

## Analyzing the Impact of Macroeconomic Factors on Capital Structure Decisions; Empirical Evidence from the Textile Sector of Pakistan

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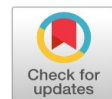
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**Abstract:** Internal (firm-specific) and external (macroeconomic) factors influence a company's financing choice. However, most empirical research has focused on internal factors, with little emphasis on macroeconomic variables' influence on capital structure decisions, especially in emerging countries. This study aims to explore the macroeconomic factors influencing the firm's capital structure and analyze the effect of macroeconomic factors on the textile area in Pakistan. This study has examined data from the preceding ten years, from 2012 to 2022. POLS, fixed effect model, random effect model, and Hausman test has been used to influence the macroeconomic determinants of capital structure choice in listed textile businesses in Pakistan. The study results reveal that GDP growth rate, corporate tax, and interest rate are negatively related to financial leverage. In contrast, other variables, including exchange rates, stock market development, and public debt, are positively associated with the textile sector's financial leverage. Moreover, the relationship between stock market development, corporate taxes, and exchange rates strongly suggests the high importance of macroeconomic variables in developing the textile sector in Pakistan. Practically, this study will contribute to how the shareholders decide and detect the appropriate investment and financing source. Furthermore, the study's outcomes should assist financial leaders in choosing the optimal level of capital structure.

**Keywords:** Capital structure, Macroeconomic variables, Ordinary least square, Hausman test.

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### INTRODUCTION

The financial decisions of modern-day businesses with suitable securities are essential for long-term business growth in each industry. For a modern firm to succeed and survive over the long term, the right combination of protection must be used to finance the company. The company's value will rise when the right mix of security is used to fund new investments, whereas the company's value will fall when the wrong financing choices are made.

Several studies have been established to observe the financial structure of the companies, for instance, trade-off and pecking order theories (Fama & French, 2002; Frank & Goyal, 2003; Goyenko et al., 2009; Kayhan & Titman, 2007), agency costs (Jensen, 1986), market timing (Baker & Wurgler, 2002;) and stock returns (Welch, 2004).

The capital structure or finance result is a management decision because it affects the investor's return. The market also influences capital structure choice because enterprises inherently need a capital structure to advance. Consequently, whether or not Asset growth necessitates a good structure decision. Interest in the funds raised necessitates a crucial investigation that results in another capital structure (Nirajini & Priya, 2013).

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A company's worth might rise or fall depending on how well its assets are suited to supporting new projects. As a result, it is crucial to understand how different internal and external factors affect the speed and change of the capital structure while making financial decisions. Management controls firm-specific internal variables but not macroeconomic consequences (Rehman, 2016; Burki, 2017).

In the fiscal year 2017, all economic sectors saw growth. The industrial and manufacturing industries expanded at 5.8 percent and 6.34 percent, compared to the agriculture sector's growth rate of 2.07 percent. In the fiscal year 2017, the service grew by 6.46 percent, contributing to overall GDP growth of 5.37 percent, the highest level since 2010–11. Numerous challenges the Pakistani economy has experienced in recent years have resulted in macroeconomic instability and stagnation. To draw foreign investment and reduce the budget deficit, Pakistan is implementing a phase of economic liberalization that includes privatizing government-owned businesses. Foreign exchange reserves exceeded \$24.0 billion in October 2016; Pakistan was listed as one of the ten developing economies in a 2016 BMI Research study focused on its manufacturing hub.

A company's capital structure refers to its funding sources, including ordinary and preferred shares and debt (Mujahid & Akhtar, 2014).

Despite the challenges, several indicators indicate a promising future. The World Bank estimates that poverty in Pakistan decreased from 64.3% in 2002 to 29.5% in 2014. The budget deficit in Pakistan has dropped from 6.4 percent in 2013 to 5.8 percent in 2017, and it continues to improve. The macroeconomic situation of the nation is improving, and Moody's has upgraded Pakistan's debt outlook to "stable." Foreign direct investment increased by 133.3 percent from the year 2012 to the year 2013 as a result of the government's new policies, including privatization, deregulation, and ease of doing business (Ministry of Finance, Economic Survey).

An organization's capital structure is a composite of the financing methods used. Due to its connection to risk and return, it is one of the first crucial decisions made by a firm (Pais, 2017).

Financial performance, liquidity, and profitability are crucial tools for stakeholders and a firm's current situation. Financial performance is influenced by a wide range of variables, including, among many others, capital structure and macroeconomic conditions. The capital structure or finance choice is a management judgment because it affects the investors' return. The market also influences capital structure choice because enterprises need capital to advance. Therefore, a capital structure decision is required on whether or not the assets need to grow (Booth et al., 2001, Frank and Goyal, 2009).

Companies that have significant volatility in their capital structure earn less profit and have stringent dividend policies as compared to those firms that have stable capital structures Campbell and Rogers (2018).

If the financial manager chooses to borrow capital through debt financing in an irrational manner, it could be expensive for the company since the cost of capital could rise, ultimately lowering the profit. As a result, the finance manager's poor financing choices could compromise the viability and stability of the company. Due to the requirement to increase outcomes and the impact such a decision has on the financial situation and stability of the company (Pinto et al., 2020).

Pakistan is a developing economy with excellent growth potential. Investment flow is crucial to a country's growth and success since it is required for corporate and industry development. The capital market manages and combines investment flows, allowing quicker economic growth. The current study focuses on the textile sector in Pakistan. Textile is Pakistan's most important industrial sector since it is its financial backbone. This industry is vital to Pakistan's economy since it contributes to its trade balance and employment creation. It exports over 60% of the country's total goods and employs around 40% of the manufacturing workforce (Devia, 2019; Raza et al., 2021).

### **Significance of the study**

This study investigates how macroeconomic factors affect the corporate capital structure of publicly traded companies in Pakistan's textile industry. Pakistan's business environment is extremely challenging the economy's slower growth caused by the oil crisis, high interest and inflation rates, the lack of law and order, etc. Therefore, it was crucial to understanding macroeconomic factors affecting businesses' financial decisions in this challenging climate.

## **Objectives**

The study's goals are to accomplish the following.

- To identify the critical role of capital structure decisions in Pakistan.
- To explore the impact of macroeconomic factors influencing the firm's capital structure.
- To suggest appropriate recommendations to concerned stakeholders.

## **REVIEW OF LITERATURE**

Thach and Oanh (2018) analyzed the role of critical macroeconomic variables on a firm's capital structure throughout downturns and recoveries in the economy. From Quarter 1 of 2007 to Quarter 2 of 2016, the authors utilized PVAR to gather information on 82 firms from the financial reports recorded on the Vietnam stock market. Economic growth, bond markets, and credit markets positively affected the capital structure during downturns, while the stock market had adverse results. Economic development positively influenced capital structure throughout the economic recovery, but the remaining macroeconomic factors had negative consequences.

Akhtar et al. (2019) studied the effect of the capital structure of those textile corporations listed on the Pakistan Stock Exchange, with liquidity as a moderator. The numbers were gathered utilizing spending plan data from 30 textile companies from 2007 to 2016. Ordinary least square was employed to inquire about relationships. The altering total debt ratio does not affect the three corporate performance criteria: equity on the asset and earnings per share. The debt ratio influences two key company performance indicators (ROA and ROE). When liquidity is utilized as a moderator, it considerably impacts the link between the debt ratio variable and the two performance variables, return on assets and earnings per share.

According to the ideal capital market hypothesis, which was put forth by Modigliani and Miller (1958), the association's regard is independent of the capitalization of assets. Since exports are the primary driver of economic growth in this era of globalization and allow any nation to quicken the process of economic growth, Local businesses can gain economies of scale, profitability, internationalization, and globalization in the domain of exports. Increasing product exports can boost profits in foreign currencies, allow the nation to acquire raw materials, and help it meet its development needs.

Rao et al. (2019) analyzed that various enterprises in India make capital structure decisions. There are 174 non-financial businesses in the sample. The GMM was used to identify the 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 taken into consideration by the study.

Chang et al. (2019) analyzed the impact of capital structure on productivity. This research focused on the economy of four different Asian countries and employed regression and correlation analysis on datasets from 2013 to 2016. The study tracked a significant negative connection between leverage and profitability in Kosdrea, Taiwan, and Hong Kong, yet a vast positive relationship between growth and leverage. Furthermore, the research highlights a robust positive association between leverage and firm in each nation.

Goel (2019) investigated the impact of macroeconomic factors on the capital structure of 255 non-financial enterprises listed on the Indian stock exchange between 2008 and 2017. It explored how macroeconomic variables like GDP, interest, and inflation affect capital structure decisions. Although the relationship is negative but not statistically significant regarding debt, it is proven to be negative and statistically significant regarding the capital structure induced by long-term debt to total assets. Inflation has a statistically meaningful and positive effect on capital structure and long-term debt. Panel regression results show a negative but not a statistically significant association between debt levels and interest rates.

Nguyen and Nguyen (2020) investigated the relationship between non-financial organizations based on the Stock Exchange of Vietnam, as well as the enterprises' capital structures and levels of profitability. Panel data from 488 publicly traded firms were analyzed during the research. The ROE was used to establish the capital structure's short- and long-term liability ratios and the total liabilities to total assets ratio. Non-financial have a negative association with their performance, as evidenced by the summed-up least square approach. On the Vietnam Stock Exchange.

Putri and Rahyuda (2020) investigated how capital structure affected macroeconomic metrics like sales growth, profitability, and a proxy for the debt-to-equity ratio. We compiled the annual reports of 51 industrial consumer

goods businesses listed in Indonesia between 2013 and 2018. According to studies, the debt-to-equity ratio proxy has a significant detrimental impact on profitability.

Saif-Alyousfi et al. (2020) investigated a study to find the determinants of the capital structure of firms listed on the Malaysia Stock Exchange. Panel data of 8270 observations from 870 firms was used from 2008 to 2018. The researcher used static panel estimation techniques as well as a GMM estimator. Results explained that profitability, growth, tax shield, liquidity, and cash flow have an inverse impact on the leverage. At the same time, firm size and age positively relate to leverage.

Rasool et al. (2021) examined to find the relationship between leverage and elements of capital structure. Leverage was used as a dependent variable, while the firm’s profitability, earning volatility, firm size, Assets tangibility, non-debt tax shield, and liquidity were used as the dependent variable. Data from 52 firms was used from the period 2015 to 2020. Results revealed 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 a study of factors of capital structure from the listed firm in the Bangladesh Stock Exchange. Energy sector firms were used for the analysis, and Panel data was used to get the desired results. The study’s outcomes specified that the firm’s age, size, Liquidity, Assets Tangibility, and non-debt tax shield were the core determinants of capital structure.

Maurice (2023). Investigated a study to find the impact of leverage on REIT enactment. Recent data was used to investigate the effect of key capital structure determinants on the RIET leverage ratio. The significance of the factors of capital structure found the leverage indicating endogenous influences on the use of leverage.

## DATA AND METHODOLOGY

The study investigates the determinants of capital structure for the textile sector, listed on the Pakistan Stock Exchange. This research is based on panel data. Using panel data regression, the influence of macroeconomic determinants on capital structure choice in listed textile businesses in Pakistan was employed; the textile sector has been chosen because data is available in a massive range compared to the rest of the sectors. It will show an accurate picture of desired results.

Data for this inquiry has been from secondary sources. The State Bank of Pakistan’s databases is a compiled data set on macroeconomic factors and firm-level variables. This study examined data from the preceding six years, from 2017 to 2022. The sample contained all textile companies listed on the Karachi Stock Exchange.

Table 1: Table for variable computations

Variable	Symbol	Description	Variable Status	Expected 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	-

### Estimation model

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

$$LEV_{it} = \alpha_0 + \beta_1 GDP_{it} + \beta_2 RIR_{it} + \beta_3 CT_{it} + \beta_4 EXG_{it} + \beta_5 PD_{it} + \beta_6 SMD_{it} + \mu_{it}$$

Whereas,

- $\alpha$  = Constant
- $\beta$  = coefficient
- LEV = Financial leverage
- GDPR = Rate of growth in gross domestic product
- RIR = Real interest rate
- CT = Corporate tax
- EXG = Exchange rate
- PD = Public debt
- SMD = Stock market development
- $\mu_i$  = Error term

### Descriptive statistics

Table 2: Descriptive statistics of variables

	LEV	CT	EXG	GDPR	PD	RIR	SMD
Mean	16.053	15.206	15.565	16.335	15.501	14.98	18.074
Median	16.014	15.084	15.706	16.494	15.726	15.045	18.306
Maximum	20.1	19.602	20.046	20.706	20.072	19.712	22.44
Minimum	12.431	11.593	8.426	7.625	6.908	6.033	10.401
Std. Dev	1.144	1.613	1.777	1.715	1.951	2.12	1.684
Skewness	0.763	0.04	-0.313	-0.612	-0.798	-0.668	-0.439
Kurtosis	6.683	3.195	3.991	5.432	5.07	4.345	4.208

The variables' means and medians are nearly identical, demonstrating that they are all regularly distributed. The values of skewness and kurtosis are in range. Moreover, the standard deviation is quite reasonable and justifies the normality of the data. Most of the study's parameters are negatively skewed apart from corporate tax and financial leverage. The value of kurtosis describes the height of the peak of the data. The kurtosis value of financial leverage and GDP is high. Apart from that, the variables' kurtosis value is quite reasonable.

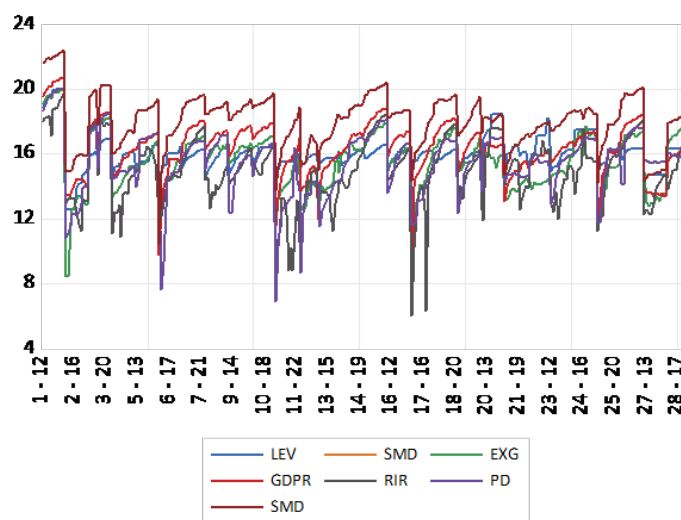


Figure 1: Mean table of macroeconomic variables

Figure 1 indicates the mean table of macroeconomic variables. The mean values of all variables are closer to each other, which justifies that the data set is usually distributed. As the data set contains ten years of data, there was a chance of abnormality due to more variability and temporal disparities. Still, the above graph nullifies any higher variability of mean values of all macroeconomic variables. One thing which is quite noticeable is that the

variation in the exchange rate is high, which indicates that over time, foreign exchange fluctuation remains a severe concern in the country's economic performance. Other than that rest of the variables have reasonable variations in their movement in the last ten years.

### Correlation matrix

A correlation characteristic is a function that depends on the distance in time or space between the random variables.

Table 3: Correlation matrix

	LEV	CT	EXG	GDPR	PD	RIR	SMD
LEV	1						
CT	0.6572	1					
EXG	0.6969	0.8431	1				
GDPR	0.6674	0.8871	0.9002	1			
PD	0.6638	0.6990	0.8067	0.7955	1		
RIR	0.6004	0.6751	0.7171	0.7676	0.7697	1	
SMD	0.6811	0.9050	0.9232	0.9702	0.7725	0.7397	1

Table 3 highlights the intensity of the relationship among the study variables. Moderate relationship lies among all variables. The relationship between GDP and SMD is high. Similarly, the relationship between SMD and EXG is apart from that; all other variables carry a moderate relationship. The relationship between SMD and the other variables is comparatively higher than all other variables. It highlights the influence of the KSE-100 index on the macroeconomic factors of the economy. Moreover, it helps understand the stock exchange's significance and the economy's overall performance. Similarly, the relationship between public debt and the exchange rate is also the role of interest rates in economic performance. It is understood that the part of interest is quite common in channeling economic activities, which is why different, governments use this as a tool to control the economic activities in the country.

### Ordinary least square method

Table 4: Least square method

Variables	Coefficient	Std. error	t-statistic	Prob.
CT	-0.1635	0.0855	-1.9112	0.0569
EXG	0.0658*	0.006	10.961	0.0000
GDPR	-0.0634*	0.0115	-5.501	0.0000
PD	0.7543*	0.1009	7.4730	0.0000
RIR	-1.1142*	0.0533	-20.881	0.0000
SMD	0.1902*	0.0666	2.8559	0.0046
	R-squared	0.608043	F-statistic	6.742204
	Adjusted R-squared	0.517859	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.706765		

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

Table 4 demonstrates the results of the panel least square method. The results indicate that 60% of variations in d selected variables explain 60% of variations in dependent variables correlation in the dataset. Prob. F value shows that the model is fit. The corporate tax, GDP, and interest rate deviation have a statistically significant but negative impact on the financial leverage of textile companies. Similarly, all other variables like stock market development, public debt, and exchange rate have a statistically significant positive impact on the financial leverage of the textile sector.

### Fixed effect model

Table 5: Fixed effect results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
CT	-0.2851	0.1114	-2.5586	0.0111
EXG	0.0419	0.0064	6.4729	0.0000
GDPR	-0.0152	0.0152	-0.9977	0.3193
PD	0.3208	0.1064	3.0150	0.0028
RIR	-0.8440	0.0746	-11.3097	0.0000
SMD	0.4433	0.0696	6.3640	0.0000
	R-squared	0.608043	F-statistic	6.742204
	Adjusted R-squared	0.517859	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.706765		

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

Table 5 indicates the results of the fixed effect method. The results highlight that corporate tax, GDP, and interest rate deviation have a statistically significant but negative impact on the financial leverage of firms companies. Similarly, all other variables like stock market development, public debt, and exchange rate have statistically significant positive effects on the financial leverage of the textile sector. Moreover, F-statistics highlight that model is fit.

### Random effect model

Table 6: Random effect model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
CT	-0.2363	0.0915	-2.5821	0.0103
EXG	0.0514*	0.0055	9.2945	0.0000
GDPR	-0.0383*	0.0105	-3.6385	0.0003
PD	0.445*	0.0971	4.5793	0.0000
RIR	-0.899*	0.0583	-15.4096	0.0000
SMD	0.3562*	0.0612	5.8134	0.0000
	R-squared	0.608043	F-statistic	6.742204
	Adjusted R-squared	0.517859	Prob. (F-statistic)	0.000
	Durbin-Watson stat	1.706765		

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

Table 6 highlights the results of the random effect method. The results suggest that corporate tax, GDP, and interest rate deviation have a statistically significant but negative impact on the financial leverage of textile companies. Similarly, all other variables like stock market development, public debt, and exchange rate have statistically significant positive effects on the financial leverage of the textile sector. Moreover, F-statistics highlight that model is fit. In the end, applying random effects to build a mixed- or random effects model is done to represent better the realism of the system we are trying to portray. We want to specifically better take into consideration linked structures and uncertainty.

### Hausman test

Table 7: Hausman test

Test Summary	Chi-sq. Statistic	Chi-Sq.d.f.	Prob
Cross-section random	41.8805	6.0000	0.0000

Table 7 highlights the results of the Hausman test. This test is used to identify which effect is more appropriate, either fixed or random. In this case, the fixed product is more appropriate. That is why we will go with the fixed effect model.

## CONCLUSION

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. Secondary data from 2012 to 2021 has been used to determine the results. The macroeconomic factors that affect the capital structure choice in Pakistan's listed textile companies have been influenced by panel data regression. The study's findings demonstrate that corporate taxes, GDP, and interest rates have a statistically significant negative impact on the financial leverage of textile companies. In contrast, public debt, exchange rates, and stock market performance positively impact the financial leverage of the textile industry of Pakistan.

## PRACTICAL IMPLICATIONS

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.

## LIMITATIONS OF THE STUDY

Due to data availability restrictions, this study only included listed textile companies in Pakistan and disregarded unlisted ones. Non-listed companies, however, may offer important information on macroeconomic factors and their impact on capital structure. Additionally, 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 KSE 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.

## FUTURE RESEARCHES

As this study is based on only the textile sector of Pakistan, which does not cover all manufacturing sectors of Pakistan. Hence, in future studies, all manufacturing sectors should take as samples for analysis. Similarly, Non-listed companies may offer important information on macroeconomic factors and their impact on capital structure. Therefore, a sample of non-listed companies should also be taken in the following research. Additionally, 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 KSE 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.

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