and the overall economic environment.

Profitability is attained when generated revenue surpasses the direct and indirect costs incurred. As highlighted by (Ajibola et al., [2018](#)), shareholders' wealth flourishes when a company achieves growth and stability in dividend payments or capital gains through increased market share value. A comprehensive understanding of company risks is pivotal for asset management and reducing avoidable expenses. Financial ratios can be impacted by issues in the sugar industry, which will, therefore, impact a company's earnings per share (EPS). Initially, a company's interest costs may rise due to high levels of debt in the sugar industry, which is frequently incurred for capital-intensive operations like sugar production and refinery. Since a sizeable amount of the earnings is utilised to pay off the debt, this may pressure profitability and lower EPS.

Furthermore, the operating cash flow ratio estimates a company's capacity to earn cash from its core operations. It can negatively impact the sugar sector because of variables like changing sugar prices and rising production costs. A company's capacity to reinvest in its business may be limited by a decreasing operating cash flow ratio, which will reduce profitability and, subsequently, EPS. Additionally, in the context of the sugar industry, the current ratio and quick ratio, both of which evaluate a company's liquidity and short-term financial health, are significant. Problems like late payments to suppliers and higher borrowing rates may result if these ratios deteriorate due to difficulties managing short-term obligations. These issues may then significantly affect a company's profitability, harming EPS.

In conclusion, issues in the sugar industry, including high debt levels, decreased operating cash flow, and weak liquidity ratios, can all hurt a company's profitability, which will cut EPS. Sugar firms should concentrate on effective debt management, cost reduction, and liquidity optimisation to address these difficulties, improve their financial health, and boost their EPS. The primary objective of this study is to analyze the optimal level of earnings per share in the sugar industry in Pakistan. This optimal level ensures that the industry can meet its financial obligations while adjusting to maximise investments and profits. A secondary objective of this study is to investigate the impact of management strategies, specifically related to operating cash flow, current ratio, quick ratio, and debt ratio, on company performance. This research aims to uncover the influence of the corporate performance management strategies employed by the sugar industry. The main objectives of this study are as follows: To assess the varying levels of earnings per share among different sugar industries operating in Pakistan and to investigate whether certain variables, such as debts, operating cash flow, current assets, quick assets, firm age and leverage as moderate can serve as reliable predictors in the sugar industry.

2 Literature Review

Earnings per share (EPS) are a pivotal financial metric that assesses a company's per-share profitability (Gharaibeh et al., [2022](#)). Another crucial financial indicator significantly influencing a company's financial performance is the debt ratio, revealing how much a company's capital structure is financed through debt (Vätavu, [2015](#)). The sugar industry has been a focal point of scholarly research examining the intricate relationship between the debt ratio and earnings per share (Chinaemerem & Anthony, [2012](#)). A notable analysis conducted shed light on this relationship. Their findings indicated that the tax benefits associated with higher debt levels initially led to a boost in EPS, coinciding with an increase in the debt ratio (Guney & Fairchild, [2011](#)). However, as the debt-to-income ratio continued to climb, the burden of interest expenses began to negatively impact profitability, resulting in a subsequent decline in EPS (Gourinchas et al., [2017](#)). The financial literature has shown keen interest in exploring the correlation between an organization's operating cash flow ratio and its earnings per share (EPS) within the sugar sector (Waswa et al., [2018](#)). This relationship has been a subject of investigation in numerous studies to understand how a company's EPS is influenced by its ability to generate cash from its core operational activities (Joyo et al., [2018](#)).

Their research revealed a compelling and statistically significant positive relationship between higher operating cash flow ratios and increased EPS (Rehman, [2013](#)). This implies that sugar companies achieve greater profitability per share when their operational cash flow substantially outweighs their market capitalisation (Apete et al., [2022](#)). They contended that various factors, including a company's growth stage and investment strategies, can influence the relationship between the operational cash flow ratio and EPS within the sugar industry (Waswa et al., [2018](#)). According to their findings, EPS may benefit from a moderate operational cash flow ratio. In contrast, excessively high ratios might indicate that growth opportunities must be fully capitalised upon, potentially hindering future earnings growth (Naknok, [2022](#)).

They underscored the contextual nature of the relationship between the operating cash flow ratio and EPS. They emphasized the critical importance of considering industry dynamics and company-specific characteristics when interpreting these results (Sayari & Mugan, [2013](#)). In review, research examining the correlation between the operational cash flow ratio and earnings per share in the sugar sector is an ongoing endeavour, with the existing literature presenting a spectrum of findings (Fwamba, [2017](#)). This relationship is intricate and subject to a range of influencing factors (Dechow & Ge, [2006](#)).

However, an investigation that analyzed a sample of sugar companies revealed a positive linear association between earnings per share and the debt ratio (Rehman, 2013). Their findings indicated

that higher debt ratios, by increasing leverage, had a beneficial impact on EPS (Rahman & Shamsuddin, [2019](#)). These divergent results underscore the complexity of the connection between debt and EPS in the sugar sector (Koskei, [2019](#)).

They emphasized that various variables, such as economic conditions, market dynamics, and company-specific attributes, influence how the debt ratio affects earnings per share (Waswa et al., [2018](#)). They also underscored the critical importance of considering industry-specific idiosyncrasies when assessing the relationship between debt financing and earnings per share in the sugar industry (Fwamba, [2017](#)). In conclusion, research regarding the correlation between the debt ratio and earnings per share in the sugar industry remains an evolving area, with differing conclusions arising from various studies (Saeed & Badar, [2013](#)). This relationship is intricate, shaped by numerous variables, and subject to modification based on the specific circumstances surrounding sugar companies (Mehta, [2014](#)). Future investigations in this field should adopt a more sophisticated and industry-specific approach to understand better the intricate interplay between debt financing and earnings per share in the sugar sector.

There has been ongoing discourse in financial literature concerning the correlation between a sugar sector company's earnings per share (EPS) and its current ratio (Mubeen et al., [2016](#)). Scholars have sought to unravel how a firm's liquidity, gauged through its current ratio, affects its per-share profitability. Their findings unveiled a positive association between higher EPS and a larger current ratio (Nworie et al., [2023](#)). This suggests that sugar companies with robust liquidity positions generally exhibit elevated per-share profitability (Joyo et al., [2018](#)). This correlation underscores the critical role of liquidity management within the sugar sector.

While a healthy current ratio is typically deemed favourable, they argued that its direct influence on EPS in the sugar industry can fluctuate depending on the company's growth stage and investment decisions (Rehman, [2013](#)). Their research indicated that exceptionally high current ratios might signal an inadequate allocation of resources to potential growth areas, potentially impeding future earnings growth. In review, investigations into the relationship between the current ratio and earnings per share in the sugar industry are ongoing, yielding a range of results in the existing literature (Koskei, [2019](#)). This relationship is multifaceted and influenced by many factors; thus, forthcoming research on this subject should consider the distinct nuances and circumstances inherent to the sugar sector.

In financial literature, there has been a growing interest in exploring the connection between a company's quick ratio and its earnings per share (EPS) within the sugar industry (Mehta, [2014](#)). The primary objective of these research endeavours has been to unravel how a company's quick ratio, a measure of its liquidity and ability to convert assets into cash swiftly, impacts its per-share profitability. Their findings revealed a notable and statistically significant correlation between a higher quick ratio and elevated EPS (Koskei, [2019](#)). This suggests that sugar companies are endowed with more vital liquidity positions, particularly the importance of liquidity and the expeditious conversion of assets into cash within the sugar sector (Gopinath et al., [2018](#)). The authors argued that while a robust quick ratio is generally considered advantageous, its precise impact on the sugar sector's earnings per share (EPS) can vary depending on factors such as the company's growth stage and investment strategies (Saeed & Badar, [2013](#)). Their research indicated that an excessively high quick ratio might indicate an inadequate allocation of resources to growth opportunities, potentially restraining future earnings growth.

They emphasised that various factors, including company-specific strategies and industry-specific dynamics, can influence the connection between the quick ratio and EPS (Waswa et al., [2018](#)). The evaluation recommended further research into the intricate interplay between the quick ratio and EPS within the sugar sector while considering the sector's unique circumstances and idiosyncrasies. In sum, ongoing research on the relationship between the quick ratio and earnings

per share in the sugar industry has generated diverse findings in the existing literature. This connection is intricate and influenced by numerous factors. Thus, future research endeavors in this domain must provide a more comprehensive understanding of this complex relationship.

Understanding the intricate interplay between various financial metrics and their potential moderating effects on earnings per share (EPS) is paramount for investors, analysts, and other stakeholders in the sugar industry (Joyo et al., [2018](#)). The financial performance of sugar companies is a multifaceted subject, and this literature review seeks to delve into the complex relationships among different financial indicators, including the debt ratio, quick ratio, operating cash flow ratio, current ratio, and leverage ratio, and their potential influences on EPS. Their findings revealed that while higher debt ratios might initially lead to increased EPS due to interest tax shielding, excessively high debt levels could have adverse consequences in the long run (Odeyo, [2023](#)).

Similarly, research has delved into the operating cash flow ratio and its effect on EPS within the sugar industry (Rehman, [2013](#)). They investigated that relationship and uncovered a positive linear connection between the operating cash flow ratio and EPS (Apete et al., [2022](#)). This suggests that companies with robust operational cash flows exhibit higher EPS, underlining the importance of cash flow management (Fwamba, [2017](#)). Moreover, both the quick and current ratios have been subjects of examination. Studies, such as the one conducted, have demonstrated a favourable association between EPS in sugar companies and higher current and quick ratios (Nworie et al., [2023](#)). These findings emphasize the significance of a company's ability to meet short-term obligations and maintain liquidity, contributing to enhanced profitability (Saeed & Badar, [2013](#)).

The leverage ratio, which signifies the extent of financial leverage, can significantly impact EPS. Research has indicated that sugar firms with moderate leverage ratios tend to have more stable and predictable EPS, steering clear of the pronounced fluctuations associated with highly leveraged or unleveraged enterprises. In summing up, comprehending the intricate relationships between various financial metrics and their potential effects on earnings per share is crucial in the complex landscape of the sugar industry. Multiple studies have shed light on these connections, highlighting the importance of prudent financial management and balanced ratios in optimising a company's EPS performance.

There is a pressing need for comprehensive research that considers the combined impact of these financial metrics on earnings per share (EPS), even though prior studies have predominantly examined them in isolation. For academic scholars and business practitioners, it is imperative to grasp how these ratios interact and potentially mitigate each other's influence on EPS within the unique context of the sugar industry.

In review, the relationship between various financial metrics and EPS within the sugar industry is multifaceted. This research underscores the critical importance of considering these metrics collectively and recognizing potential moderating effects to gain a more thorough understanding of their collective impact on the overall profitability of sugar companies. To provide valuable insights for stakeholders in the sugar sector, future research should concentrate on unravelling these intricate interactions.

This comprehensive analysis underscores how industry dynamics, prevailing economic conditions, and management decisions play pivotal roles in the intricate and context-specific relationship between these financial metrics and EPS. Further research should consider these intricacies and their ramifications for the financial outcomes of the sugar sector, underscoring the importance of prudent economic management.

H1: A significant relationship exists between debt ratio and earnings per share.

H2: A significant relationship exists between operating cash flow ratio and earnings per share.

H3: There is a significant relationship between the current ratio and earnings per share.

H4: A significant relationship exists between quick ratio and earnings per share.

H5: There is a positive significance of the leverage ratio as moderate on earnings per share.

Framework

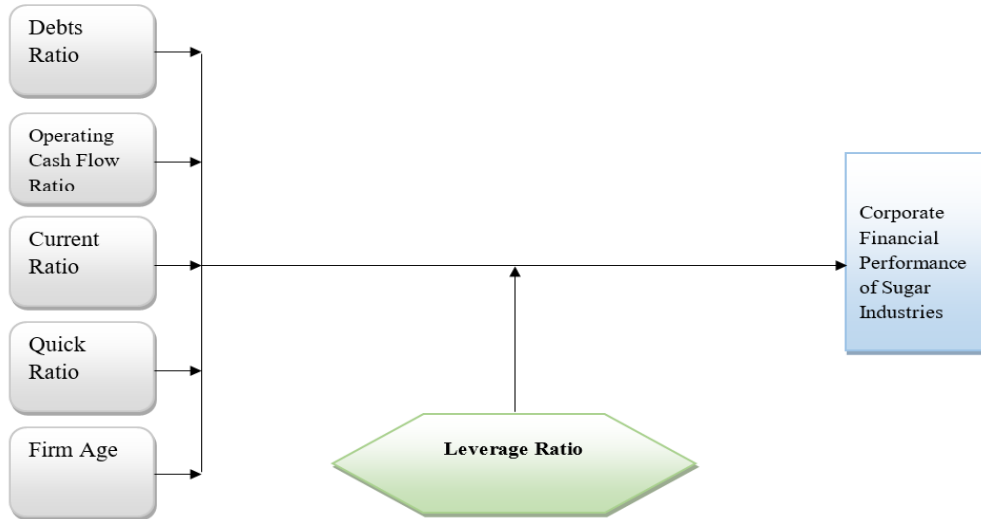


Figure 1: Framework

3 Material and Methodology

3.1 Data Collection

The primary objective of the current descriptive research is to examine a situation or an issue to clarify the relationship between variables. The Sugar Sector listed on the Pakistan Stock Exchange from 2012 to 2022 makes up the sample for this study. The study includes secondary data gathered from the Sample Company's Financial Statements Analysis of the Pakistan Stock Exchange. The debt ratio, operating cash flow ratio, current ratio, quick ratio, and firm age are the study of independent variables indicators and leverage ratio is taken as a mediator while the earning per share of corporate financial performance is its dependent variable.

3.2 Equation Model

To investigate the relationship between independent variables with moderate variables and dependent variables, following regression model was proposed as equations:

$$EPR_{it} = \alpha_{it} + \beta_1 DR_{it} + \beta_2 OCF_{it} + \beta_3 CR_{it} + \beta_4 QR_{it} + \beta_5 FA_{it} + \beta_5 LR_{it} + \xi_{it}$$

$$EPR_{it} = \alpha_{it} + \beta_1 DR_{it} * LR_{it} + \beta_2 OCF_{it} * LR_{it} + \beta_3 CR_{it} * LR_{it} + \beta_4 QR_{it} * LR_{it} + \beta_5 FA_{it} * LR_{it} + \xi_{it}$$

EPR = Earnings per share

DR = Debt ratio

OCF= Operating cash flow

CR = Current ratio

QR = Quick ratio

FA = Firm age

LR = Leverage ratio

4 Analysis

Table 1: Descriptive statistics

	EPS	DR	CR	DPR	QR	LR	FA
Mean	10.78	0.52	1.66	3.99	1.14	0.15	38.35
Median	4.24	0.52	1.17	0.00	0.73	0.09	35.00
Maximum	516.62	1.00	39.18	600.00	37.32	13.51	103.00
Minimum	-108.70	0.00	0.03	0.00	-15.67	-0.07	3.00
Std. Dev.	33.05	0.21	2.12	20.03	1.99	0.34	17.52
Skewness	8.18	-0.04	9.02	25.49	9.48	29.48	0.54
Kurtosis	103.13	2.40	127.79	749.39	145.47	1143.90	3.12

Earnings per share have a mean value of 10.78 with a maximum of 516.62 rupees and also has a minimum of 108.76. The debt ratio has a mean value of 0.52 with a maximum of 1.00 rupees and a minimum of 0.00. The current ratio of 1.66 has a mean value of 1.66 with a maximum of 39.18 and a minimum of 0.03. The quick ratio has a mean of 1.14 with a maximum of 37.32 and minimum-15.67. The liquidity ratio has a mean of 0.15 with a maximum of 13.51 and a minimum 0.07 of. Firm age has a mean of 38.35 with a maximum of 103 and a minimum of 3.0.

Table 2: Correlation Matrix

	EPS	DR	OCFR	CR	QR	LEV_	FIRM_AGE
EPS	1						
DR	-0.13348	1					
OCFR	0.28979	-0.1103	1				
CR	0.026536	0.47671	-0.07926	1			
QR	-0.02147	0.44831	-0.14119	0.983349	1		
LEV_	-0.17855	-0.0119	0.05641	0.024248	0.08473	1	
FIRM_AGE	-0.11672	0.06002	0.317563	-0.22332	0.27304	0.40577	1

These are the table's values, which show the magnitude and axis of the linear correlation (correlation) between two sets of variables. The range of correlation coefficients is from -1 to 1. A positive correlation (closer to 1) shows that the two variables tend to rise together as one rises. When two variables are correlated negatively (closer to -1) it means that while one variable rises, the other tends to fall. No linear communication exists between the variables if the correlation coefficient is 0.

The correlation value, which is about -0.134, points to a sluggishly negative linear association between EPS and DR. This indicates that EPS tends to fall slightly when DR rises. However, the association could be stronger. The correlation coefficient between EPS and OCFR is about 0.290, showing a dubious positive linear association. Again, the association is not particularly strong, but EPS tends to improve slightly when OCFR rises. The correlation value between EPS and CR is about 0.027, which points to a very slender positive linear link. The connection is insignificant. The correlation coefficient between EPS and QR is probably -0.021, indicating a fragile negative linear link. The connection is essentially nonexistent. An estimated -0.179 correlation value indicates a tenuous negative linear association between EPS and LEV. Although EPS has a minor tendency to decline as LEV rises, this relationship is not very significant. The correlation coefficient between EPS and the firm's age, which is about -0.117, shows a mild negative linear link. Although there is a minor correlation between EPS and firm age, it is not highly significant.

These correlation coefficients reveal the relationships between variables on a pair-by-pair basis.

Remember that correlation does not indicate causation, and the usually weak nature of the associations here suggests that additional variables or nonlinear interactions may be at work in explaining the relationships between these variables. Furthermore, correlation coefficients may not accurately reflect more complex interactions between variables because they only capture linear relationships.

Table 3: OLS results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	-16.761	7.239215	-2.31531	0.0216
OCFR	11.65968	2.113887	5.515755	0.0000
CR	7.463991	4.750504	1.5712	0.1177
QR	-8.7861	4.632426	-1.89665	0.0593
FIRM_AGE	-0.51777	0.084425	-6.13296	0.0000
LEV_	-151.15	31.74477	-4.76141	0.0000
C	28.4005	7.828486	3.627841	0.0004
R-squared	0.27459		Durbin-Watson	1.83775
Adjusted R-squared	0.253461		Prob(F-statistic)	0.0000

Note: Results are significant at 1%, 5% and 10% significance.

The regression equation is made up of each independent variable's coefficients. While maintaining all other variables constant, they reflect the anticipated change in the dependent variable (EPS) for a one-unit change in the respective independent variable. The standard error measures the precision or uncertainty related to each coefficient estimate. The coefficient estimate's distance from zero is quantified by the t-statistic, which measures standard errors. More absolute values denote relationships with more significance. The p-value assigned to each coefficient estimate represents probability. When the null hypothesis is assumed to be true, i.e. that the coefficient is zero, it provides the likelihood of experiencing a t-statistic that is as extreme as the one calculated. Smaller p-values suggest more significant correlations.

The amount of variance in the dependent variable (EPS) that the independent variables can explain is indicated by the coefficient of determination or R-squared. In this research, the model accounts for about 27.46% of the variance in EPS. R-squared has a variation called adjusted R-squared that considers the number of independent variables in the model. It evaluates how effectively the independent variables account for the variance in the dependent variable. The regression's standard error measures the average difference between actual values and expected values. Model selection criteria that assist in comparing the decent of fit of various models include the Akaike info criterion, Schwarz criterion, and Hannan-Quinn criterion. In general, lower numbers are preferable.

The statistic used to evaluate the model's overall significance is the F-statistic. It is suggested that at least one of the independent variables is important in explaining the dependent variable by a high F-statistic and a low p-value. Prob. (F-statistic) is the F-statistics p-value, which is 0.0000. The p-value represents the statistical significance of the model as a whole. The Durbin-Watson statistic measures the residual autocorrelation. Numbers significantly divergent from 2 may indicate autocorrelation, whereas numbers close to 1.837 suggest no autocorrelation.

The regression analysis results are summarized in Table 2, together with the coefficients of the independent variables, their statistical significance, and other goodness-of-fit statistics to evaluate how well the regression model performed overall in explaining the variation in EPS. The model's R-squared value appears to be around 27.46%, indicating that the independent variables account for a substantial portion of the variance in EPS.

Table 4: Moderation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR*LEV	-145.382	49.22604	-2.95336	0.0035
O CFR*LEV	102.3883	34.09749	3.002812	0.003
CR*LEV	95.50776	78.4068	1.218106	0.2246
QR*LEV	-107.612	78.20546	-1.37601	0.1703
FIRM_AGE*LEV	-4.99446	1.530793	-3.26266	0.0013
C	10.42887	2.357471	4.423751	0
R-squared	0.131173	Durbin-Watson stat		1.947454
Adjusted R-squared	0.110187	Prob		0.00002

Note: Results are significant at 1%, 5% and 10% significance.

The interaction terms describe how holding leverage ratio at a moderate level affects the relationships between the various variables (DR, OCFR, CR, QR, and FIRM AGE) and EPS. When leverage is kept at a modest level, an increase in DR of one unit is often accompanied by a drop in EPS of about 145.38 units. The p-value for the coefficient is 0.0035, below the standard significance level of 0.05. This shows that the interaction term debt ratio with leverage is statistically significant when the leverage ratio is moderate.

The interaction of the operating cash flow ratio with leverage is statistically significant when leverage is held at a reasonable level since a one-unit rise in the operating cash flow ratio is related to an average increase in EPS of about 102.39 units, and the p-value of 0.0030 is less than 0.05. When leverage is maintained at a moderate level, a one-unit rise in the company firm age is connected to an average decline in EPS of 4.99 units. The coefficient is statistically significant when the leverage ratio is moderate, according to the t-statistic of -3.263 and the p-value of 0.0013.

Overall, when leverage is modest, the debt ratio with leverage and operating cash flow with leverage ratio appear statistically significant and have insightful interpretations in the context of your regression study. These phrases imply that the degree of business leverage affects the link between the variables above and EPS. Conversely, current ratio and leverage, quick ratio with leverage ratio, and firm age with leverage ratio do not seem statistically significant when the leverage ratio is moderate, as their p-values are higher than 0.05.

5 Conclusion

A regression analysis and independent variable coefficients, statistical significance, and goodness-of-fit measures are summarized. About 27.46% of the variance in EPS can be explained by the model, which shows a modest contribution of independent variables. It broadens the study by adding terms for interactions. It gives these variables' coefficients, standard errors, t-statistics, p-values, and updated fit statistics for how well the extended model explains EPS variance. Correlation coefficients reveal the links between variables; however, they are typically not strong. This implies that additional elements or nonlinear interactions may be involved. It is important to remember that correlation does not indicate causality and that these coefficients only capture linear interactions, potentially omitting more complex relationships between the variables.

The practical implications of these financial ratios on earnings per share (EPS) can be summarized as follows: A high debt ratio, indicating substantial reliance on debt financing, can lead to increased interest expenses and heightened financial risk, which may result in a reduction in EPS. Conversely, a solid operating cash flow ratio, a high current ratio, and a high quick ratio typically serve as positive indicators for EPS. They signify a robust capacity to generate cash from day-to-day operations, meet immediate financial obligations, and maintain economic stability, all of which contribute to consistent profitability and shareholder value. Nevertheless, the precise impact

on EPS hinges on various factors, including industry dynamics, market conditions, and management decisions. It must be assessed within the context of the company's unique circumstances.

For future considerations, companies should aim to strike a balance between debt and equity financing, maintaining a sustainable debt ratio that does not overly burden earnings with interest expenses. Prioritising the enhancement of operating cash flow through efficient operations and prudent working capital management is essential, as it can positively influence earnings per share. Maintaining healthy current and quick ratios is also vital to ensure short-term liquidity and financial stability, safeguarding EPS during uncertain economic conditions. Furthermore, continuous monitoring and strategic adjustments to these financial ratios, aligned with the company's growth objectives and risk tolerance, are advisable to support long-term growth in EPS and shareholder value.

In conclusion, the relationship between debt ratio and earnings per share in the sugar industry is a subject of ongoing research, with differing conclusions reached by various studies. It is clear that this relationship is multifaceted, influenced by several variables, and may vary depending on the specific context of sugar companies. Future research should consider a more nuanced and industry-specific approach to shed further light on the intricate interplay between debt financing and earnings per share in the sugar sector.

The influence of modest leverage and liquidity ratios on the financial performance of Pakistan's sugar business is multidimensional. For starters, modest leverage indicates a balanced approach to finance, implying that sugar companies are deliberately managing their debt levels, allowing for increased investment and growth opportunities while avoiding financial risks. However, the influence of liquidity ratios emphasizes the importance of having enough cash reserves and short-term assets to meet obligations and capitalize on new opportunities. For the sugar industry, this means optimizing working capital management and guaranteeing effective cash flow operations to maintain operational agility and weather economic risks. While researching the impact of moderate leverage and liquidity ratios on the financial performance of Pakistan's sugar business gives valuable insights, there are several limits and areas for future research. To begin, the study's distinctiveness and unique operational dynamics may limit the generalizability of findings to other businesses or circumstances. Future studies could include comparative assessments across sectors or locations to identify larger patterns and trends.

Furthermore, the study's emphasis on moderate leverage and liquidity ratios may neglect other key financial indicators and variables that could substantially impact the sector's performance, such as operational efficiency, technological innovation, and regulatory dynamics. Future research efforts should include a broader collection of financial indicators and qualitative elements to present a complete picture of Pakistan's sugar sector's financial success.

6 References

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