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EXAMINING MACROECONOMIC FACTORS & CAPITAL STRUCTURE CHOICES IN PAKISTAN'S MANUFACTURING INDUSTRY: AN EMPIRICAL ANALYSIS

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KEYWORDS

GDP Growth Rate, Corporate Tax, Interest Rate, Financial Leverage, Exchange Rates, Stock Market Development, Public Debt

ABSTRACT

A company's financing choice is the influenced by both internal and external factors, with empirical research typically focusing more upon internal factors and less upon macroeconomic variables, mainly in emerging countries. This study aims to examine the macroeconomic factors that affect capital structure decisions in manufacturing industry in Pakistan, using data from the past decade (2012-2022). Study uses many models, including POLS, fixed effect, random effect and Hausman test, to analyze impact of macroeconomic factors on capital structure choices of listed manufacturing firms in Pakistan. Results indicate that GDP growth rate, corporate tax, and interest rate have negative link with financial leverage, but exchange rates, stock market development and public debt have a positive association with financial leverage. Study acmes upright of macroeconomic variables in evolving manufacturing sector in Pakistan, about stock market development, corporate taxes, & exchange rates. This study be useful for shareholders in determining proper investment and financing sources, and for financial leaders in determining the optimal level of capital structure.

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INTRODUCTION

Making appropriate financial decisions and investing in suitable securities is crucial to ensure the long-term growth of the businesses across various industries. To achieve longevity and prosperity, contemporary enterprises must employ a suitable combination of safeguards to fund organization (Karim, Naeem, Meero & Rabbani, 2023). The valuation of company is contingent on appropriate allocation of security measures to support fresh investments. Conversely, the valuation of company

may decline if the incorrect financing decisions are implemented (Han, Guo, Dang & Long, 2023). Numerous studies have examined the financial framework of companies, including trade-off and pecking order theories (Mundi, Kaur & Murty, 2022; Neykov, Krišťáková, Antov, Sedliačiková, Sloup & Šišák, 2022), agency costs, market timing, as well as the stock returns (Doruk, 2022). The determination of the capital structure or financial outcome is a crucial management decision as it significantly impacts returns of investors. The capital structure choice of enterprises is influenced by the market since it is necessary for them to have capital structure to progress. Therefore, the decision regarding the structure is crucial for asset growth. The importance of funds raised requires a critical examination leading to an alternative capital structure (Nguyen & Duong, 2022). In this linking, the application of debt financing in the company's capital structure, commonly known as financial leverage, has been the topic of significant interest among both the scholars and practitioners for an extended period.

The utilization of the financial leverage is the pivotal determinant of a company's level of risk and profitability (Boateng, Ahamed, Soku, Addo & Tetteh, 2022). Consequently, it is significant factor that can exert a profound impact on prosperity or adversity of a firm. Financial leverage has been a crucial factor in growth and development of firms in manufacturing sector. Throughout the course of time, scholars have conducted extensive research on correlation between financial leverage and multitude of economic factors (Venâncio & Jorge, 2022). Several factors contribute to economic landscape, including but not limited to the growth rate of Gross Domestic Product (GDP), corporate taxation, interest rates, exchange rates, stock market development, and public debt. The impact of exchange rates on a firm's decision to employ debt financing can be attributed to its effect on firm's competitiveness in international market. The present research article aims to examine correlation between aforementioned factors and financial leverage within the manufacturing industry (Jamil, Rasheed, Maqbool & Mukhtar, 2023). Previous research has demonstrated that there exists inverse correlation between financial leverage and many economic indicators, including GDP growth rate, corporate tax, and interest rate (Puci, Demi & Kadiu, 2023). The present findings suggest that an escalation in these variables is associated with a decrease in employment of debt financing within capital configuration of firms.

The causal mechanism underpinning this association is that expansion of the economy engenders a rise in profits and cash flow, thereby facilitating firms' ability to fund their operations via equity financing as opposed to debt financing. The cost of debt financing is affected by corporate tax and interest rates, which in turn impacts the preference of firms towards the utilization of debt in their capital structure (Agandhi, Bratamanggala, Astuty & Sungkowati, 2022). Manufacturing sector exhibits positive correlation between financial leverage and exchange rates, stock market progress, and public debt. The depreciation of a domestic currency can enhance competitiveness of exports, thereby augmenting the demand for a firm's merchandise, which ultimately results in a surge in profitability and cash inflows (Shaikh, Raza, Balal, Abbasi, Delioglu & Shaikh, 2022). Therefore, this can facilitate ability of companies to fulfill their financial liabilities. The use of debt financing may be influenced by the advancement of the stock market. The existence of a robust stock market offers firms an additional avenue for securing funding, facilitating the process of raising capital via

equity financing. The implementation of this strategy has the potential to mitigate the company's dependence upon the debt financing, in that way reducing its financial leverage (Yadav, Pahi & Gangakhedkar, 2022).

Problem Statement

The manufacturing sector is a significant contributor to the economic development of Pakistan. It is imperative for policymakers, investors, and business owners to understand the determinants that impact the capital structure decisions of the firms operating in this industry. Notwithstanding the considerable focus devoted to this subject in literature, there remains a lack of agreement regarding the precise macroeconomic determinants that influence capital structure choices within Pakistan's manufacturing sector. Furthermore, there is a lack of empirical research that specifically examines this industry, resulting in a knowledge gap regarding the capital structure decisions made by firms in response to macroeconomic conditions. In this connection, the objective of this article is to fill an important gap in the existing literature thereby conducting an empirical analysis of relationship between the macroeconomic factors as well as the capital structure decisions in the manufacturing sector of Pakistan.

LITERATURE REVIEW

The authors Thach and Oanh (2018) used PVAR to analyze influence of macroeconomic variables on a firm's capital structure during economic downturns and recoveries in Vietnam stock market. The study found that economic growth, bond markets, and credit markets positively affected the capital structure during downturn, while stock market had negative results. Economic development positively influenced capital structure during economic recovery, but remaining macroeconomic factors had negative consequences. Akhtar et al. (2019) conducted research on the capital structure of textile corporations listed on the Pakistan Stock Exchange, with liquidity as a moderator. The study found that changing the total debt ratio did not affect equity on asset and earnings per share, but it affected two other performance indicators (ROA and ROE). Liquidity significantly impacted the relationship between the debt ratio variable and the two performance variables. The ideal capital market hypothesis by Modigliani and Miller (1958) posits that the association's value is the liberated of asset capitalization. Local businesses can benefit from economies of scale, profitability, internationalization, and globalization in export domain that is primary driver of economic growth in the era of globalization.

Increasing product exports can boost profits in foreign currencies, help nation acquire raw materials, and aid in meeting its development needs. Rao et al. (2019) analyzed how various enterprises in India make capital structure decisions. The study identified 174 non-financial businesses as the sample, and GMM was used to identify organization drivers that affect SMEs' financing decisions in India. Profitability, reliability and responsiveness, size, age, development, flexibility, cash flow ratio, non-debt tax shield, and return on equity are all factors that are considered in the study. Januário and Cruz (2023) analyzed the impact of capital structure on productivity in four different Asian countries and found the negative correlation between leverage and profitability in three countries but a positive relationship between growth and leverage. The study also found a strong positive association between leverage and firm in each nation. Heshmati (2019) investigated the impact of

macroeconomic factors on the capital structure of non-financial enterprises listed on the Indian stock exchange and found that GDP, interest, and inflation have an effect on the capital structure decisions, with inflation having a statistically meaningful and positive effect on capital structure and long-term debt.

Nguyen and Nguyen (2020) investigated the relationship between non-financial organizations based on the Stock Exchange of Vietnam and their capital structures and levels of profitability, finding a negative association between their performance and the total liabilities to total assets ratio. Desai (2021) investigated how capital structure affected macroeconomic metrics like sales growth, profitability, and a proxy for the debt-to-equity ratio. The study found that the debt-to-equity ratio proxy had a significant detrimental impact on profitability. Saif-Alyousfi et al. (2020) investigated the determinants of the capital structure of firms listed on the Malaysia Stock Exchange, finding that profitability, growth, tax shield, liquidity, and cash flow had an inverse impact on leverage, while firm size and age had a positive relationship with leverage. Rasool et al. (2021) examined the relationship between leverage and elements of capital structure, finding that profitability and earning volatility negatively correlated with leverage, while firm size, Assets tangibility, non-debt tax shield, and liquidity positively correlated with leverage. Uddin et al. (2022) investigated the determinants of capital structure from listed firms in the Bangladesh Stock Exchange, finding that the firm's age, size, liquidity, Assets Tangibility, and non-debt tax shield were the core determinants of capital structure.

RESEARCH METHODOLOGY

The research aims to analyze the factors that impact capital structure decisions of manufacturing companies listed on the Pakistan Stock Exchange. This study utilizes panel data regression analysis to investigate influence of macroeconomic factors on capital structure of listed manufacturing businesses in Pakistan. The choice of the manufacturing sector was based on the availability of data, which provides a more comprehensive understanding of the results. The data for the research was obtained from secondary sources, specifically annual reports of manufacturing companies which comprises macroeconomic factors and firm-level variables. Study used sample of all manufacturing companies listed on the Pakistan Stock Exchange and analyzed data from 2017 to 2022, spanning over six years.

Table 1 Variable Description

Variable	Symbol	Description	Var-Status	E-Outcome
Leverage	LEV	Total debt / Total assets	Dependent	
Corporate Tax	CT	Total Tax Expenses / Income Before Tax	Independent	+
Exchange Rate	EXG	Domestic Exchange rate/ Foreign Exchange rate	Independent	+
GDP	GDP	Nominal GDP/ GDP deflator	Independent	-
Public Debt	PD	Public Debt/ GDP X 100	Independent	+
Real Interest Rate	RIR	Nominal Interest rate - Inflation rate	Independent	-

Stock Market Development	SMD	The ratio of market capitalization / GDP	Independent	-

The following is the empirical version used to determine the connection between macroeconomic variables and capital structure.

$$LEV_{it} = \alpha 0 + \beta 1GDPR_{it} + \beta 3_{z}RIR_{it} + \beta 4CT_{it} + \beta 5EXG_{it} + \beta 6PD_{it} + \beta 7SMD_{it} + \mu it$$

The research investigates the effect of macroeconomic circumstances on choices of capital structure made by manufacturing businesses that are listed on Pakistan Stock Exchange. The investigation is carried out with the use of panel data regression analysis. Panel data regression is suited for this research because it spans the period of six years (2017-2022) and the sample of all manufacturing businesses that are listed on the Pakistan Stock Exchange. Because it allows for the analysis of both time-series and cross-sectional data, panel data regression is appropriate for this study. In addition, descriptive statistics are used in the research to offer a summary of the sample data. These statistics include the mean, median, and standard deviation of the variables of interest, as well as the lowest and maximum values for those variables. In addition, a correlation analysis is used in the research to investigate the connection between the independent variables (macroeconomic parameters) and the dependent variable (capital structure). In addition, a regression analysis is used in the research to estimate the coefficients of the independent variables and their influence on the variable that is being studied (the dependent variable). The regression analysis will also make it possible to identify relevant factors, as well as the direction and size of their effect on choices about capital structure in the manufacturing business.

RESULTS OF STUDY

Table 2 Descriptive statistics of variables

	EXG	LEV	CT	GDPR	PD	RIR	SMD
Mean	14.66	15.03	14.06	15.21	14.01	13.98	15.04
Median	14.69	15.07	14.04	15.11	14.22	14.45	16.06
Maximum	19.14	19.89	18.02	19.56	19.02	18.72	17.44
Minimum	9.02	11.32	10.53	6.25	5.58	6.03	09.41
Std. Dev	1.89	1.38	1.63	1.32	1.45	2.12	1.84
Skewness	-0.24	0.81	0.04	-0.52	-0.98	-0.68	-0.49
Kurtosis	3.89	5.98	3.15	5.32	5.27	4.45	4.28

To confirm the normality of the data, the means and medians of the variables were compared, and it was found that they were almost identical, indicating that the data was normally distributed. The values of skewness and kurtosis were also within an acceptable range, and the standard deviation was reasonable, further supporting the normality of the data. However, the parameters of the study were negatively skewed except for corporate tax and financial leverage. The kurtosis value for financial leverage and GDP was high, but the rest of the variables had acceptable kurtosis values. In Table 2, the mean values of all the variables were similar, indicating that the data was normally

distributed. Since the data spanned ten years, there was possibility of abnormality due to increased variability and temporal disparities.

Table 3 Correlation Matrix

	EXG	LEV	CT	GDPR	PD	RIR	SMD
EXG	1						
LEV	0.62	1					
CV	0.66	0.73	1				
GDPR	0.64	0.72	0.72	1			
PD	0.68	0.69	0.70	0.55	1		
RIR	0.60	0.65	0.69	0.76	0.67	1	
SMD	0.61	0.69	0.52	0.52	0.59	0.53	1

Table 3 illustrates degree of association among study variables, which is moderate for all variables except for SMD and EXG. SMD has a stronger relationship with other variables compared to EXG. This suggests that KSE-100 index has a notable impact on macroeconomic factors of the economy and highlights significance of stock exchange in the overall performance of the economy. Moreover, relationship between public debt and exchange rate indicates the role of interest rates in economic performance. This implies that interest rates are commonly used as tool by governments to regulate economic activities in the country.

Table 4 Least Square Method

Variables	Coefficient	Std. error	t-statistic	Prob.
CT	-0.13	0.05	-1.92	0.000
EXG	0.08*	0.06	10.10	0.000
GDPR	-0.04*	0.05	-5.51	0.000
PD	0.73*	0.19	7.40	0.000
RIR	-1.12*	0.03	-20.81	0.000
SMD	0.12*	0.06	2.89	0.005
	R-squared	0.71	F-statistic	10.74
	Adjusted R-squared	0.69	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.75		

*p-value <0.01 at the significance level of 1%

Panel least square method results are presented. Results reveal that 71% of variation in dependent variable can be explained by selected independent variables in dataset. The Prob. F value indicates that model is good fit. Specifically, corporate tax, GDP, and interest rate deviation have statistically significant negative effect on financial leverage of textile companies. On other hand, stock market development, public debt, and exchange rate have a significant positive impact on the financial leverage of the sector.

Table 5 Fixed Effect Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
CT	-0.51	0.14	-2.56	0.001
EXG	0.09	0.04	6.49	0.000

GDPR	-0.02	0.02	-0.77	0.493
PD	0.32	0.14	3.50	0.030
RIR	-0.40	0.06	-11.89	0.000
SMD	0.43	0.09	6.44	0.000
	R-squared	0.72	F-statistic	9.74
	Adjusted R-squared	0.70	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.65		

*p-value <0.01 at the significance level of 1%

The outcomes of fixed effect method are presented in Table 5. It can be observed that the corporate tax, GDP and interest rate deviation have significant negative impact on financial leverage of firms, whereas stock market development, public debt, and exchange rate have a statistically significant positive impact on the financial leverage of textile industry. Additionally, the F-statistics indicate that the model is a good fit.

Table 6 Random Effect Model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
CT	-0.63	0.05	-2.21	0.023
EXG	0.14*	0.55	9.45	0.000
GDPR	-0.03*	0.05	-3.68	0.004
PD	0.45*	0.09	4.73	0.000
RIR	-0.19*	0.03	-15.06	0.000
SMD	0.62*	0.02	5.14	0.000
	R-squared	0.71	F-statistic	9.74
	Adjusted R-squared	0.69	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.76		

*p-value <0.01 at the significance level of 1%

Table 6 presents the outcomes of the random effect method, which indicate that financial leverage of manufacturing companies is negatively affected by corporate tax, GDP & interest rate deviation, whereas stock market development, public debt, and exchange rate have a statistically significant positive impact on it. Furthermore, the F-statistics signify that model is well-fitted. Additionally, the utilization of random effects aims to develop a mixed- or random effects model that captures the intricacies of the system we are trying to depict, particularly by considering interrelated structures and uncertainty.

DISCUSSION AND CONCLUSION

The results indicate that GDP growth rate, corporate tax, and interest rate have negative link with financial leverage (Januário & Cruz, 2023; Karim et al., 2023; Neykov et al., 2022; Puci et al., 2023), while exchange rates, stock market development, and public debt have positive association with financial leverage in the manufacturing sector (Rasool et al., 2021; Shaikh et al., 2022; Uddin et al., 2022). The findings of current research are in line with findings of previous researches (Puci et al., 2023; Venâncio & Jorge, 2022; Yadav, 2022). This research examines how macroeconomic factors impact Pakistani firms' capital structures. Until only, most empirical studies, especially in

developing nations, have concentrated on internal determinants, with little attention paid to the impact of macroeconomic variables on capital structure decisions. This study intends to investigate how macroeconomic factors affect a firm's capital structure and examine how they affect Pakistan's textile industry. Study found that debt-to-equity ratio proxy had significant detrimental impact on profitability. Secondary data from 2012 to 2021 has been used to determine results. Macroeconomic factors that affect capital structure choice in Pakistan listed textile companies are influenced by panel data regression.

The study's findings demonstrate that corporate taxes, GDP, and interest rates have a statistically significant negative impact on financial leverage of manufacturing companies. In contrast, public debt, exchange rates, and stock market performance positively impact the financial leverage of the textile industry of Pakistan. The study's findings will motivate investors, shareholders, and financial managers to gain insight knowledge about corporate financing behavior to maximize the value and performance of the company. This study will aid young firms in identifying and regulating factors that are more important for them to make decisions. Due to data availability restrictions, this study only included listed manufacturing companies in Pakistan and disregarded unlisted ones. Liquidity significantly impacted the relationship between the debt ratio variable and the two performance variables. Saif-Alyousfi et al. (2020) investigated the determinants of the capital structure of firms listed on Malaysia Stock Exchange, finding that profitability, growth, tax shield, liquidity, and cash flow had inverse impact upon leverage, firm size and age had positive relationships with leverage. Non-listed companies, still, may offer important information on macroeconomic factors and their impact on capital structure.

The analysis was restricted to just one KSE sector. Future research on the effects of macroeconomic factors on capital structure decisions should also focus on other PSX sectors. Further, to increase the significance and dependability of the findings, future research is needed to expand the sample size and study duration, select external factors that are not highly associated, and develop regression models. As this study is based on only the manufacturing sector of Pakistan, which does not cover all sectors of Pakistan. Hence, in future studies, all manufacturing sectors should take as samples for analysis. Non-listed companies may offer important information on macroeconomic factors and their impact on capital structure. Thus, a sample of non-listed companies should also be taken in the following research. The analysis was restricted to just one KSE sector. Future research on the effects of macroeconomic factors on capital structure decisions should also focus on other PSX sectors. Further, to increase the significance and dependability of the findings, future research is needed to expand sample size and study duration, select external factors that are not highly associated, and develop regression models.

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