

# Analyzing the Firm and Country Level Determinants of Capital Structure in the Dynamic Political Regimes: A Case of Emerging Market Economy

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## Abstract

Capital structure acts as a backbone in the functioning of the firms. The disparities in the political system affect the whole economy of the country and this leads the firms to undergo financial stress and bankruptcy thus affecting their capital structure in several ways. This study analyzed and compared the firm level and country level variables of capital structure of firms during dynamic political regimes in the country. The sample comprised of secondary data of 50 companies from the 28 manufacturing sectors of Pakistan Stock Exchange for the time period 2005-2018. The data is divided into five regimes based on the tenure of the Prime Ministers of Pakistan. The results indicated that the manufacturing sector of Pakistan mostly relies on short term debt financing in all the political regimes. Firms which were highly profitable and had high liquidity did not rely much on the debt but in case of uncertain political conditions firms borrowed long term debt, when required, due to their high tangibility. The volatility risk of the firms was higher in regimes which comprised of global financial crises and the dismissal of the government. Due to high inflation and fluctuations in exchange rate the firms had to pay more interest on debt.

**Keywords:** Determinants of capital structure, Financial leverage, Pecking Order Theory, Trade-off Theory, Country level variables, Firm level variables, Panel data analysis

**JEL Classification:** D25, G18, G32, F62

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## Introduction

Capital structure plays a significant role in decision taking of firms because it occupies an essential place in the profitability of organizations. The studies related to capital structure have gained much importance in corporate finance after the great findings of Modigliani and Miller (1958) who were the founders of the research on the firm's capital structure and its relation with the value of the firm. The capital structure of firm is affected by two types of determinants that are: (a) the internal determinants which are specific for every firm and (b) the external determinants which are the macroeconomic conditions of a specific country as discussed by (Lane & Milesi-Ferretti, 2000). The study aims to analyze the firm and country level determinants of capital structure with reference to the pecking order theory and the tradeoff theory. Many previous researchers have found that country related factors along with the firm related factors also affect the capital structure of the firms (Demirgüç-Kunt & Maksimovic, 1996; Claessens et al., 2001; Bancel & Mitto, 2004).

Efficient political and legal system reduces information asymmetry because the managers of the organizations are restricted to pay out the profits rather than using them for their personal interests thus reducing the agency problem (Choy et al., 2011). The inconsistencies in the political system can affect the whole economy of the country. This leads the firms to undergo financial stress and bankruptcy thus affecting their capital structure in several ways. In case of countries having a corrupt system, debt and most probably short term debt is used more as a method of financing due to the fact that equity can be confiscated more easily. In the perspective that how it impacts the capital structure of the firms this shows the extent to which the rights of investors can be abused by the authorities and managers. Due to continuous struggle between the civilian and military governments the capital structure policies of the firms have been affected because whenever a new government takeovers it discontinues the existing policies with the opinion of rectifying them. Such disturbances affect the mode of financing of firms and therefore their capital structure too. Hence studying the determinants of capital structure of firms in a country that progressed with the enforcement and

establishment of new governments with new market-oriented legal systems will prove to be valuable in the firm's financial decisions.

Various attempts have been made and many experimental studies have been done on various business sectors of Pakistan in the literature to study the determinants of capital structure of firms of Pakistan and their profitability (Ahmad, [2014](#); Nasimi & Nasimi, [2018](#); Shah et al., [2004](#)). But there exists a gap in the existing research to observe capital structure determinants of various business sectors in different political regimes. To the best of knowledge an effort is done to fill this gap and the results of the study will be of significant importance for the managers of firms, the investors of financial markets and the policy makers because the firm and the country specific variables used in the study provide an enhanced understanding of the capital structure decisions and which strategies to adopt during dynamic political regimes of the country. The objective of the research is to analyze the capital structure of the companies of Pakistan during the eras of different governments by analyzing the firm and country level elements of capital structure. The research comprises of the review of some existing related studies followed by the research methodology used. The next section is based on the discussion of the statistical results with reasoning of their occurrences in light of previous literature. The last part comprises of the conclusions derived from the results followed by some limitations in the study and some recommendations for upcoming researchers.

### **Literature Review**

Capital structure acts as a backbone in the functioning of the firms and is determined by the amount of their debt and equity financing. The first theory of capital structure was proposed by Modigliani and Miller ([1958](#)) who presumed a perfect market with no insolvency cost, no agency cost, no taxes and asymmetric information, no operational costs and full competition and no arbitrage opportunities. They disclosed that the capital structure had no influence on the firm value. Later Modigliani and Miller ([1963](#)) found that due to the tax-deductibility of debt firm value increases when the leverage increases. The trade-off theory was established by Kraus and Litzenberger ([1973](#)) who proposed that the optimal financial leverage is the trade-off between the business risks and the benefits from

high debt. Guo and Wu (2009) in their research studied that according to the static trade-off theory at point when the tax advantage of borrowing is adjusted by cost of monetary distress the firms obtain their ideal capital structure. Hemmelgarn and Teichmann (2014) argued that firms can achieve an optimal capital structure if their tax benefit equals their bankruptcy cost.

The pecking order theory describes how managers use and select various sources of resources obtainable to finance the firm's operations (Gaud et al., 2005). Hatzinikolaou et al. (2002) quoted that when the inflation in the economy increases the government tries to formulate a monetary policy to reduce the interest rates which increase due to the increased rate of debt. As a result the private investment is reduced which affects the capital structure of the firms and in turn the GDP and the economic growth of the country also decreases. Durnev (2010) suggested that the capital structure of firms and its capital allocation is incompetent during the time of elections and the investment of the firms is least responsive to the prices of stocks during political uncertainty. Therefore the capital allocation and structure of firms differs during and after the changing of governments during the elections period.

### **Firm Specific Variables**

The nature of assets that a firm possesses governs the leverage of the firm. It has been researched that those firms issue more debt when they have more tangible assets (Shubita & Alsawalhah, 2012; Velnampy & Nireesh, 2012). The Pecking order theory and tradeoff theory predict that tangible assets are easy to collateralize and ensure a security of repayment for creditors as they are less exposed to information asymmetries and hold more worth in liquidation therefore encouraging a higher leverage (Lipson & Mortal, 2009; Sibilkov, 2009). According to the pecking order theory greater are the profitability and liquidity, then the need for debt financing decreases due to greater amount of internal funding. This in turn generates a negative association of leverage with profitability and liquidity (Fama & French, 2002; Bokpin, 2009; El-Masry et al., 2008). Whereas the tradeoff theory predicts an opposite relation of profitability with leverage and states that a firm should increase a company's debt (Gaud et al., 2005; Mazur, 2007; Qureshi, 2009).

Delcours (2007) stated that the empirical consequences for non-debt tax shield are indecisive because they specify a positive association in provisional economies. As the equity-holders are basically restricted in terms of their obligation, they are almost insusceptible to investment in extremely risky projects, but these are not advantageous from a bondholder's viewpoint as quoted by El-Masry et al. (2008). The TOT summarizes that a corporation faces higher volatility risk during the time of elections which indicates that higher interest rates will be demanded by the creditors and institutional investors hesitate to invest in the capital market (El-Masry et al., 2008; Mei and Guo, 2004). On the basis of the above literature, the firm level variables that were specified are profitability, tangibility, liquidity, non-debt tax shield, agency costs and volatility risk.

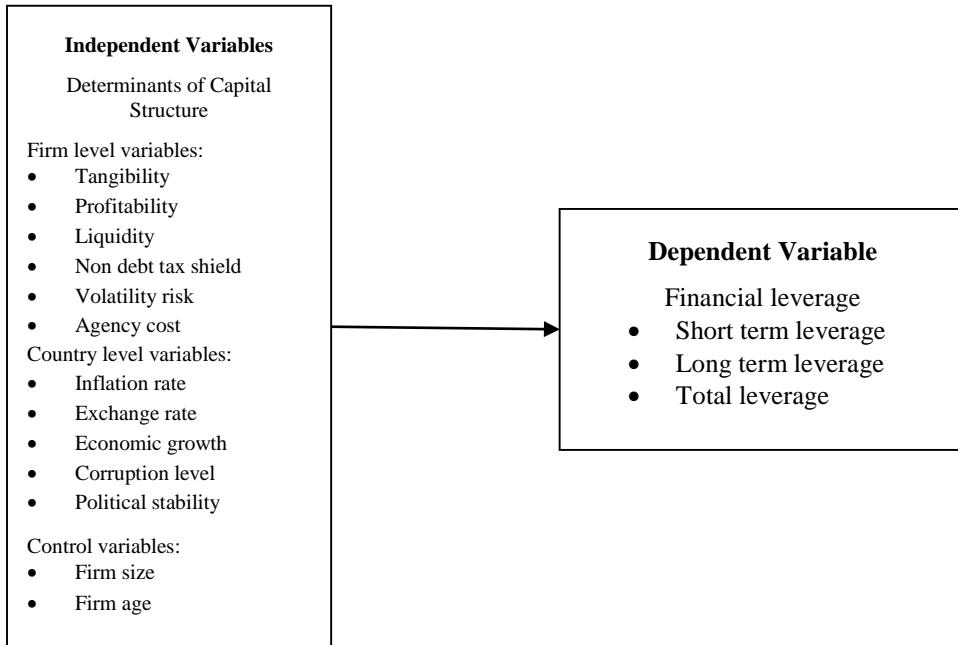
### **Country Specific Variables**

Chani et al. (2008) observed that there is an increase in debt due to growth in real GDP comparative to equity, because as higher is the GDP, the investment opportunities and the financial activities also increases in the country. Frank & Goyal (2009) stated that there is increased interest rate on debt in periods of high inflation therefore the firms incur more borrowing costs but get more tax shield benefit. The borrowing costs of the firms are affected as the loan pricing by the banks is done according to the response to the exchange rate and according to the disclosure of the firms to the exchange rate risk during imports and exports as justified by (Abzari et al., 2012). The level of corruption is expected to increase when the use of additional debt is allowed by the shareholders and the executives can misuse it to fulfill their personal plans (Kayo & Kimura, 2011). Due to increasing incidents of corruption in the country this variable is taken as a factor in determining the capital structure. Political stability plays an important role to control the capital assembling of organizations as stated by (Asteriou & Siriopoulos, 2000). It is measured by the political stability index which is an indicator of World Bank and is derived from the likelihood that government will be overthrown or destabilized by violence and terrorism (Amelot et al., 2018). The companies reduce their level of investments during the election period and

then increase it after the election period depending upon the economic condition of the country (Liu, [2010](#)).

## Figure 1

### *Conceptual Framework*



Following hypothesis were deduced on the basis of the previous researches for all the five Regimes:

**H<sub>01</sub>:** There is a significant impact of determinants of capital structure on the financial leverage of firms in political regime 1.

**H<sub>02</sub>:** There is a significant impact of determinants of capital structure on the financial leverage of firms in political regime 2.

**H<sub>03</sub>:** There is a significant impact of determinants of capital structure on the financial leverage of firms in political regime 3.

**H<sub>04</sub>:** There is a significant impact of determinants of capital structure on the financial leverage of firms in political regime 4.

**H<sub>05</sub>:** There is a significant impact of determinants of capital structure on the financial leverage of firms in political regime 5.

## **Methodology**

The population of the research comprises of firms from the manufacturing sector of Pakistan Stock Exchange. As Pakistan is a developing country having dynamic political environment and the stock market is significantly impacted by any news about the disturbances in the political system which in turn affects the behavior of investors and financing decisions of firms. The sample of the study included 50 companies from the 28 manufacturing sectors of PSX. The sampling technique used was proportionate random sampling which is useful when the population of the study has subgroups which differ immensely in number. In order to be included in the sample, a firm should be in the business for the whole study period and the secondary data for conducting the study was abstracted from the respective company's official websites and annual reports. The period of study is from the years 2005-2018. The sample of the research was divided into five regimes based on the tenure of the Prime Ministers of Pakistan from 2005-2018.

The first regime is based on the tenure of Prime Minister Mr. Shaukat Aziz whose tenure lasted till 2007 after which he left the office when the parliamentary term ended. The second regime is based on the tenure of PM Syed Yousaf Raza Gillani whose tenure lasted from 2008 to 2012 and then he was disqualified from the parliament for disobeying the laws of court. Raja Pervez Ashraf and later Mir Hazar Khan Khoso were appointed as the caretaker Prime Ministers for one year. Therefore the third regime is based on this one year that is 2013 which comprises of the tenure of these two caretaker Prime Ministers. The fourth regime is based on the tenure of Prime Minister Muhammad Nawaz Sharif whose tenure lasted from 2014 to 2017. Later he was disqualified from the seat on the basis of the Panama Case and then Mr. Shahid Khaqan Abbasi was appointed as the caretaker PM till 2018. Therefore the fifth regime is based on one year tenure i.e 2018 of this caretaker prime minister. The panel data analysis is used in the study which has also been used in the previous studies (Sheikh & Wang, [2011](#)). The following dependent,

independent and control variables stated in the framework have been used to test the hypotheses of the study.

**Table 1**

*Measurement and expected signs of variables*

<b>Variables</b>	<b>Abbreviations</b>	<b>Measurement</b>
Tangibility	TANG	Net fixed assets/ total assets
Profitability	PROF	Net income / total assets
Liquidity	LIQ	current assets / current liabilities
Non debt tax shield	NDTS	Depreciation expenses / total assets
Volatility risk	VR	standard deviation of the first difference of ((EBIT) / total assets)
Agency cost	AC	Operating expenses / sales
Inflation rate	IR	Annual inflation (consumer prices) rate
Exchange rate	EXR	Ln (yearly average exchange rate PKR/USD)
Economic growth	ECG	Annual per capita GDP growth rate
Corruption level	CL	Corruption perceptions index
Political stability	PS	Political stability index
Firm Size	FS	Natural logarithm of total assets
Firm Age	FA	Observation year – registered starting year



The equations for estimating regression model for all the five regimes where determinants of capital structure are independent variables and measures of leverage that are short term leverage, long term leverage and total leverage are dependent variables are written as:

$$\text{STL it} = \beta_1 (\text{TANG it}) + \beta_2 (\text{PROF it}) + \beta_3 (\text{LIQ it}) + \beta_4 (\text{NDTS it}) + \beta_5 (\text{VR it}) + \beta_6 (\text{AC it}) + \beta_7 (\text{IR it}) + \beta_8 (\text{EXR it}) + \beta_9 (\text{ECG it}) + \beta_{10} (\text{CL it}) + \beta_{11} (\text{PS it}) + \beta_{12} (\text{FS it}) + \beta_{13} (\text{FA it}) + \varepsilon \text{ it} \quad (1)$$

$$\text{LTL it} = \beta_1 (\text{TANG it}) + \beta_2 (\text{PROF it}) + \beta_3 (\text{LIQ it}) + \beta_4 (\text{NDTS it}) + \beta_5 (\text{VR it}) + \beta_6 (\text{AC it}) + \beta_7 (\text{IR it}) + \beta_8 (\text{EXR it}) + \beta_9 (\text{ECG it}) + \beta_{10} (\text{CL it}) + \beta_{11} (\text{PS it}) + \beta_{12} (\text{FS it}) + \beta_{13} (\text{FA it}) + \varepsilon \text{ it} \quad (2)$$

$$\text{TL it} = \beta_1 (\text{TANG it}) + \beta_2 (\text{PROF it}) + \beta_3 (\text{LIQ it}) + \beta_4 (\text{NDTS it}) + \beta_5 (\text{VR it}) + \beta_6 (\text{AC it}) + \beta_7 (\text{IR it}) + \beta_8 (\text{EXR it}) + \beta_9 (\text{ECG it}) + \beta_{10} (\text{CL it}) + \beta_{11} (\text{PS it}) + \beta_{12} (\text{FS it}) + \beta_{13} (\text{FA it}) + \varepsilon \text{ it} \quad (3)$$

## Results

The results of all the five political regimes of Pakistan have been discussed in order from 2005 to 2018. The correlations presented in table 2 present the extent and strength of linear relationship which exists between two variables. Many of the independent variables have an opposite relationship with the short term leverage and the long term leverage. Moreover, the correlation table shows negative correlation between the short term and long term leverage which is due to the fact that the firms use short term leverage as a substitute of the long term leverage. Whereas the correlation between the long term and total leverage is positive because long term debt is mostly used as a form of financing by the firms as compared to short term debt which is also evident from the high values of mean for LTL.

The descriptive statistics and VIF value of variables in tables 3, 4, 5, 6 and 7 help to indicate important trends which are helpful in accessing the results of the study. The mean of STL is higher than the mean value of LTL which indicates that the firms used more short term debt as compared to the long term debt (Qureshi, 2009). The low mean value of PROF shows that the firms of Pakistan were not highly profitable and that is the reason they relied more on short term debt as a mode of financing. The companies used their own resources for attaining short term debt which is reflected by the high mean value of LIQ. Due to the more debt usage and

low profitability the firms did not benefit from the NDTS as its mean is also low. The IR has high mean value and standard deviation which is also a reason of low profitability of the firms. Due to the dynamic political environment of Pakistan there seems to be volatility in the EXR and ECG. The level of corruption and the political instability in the country was also high as reflected by the high values of standard deviation.

The study comprised of firm level variables and macroeconomic variables. For such a database the multi-collinearity and autocorrelation between variables can be observed which can be problematic. The VIF values of all the variables are less than 7 which are not problematic (Akinwande et al., [2015](#)). It shows that there is no linear relation between variables and none of the variables can be predicted from any other variable. Some variables have been omitted because they are time invariant. This also happens because the entire cross sectional variance is absorbed by the other variables in the study and nothing is left to estimate the parameter that is associated with these time invariant variables (Bell et al., [2019](#)). In Regimes 3 and 5 the values of all country specific macroeconomic variables cannot be calculated as it is not a panel data and the regime contains only a single year.

**Table 2**  
*Correlations between variables*

	STL	LTL	TL	TANG	PROF	LIQ	NDTS	VR	AC	IR	EXR	ECG	CL	PS	FS	FA
FA																1.0000
FS															1.0000	0.311**
PS														1.0000	-0.081*	-0.070
CL													1.0000	-0.203**	0.211**	0.231**
ECG												1.0000	0.214**	0.321**	0.005	0.027
EXR											1.0000	0.055	0.876**	-0.375**	0.213**	0.228**
IR										1.0000	-0.569**	-0.750**	-0.617**	-0.313**	-0.113**	-0.139**
AC									1.0000	-0.019	-0.222**	0.142**	-0.154**	0.229**	0.142**	0.146**
VR								1.0000	0.074	0.000	0.001	0.000	0.000	-0.001	-0.029	-0.181**
NDTS							1.0000	-0.046	0.034	0.077*	-0.132**	-0.052	-0.137**	-0.004	-0.154**	-0.174**
LIQ						1.0000	-0.056	-0.106**	0.038	-0.027	-0.095*	0.097*	-0.067	0.118**	-0.059	0.026
PROF					1.0000	0.318**	-0.106**	0.069	0.263**	-0.127**	0.102**	0.090*	0.108**	0.035	0.124**	0.158**
TANG				1.0000	-0.294**	-0.417**	0.229**	-0.078*	-0.033	0.107**	-0.120**	-0.063	-0.125**	-0.001	-0.156**	-0.235**
TL			1.0000	0.179**	-0.320**	-0.377**	0.030	-0.104**	-0.102*	0.106**	-0.053	-0.092*	-0.079*	-0.043	0.043	-0.269**
LTL		1.0000	0.458**	0.533**	-0.288**	-0.217**	0.095*	-0.131**	0.019	0.175**	-0.225**	-0.082*	-0.235**	0.028	0.046	-0.254**
STL	1.0000	-0.195**	0.609**	-0.148**	-0.182**	-0.361**	0.000	0.001	-0.137**	-0.023	0.122**	-0.048	0.113**	-0.091*	-0.016	-0.060

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

**Table 3***Descriptive Statistics of Variables of Regime 1*

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>VIF with STL</b>	<b>VIF with LTL</b>	<b>VIF with TL</b>
<b>STL</b>	.0588	.6319	.3472	.1359			
<b>LTL</b>	.0057	.6538	.2366	.1596			
<b>TL</b>	.1729	.9719	.5741	.1771			
<b>TANG</b>	.0589	.8827	.5059	.1770	1.59	1.57	1.57
<b>PROF</b>	-.1969	.2701	.0439	.0824	1.48	1.51	1.48
<b>LIQ</b>	.2546	2.319	1.171	.3920	1.44	1.36	1.43
<b>NTDS</b>	.0101	.0829	.0388	.0159	1.28	1.26	1.25
<b>VR</b>	.0205	.1849	.0743	.0397	1.78	1.97	1.79
<b>AC</b>	.0130	.3239	.1417	.0834	1.77	1.77	1.75
<b>IR</b>	7.60	9.06	8.193	.6287	3.59	3.59	3.49
<b>EXR</b>	4.094	4.139	4.114	.0189	3.66	3.66	3.62
<b>ECG</b>	2.468	5.223	3.820	1.129	-	-	-
<b>CL</b>	21	24	22.33	1.251	3.76	3.77	3.70
<b>PS</b>	-2.43	-1.75	- 2.070	.2799	-	-	-
<b>FS</b>	19.41	25.60	22.35	1.466	1.19	1.10	1.19
<b>FA</b>	4	63	28.56	16.43	1.26	1.33	1.21

**Table 4***Descriptive Statistics of Variables of Regime 2*

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>VIF with STL</b>	<b>VIF with LTL</b>	<b>VIF with TL</b>
<b>STL</b>	.0489	.8696	.3949	.1689			
<b>LTL</b>	.0039	.6879	.2199	.1562			
<b>TL</b>	.1111	1.131	.6027	.1922			
<b>TANG</b>	.0532	.8894	.5002	.1826	1.17	1.48	1.49
<b>PROF</b>	-.1793	.2586	.0362	.0744	1.04	1.28	1.28
<b>LIQ</b>	.1300	1.920	1.016	.3295	1.22	1.46	1.48
<b>NTDS</b>	.0101	.0844	.0374	.0162	1.13	1.10	1.10
<b>VR</b>	.0205	.1849	.0743	.0396	1.15	1.11	1.10
<b>AC</b>	.0087	.2046	.0704	.0454	1.13	1.13	1.13
<b>IR</b>	9.68	20.29	13.88	3.546	5.61	6.12	6.16
<b>EXR</b>	4.108	4.508	4.377	.1401	6.76	4.19	4.21
<b>ECG</b>	-.601	1.329	.2538	.7439	1.76	5.93	5.87
<b>CL</b>	23.0	27.0	24.80	1.329	3.22	3.04	2.99
<b>PS</b>	-2.81	-2.57	- 2.676	.0783	2.49	2.02	2.14
<b>FS</b>	19.65	26.54	22.77	1.529	1.24	1.22	1.22
<b>FA</b>	7.0	68.0	32.58	16.47	1.17	1.24	1.23

**Table 5***Descriptive Statistics of Variables of Regime 3*

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>VIF with STL</b>	<b>VIF with LTL</b>	<b>VIF with TL</b>
<b>STL</b>	.0936	.9071	.3969	.1879			
<b>LTL</b>	.0028	.5022	.1917	.1418			
<b>TL</b>	.1383	1.138	.5784	.2146			
<b>TANG</b>	.0688	.8162	.4689	.1787	1.89	1.44	1.44
<b>PROF</b>	-.1486	.2968	.0604	.0876	1.14	1.53	1.53
<b>LIQ</b>	.1300	2.450	1.128	.4672	1.22	1.40	1.40
<b>NTDS</b>	.0083	.0611	.0337	.0136	1.94	1.22	1.22
<b>VR</b>	.0205	.1849	.0749	.0401	1.26	1.20	1.20
<b>AC</b>	.0084	.2306	.0749	.0561	1.23	1.39	1.39
<b>IR</b>	7.69	7.69	7.690	.0000	-	-	-
<b>EXR</b>	4.591	4.591	4.591	.0000	-	-	-
<b>ECG</b>	2.223	2.223	2.223	.0000	-	-	-
<b>CL</b>	28	28	28.00	.0000	-	-	-
<b>PS</b>	-2.6	-2.6	-2.600	.0000	-	-	-
<b>FS</b>	20.16	26.74	22.96	1.544	1.21	1.15	1.15
<b>FA</b>	12	69	35.01	16.26	1.29	1.26	1.26

**Table 6***Descriptive Statistics of Variables of Regime 4*

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>VIF with STL</b>	<b>VIF with LTL</b>	<b>VIF with TL</b>
<b>STL</b>	.0164	.9428	.4072	.1866			
<b>LTL</b>	.0032	.5214	.1618	.1234			
<b>TL</b>	.1113	1.004	.5533	.2025			
<b>TANG</b>	.0355	.8988	.4564	.1964	1.13	1.13	1.13
<b>PROF</b>	-.1386	.2789	.0614	.0778	1.01	1.05	1.04
<b>LIQ</b>	.0654	2.120	1.017	.3713	1.14	1.13	1.14
<b>NTDS</b>	.0056	.0834	.0351	.0164	1.14	1.14	1.14
<b>VR</b>	.0205	.1849	.0743	.0397	1.24	1.23	1.24
<b>AC</b>	.0104	.1880	.0713	.0405	1.16	1.15	1.16
<b>IR</b>	2.53	7.19	4.395	1.719	2.80	2.77	2.80
<b>EXR</b>	4.590	4.653	4.630	.0259	-	-	-
<b>ECG</b>	2.507	3.530	2.989	.4576	1.04	1.05	1.04
<b>CL</b>	29	32	30.75	1.302	-	-	-
<b>PS</b>	-2.48	-2.40	-2.443	.0378	2.82	2.79	2.82
<b>FS</b>	20.01	27.16	23.17	1.603	1.28	1.28	1.29
<b>FA</b>	13	73	38.09	16.47	1.19	1.19	1.19

**Table 7***Descriptive Statistics of Variables of Regime 5*

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>VIF with STL</b>	<b>VIF with LTL</b>	<b>VIF with TL</b>
<b>STL</b>	.0493	.7622	.4165	.1815			
<b>LTL</b>	.0059	.4071	.1413	.1002			
<b>TL</b>	.0508	1.144	.5632	.2189			
<b>TANG</b>	.0914	.9224	.4425	.2099	1.49	1.49	1.49
<b>PROF</b>	-.0733	.2104	.0574	.0635	1.22	1.22	1.22
<b>LIQ</b>	.1200	2.077	1.091	.4108	1.48	1.48	1.48
<b>NTDS</b>	.0061	.0559	.0290	.0124	1.25	1.25	1.25
<b>VR</b>	.0205	.1849	.0743	.0399	1.08	1.08	1.08
<b>AC</b>	.0132	.1717	.0692	.0373	1.28	1.28	1.28
<b>IR</b>	5.08	5.08	5.080	.0000	-	-	-
<b>EXR</b>	4.750	4.750	4.750	.0000	-	-	-
<b>ECG</b>	3.285	3.285	3.285	.0000	-	-	-
<b>CL</b>	33	33	33.00	.000	-	-	-
<b>PS</b>	-2.27	-2.27	-2.270	.0000	-	-	-
<b>FS</b>	20.09	27.23	23.46	1.613	1.36	1.36	1.36
<b>FA</b>	17	74	40.61	16.57	1.22	1.22	1.22

The Kolmogorov Smirnova and Shapiro-Wilk tests were done to check the normality of the dependent variables NSTL, NLTL and NTL of all regimes. The p-values of both tests were greater than 0.05 which showed that the data is normal. The histograms of the variables were also bell shaped which means that the mean of the data is equal to the medium of the data. Het-test was also done to ensure that the problem of



heteroskedasticity no longer existed whose results are shown in table 8. In case the problem of heteroskedasticity existed it was rectified using the method Weighted Least Squares Regression.

**Table 8**

*Hetttest results of variables of all Regimes*

<b>HETTEST</b>	<b>Dependent Variables</b>		
	<b>STL</b>	<b>LTL</b>	<b>TL</b>
<b>Prob &gt; chi2</b>			
<b>Regime 1</b>	0.2810	0.7934	0.2825
<b>Regime 2</b>	0.7431	0.1309	0.4489
<b>Regime 3</b>	0.3761	0.3112	0.1423
<b>Regime 4</b>	0.9941	0.4110	0.6646
<b>Regime 5</b>	0.1085	0.8383	0.1112

The panel data was used in the formation of the regression models for the three proxies of leverage that are STL, LTL and TL. The results of the regression helps to identify the extent, to which the explanatory variables including firm level and macroeconomic variables tends to determine the capital structure of the firms. The table 9 shows the results of the regression analysis. The Hausman test in table 9 is used to identify whether fixed effect or random effect approach is more suitable for each proxy of leverage in each regime. Some of the variables appear to be omitted in the regression tests this is because they had time invariant values with time invariant effects so they were automatically omitted by the software during regression. This also happens because the entire cross sectional variance is absorbed by the other variables in the study and nothing is left to estimate the parameter that is associated with these time invariant variables (Bell et al., [2019](#)). Therefore the random effect is suitable because it estimates the effect of omitted variables. These omitted variables are not correlated with the independent variables in the model so random effect is best to produce results with unbiased estimates of

coefficients, having smallest standard errors and uses all the data available as compared to fixed effect (Bell et al., [2019](#)).

**Table 9***Regression Results*

Independent variables	Dependent Variables		
	STL	LTL	TL
<b>HAUSMAN TEST</b>			
<b>Prob&gt;chi2</b>			
Regime 1	0.0000	0.1243	0.9711
Regime 2	0.9165	0.5937	0.9711
Regime 4	0.0709	0.5310	0.9608
<b>Adjusted R<sup>2</sup></b>			
Regime 1	0.585	0.670	0.572
Regime 2	0.776	0.492	0.300
Regime 3	0.834	0.444	0.470
Regime 4	0.615	0.268	0.312
Regime 5	0.843	0.320	0.242
<b>F-Statistics</b>			
Regime 1	4.894	8.195	2.728
Regime 2	67.677	19.032	8.418
Regime 3	23.253	4.317	3.981
Regime 4	26.862	7.694	6.211
Regime 5	25.571	2.351	1.598
<b>Durbin Watson</b>			
Regime 1	1.620	1.619	1.601
Regime 2	2.068	1.998	1.763
Regime 3	2.087	1.699	1.840
Regime 4	1.977	1.690	1.821
Regime 5	1.972	1.906	1.661

	<b>COEF.</b>	<b>P&gt; t </b>	<b>COEF.</b>	<b>P&gt; t </b>	<b>COEF.</b>	<b>P&gt; t </b>
<b>TANG</b>						
Regime 1	-0.47312	0.000	0.42778	0.000	-0.11019	0.018
Regime 2						
Regime 3	0.01189	0.218	0.53792	0.000	-0.03606	0.601
Regime 4	-0.01464	0.416	0.38659	0.001	-0.22024	0.171
Regime 5	-0.00587	0.405	-0.00895	0.026	-0.15102	0.059
	-0.33243	0.019	0.13767	0.047	-0.23645	0.153
<b>PROF</b>						
Regime 1	-4.16246	0.000	-1.08307	0.233	-2.21270	0.092
Regime 2	0.00008	0.474	-0.28599	0.009	-0.52798	0.001
Regime 3	0.00023	0.087	-0.30529	0.155	-0.62094	0.062
Regime 4	-0.00004	0.918	-0.00003	0.852	-0.14819	0.410
Regime 5	-0.26266	0.522	-0.32275	0.131	-0.64801	0.188
<b>LIQ</b>						
Regime 1	-0.06608	0.003	0.01932	0.385	-0.02507	0.012
Regime 2	0.07405	0.000	0.07327	0.006	-0.16238	0.000
Regime 3	0.05125	0.036	0.03100	0.433	-0.21361	0.001
Regime 4	0.01619	0.098	0.00443	0.645	-0.24372	0.000
Regime 5	-0.13514	0.058	-0.02124	0.556	-0.14209	0.043
<b>NTDS</b>						
Regime 1	6.00704	0.565	-5.46482	0.612	-10.2681	0.525
Regime 2	0.00043	0.709	-0.38797	0.404	-0.51909	0.438
Regime 3	0.00118	0.609	-0.40059	0.752	0.37371	0.848
Regime 4	-0.00025	0.730	-0.00037	0.374	-0.15711	0.842
Regime 5	3.06122	0.156	1.19878	0.279	2.63783	0.302
<b>VR</b>						
Regime 1	3.58080	0.097	-6.97986	0.005	-0.75172	0.402
Regime 2	0.00329	0.138	-0.27995	0.142	-0.70395	0.011

Regime 3	0.00292	0.334	-0.04465	0.915	-2.38699	0.001
Regime 4	0.00345	0.172	-0.00063	0.695	-1.16143	0.000
Regime 5	-0.18256	0.766	-0.24499	0.440	-0.69705	0.670
<b>AC</b>						
Regime 1	-1.06002	0.134	0.98411	0.181	-0.37681	0.063
Regime 2	0.00209	0.139	0.04573	0.784	-0.22244	0.357
Regime 3	0.00118	0.301	-0.17078	0.588	0.48470	0.320
Regime 4	0.00196	0.110	-0.00214	0.074	-0.52541	0.141
Regime 5	-0.11776	0.869	0.32262	0.383	-0.36342	0.670
<b>IR</b>						
Regime 1	0.00187	0.485	0.00041	0.884	0.00319	0.006
Regime 2	0.52544	0.548	0.00227	0.648	-0.00295	0.002
Regime 3						
Regime 4	0.02519	0.799	0.10814	0.095	-0.00184	0.018
Regime 5						
<b>EXR</b>						
Regime 1	-0.42421	0.265	-0.02352	0.929	0.48223	0.056
Regime 2	3.28177	0.081				
Regime 3						
Regime 4						
Regime 5						
<b>ECG</b>						
Regime 1						
Regime 2	-0.00050	0.834	0.00603	0.820	-0.01820	0.634
Regime 3						
Regime 4		0.842	-0.17425	0.888	0.07265	0.740
Regime 5						
<b>CL</b>						
	0.00054	0.265	0.00005	0.929	0.00067	0.006

Regime 1			-0.01034	0.269	-0.00354	0.792
Regime 2						
Regime 3						
Regime 4						
Regime 5						
<b>PS</b>						
Regime 1	1.46967	0.037	0.02483	0.852	0.06591	0.732
Regime 2	-0.53218	0.801	-0.74601	0.482	0.19385	0.730
Regime 3						
Regime 4						
Regime 5						
<b>FS</b>						
Regime 1	0.00018	0.382	0.00079	0.001	0.00046	0.023
Regime 2	1.02049	0.903	0.01991	0.000	0.01524	0.042
Regime 3	-1.96143	0.865	0.03598	0.002	0.00864	0.604
Regime 4	-0.01256	0.002	0.01856	0.001	0.02289	0.008
Regime 5	-0.00376	0.825	0.01690	0.049	0.02904	0.157
<b>FA</b>						
Regime 1	0.00000	0.879	-0.00002	0.367	-0.00002	0.127
Regime 2	0.39483	0.721	-0.00135	0.492	-0.00364	0.300
Regime 3	1.30396	0.876	-0.00139	0.200	-0.00364	0.032
Regime 4	4.37426	0.961	1.69702	0.114	-0.00435	0.000
Regime 5	-0.00181	0.254	-0.00090	0.269	-0.00375	0.051

\*Note: Values of some variables were omitted because they had time invariant values

## Discussion

The linear regression results presented in table 9 of Regime 1 showed that 58.5% variance in short term leverage, 67% variance in long term leverage and 57.2% variance in total leverage, as evident from the values of R-

square. The results of Regime 2 explained 77.6% variance in short term leverage, 49.2% variance in long term leverage and 30% variance in total leverage, as evident from the values of R-square. The data of Regime 3 was based on time period of one year so it was not considered as panel data with 83.4% variance in short term leverage, 44.4% variance in long term leverage and 47% variance in total leverage, as evident from the values of R-square. The results of Regime 4 explained 61.5% variance in short term leverage, 26.8% variance in long term leverage and 31.2% variance in total leverage, as evident from the values of R-square. The data of Regime 5 was also based on time period of one year so it was not considered as panel with 84.3% variance in short term leverage, 32% variance in long term leverage and 24.2% variance in total leverage, as evident from the values of R-square.

TANG had significant negative relationship with STL in Regime 1 and 5 but it is insignificant in Regime 2, 3 and 4. This showed that greater is the ratio of short term leverage of firms, lower is their tangibility. However it showed a significant positive relationship with LTL in all the regimes except regime 4 which means that higher is the tangibility higher is the chance that the firms will use more long term debt irrespective of its maturity (Booth et al., [2001](#); Velnampy & Niresh, [2012](#)). The pecking order theory and trade-off theory state that the agency costs associated with long term debt are low when tangibility is high because tangible assets can be collateralized easily and carry more value during liquidation with less chances of default risk in times of dynamic political conditions (Frank & Goyal, [2009](#)). PROF had insignificant relationship with long term leverage in almost all regimes except in regime 2 which is consistent with the previous studies (Qureshi, [2009](#); Sheikh & Wang, [2011](#)). The POT also states that the firms with high profitability prefer to utilize their internal funds and earnings for financing instead of using debt or other external sources. The PROF had significant negative relationship with leverage in regime 2 because of the changes in the economic reforms in 2008 due to the global financial crises as the managers of the firms must have preferred leverage to finance their businesses but higher was amount of debt taken lower was the profitability of the firms.

LIQ had a significant negative relationship with total leverage of the firms in all the regimes and firms which have high liquidity prefer to rely less on the debt mode of financing (De Jong et al., 2008). However there was positive significant relationship of liquidity with STL and LTL in regime 2. Regime 2 being the time of global financial crises, the firms obtained short term and long term debt to finance their business operations and higher was the liquidity of the firms, higher was their ability to use short and long term debt in financing. The NDTs showed insignificant relationship with all proxies of financial leverage. The reason of this insignificance in Pakistan is that it is a tax economy and the firms rely more on the financial leverage. This provides tax shield benefit as there is less payment of taxes due to payment of interest on debt and the impact of non-debt tax shield becomes insignificant due to more significance of tax shield also illustrated by the trade-off theory. The NDTs in tax economies plays both the role of collateral and a substitution effect (Joyo et al., 2017).

The VR was negatively significant with LTL in regime 1 and with TL in regimes 2, 3 and 4 which were consistent with studies of Chen & Kou (2009). Due to the dynamic political conditions and the dismissal of government especially in regime 3, the volatility in earnings of the firms increased. As a result the risk of bankruptcy also increased so creditors demand more interest on the debt and the banks stop lending money to firms. Due to political pressure, the banks might have given debt in regime 1 and 3 but due to high chances of default the volatility risk showed a negative relationship with debt level also illustrated by trade off theory (Bahsh et al., 2018; Ahsan et al., 2016; Khwaja & Mian, 2005). The AC had insignificant relationship with all proxies of financial leverage in all regimes. The reason of this insignificance is that due to dynamic political conditions the board of directors of the companies tries to maintain strict corporate governance policies. As a result the agency costs and the asymmetric information in the companies tend to be lesser because the board of directors themselves perform the duties of the managers and maintain transparency by keeping a strict check on the cash flows of the companies so that there is no misinterpretation (Ahsan et al., 2016).

The IR showed positive significant relationship with TL in Regime 1. According to Trade-off theory due to an increase in the inflation rate there is volatility in the price structure of the firms and as the prices increase their ability to generate more revenues increases and they can afford debt financing because they have the ability to payback their obligations (Frank & Goyal, [2009](#); Köksal & Orman, [2015](#)). There is significant negative relationship of IR with TL in regime 2 and 4 because of the global financial crises and dismissal of government. The uncertainty in inflation rate increased which resulted in the increase in business risk. Moreover, those firms which used short term financing had to experience volatility in their cash flows and tax shield benefit associated with debt therefore they preferred to issue equity as compared to long term financing (Booth et al., [2001](#); Hatzinikolaou et al., [2002](#)).

The EXR had an insignificant relationship with all proxies of leverage in all Regimes. This is due to the fact that the firms try to take measures to hedge their debt from the exposure of currency risk by using derivatives like forward, future and option contracts. Due to the global financial crises the domestic currency had to experience fluctuations and the firms had to experience high borrowing costs on short term debt. As the firms borrowed money more from banks and the banks are aware of the exposure to the exchange rate risk and the fluctuations in the business environment so they kept high costs in pricing the short term debt (Broll & Wong, [2006](#)). The ECG had insignificant relationship with all proxies of financial leverage. The reason is that the economic growth in the country is not up to the optimal level and the spending of government is lesser towards the investments in the manufacturing sector. The firms do not consider the stability of economic growth and adjust their capital structure by utilizing their earnings to borrow short term debt and pay their long term debt. Therefore it follows both a combination of trade-off theory and pecking order theory while considering the impact of ECG on the capital structure (Abzari et al., [2012](#)).

The CL had significant positive relationship with TL in regime 1 because greater is the level of corruption the firms tend to borrow more debt in that time and use less equity. This is due to the fact that there is less regulation by the legal system and the managers have a chance of



using the debt to fulfill their personal needs with few damaging costs (Kayo & Kimura, [2011](#)). The PS has significant positive relationship with STL in regime 1 because due to more political instability the firms do not prefer to borrow for long term due to political interference and prefer to borrow on short term basis to avoid the chances of financial friction in the future (Amelot et al., [2018](#)). The PS has insignificant relationship with all proxies of leverage in regime 4. This may be due to the fact that once the firms gain more access to the public debt they prefer more use of financial leverage and then the financial frictions generated due to the dynamic political instability lessens and becomes insignificant in determining the capital structure of the firms (Faulkender & Petersen, [2005](#)).

The FS had significant positive relationship with LTL in all the regimes. The large size firms rely more on long term debt because they have high tangibility with less chances of bankruptcy and the creditors also lend money easily on long term basis as evident from trade-off theory (Gaud et al., [2005](#); Kayo & Kimura, [2011](#); Sheikh & Wang, [2011](#)). The FA had significant negative relationship with TL in the regimes 3 and 4 and insignificant relationship in regimes 1, 2 and 5. According to the Pecking-Order Theory as the firms grow older they have more market knowledge and power as compared to the new emerging firms and more cash flows in the form of retained earnings that they no longer need external aid for financing their operations (Ahsan et al., [2016](#))

### **Conclusion**

The study was carried out to analyze the determinants of capital structure with contribution of comparison of different political regimes. The manufacturing sector of Pakistan mostly relies on short term debt financing as compared to the long term financing in all the political regimes. The firms with high tangibility borrowed long term debt due to their high tangibility. This was in accordance to the Trade-off Theory because their tangibility served as collateral to secure the long term debt against risk caused due to the political uncertainty. Whereas the firms which were highly profitable and had high liquidity they did not rely much on the debt mode of financing. They preferred to use their internally generated cash flows in form of retained earnings to finance their operations in times of political crisis. As Pakistan is a tax based economy

the tax shield benefit associated with debt due to payment of interest has been more significant in all the five regimes. As a result, the non-debt tax shield which is provided by depreciation of assets has a lesser impact on the capital structure of firms. In regimes which comprised of global financial crises and the dismissal of the government, the financial institutions were reluctant to give debt due to high risk which resulted in a negative relationship between volatility risk and financial leverage. The agency costs arising due to political interference are not significant because the board of directors of the firms keep a strict check on their cash-flows to avoid any asymmetric information with conflict of interest arising due to political interference.

Along with the firm level variables the macroeconomic variables also play an important role in the capital structure decisions of firms. The inflation in the country increased the interest on debt and the firms gained more tax shield benefit. The exchange rate also plays an important role because firms tend to borrow more short term debt to fulfill their financial needs in dynamic political circumstances in order to avoid high interest rate on long term debt. The economic growth in Pakistan has also not been up to the mark and the government's spending in manufacturing sector has not been much. Due to the increased level of corruption and political instability in the country there was less regulation and weak governance so managers utilize more debt especially short term debt to fulfill their personal needs and to incur few damaging costs. Therefore the dynamic political environment of Pakistan has impacted the capital structure decision of the firms and both firm level and country level variables are important in determining it. There should be strong governance systems to control the macroeconomic variables like inflation, corruption level etc. to reduce the volatility arising at the firm level which in turn effects the debt structure of firms.

The sample size of the study was limited to 50 firms from the manufacturing sector of PSX. The future researchers can continue their study by increasing the sample size. The study includes comparison and analysis of only five political regimes of Pakistan. The effect of more political regimes of the history can be studied with a comparison of military and political parties' tenures in Pakistan. The study was done in a

tax economy whereas non tax economies can give a different result for example variables like non debt tax shield whose results can be insignificant due to tax shield benefit in a tax economy. More firm and country level variables can be used in the study other than these variables as determinants of capital structure. The study is conducted on one country future researchers can use data of other countries also including a comparison of those countries with each other.

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