Global Management Journal for Academic & Corporate Studies (GMJACS)
Fall 2021, Vol 11, No. 2, pp. 77-94
ISSN: 2219-6145 (Print), 2305-0756 (Electronic)

Published By Bahria University Karachi Campus

Impact of Macroeconomic Conditions on Firm Leverage: A Comparative study of Pakistan and India

Zia ur Rehman[1], Dr Muhammad Ayub Siddiqui[2], Asad Khan[3], Abdul Ghafoor Khan[4]

Abstract

The study aimed to analyse the impact of macroeconomic conditions on firm level leverage of the listed non-financial firms of Pakistan and India. Data from 929 listed firms from Pakistan and India was collected for the period 2008-2019. Panel data regression (fixed effects model) was used to estimate the relationship between macroeconomic conditions and firm leverage. The findings of the study revealed that in Pakistan real interest rate, exchanges rates, public debt and GDP growth rates significantly influence firm leverage whereas in India none of the macroeconomic variables have a significant influence on firm leverage. In Pakistan real interest rate, exchange rate, corruption, public debt, banking sector development, stock market development negatively influence firm leverage whereas unemployment rate, GDP growth rate and corporate taxes has a positive influence on firm leverage. In India, on the other hand, real interest rate, corruption, exchange rate and public debt negatively influence firm leverage whereas the rest of macroeconomic variables have a positive influence firm leverage. Moreover, the analysis of slope and differential slope coefficients revealed that the only the influence of exchange rates, public debt and GDP growth rates significantly differs in Pakistan from that of India.

Keywords Leverage, Corruption, public debt, banking sector development

[1] Assistant Professor, Department of Management Sciences, University of Haripur, Pakistan email zia.rehman@uoh.edu.pk

[2] Professor, FAST National University, Islamabad, Pakistan, email ayub.siddiqui@nu.edu.pk

[3] Lecturer, Department of Management Sciences, University of Haripur, Pakistan, email asadkhan@uoh.edu.pk

[4] Lecturer, Department of Management Sciences, Comsats University, Abbottabad Campus, email abdulghafoor@cuiatd.edu.pk

1. Introduction

Financing decisions by firms continues to attract the interest of researchers due to its possible influence on firm value. Nearly six decades has passed since the path breaking study of Modigliani and Miller (1958) which brought the issue of capital structure into prominence, still there is no universally accepted theory of capital structure. However, empirical studies have identified some common determinants of capital structure namely profitability, growth opportunities, asset tangibility, firm size, non-debt tax shields etc. that could influence firm value (see Titman & Wessels, 1988; Korajczyk & Levy, 2003; Bauer, 2004; Daskalakis & Psillaki, 2008; Bokpin, 2009; Nguyen & Wu, 2011; Keshtkar, Valipour & Javanmard, 2012; Kouki & Said, 2012, Oztekin, 2015; Rehman, Ahmed, Rahman & Khan, 2020). However, some determinants such as growth opportunities and profitability vary with changes in macroeconomic conditions thus suggesting that capital structures may vary with changes in macroeconomic conditions. Considering the importance of macroeconomic conditions, in recent literature we find more focus on measuring the effect of macroeconomic conditions on financing decisions. Among eminent researchers Rajan and Zingales (1995) led the way in highlighting the importance of macroeconomic conditions while making financing decisions by the firm. Empirical studies from Booth, Aivazian, Demirguc-Kunt, Maksmivoc (2001), Gajurel (2006), Fan, Timan and Twite, (2012), Mokhova and Zinecker (2014), Khanna, Srivastava and Medury, (2015) Buvanendra, Sridharan and Thiyagarajan, (2016), Pepur, Ćurak and Poposki, (2016), Rehman (2016) and Rehman, Siddiqui, Khan & Khan, 2020 further strengthen the argument that capital structure decisions are influenced by macroeconomic conditions.

Most of the empirical literature related to measuring the effect of macroeconomic conditions on financing decisions has focussed on developed countries whereas in developing countries it is somewhat under researched (see Frank & Goyal, 2009; Camara, 2012; Mokhova & Zinecker, 2014; Heider & Ljungqvist, 2015; Painer, Gonzalez, & Villanueva, 2015). Hence, it immensely important to focus on developing countries to fill this gap and find out the behaviour of these macroeconomic variables and their likely influence on firm financing decisions. The need to focus on developing countries is primarily due to the fact that macroeconomic conditions in developing countries are entirely different from those of developed countries because of greater macroeconomic stability in developed countries as compared to developing countries. Moreover, corruption an important macroeconomic determinant is a more of a developing countries problem due to their inefficient legal

systems and weak institutions as compared to developed countries where institutions are much stronger with more efficient legal system which keeps corruption under check to some extent.

Since Pakistan and India are developing countries, therefore, the aim of the paper is to measure the effect of macroeconomic conditions (GDP growth rate, exchange rates, real interest rates, corruption, public debt, unemployment rate, banking sector development, stock market development and corporate taxes) on firm leverage. The external environment has witness significant changes during the last few years thus presenting numerous challenges for managers to run businesses efficiently. The integration of financial markets, trade liberalization, deregulation, removal of barriers to movement of capital across countries has made national economies vulnerable to monetary and real shocks occurring in the international markets. Managers around the world are now more concerned about changes in inflation rates, exchange rates, level of competition, interest rates etc. as they are more likely to have an effect on national economies and firms operating in these economies. Furthermore, no firm has the ability to control its external environment which makes it even more important for managers to understand changes in external environment and its likely effect on the firm, both positive as well as negative. Moreover, both economies are going through challenging times with inefficiencies in legal system, corruption, energy crisis, comparatively underdeveloped financial system and lack of fiscal and monetary discipline. Considering these global changes in external environment and challenging economic conditions in Pakistan and India, it is important to analyse the how these macroeconomic variables are influencing firm leverage.

2. Literature Review

The importance of macroeconomic conditions has been highlighted in a number of empirical studies (see Hall, Hutchinson & Michaelas, 2004; Gaud, Hoesli & Bender, 2007; Fan et al., 2012). The findings of these studies revealed that financing decisions of the firm are significantly influenced by macroeconomic conditions. Furthermore, they find variations in the level of influence of firm-level determinants across countries on financing decisions which further validates the argument that financing decisions are significantly influenced by macroeconomic conditions.

Among variables used to measure the effect of macroeconomic conditions on financing decisions, GDP growth rate is probably is the most common variable that is being used for this purpose. A vast majority of studies while finding support for trade-off theory concluded with positive relationship

between GDP growth rate and leverage (see Booth et al. 2001; Korajaczyk & Levy, 2003, Dasklalakis & Psillakis, 2008; Muthama, Mbaluka & Kalunda, 2013; Baltaci & Ayaydin, 2014; Rehman, Khan & Khan, 2019). Rise in growth opportunities leads to increase in investment opportunities thus increases the demand for external funds by firms to exploit profitable opportunities as a result of rise in growth rates. On the other hand, studies from Bopkin, (2009), Dincergok and Yalciner, (2011), Camara, (2012), Koksal and Orman (2014) found that GDP rate and leverage are negatively related. While finding support for pecking order theory in their findings, they further added that in periods of economic growth the profitability of firms tend to rise thus declining the dependence on external funds as internally generated funds are preferred over external funds.

Interest rate is another variable that is widely used in empirical studies. Changes in interest rates have a direct influence on the firm borrowing decision. Increase in interest rates may have a positive or negative effect on leverage levels. On one hand, increase in interest rates leads to decline in borrowing by the firm due to increased cost of financial distress but at the same time may encourage firms to borrow due to improve supply of loanable funds by lenders to benefit from higher interest rates and more tax shield advantages on offer to exploit as a result of rising interest rates. Graham and Harvey (2001), Bancel and Mittoo (2004), Henderson Jedadesh and Weisbach (2006) and Bartholdy and Mateus (2008) concluded in their studies that there is a negative relationship between interest rate and leverage whereas Bokpin (2009) and Rehman et al., (2019) found a positive relationship between the two variables.

As interest charged on debt is treated as an expense, there are certain advantages with respect to tax shields that can be exploited by the firm. Increase in the proportion of debt in the total financial mix presents certain tax savings due to the treatment of interest as an expense. Graham (2000), Bauer, (2004), Moore and Ruane (2005), Huizinga, Laeven and Nicodeme (2008), Faccio and Xu (2015) and Heider and Ljungqvist (2015) found positive relationship between corporate taxes and leverage whereas Ayers, Cloyd and Robinson (2001) found negative relationship between leverage and taxes. Moreover, Titman and Wessels (1988) found no significant relationship between leverage and taxes.

Corruption perceived to be more of a developing countries problem is an important factor that is used in empirical studies while measuring the effect of macroeconomic conditions on capital structure decisions of the firm. Theoretically, the misuse of public office for private gain is known as corruption. Borrowing cost tend to rise both for the firm as well as the government in the presence of corruption in

an economy (Ciocchini, Durbin & Ng, 2003). Lee and Ng (2009) concluded that corruption and leverage are inversely related. They further added that corruption leads to significant deterioration in shareholder value. On the other hand, studies from Leff, (1964), Lui, (1985), Kaufmann and Wei, (1999) concluded that corruption and leverage are positively related. These results, although surprising, do support the theory of efficient grease hypothesis which states that borrowing costs can be reduced significantly if more bribes are paid while borrowing funds from external sources. (Kaufmann & Wei, 1999). Paying bribes allow firms to save precious time that normally is taken by the concerned officials while certifying compliance with rules and regulations. Moreover, it is possible that at times some corruption is not only beneficial but desirable also because bribing officials well enough enables them to become more helpful for that particular cause of the organization (Leff, 1964). Also, troublesome regulations can be overcome by the firm through bribing officials.

Financial institutions play an important role in channelizing funds from savers to lenders. Developed financial markets and institutions leads to lower borrowing costs, increased access to funds and liquidity. One of the most important financial institutions operating in an economy is the bank. Their role is critical in monitoring borrowers. Due to their ability to gain information efficiently from the borrowers, they are in a better position to discipline borrowers, using the information they have at their disposal (Diamond, 1984). Therefore, developed banking sector makes it easier for borrowers to borrow external funds.

Stock market is another important financial institution that has been commonly used in empirical studies (see Rajan & Zingales, 1995; Levine & Zervos, 1998; Demirguc-Kunt & Maksimovic, 1999). Studies from Dincergok and Yalciner (2011) and Tomschik (2015) concluded that development of stock market and leverage are positively related whereas Sett and Sarkhel (2010) finds negative relationship.

Lastly, exchange rates an important macroeconomic determinant has been overlooked in empirical studies while measuring its influence on financing decisions. The cost of foreign currency denominated debt and earnings in foreign currency can be significantly influenced due to changes in exchange rates. Moreover, variation in exchanges rates leads to variations in domestic interest and inflation rates as well as firm earnings particularly for those that are involved in international business. Devaluations of local currencies may have drastic effects on local economies leading to widespread

bankruptcies as it results in lower output due to decline in aggregate demand (Calvo, 2001; Cavoli & Rajan, 2005; Eichengreen, 2005).

To conclude, a vast majority of empirical studies particularly in developing countries have focused on taxes, interest rates, inflation rates, GDP growth rates etc. whereas we found very limited empirical evidence that have focused on stock market development, banking sector development, public debt exchange rates and corruption particularly in the context of Pakistan and India while measuring their impact on firm leverage. This study, therefore, adds to the already limited literature generally in the context of developing countries and particularly in the context of corruption, public debt, exchanges rates, banking sector development, unemployment rate and stock market development and will provide meaningful insights with respect to their impact on firm leverage.

3. Data and Methodology

Since the study aimed to measure the effect of macroeconomic conditions on firm leverage of listed firms in Pakistan and India, therefore, secondary data was used for this purpose. Data for this study was collected from multiple sources including World Bank database, money control database (for India), Reserve Bank of India and State Bank of Pakistan database for the period 2008-2019. The sample contained all listed (non-financial) firms of Pakistan Stock Exchange (PSX) and Bombay Stock Exchange (BSE). However, firms that remained listed during the study period were considered for this study. The final sample comprised of 929 firms i.e., 334 firms from Pakistan and 595 from India.

Firm leverage (FL) is used as a dependent variable in this study. The independent variables used in study are exchange rates (EXG), GDP growth rate (GDPR), corruption (CI), real interest rate (RIR), stock market development (SMD), corporate taxes (TAX), banking sector development (BA) public debt (PD) and unemployment rate (UNEMP). Firm Leverage is measured through total debt divided by total debt plus equity, nominal interest rate minus GDP deflator (inflation) is used to measure real interest rate. Inflation can be measured more commonly through Consumer Price Index (CPI) and GDP deflator. GDP deflator is regarded as more accurate predictor of inflation as it considers the prices of all goods and services produced in an economy whereas the CPI consider only a basket of goods (Mankiw, 2011). Annual Corruption Perception Index issued by Transparency International is used as a measure of corruption (Baxamusa & Jalal, 2014), annual economic growth rate is used to

measure GDP growth rate. Annual corporate tax rate is used as a measure of corporate taxes. Market capitalization ratio as percentage of GDP is used to measure stock market development, total assets (banking) as a percentage of GDP was used to measure the development of banking sector (IMF, 2005), debt as a percentage of GDP was used as a measure of public debt, annual unemployment rate was used as measure for unemployment rate and lastly, year ending exchange rates were used for measuring exchange rates.

4.1 Estimated Model

In this study, to analyse the impact of macroeconomic conditions on firm leverage in Pakistan and India, panel data regression was used. The main reason for using panel data regression is that "*collected data comprised of both cross-sectional as well as time series characteristics. Moreover, there are several benefits of employing panel data regression, such as limited or no estimation bias, very limited issues of multicollinearity, and essential in providing solid foundation for carrying out aggregate-level data analysis"* (Hiaso, 1986).

$$\begin{aligned} \boldsymbol{EL_{it}} = {} & \boldsymbol{\alpha_1 + \alpha_2 D_{it} + \beta_1 GDPR_{it} + \beta_2 (GDPR_{it} D_{it}) + \beta_3 RIR_{it} + \beta_4 (RIR_{it} D_{it}) + \beta_5 TAX_{it}} \\ & \boldsymbol{+ \beta_6 (TAX_{it} D_{it}) + \beta_7 SMD_{it} + \beta_8 (SMD_{it} D_{it}) + \beta_9 BA_{it} + \beta_{10} (BA_{it} D_{it})} \\ & \boldsymbol{+ \beta_{11} CI_{it} + \beta_{12} (CI_{it} D_{it}) + \beta_{13} PD_{it} \beta_{14} (PD_{it} D_{it}) + \beta_{15} EXG_{it} \beta_{16} (EXG_{it} D_{it})} \\ & \boldsymbol{+ \beta_{17} UN\_EMP_{it} \beta_{18} (UN\_EMP_{it} D_{it}) + \mu_{it}} \end{aligned}$$

For Pakistan

$$E(EL_{it} \mid D_{it} = 0, GDPR_{it}, RIR_{it}, TAX_{it}, SMD_{it}, BA_{it}, CI_{it}, PD_{it}, EXG_{it}, UN\_EMP_{it}) = \alpha_1 + \beta_1 GDPR_{it}, + \beta_3 RIR_{it}, + \beta_5 TAX_{it}, + \beta_7 SMD_{it}, + \beta_9 BA_{it}, + \beta_{11} CI_{it}, + \beta_{13} PD_{it} + \beta_{15} EXG_{it} + \beta_{17} UN\_EMP_{it} + \mu_{it}$$

For India

$$E(EL_{it} \mid D_{it} = 1, GDPR_{it}, RIR_{it}, TAX_{it}, SMD_{it}, BA_{it}, CI_{it}, PD_{it}, EXG_{it}, UN\_EMP_{it}) = (\alpha_1 + \alpha_2) + (\beta_1 + \beta_2) GDPR_{it} + (\beta_3 + \beta_4) RIR_{it} + (\beta_5 + \beta_6) TAX_{it} + (\beta_7 + \beta_8) SMD_{it} + (\beta_9 + \beta_{10}) BA_{it} + (\beta_{11} + \beta_{12}) CI_{it} + (\beta_{13} + \beta_{14}) PD_{it} + (\beta_{15} + \beta_{16}) EXG_{it} + (\beta_{17} + \beta_{18}) UN\_EMP_{it} + \mu_{it}$$

In the above model, α_2 is the differential intercept whereas $\beta_2, \beta_4, \beta_6, \beta_8, \beta_{10}, \beta_{12}, \beta_{14}, \beta_{16}, \beta_{18}$ are the differential slope coefficients. These differential slope coefficients help us in measuring by

how much Indian slope coefficients differs from the Pakistani slope coefficients given the Indian differential slope coefficients receives a dummy value of 1.

Furthermore, the multiplicative form of D_{it} in the regression model is used to differentiate slope coefficients of Pakistan from that of India whereas D_{it} in additional form in the above model helps us to distinguish between intercepts of Pakistan and India. If the *p-value* of differential intercept α_2 is significant then the hypothesis of both intercepts being the same will be rejected. Similarly, if the *p-value* of β_2 which represents the differential slope coefficient is insignificant whereas α_2 is significant, then we cannot reject the hypothesis that the slopes are same for both regressions.

In panel data random effects model and fixed effects model are two common panel data models that have been mostly used in empirical studies. "*Both models differ from each other, random effects assume that the intercept of each firm is a random drawing from a significantly large population with a constant mean value whereas fixed effects model assumes that each firm's intercept is different from that of the other*" (Gujarati, 2004). However, to choose between random effects and fixed effects, a specification test in the name of Hausman was used which not only eliminates selection bias but also helps in identifying the appropriateness of a model in a given situation. Based on the result of Hausman test, fixed effects model was chosen for this study.

Table 1 Hausman Test
Correlated Random Effects - Hausman Test
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	87.03	9	0.00

5. Results

In table 2 and 3 descriptive statistics of the variables from Pakistan and India is given. From the above tables we can see that the mean and median values are very close to each other which reflect that the data is evenly distributed around the mean. Standard deviation measures the dispersion around the mean value and is also used to measure volatility of data. The value of standard deviation for most of the variables confirms that data is volatile.

Table 2 Descriptive Statistics with respect to Pakistan

	FL	BA	CI	EXG	GDPR	PD	RIR	SMD	TAX	UN_EMP
Mean	45.90	69.92	3.38	56.25	7.19	70.12	0.86	76.67	33.81	3.93
Median	50.79	74.19	3.40	53.34	7.50	69.60	3.65	71.79	33.99	3.62
Maximum	81.30	77.91	3.80	103.68	10.26	77.10	7.90	151.45	35.00	6.24
Minimum	0.01	42.20	2.20	41.78	0.36	56.40	-8.10	13.73	32.44	3.49
Std. Dev.	2.82	9.34	0.34	14.01	2.19	4.21	5.23	31.85	0.73	0.65

Table 3 Descriptive Statistics with respect to India

	FL	BA	CI	EXG	GDPR	PD	RIR	SMD	TAX	UN_EMP
Mean	51.23	59.43	3.02	70.42	5.68	66.13	4.23	52.50	34.21	4.72
Median	49.84	51.23	3.00	66.39	5.45	63.90	4.70	45.74	34.00	4.98
Maximum	89.50	77.91	3.80	103.68	10.26	77.10	7.20	151.45	35.00	6.24
Minimum	0.00	42.20	2.20	41.78	0.36	56.40	-0.70	13.73	32.44	3.49
Std. Dev.	4.84	13.63	0.51	20.99	2.52	5.64	2.27	36.14	0.82	1.03

Regression results from Table 4 show that in Pakistan only real interest rate, exchanges rates, public debt and GDP growth rates significantly influence capital structure whereas the remaining macroeconomic variables have a weak relationship with firm leverage. Moreover, real interest rate, exchange rate, corruption, public debt, banking sector development, stock market development negatively influences on firm leverage whereas unemployment rate, GDP growth rate and corporate taxes positively influence firm leverage in Pakistan. In India only real interest rate, corruption, exchange rate and public debt negatively influence firm leverage whereas the rest of macroeconomic variables have a positive influence on firm leverage. However, none of the macroeconomic variables have a significant influence on firm leverage in India.

Table 4 Panel Regression Analysis with respect to Pakistan and India

Pakistan				**India**			
Variable	**Coefficient**	**Std. Error**	**Prob.**	**Variable**	**Coefficient**	**Std. Error**	**Prob.**
C	5.479	0.840	0.000	**C**	5.204	0.474	0.000
RIR	-0.048	0.018	0.006	**RIR**	-0.031	0.027	0.237
CI	-0.162	0.100	0.106	**CI**	-0.013	0.038	0.734
SMD	-0.021	0.001	0.550	**SMD**	0.016	0.000	0.767
EXG	-1.004	0.204	0.002	**EXG**	-0.252	0.021	0.263
GDPR	0.008	0.004	0.041	**GDPR**	0.002	0.004	0.605
PD	-0.068	0.007	0.046	**PD**	-0.002	0.002	0.160
BA	-0.024	0.005	0.905	**BA**	0.019	0.002	0.412
TAX	0.004	0.009	0.662	**TAX**	0.011	0.011	0.343
UN_EMP	0.012	0.032	0.708	**UN_EMP**	0.029	0.024	0.222
R-squared	0.646	**Adjusted R-squared**	0.606	**F-statistic**	16.098	**Prob(F-statistic)**	0.000
S.E. of regression	2.295						

Table 5 Regression Results Slope Coefficients and Differential Slope Coefficients

Variable	**Coefficient**	**Prob.**
C	5.303	0.000
RIR	-0.048	0.006
RIR*DUM	0.017	0.601
CI	0.162	0.105
CI*DUM	-0.149	0.181
SMD	-0.021	0.540
SMD*DUM	0.037	0.547
EXG	-1.004	0.002
EXG*DUM	0.752	0.008
GDPR	0.008	0.041
GDPR*DUM	-0.006	0.046
PD	-0.068	0.046
PD*DUM	0.066	0.036
BA	-0.024	0.905
BA*DUM	0.043	0.551
TAX	0.004	0.662
TAX*DUM	0.007	0.642
UN_EMP	0.012	0.708
UN_EMP*DUM	0.017	0.666

In table 5, the significance of differential intercept indicates that Pakistani intercept differs from that of the Indian intercept. In table 4 coefficients of macroeconomic variables with respect to India are derived by summing up the slope and differential slope coefficients given in table 5. For instance, the coefficient of real interest rate for India was calculated by adding the coefficient of real interest rate

and the differential slope coefficient rir*dum given in table 5. Similar procedure was performed for other macroeconomic variables with respect to India.

6. Discussion

Developed financial markets involving both stock markets and banking sector development is of critical importance in meeting the financing needs of the firms. Financing costs tend to decline and access to finance increases if financial markets are efficient and effective. Moreover, the quality of information improves with respect to the firm as stock markets implement strict monitoring and control procedures for the firm which helps the lenders in extending loans to creditworthy firms. The improved information quality reduces adverse selection costs for potential investors and lead to a positive response from them to equity issues (Rajan & Zingales (1998). Apart from easy access to finance with varying maturities, improved liquidity of financial markets has resulted in lower liquidity risk thus encouraging potential investors to respond positively to bond and equity issues Didier and Schmukler (2013). Results from table 4 shows that both measures of development of financial markets negatively influence leverage in Pakistan whereas in India the influence of stock market development and banking sector development is positive. A possible explanation for this contrasting evidence can be that in India the financial markets are comparatively more developed and efficient than Pakistan with lower transaction costs and easy access. Comparatively higher transaction costs and floatation costs discourage firms to borrow in Pakistan as compared to India.

Although, both in Pakistan and India GDP growth rate has a positive influence on firm leverage but in Pakistan the influence is significant. Growing economies provide numerous investment opportunities for businesses to exploit and expand their business thus leading to rise in borrowing by firms (Yeh & Roca, 2010). Studies from Muthama et al., (2013) and Baltaci and Ayaydin (2014) also found positive relationship between GDP growth rate and leverage. Additionally, profitable firms may also need borrowing from external sources to take advantage of some of these profitable opportunities as they may not have sufficient funds generated through internal sources at their disposal. Furthermore, during expansionary monetary policy, interest rates are lowered to encourage firms to borrow as the objective of the expansionary monetary policy is to promote growth. As a result, firms are faced with twin opportunities to exploit i.e., increased profitable investment opportunities due focus on growth and lower interest rates (Yan, 2010**).** Furthermore, p-value of the differential slope (GDPR*DUM) is

significant thus indicating that the influence of GDP growth rate is significantly different in Pakistan from that of India.

Negative effect of corruption on firm leverage both in Pakistan and India indicates that borrowing by firms rises when level of corruption is low and vice versa. Corruption not only leads to wastage of resources but also increase the transaction cost thus increasing the financing cost. Lee and Ng (2009) while finding negative effect of corruption on leverage concluded that shareholder value significantly declines as a result of corruption. Investors demand higher returns in corrupt countries thus increasing the cost of financing because higher perceived risk as corruption weakens legal and regulatory environment of the firm (Ciocchini et al., 2003). The increase in financing costs discourages firm to borrow thus resulting in negative relationship. Moreover, agency problems can also be created due to corruption as managers can be bribed to undertake projects that may have a negative effect on shareholder value. However, it is extremely difficult to prevent managers from such practice's due weak legal environment. Furthermore, p-value of the differential slope (CI*DUM) is insignificant thus indicating that both in Pakistan and India corruption has a similar influence on firm leverage.

Corporate taxes have a positive effect on firm leverage in both countries. The presence of tax shield advantages encourages firms to borrow. De Jong, Kabir and Nguyen (2008) and Sayeed (2011) also found significantly positive relationship between corporate taxes and leverage. Moreover, Faccio and Xu (2015) concluded that taxes are an important factor and comparatively the effect of corporate taxes is much stronger in countries where the rates of taxation are high. This shows that variation in tax rates do matter particularly in the presence of significantly large advantages of tax shields as perceived by the financial managers. Heider and Ljungqvist (2015) and Panier et al., (2015) also concluded that the response of large firms is much stronger in response to increases in tax rates due higher perceived value of tax shield advantages. Furthermore, p-value of the differential slope (TAX*DUM) is insignificant thus indicating that in both Pakistan and India corporate taxes has a similar influence on firm leverage.

The effect of real interest rates on firm leverage is negative in both countries. This implies that rise in interest rates discourages firms in Pakistan and India to borrow as rise in interest rates increases financial risk as well as the cost of financial distress. Although increase in interest rates increases the tax shield advantages for the firm and managers should borrow to exploit these tax advantages but at

times potential costs of financial distress out outweighs the advantages of tax shields thus discouraging firms to borrow (Graham & Harvey, 2001; Drobetz, Pensa & Wanzenried, 2006; Henderson et al., 2006). Furthermore, p-value of the differential slope (RIR*DUM) is insignificant thus indicating that the influence of real interest rate on leverage is not that different in Pakistan from India.

Public debt also has a negative relationship with firm leverage in both countries. However, the relationship is strong and significant in Pakistan. Budgetary deficits force governments to borrow from financial markets. Government borrowing affects the supply of loanable funds to private sector. Increase in borrowing by government leaves little funds for the private sector to borrow. Moreover, banks also prefer to lend to the government over private sector due to government willingness to pay slightly higher rate of interest on borrowed funds (Mokhova & Zinecker, 2014). Furthermore, p-value of PD*DUM is significant thus indicating that the influence of public debt is significantly different in Pakistan from that of India. A possible explanation for this can be that the budgetary deficit in Pakistan is comparatively more than India. This leads to more borrowing from the financial markets to support budgetary deficits thus leaving little for the private sector to borrow.

Lastly, exchange rate an important macroeconomic determinant is more relevant in the modern-day business environment due to its far-reaching effects on the economy. Exchange rate fluctuations not only affect the international receipts and payments and the cost of financing for borrowings from the international financial markets but also influences domestic interest rates and inflation. Devaluations of local currencies may have drastic effects on local economies leading to widespread bankruptcies as it results in lower output due to decline in aggregate demand (Calvo, 2001; Cavoli & Rajan, 2005; Eichengreen, 2005). Furthermore, p-value of EXG*DUM is significant thus indicating that the influence of exchange rates is significantly different in Pakistan from that of India. A possible explanation for this can be that Pakistani rupee remained highly volatile during the last decade or so whereas the Indian currency has remained comparatively stable. The Pakistani rupee lost 93% of its value since January 2008 whereas the Indian rupee lost only 63% of its value during this time.

7. Conclusion

To conclude, the study aimed to analyse the impact of macroeconomic conditions on the capital structures of the listed non-financial firms of Pakistan and India. The findings of the study revealed that in Pakistan real interest rate, exchanges rates, public debt and GDP growth rates significantly influence capital structure whereas in India none of the macroeconomic variables have a significant influence on firm leverage. In Pakistan real interest rate, exchange rate, corruption, public debt, banking sector development, stock market development negatively influence firm leverage whereas unemployment rate, GDP growth rate and corporate taxes has a positive influence on firm leverage. In India, on the other hand, real interest rate, corruption, exchange rate and public debt negatively influence firm leverage whereas the rest of macroeconomic variables have a positive influence firm leverage. Moreover, the analysis of slope and differential slope coefficients revealed that only the influence of exchange rates, public debt and GDP growth rates significantly differs in Pakistan from that of India. The main contribution of the study is that changes in external environment do influence firms and the findings can be generalized to other developing economies. The understanding about the effect of macroeconomic events and the interrelationships between macroeconomic conditions will greatly help managers not only in determining their exposure to these macroeconomic shocks but also in managing their risk.

REFERENCES

Ain, Q., Jan, S.U., & Rafiq, M. (2011). Effect of Macroeconomic Factors on Capital Structure Decisions of Firm-Evidence from a Developing Country. *Journal of Business and Economic Review, 3*(1), 64-90

Ayers, B.C., Cloyd, C.B., & Robinson, J.R. (2001).The influence of income taxes on the use of inside and outside debt by small businesses. *National Tax Journal*, *54* (1).

Bancel, F., & Mittoo, U. R. (2004). Cross-country determinants of capital structure choice A Survey of European Firms. *Financial Management. 33*, 103-132.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *Journal of Finance, 57,* 1-32.

Baltaci, N., & Ayaydin, H. (2014). Firm, Country and Macroeconomic determinants of capital structure evidence from Turkish banking sector. *Emerging Markets Journal, 3*(3), 46-58.

Baltagi, B.H. (1995). *Econometric analysis of panel data* (Chichester Wiley).

Bartholdy, J., & Mateus, C. (2008). Taxes and corporate debt policy evidence for unlisted firms of sixteen European countries. https//papers.ssrn.com/sol3/papers.cfm?abstract_id=1098370

Bastos, D. D., Nakamura, W. T., & Basso, L. F. C. (2009). Determinants of capital structure of publicly-traded companies in Latin America the role of institutional and macroeconomic factors. *Journal of International Finance and Economics, 9*(3), 24-39.

Bas, T., Muradoglu, G. & Phylaktis, K. (2009). Determinants of capital structure indeveloping countries. *Cass Business School*, London.

Bauer, P. (2004). Determinants of capital structure Empirical evidence from Czech Republic. *Czech Journal of Economics and Finance, 54*(1-2), 2-21.

Baxamusa, M., & Jalal, A. (2014). The effects of corruption on capital structure When does it matter? *The Journal of Developing areas, 48*(1), 315-335.

Beck, T., Demirguc-Kunt, & Levine, R. (2009). Financial institutions and markets across countries and over time-data analysis. *World Bank Policy Research Working Paper Series, 4943.*

Bopkin, G. A. (2009). Macroeconomic development and capital structure decisions of firms evidence from emerging market economies. *Studies in Economics and Finance, 26*(2), 129-142. http//dx.doi.org/10.1108/10867370910963055

Booth, L.V., Aivazian, A., Demirguc-Kunt, A., & Maksmivoc, V. (2001). Capital structure in developing countries. *Journal of Finance, 56,* 87-130.

Buvanendra, S., Sridharan, P., & Thiyagarajan, S. (2016). Role of Country-specific Factors on Capital Structure Decision—Evidence from Sri Lankan Listed Firms, *Global Business Review, 17*(3)

Calvo, G., (2001). Capital markets and the exchange rate. With special reference to the dollarization debate in Latin America. *Journal of Money, Credit and Banking*, *33*, 312-334.

Camara, O. (2012). Capital structure adjustment speed and macroeconomic conditions U.S. MNCs and DCs. *International Research Journal of Finance and Economics. 84,* 106-120.

Cavoli, T., & Rajan, R. (2005). Have exchange rate regimes in Asia become more flexible post crisis? Re-visiting the evidence.*NUS Working Paper No. 6*.

Ciocchini, F., Durbin, E., & Ng, D. (2003). Does corruption increase emerging market bond spreads? *Journal of Economic and Business, 55,* 502-528.

Daskalakis, N. Psillaki, M. (2008). Do country or firm factors explain capital structure? Evidence from SMEs in France and Greece. *Applied Financial Economics, 18*(1), 87-97. http//dx.doi.org/10.1080/09603100601018864

De Jong, A., Kabir, R., & Nguyen, T.T. (2008). Capital Structure Around The World The Roles of Firm- And Country-Specific Determinants. *Journal of Banking and Finance,32,* 1954-1969.

Demirguc-Kunt, A., & Maksimovic, V. (1996). Stock market development and financing choices of firms. *World Bank Economic Review,* 341-371.

Demirguc-Kunt, A., & Maksimovic, V. (1999). Institutions, Financial Markets, and Firm Debt Maturity. *Journal of Financial Economics, 54,* 295-336.

Diamond, D. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies, 51,* 393-414.

Didier, T., & Schmukler, S. L. (2013). The financing and growth of firms in China and India Evidence from capital markets. *Journal of International Money and Finance, 39*(C), 111-137.

Dincergok, B., & Yalciner, K. (2011). Capital structure decisions of manufacturing firms' in developing countries. *Middle Eastern Finance and Economics.* 86-100.

Drobetz, W., Pensa, P., & Wanzenried, G. (2006). Firm characteristics, economic conditions, and capital structure adjustments. *Working paper*, University of Basel.

Eichengreen, B., (2005). Can Emerging Markets Float? Should They Inflation Target?" In Driver, R., Sinclair, P. and Thoenissen, C. (Eds.), Exchange Rates, Capital Movements and Policy, Routledge, London.

Faccio, M., & Xu, J. (2015). Taxes and Capital Structure. *Journal of Financial and Quantitative Analysis, 50*(3), 277-300.

Fan, J., Titman, S., & Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *Journal of Financial and Quantitative Analysis, 47*(1), 23-56.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions which factors are reliably important? *Financial Management. 38*(1), 1-37.

Gajurel, D. P. (2006). Macroeconomic influences on corporate capital structure. Available at SSRN http//ssrn.com/abstract=899049 Accessed on 12/09/2016

Gaud, P., M. Hoesli, A. & Bender. (2007). Debt-equity choice in Europe. *International Review of Financial Analysis, 16*(3), 201-222.

Graham, J. R., & Harvey, C. R. 2001. The Theory and Practice of Corporate Finance Evidence from the Field. *Journal of Financial Economics. 60,* 187-243.

Gujarati, D.N. (2004). *Basic Econometrics*, 4th edition, McGraw-Hill Book Co.

Hall, G., Hutchinson, P., & Michaelas, N. (2004). Determinants of the capital structures of European SMEs. *Journal of Business Finance and Accounting. 31,* 711-728.

Hausman, J. (1978). Specification tests in econometrics. *Econometrica, 46,* 1251-1271.

Heider, F., & Ljungqvist, A. (2015). As certain as debt and taxes Estimating the tax sensitivity of leverage from state tax changes. *Journal of Financial Economics, 118,* 684-712.

Henderson, B. J., Jegadeesh, N., & Weisbach, M. S. (2006). World markets for raising new capital. *Journal of Financial Economics, 82*(1), 63-101.

Hiaso, C. (1986). *Analysis of Panel Data, Econometric Society monographs No. 11*, New York Cambridge University Press.

Huizinga, H., Laeven, L., & Nicodème, G. (2008). Capital structure and international debt shifting. *Journal of Financial Economics, 88,* 80-118.

IMF. (2005). Financial Sector Assessment A Handbook, World Bank Publishing

Kaufmann, D., & Wei, S.J. (1999). Does “Grease Money” speed up the wheels of commerce? *NBER working paper no 7093*

Keshtkar, R., Valipour, H., & Javanmard, A. (2012). Determinants of corporate capital structure under different debt maturities empirical evidence from Iran. *International Research Journal of Finance and Economics. 90,* 46-53.

Khanna, S. Srivastava, A., & Medury, M. (2015). The Effect of Macroeconomic Variables on the Capital Structure Decisions of Indian Firms A Vector Error Correction Model/Vector Autoregressive Approach. *International Journal of Economics and Financial Issues, 5*(4), 968-978.

Koksal, B., & Omran, C. (2014). Determinants of Capital Structure Evidence from a major developing country. *Small Business Economics, 44*(2), 255-282.

Korajczyk, R.A. & Levy, A. (2003). Capital structure choice Macroeconomic conditions and financial constraints. *Journal of Financial Economics, 68,* 75-109.

Kouki, M., & Said, H. B. (2012). Capital structure determinants new evidence from French panel data. *International Journal of Business and Management, 7*(1), 214-229.

Lee, C., & Ng, D. (2009). Corruption and international valuation Does virtue pay? *Journal of Investing, 18*(4), 23-41

Leff, N. (1964). Economic development through bureaucratic corruption. *The American Behaviour Scientist, 8,* 8-14.

Levine, R. & Zervos, S. (1998). Stock markets, banks and economic growth. *American Economic Review, 88*(3), 537-558.

Lui, F. (1985). An equilibrium queuing model of bribery. *Journal of Political Economy, 93,* 760-781.

Mankiw, N.G. (2011). *Principles of Economics.* 5th Edition. South-Western Cengage Learning

Modigliani, F., & Miller, M. (1958). The cost of Capital, Corporation finance and the theory of investment. *The American Economic Review, 48*(3).

Modigliani, F., & Miller, M. 1963. Corporate Income taxes and the cost of capital A correction. *American Economic Review, 53*(3), 433-443.

Mokhova, N., & Zinecker, M. (2014).Macroeconomic factors and corporate capital structure. *Procedia-Social and Behavioral Sciences, 110,* 530-540.

Moore, P. J., & Ruane, F. P. (2005). Taxation and the Financial Structure of Foreign Direct Investment. *IIIS Discussion Paper No. 88*

Muthama, C., Mbaluka, P., & Kalunda, E. (2013). An empirical analysis of macro-economic influences on corporate capital structure of listed companies in Kenya. *Journal of Finance and Investment Analysis, 2*(2), 41-62.

Myers, S. & Majluf, N. (1984). Corporate financing and investment decisions when firms have information investors do not have. *Journal of Financial Economics, 13,* 187-221.

Nguyen, T., & Wu, J. (2011). Capital structure determinants and convergence. *Bankers, Markets and Investors.111,* 43-53.

Oztekin, O. (2015). Capital Structure Decisions around the World Which Factors are Reliably Important? *Journal of Financial and Quantitative Analysis, 50*(3), 301-323

Oxelheim, L & Wihlborg, C, (2008). *Corporate decision-making with macroeconomic uncertainty Performance and risk management*. Oxford university press

Painer, F., Gonzalez, F.P., & Villanueva, P. (2015). Capital Structure and Taxes What happens when you (also) subsidize equity? *Bank for International Settlements, Working paper series*

Pepur, S., Ćurak, M., & Poposki, K. (2016). Corporate capital structure the case of large Croatian companies. *Economic Research, 29*(1), 498-514.

Rajan, R., & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. *Journal of Finance, 50,* 1421-1460.

Rajan R.G. & Zingales L. (1998). Debt folklore, and cross country differences in financial structure. *Journal of Applied Corporate Finance, 10,* 102-107.

Rehman, Z.U. (2016). Impact of Macroeconomic Variables on Capital Structure Choice A Case of Textile Industry of Pakistan. *The Pakistan Development Review, 55*(3), 227-239.

Rehman, Z.U., Khan, S.A., & Khan, A. (2019). Economic Factors and Capital Structure. *Journal of Business Tourism, 5*(1), 183-193.

Rehman, Z.U., Ahmed, M.A., Rahman, A. & Khan, S.A. (2020). Determinants of Capital Structure A Case of Listed Pharmaceutical and Chemical firms of Pakistan. *Journal of International Management, 11*(8), 1785-1796

Rehman, Z.U., Siddiqui, M.A., Khan, S.A. & Khan, A. (2020). Do Instruments of Monetary Policy and Fiscal Policy Affect Firm-level Leverage? Evidence from Pakistan and India. *Global Management Journal for Academic & Corporate Studies, 10*(1), 119-128.

Sayeed, M. A. (2011). The Determinants of Capital Structure for Selected Bangladeshi Listed Companies. *International Review of Business Research Papers, 7*(2), 21-36.

Sett, K. & Sarkhel, J. (2010). Macroeconomic variables, financial sector development and capital structure of Indian private corporate sector during the period 1981-2007. *The IUP Journal of Applied Finance, 16*(1), 40-56.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance. 43*(1), 1-19. http//dx.doi.org/10.1111/j.1540-6261.1988.tb02585.x

Tomschik, D. (2015). The impact of macroeconomic variables on capital structure A comparison between companies in E7 and G7 countries, *5th IBA Bachelor Thesis Conference,* Enschede, The Netherlands

Yan, W. W. (2010). Testing the effects of capital structure on entrepreneurial effort. *Applied Financial Economics, 20,* 785-794.

Yeh, H., & Roca, E. (2010). Macroeconomic Conditions and Capital Structure Evidence from Taiwan. *Discussion Paper no 2010-14*, Griffith Business School.