Impact of Cash Flow Volatility on Debt Maturity Structure, Capital Structure, Investment, and Dividend Policy Decisions: Evidence from Pakistan's Firms Level Data

Researcher

Sania Shaheen

165-FE/PhD Eco /F16

Supervisor	**Co-Supervisor**
Dr. Babar Hussain	**Dr. Arshad Ali Bhatti**
Assistant Professor, IIIE	**Professor, IIIE**

FACULTY OF ECONOMICS

INTERNATIONAL INSTITUTE OF ISLAMIC ECONOMICS

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APPROVAL SHEET

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By

Sania Shaheen
Reg. No: 165-FE/PhD Economics/F16

Accepted by the International Institute of Islamic Economics (IIIE), International Islamic University Islamabad (IIUI), as partial fulfillment of the requirements for the award of degree of **PhD Economics**

Supervisor-I: ______________________
(Dr. Babar Hussain)
Assistant Professor, IIIE, IIUI

Supervisor-II: ______________________
(Dr. Arshad Ali Bhatti)
Assistant Professor, IIIE, IIUI

Internal Examiner: ______________________
(Dr. Abdul Rashid)
Professor, IIIE, IIUI

External Examiner-I: ______________________
Dr. Muhammad Naveed,
Professor, Bahria University, Islamabad

External Examiner-I: ______________________
Dr. Muhammad Jamil,
Professor, University of AJ&K, Muzzafarabad

Chairperson,
School of Economics
International Institute of Islamic Economics
International Islamic University, Islamabad

Director General,
International Institute of Islamic Economics
International Islamic University, Islamabad

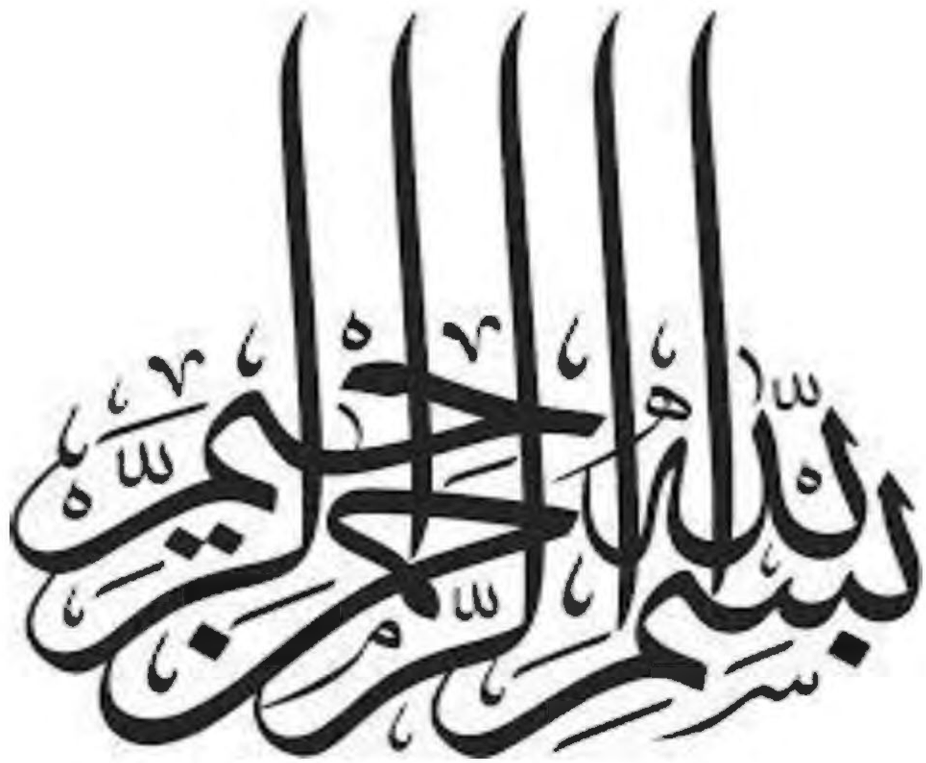
Date of Viva Voce Examination: November 20, 2023

DECLARATION

I, **Sania Shaheen** D/O **Taj Muhammad** Registration No. 165-FE/PhD Eco /F16 student of PhDEconomics at the faculty of Economics, International Islamic Institute of Islamic Economics, International Islamic University, Islamabad, do hereby solemnly declare that the thesis entitled **"Impact of Cash Flow Volatility on Debt Maturity Structure, Capital Structure, Investment, and Dividend Policy Decisions: Evidence from Pakistan's Firms Level Data",** submitted by me in the partial fulfillment for the award of PhD degree in Economics. It is my original work, except where otherwise acknowledged in the text, and has not been submitted, printed or published earlier and shall not, in future, be submitted by me for obtaining any degree from this or any other university or institution.

Signature:___________________

Sania Shaheen



In the name of Allah Most Gracious and Most Merciful

I dedicate this work to my beloved Parents whose constant encouragement and help provided me incentive and opportunity to complete this study

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Abstract

Cash flow volatility may lead to budget turmoil, discourage capital spending, disrupt production, or delay debt repayment. It is described as the changes in the profitability of a company, institutions, and individual investors over a given period. It also affects corporate financial indicators such as the maturity structure of debt, capital structure, investment decision-making, and dividend payout distribution policy.Globally, firms are continuously playing a significant role, but firms in developing economies like Pakistan are experiencing cash flow volatility and facing liquidity probems that compound the financial constraints. There is a behavioral and structural heterogeneity that continuously exists between firms and has several institutional and country-level differences with developed and underdeveloped economies, which have various economic and financial implications. The existing literature generally focuses on firms in developed economies, but the existing evidence is limited for developing economies, particularly in the case of Pakistan. Therefore, in the current study, we investigate how firms' debt maturity structure, capital structure, investment policy, and dividend payment decisions are affected by cash flow volatility in the context of Pakistan. Additionally, we also examine these financing decisions and the cash flow volatility relationship by considering the effect of macro-economic factors, institutional differences, firm-level internal fators, and ownership structure of the firms. This study mainly focuses on four main themes. First, the effect of cash flow volatility on the firms' debt maturity structure, by considering the impact of macro-economic and institutional factors. Second, analyze the impact of cash flow volatility on a firm's capital structure by considering the role of macro-economic and institutional factors. Third, investigate the impact of cash flow volatility on firms' investment decision-making by taking into account the role of institutional factors. Fourth, analyze the effect of cash flow volatility on firms' dividend distribution policy by explicitly considering the role of internal and external factors. To achieve the above objectives, we have collected a sample of 380 non-financial firms of Pakistan listed on the Pakistan Stock Exchange during a period from (1999-2018). We have selected those firms that meet the accounting criteria consistent with the objectives of the study. For empirical estimation, we have employed advanced econometric estimation techniques, namely Ordered Probit Regression, Fixed Effect, and Generalized Method of Moments (GMM). The results of the study concluded that firms financing decisions regarding their debt maturity structure, capital structure, investments, and dividend payment decisions are significantly influenced by cash flow volatility. Furthermore, our analysis indicates that the impact of macroeconomic, institutional, internal, and external factors are significant in influencing CFV and firms' financing decisions regarding debt maturity structure, capital structure, investment policy, and dividend payment decisions.
Keywords: Cash Flow Volatility, Debt Maturity Structure, Capital Structure, Investment, Dividend Payout, Macro-economic Factors, Institutional Factors, Internal Factors, External Factors, Ownership Structure.

JEL Codes: G18; G32; G35; E42, E43

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List of Abbreviations

ACT	Agency Cost Theory
BD	Bank Deposits
CF	Cash Flow
CFV	Cash Flow volatility
CORR	Corruption
DMS1	Debt Maturity Structure based on categories
DMS2	Debt Maturity Structure (Alternative Proxy)
DPO	Dividend Payout
EF	External Factors
GDPG	GDP Growth
GROW	Growth Opportunities
INV	Investment
INF	Inflation
INTEREST	Interest Rate
IF	Internal Factors
IQ	Institutional Quality
IO	Institutional Ownership
INST	Institutional Variables
IST	Information Signalling Theory
LEV	Leverage
LIQ	Liquidity

LTD	Long-Term Debt
MS	Money Supply
MAC	Macroeconomic Variables
PS	Political Stability
POT	Pecking Order Theory
RG	Regulatory Quality
RL	Rule of Law
ROA	Return of Assets
SIZE	Firm Size
STD	Short-Term Debt
STDEV	Standard Deviation
TANG	Tangibility
TAX	Tax Rate
TOT	Terms-Off Trade Theory

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Cash flow (hereafter CF) is generally considered the main indicator of a company's financial health. In finance, the term CF describes the amount of cash generated or consumed by the business, institutions, and individuals during a given period. However, cash flow volatility (hereafter CFV) may lead to budget turmoil, discourage capital spending, disrupt production, or delay debt repayment. It can be explained by the variations in the profits of companies, institutions, and individual investors the given period. A higher CFV is connected to higher market uncertainty and a higher level of operation cost. In addition, the CFV increases the chances of company increasing access to equity markets and also raises the cost of this access (Minton & Schrand, 1999; Myers & Majluf, 1984a).

Firms make important decisions such as debt maturity structure (hereafter DMS), capital structure (after that leverage), investment, and dividend payout decisions. CFV also affects these corporate financial indicators. DMS explains the relationship between short-term debt (hereafter STD) and long-term debt (LTD). Longer-maturity debts typically mature in more than one year, and shorter-maturity debts normally mature in less than one year (Barclay & Smith 1995). Corporate DMS significantly affects corporate financial performance and sustainability (Modigliani & Miller, 1958; Myers & Majluf, 1984b). The importance of DMS is the same as that of capital structure. For example, firms select between issuing equity or borrowing from lenders when they are looking for external capital. The significance of DMS can be explained by a number of reasons such as the corporate leverage may relate to their asset structure to ignore any probable liquidations. They may choose DMS to avoid the agency problems. Additionally, firms may also use a particular combination of maturity to indicate the quality of their earnings. If a company reflects financing flexibility, financing cost, and refunding risk, then corporate DMS matters (Cai et al., 2008). The use of funds does not match both intertemporally and cross-sectionally because of market imperfection in an economy. This discrepancy creates an ineffective liquidation for the positive net present value of a project. Therefore, the optimal DMS comes from the famous golden rule of finance and will not work if the markets are imperfect. According to Cai et al. (2008), the DMS is compulsory for a firm, because the use of a specific mixed combination of maturities can help firms to ignore probable corporate liquidations, report the agency problms, recognize financing flexibility, and indicate the quality of their earnings. On the other hand, an optimum level of indebtedness compensate the tax benefits that are associated with debt and the cost of financial distress (E. Dudley & C. James, 2015).

1.2 Cash Flow Volatility relationship with Debt Maturity Structure and Leverage

Both leverage and DMS are affected by firms' CFV. Earlier theoretical literature discusses the inverse relationship between CFV and DMS. The signaling theory explains that a higher CFV increases the likelihood that a company will change its leverage and select the short DMS to minimize the cost of bankruptcy (Diamond, 1991; Flannery, 1986b). Additionally, screening theory describes that small firms with more volatile cash flows do not select LTD and large firms may select LTD maturity (Diamond, 1991; Stiglitz

& Weiss, 1981). The capital structure, Trade-Off Theory (hereafter TOT) was proposed by Baxter (1967) and Kraus and Litzenberger (1973), who established the state preference model by using the interest tax shields that are related to leverage and the cost of financial distress. Moreover, TOT explains that managers make an effort to equalize the payment of interest tax shields against the PV of the expected cost of bankruptcy o r financial distress (Myers, 2001). Moreover, TOT explained the relationship between CFV and leverage level by suggesting that firms' leverage decreases due to an increase in CFV to balance the cost of debt. For instance, the tax advantage of debt thus balances the leverage level in order to keep the optimal debt level (Bradley et al., 1984a; Dudley & James, 2015; Frank & Goyal, 2009; Kale et al., 1991).

Theoretical studies have explained the negative association between CFV and DMS. According to Guedes and Opler (1996), riskier firms choose debt with shorter maturities to account for inefficient liquidation, but they do not choose LTD from the perspective of risky asset substitution. To ignore this threat, firms select debt with short maturity. Minton and Schrand (1999), Myers and Majluf (1984b), believe that highly volatile cash flows are associated with higher market uncertainty and a higher level of operating costs. It also raises the corporate ability to access the capital market and increases the cost of doing so. Sarkar (1999) and Kane et al. (1985) explained that a higher variation in the firms' cash flow increases the probability that it may experience financial distress, which also increases the risk of bankruptcy. In order to ignore this threat, the more probability is that firms select debt with short maturity.

Several studies in the empirical literature report the inverse relationship between CFV and DMS. Such as Keefe and Yaghoubi (2016) for the United State of America and

Memon et al. (2018) for China explain an inverse relationship between CFV and DMS by asserting that firms with high CFV are more likely to select short DMS to reduce the cost of bankruptcy on debt. Similar results highlight the following empirical research (Amal et al., 2011; González, 2017; Keefe & Yaghoubi, 2015; Lee & Moon, 2011b; Stephan et al., 2011; Strebulaev, 2007; Zheng et al., 2012).

Despite strong theoretical justification on how CFV should affect firms' financing decisions, the empirical literature that explains the CFV relationship with DMS/leverage is inconclusive and specifically limited for developing economies.

1.2.1 Cash Flow Volatility and Debt Maturity Structure/leverage: Role of Macroeconomic and Institutional Factors

The researchers focus on analyzing the impact of macro-economic variables on firms' DMS in the most recent literature. The prevailing argument among researchers is that firms cannot independently make financing decisions because firm-specific and external factors have a substantial impact on corporate financing policy. Internal factors may be controlled by management while external factors are broadly referred to as macro-economic and institutional variables which cannot be controlled by the management of the firms. Macro-economic and institutional factors also affect the business performance. To decrease their effects on future cash flow and profitability, companies need to pay attention to these factors. The organizations cannot control macroeconomic factors including the unemployment rate, inflation rate, money supply, interest rate, and corporation tax rate. Therefore, companies must anticipate the heterogeneous impact of these external factors on their future performance (Issah & Antwi, 2017; Shu et al., 2013). These factors cause fluctuations in the company cash flow, which have a considerable impact on both DMS and leverage. Empirically, various studies have been conducted for both developed and underdeveloped countries that have examined the influence of macro-economic factors on DMS. Based on empirical evidence such as Keefe and Yaghoubi (2016), Memon et al. (2018), Awartani et al. (2016), and Bokpin (2009) reported that macro-economic variables have a significant impact on DMS and leverage.

The institutional theory explains that the role of institutions significantly affects the firms' DMS/leverage level. For instance, institutional theory advocates that institutions play an important role in an economy to speed up market interaction by reducing transaction costs and information costs. In many developing economies, institutions, that is according to the words of North (1990), a market economy that is either not operating or does not function has both formal and informal rules of the game. The lack of effective institutions may lead to increased imperfect information and higher transaction costs (Meyer, 2001).

Focusing on DMS, Demirgüç-Kunt and Maksimovic (1999), Giannetti (2003), Li et al. (2006), La Rocca et al. (2010), Fan et al. (2012), Turk (2016), and many others provide the empirical evidence that weak quality of law enforcement, political instability, high level of corruption, and poor regulatory quality influences on firms' DMS by shortening the loan maturities or decreasing the leverage. This evidence is in line with Diamond (2004) who stated that if the cost of law enforcement is high and weak creditor protection, then borrowers more dependent on short DMS. Belkhir et al. (2016) explain that corporate DMS is affected by the level under which countries have a strong rule of laws and regulations that protect the labor force. The strong labor protection leads to shortening the firms' DMS. Limited literature is available for developing economies in this context.

Taking inspiration from the extensive body of research on the significance of institutional and macro-economic variables on firm-level DMS and leverage, we have analyzed for the first time the CFV relationship with DMS and leverage by incorporating the role of institutional and macro-economic variables for developing economy of Pakistan.

Moreover, besides the importance of CFV, institutional, and macroeconomic variables, their interactive effect on DMS is also missing from the literature. It is necessary to verify whether the interactive role of CFV with both institutional and macro-economic variables is significant in the DMS of a corporation. Firm-level CFV, macroeconomic, and institutional factors are crucial variables that can significantly affect the corporate DMS. In the current study, we are interested to know whether the role of institutions and macro-economic variables weakens or strengthens the CFV relationship with DMS. The current study urges to cover the corporate finance literature gap by investigating the interactive role of CFV, macroeconomic factors (inflation, money supply, GDP growth, interest rate), and institutional factors (Bank deposits, corruption, political stability, regulatory quality, and rule of law) for a developing economy of Pakistan. Unfortunately, firms functioning in developing economies are facing difficulties in using the LTD because capital markets are not developed and have a weak institutional system (Shah & Khan, 2009b). Keeping in view the gap in the literature, this is the first study that empirically examines the impact of CFV on DMS/leverage in the context of the developing economy of Pakistan.

Firms in Pakistan are suffering from unhealthy cash flow and liquidity problems, compounding financial constraints. There is a persistent behavioral and structural heterogeneity exists among firms which report that various institutional and country-level differences among advanced and developing economies imply diverse economic and financial consequences. In contrast to developed economies, the firms of Pakistan have a different financing behaviour because of the limited and underdeveloped bond market or expensive long-term bank loans, manufacturing industries of Pakistan are highly dependent on short-term financing (Sheikh & Wang, 2011). The capital markets of Pakistan are not very much developed, and interest rates are usually unstable. Thus, firms in Pakistan experience cash flow fluctuations and liquidity problems which aggravate financial constraints (Shah & Khan, 2009). Due to the different institutional settings of manufacturing firms and capital markets, the results of the study may differ from studies in conducted in developed countries.

This study contributes significantly to the body of empirical research on corporate finance, by providing evidence for the first time regarding the selection of corporate sector DMS among STD and LTD in the presence of CFV for the developing economy of Pakistan. Additionally, this study provides evidence for the first time regarding the influence of macro-economic and institutional variables in the CFV and DMS relationship.

1.3. Cash Flow Volatility and Firms' Investment Decision Making

The next important variable in this study is firms' investment decision-making. The influential relationship between investment and CFV is inconclusive as suggested by the literature. The existing literature is divided into how CFV influences the firms' investment behavior that varies between financially constrained[1] (equity dependent) and unconstrained

[1] Fazzari et al. (1987) used the term financially constrained firms that refers to those firms who have excess sensitivity of internal cash flows as a finance source because of limited access to external finance.
Lemmon and Zender (2010), unconstrained firms prefer debt to cover the deficit financing when they are forced to seek external financing. Constrained firms, however, rely more on internal equity.
Maditinos, (2019) displays that small size firms sometimes face difficulties to finance the worthy projects. Usually, banks and outside investors may feel hesitant to fund the unknown firms, as a result, these firms finance their investment internally.

firms (Debt dependent). According to Boyle and Guthrie (2003a) and Hirth and Viswanatha (2011), the real options model proposes that financially constrained firms' investment is directly related to the CFV. Moreover, firms increase their investment, instead of holding the real option when facing high CFV. The financial flexibility literature, in contrast to the real options model, argues that CFV has a negative impact on the investment of financially constrained firms (Almeida et al., 2004; Minton & Schrand, 1999). Furthermore, empirical results show that when firms persistently face high CFV, financially constrained firms finance 5% lower than financially unconstrained firms (Keefe & Tate, 2013).

Boyle and Guthrie (2003a) suggest that CFV and investment have an inverse connection for enterprises that are not financially constrained. The explanation for the inverse link between CFV and investment is that these enterprises are financially unconstrained, free to hold the real option and invest as needed in the future. However, Keefe and Tate (2013) in the context of financially unconstrained firms found no association between CFV and investment. These findings contradict with the literature of real options while supporting the literature of financial flexibility. Almeida et al. (2004) firms operating under financial constraints reduce investment and save cash through CF. Financially unconstrained firms, on the other hand, do not comply. One explanation could be that some firms keep cash as security to invest in future projects.

Alfaro et al. (2004) explained the association between CFV and corporate investment behavior in Africa. Their findings suggested that on average, CFV is related to lower investment for African firms. Additionally, the findings show that CFV had a significant and negative impact on investment, particularly for unconstrained firms with higher levels of cash flows. Although, the empirical evidence is inconsistent and most of the previous studies in this context focus only on developed economies, however, the literature is limited to developing countries.

1.3.1 Cash Flow Volatility and Firms' Investment Decision-Making: Role of Institutions

In the empirical literature, many empirical studies investigating the direct effect of CFV on institutional factors such as corruption, rule of law, political stability, regulatory quality, institutional quality, and institutional ownership on corporate investment decision-making suggest a direct and significant impact of institutional variables on firms' investment decision-making (Ajide, 2017; Ajisafe, 2016; Emerson, 2006; Lemma & Negash, 2013; Sarkar & Hasan, 2001; Ullah, 2017). Institutional variables are crucial in the market economy and can impact the relationship between CFV and firms' investment decision-making. The literature does not address the interactive impact of institutional factors in the CFV and investment relationship. This study covers this gap in literature by investigating the influence of CFV on firms' investment decision-making. Secondly, the role of institutional factors has been examined in the relationship of CFV and corporate investment.

1.4 Cash Flow Volatility and Dividend Payout Policy

The analysis of the relationship between CFV and dividend payout policy is the next interesting theme of the current study. The dividend is the payments that are paid to shareholders of companies and based on the principal income of companies, and the determination of the amount of profit paid periodically to shareholders is known as the "Dividend Policy". A firm manager should consider the CF and its volatility when making a dividend payout policy because policy describes the company's ability to payout the current dividend payments or future dividend payments.

The two famous finance theories: Agency Cost Theory (hereafter ACT) and Information Signaling Theory (hereafter ICT) describe the theoretical relationship between CFV and dividend payment distribution. Both theories propose a contrary explanation for the relationship between CFV and dividend payment distribution. Normally, a discrete stock prices or a shareholder "wealth penalty" is associated with cutting in dividends. According to IST, in order to avoid the penalty, the manager will choose a dividend policy in which the declared distribution is less than the anticipated income. Consequently, if the subsequent CF is smaller than anticipated, this strategy allows management to retain the announcd dividends. Therefore, the IST suggests that if the future CFV is higher, the dividend payout should be lower (Lintner, 1956; Miller & F. Modigliani, 1961). The following empirical studies also support the IST (Bhattacharya, 1979a; Kose, 1985; Miller & K. Rock, 1985).

However, ACT explains that when companies pay a high dividend, a decline in free cash flow (FCF) will thus create agency costs. The probability of agency cost increases when companies are constantly facing a high CFV. Companies with high CFV can receive higher dividends contrary to investments that do not maximize value. Hence, this theory advocates that companies in case of high CFV will pay higher amount of CF in the form of dividends (Jensen & Meckling, 1976; Rozeff, 1982). The empirical literature also supports the agency cost explanation which shows the following studies (Dempsey & Laber, 1992; Rozeff, 1982; Wang et al., 1993).

To explore the impact of CFV on dividend payout, several research have been undertaken in the literature and indicate an inverse relationship among CFV and dividend payout, explaining that as the CFV increases, the ability of the company to distribute dividends decreases (Mehta, 2012; Kania, 2005; Famma & French, 2001; Amidu & Abor, 2006). However, few studies in the literature have examined the relationship between CFV and dividend payout for developing economies. Therefore, the current study examines the CFV and dividend payment relationship for the developing economy of Pakistan.

1.4.1 Cash Flow Volatility and Dividend Payout Policy: Role of Internal and External Factors

Likewise, several prior studies have investigated the effect of firm-level internal factors (hereafter IF) and external factors (hereafter EF) on firms' dividend payout policies. The empirical literature indicates that the dividend distribution behavior of companies is significantly influenced by macro-economic and firm-specific IF. Firm-specific IF and macroeconomic factors may affect the CFV and dividend payout policy relationship, as it is sensitive to both macroeconomic factors and firm-specific IF (Ullah et al., 2012; Amidu & Abor, 2006; Mirza & Afza, 2010, among others).The interactive role of firm-level IF and macroeconomic factors in the CFV and dividend payment relationship is also missing in the literature. Therefore, the current study for the first time investigated the CFV and dividend payment relationship by considering the impact of both IF and EF.

1.5 Research Gap

Overall, the debate on the influence of CFV on firms' DMS, capital structure, investment behavior, and dividend payout policy show inconsistent empirical results. The available literature regarding the CFV relationship with firms' DMS, capital structure, investment policy, and dividend payment decisions has traditionally focused on firms in advanced economies such as U.S, China, UK , and Europe, etc (Keefe & Yagghoubi,2016; Memon et al.,2018; Lemma & Negash,2012; Zheng et al.,2012).

Both developing and developed economies exist inconsistent behavioral and structural heterogeneity across firms, which has different financial and economic implications for corporate fundamentals. According to the knowledge of the researcher, a very limited number of empirical research is available for developing countries. In most of the existing studies, evidence from developing country markets is missing, however, firms belong to developing country markets are continuously performing an important role in global markets (Alfaro et al., 2004). For keeping in view, there is a need to investigate the CFV relationship with DMS, capital structure, investment, and dividend payout policy decisions for the developing economy of Pakistan. In various ways, the current study enhances the existing literature of corporate finance, by providing significant evidence on how CFV affects the firms' DMS, capital structure, investment, and dividend payout policy decisions for the developing economy of Pakistan. Further, the literature also suggests that macro-economic and institutional factors significantly affect the firms' DMS, capital structure, investment, and dividend payout policy decisions, but up to the present, this is the first study that has analyzed the importance of these factors in relation to the effect of CFV on DMS, capital structure, investment, and dividend payout policy decisions. This study will cover this gap in the context of the developing economy of Pakistan.

Pakistan is a developing country. The real GDP growth rate is 0.29 % in FY 2023. The economy suffered severe difficulties from supply shocks, global economic recession, and macroeconomic imbalances, all of which slowed economic development. Moreover, In FY2023, the industrial sector saw a negative growth rate of 2.94%. The Manufacturing sector, which accounts for 65.0% of the industry, has a greater influence on the overall performance of the industrial sector (Economic Survey of Pakistan, 2023). In 1947, Pakistan possessed very few industrial industries. After fifty years, the manufacturing production index stands at 12,000, with 1947 serving as the base year. Industries such as steel, cement, autos, sugar, fertiliser, textiles, and vegetable ghee, as well as industrial chemicals, refined petroleum, and many more produce goods not only for the domestic market but frequently for the global one as well (Hussain, 2004). This research is particularly focused on the manufacturing firms of Pakistan. We have selected data of 380 listed non-financial firms of Pakistan to investigae the impact of cash flow volatility on the selected firms DMS, Capital structure, Investment, and dividend payout policy. Additionally, we have incorporated the impact of moderators such as macroeconomic factors, institutional factors, and firm-specific factors in the CFV relationship with DMS, capital structure, investment, and dividend payout policy. This research is interested to check whether the role of macroeconomic, institutional, and internal factors affects the non-financial firms of Pakistanor not. We have conducted this study for Pakistan because financial regulation system in Pakistan is more efficient relative to the other South Asian countries. Pakistan stock exchange, banks, financial institutions, and listed firm are more efficient. Market capitalization rate is also very high. Additionally, developing countries firms have a severe hetrogenity with developed countries firms, the results of the developing economies may differ from the developed economies. Hence, Pakistan is a developing economy and this study results may provide the evidence in corporate finance literature in the context of developing economy that will represent the behavior of the developing countries manufacturing firms .

Another contribution of this study is that it brings together all types of variables, which have never been brought together in research before, such as CFV, macro-economic factors, institutional factors, and firm-specific IF, etc., especially in the context of Pakistan. Developing economies have several institutional and country-level differences from developed economies and may affect this relationship in an alternative way than developed countries.

1.6 Significance of the Study

The current study results are very meaningful and supportive for the financial manager to better understand the relationship between CFV and firms' DMS, capital structure, investment, and dividend payout policy decisions. Moreover, the study results will serve as a tool for corporate managers in sustaining the optimal level of leverage and DMS and reducing their risk of non-performing loans for lenders, and for the investors to make the best decision on which firms want to invest. Additionally, the study findings are helpful for corporate DMS, capital structure, investment, and dividend payment decisions. They are also useful for policy makers to develop the effective policies . This study will not only be helpful for institutions, but also for individual investors to increase their return by making sensible financing, investments, and dividend payout decisions. When making financing decisions, company managers must carefully consider economic conditions and creditworthiness of their operations.

1.7 Objectives of the Study

The study research objectives are listed below

1. To empirically investigate the impact of cash flow volatility on firms' debt maturity structure.

1.1 To examine the role of macroeconomic factors (inflation, GDP Growth, money supply, and interest Rate) for the effect of cash flow volatility on debt maturity structure.

1.2 To investigate the role of institutional factors (bank deposits, rule of law, corruption, political stability, and regulatory quality) for the effect of cash flow volatility on debt maturity structure.

2. To empirically analyze the effect of cash flow volatility on capital structure/leverage.

2.1 To examine the role of macroeconomic factors (inflation, economic growth, interest rate, and money supply) for the effect of cash flow volatility on capital structure/ leverage.

2.2 To investigate the role of institutional factors (bank deposit, political stability, corruption, rule of law, regulatory quality) for the effect of cash flow volatility on leverage

3. To examine the influence of cash flow volatility on investment decision-making.

3.1 To investigate the role of institutional factors (corruption, rule of law, political stability, regulatory quality, institutional quality, and institutional ownership) on investment decision-making.

4. To examine the influence of cash flow volatility on firms' dividend payout policy.

4.1 To analyze the role of firm-level internal factors (operating cash flow and corporate tax), and external factors (inflation, GDP growth, and institutional ownership) for the effect of cash flow volatility on firms' dividend payout policy.

1.8 Research Questions

Following is the research question of the study

1. Does cash flow volatility significantly affect the firms' debt maturity structure?

1.1 What is the role of macroeconomic factors for the effect of cash flow volatility and firm-level maturity structure of debt?

1.2 What is the role of institutional factors for the effect of cash flow volatility and firm-level debt maturity structure?

2. Does cash flow volatility have a significant influence on firms' leverage?

2.1 What is the role of macroeconomic factors for the effect of cash flow volatility on leverage?

2.2 What is the role of institutional factors for the effect of cash flow volatility on leverage?

3. How cash flow volatility affects the firm-level investment decision-making?

3.1 What is the role of institutional factors for the effect of cash flow volatility on investment decision-making?

4. Does CFV have a significant influence on firms' dividend payout policy?

4.1 What is the role of firm-level internal factors and external factors for the effect of CFV on dividend payout policy?

1.9 Structure of the Study

The remaining section of the current study is structured as follows: In section 2, a brief discussion of the literature review is provided. Section 3 provides a brief description of the data and methodology. The empirical results are discussed in section 4. The study findings are summarized and suggest some policy recommendations in section 5.

CHAPTER 2

LITERATURE REVIEW

Eight key themes of the current study are covered by the literature section. The first theme explains the relationship between CFV and DMS. The influence of macro-economic and institutional variables in the CFV-DMS relationship is discussed in the second theme. The third theme displays the CFV and capital structure choice/leverage relationship. The fourth theme explores how institutional and macro-economic variables affect the CFV and leverage relationship. Fifth, explain the CFV relationship with firms' investment decision-making. The significance of institutional variables on corporate investment is explained in the sixth theme. Seventh theme explores the linkages between CFV and firms' dividend payout policy. The eighth theme describes the effect of firm-level IF and EF in the CFV and corporate dividend payment relationship.

2.1. Relationship between Cash Flow Volatility and Debt Maturity Structure

The selection of optimal DMS is important for a firm because it may help firms to avoid probable companies' liquidations, report agency problems, recognize financing flexibility, and indicate earning quality. Additionally, if businesses consider the cost of borrowing, flexibility of financing, and risk reimbursement, corporate DMS is crucial (Cai et al., 2008). DMS is also affected by CFV. The existing empirical literature regarding the CFV and DMS relationship is inconclusive. Previous studies measure CFV with different proxies, including earning volatility (Antoniou et al., 2006; Cai et al., 2008; Dang, 2011; Deesomsak et al., 2009; Elyasiani et al., 2002; Friend & Lang, 1988; González, 2017; Kim & Sorensen, 1986; Körner, 2007; Lemma & Negash, 2012; Miltersen & Torous, 2007b;

Ozkan, 2000; Tayem, 2018), firms asset volatility (Gorbenko & Strebulaev, 2010; Kane et al., 1985; Stohs & Mauer, 1996b), business risk indicates the probability that a firms having financial problems (Amal et al., 2011; Graham & Harvey, 2001; Guedes & Opler, 1996; Sarkar, 1999; Shah & Khan, 2009a), return volatility (Zheng et al., 2012), and CFV (Keefe & Yaghoubi, 2016; Memon et al., 2018; Minton & Schrand, 1999).

Numerous studies in the literature have used these CFV proxies to measure DMS determinants. Like, Kane et al. (1985) using the option valuation model, found that assets return volatility has an inverse relationship with DMS. Moreover, they explain that a decline in STD results in an increase in optimal maturity, representing the fact that with a less volatile assets return, the firm rebalances its capital structure less often. Using the asset volatility proxy , Stohs and Mauer (1996b) found an inverse significant relationship between assets volatility and DMS. Barclay and C. W. Smith (1995) found an inverse association between corporate earning quality and DMS, explaining that high-quality firms will select more STD maturity while low-quality firms will select more LTD maturity.

Similarly, Castanias (1983) also demonstrated the inverse association among business risk and leverage, implying that when a particular marginal tax rate, marginal default cost function, and a higher degree of business risk exist, firms reduce their amount of debt. Additionally, Guedes and Opler (1996) measured business risk as industry-specific volatility and indicate that business risk is a significant determinant of DMS and it is inversely related to DMS. Similarly, Sarkar (1999) measured volatility with risk and determined that risk is inversely related to DMS. Moreover, this study claims that volatility increases the possibility of financial distress which leads to a high level of bankruptcy threats. To avoid this threat, there is a higher probability that firms' will select STD. Ozkan

(2000) investigated the determinants of DMS for firms in the United Kingdom. Their results indicate that earning volatility has an inverse effect on DMS, as firms choose longer DMS when earnings volatility is lower.Moreover,2 Elyasiani et al. (2002) indicate that there is no association among earning volatility and DMS for any U.S companies, including industrial and financial utility firms.

Whereas, Antoniou et al. (2006) measured the determinants of DMS for UK, France as well as Germany. The study results conjecture an insignificant relationship between earning volatility and DMS for Germany, direct relationships for France, and an inverse relationship for the United Kingdom. To ignore the possible liquidation, with earning volatility, French firms may issue LTD maturities. Whereas, British firms with high volatility in cash flows may issue less LTD to avoid any long-term agreements. Körner (2007) revealed an insignificant relationship between earning volatility and DMS for Czech firms. Similarly, Cai et al. (2008) examined the determinants of corporate DMS for companies in China and an insignificant relationship was found between earning volatility and DMS. Moreover, Deesomsak et al. (2009) used the term earning volatility and reveal that earning volatility has an inverse effect on DMS. Shah and Khan (2009a) found an insignificant relationship between business risk and DMS. Amal et al. (2011) found that riskier firms in Latin America have longer debt maturity. However, riskier firms in the U.S choose STD.

Similarly, Dang (2011) used the term earning volatility and found a direct relationship between earning volatility and DMS. Stephan et al. (2011) also determined an inverse association between earning volatility and DMS for Ukrainian firms. Kleczyk (2012) empirically examined the determinants of DMS and measured volatility by abnormal earnings and found that abnormal earnings are inversely related to DMS. Zheng et al. (2012) in the context of North America determined an inverse relationship between DMS and return volatility, reflecting that risky firms use STD. Hence, they screen-off from the LTD markets. Furthermore, Lemma and Negash (2012) examined the DMS for African firms and found direct linkages between earning volatility and DMS. This result refers to the fact that riskier borrowers may be unable to bear the expense of rolling the STD, therefore, they choose the LTD. However, low-risk borrowers usually prefer STD (Flannery, 1986b). Hajiha and Akhlaghi (2013) found an insignificant relationship between business risk and DMS for the firms in Iran.

Additionally, González (2017) displayed that the association between earning volatility and DMS is significant and inverse, explaining that as earning volatility is high, firms usually change their capital structure to minimize the cost of bankruptcy. Therefore, firms will select STD maturity. Tayem (2018) found an insignificant relationship between earning volatility and DMS for firms in Jordon.

The limited literature is available that examines the impact of CFV on DMS, and it explains that highly volatile firms have more probability to select STD maturity. For instance, Keefe and Yaghoubi (2016) investigated how CFV determines the DMS in the U.S context. The results of the study show that other things remain constant, as one standard deviation (hereafter, STDEV) increases from the mean of CFV, the likelihood of having debt maturing in ten-years falls by 26%, and 39% increase in the chances of not holding both shorter and longer maturity debt. Overall, the results indicate that firms with a high CFV are more inclined to use STD. Similarly, Memon et al. (2018) investigated how CFV affected the DMS for listed firms in China. This study provides unique findings regardless of the ownership structure and revealed that firms facing higher CFV use STD maturity. Overall, an increase of one STDEV in volatility causes a decrease of 26.62% probability of holding LTD.

Moreover, earlier studies reveal the use of zero debt by maturity question in the capital structure of companies. The accounting system differentiates both STD and LTD, which can be classified into whether the DMS is mature in one year, five years, and ten years. M. O. C. Keefe and Nguyen (2023) examined the relationship between CFV and DMS and zero policy by using a large international sample. The study results concludes a CFV direct relationship with STD maturity structure and inverse relationship with LTD maturity structure. Moreover, results explained that a one STD in CFV implies a 2.57% decrease in the probability of firms usings LTD, and a 5.83% increase in the probability of firms using only STD and 11.8% increase in the probability of firms using only zero debt policy. Additionally, evidence that cash flow volatility is more important in countries with larger banking systems and more efficient legal systems. In these countries, cash flow volatility amplifies the positive influence on STD and negative influence on LTD. This suggests banks in these countries keep cash flow volatile firms on a tighter lease.

Keefe and Yaghoubi (2015) empirically examined the CFV impact on the zero debt policy for U.S firms. This study examined the relationship using the annual measures of firm-level CFV and applied the modern econometric techniques to explain the relationship of proportionate variables. The study results indicate that high cash flow volatile firms have more probability to select STD maturity. This result is consistent with Lee and Moon (2011a) reported that firms with high variation in cash flows are more chances to choose a zero debt policy. However, these results are different from Strebulaev and Yang (2013) who found an inverse association among asset volatility and the likelihood of having zero debt policy. Dang (2011) found not any significant relationship between CFV and zero debt policy.

The above literature review reported an inconclusive relationship between CFV and DMS. Mainly, studies under this context have been done for developed economies, and the work on developing countries is limited. However, developing countries have several institutional and country-level differences from developed countries. According to the knowledge of researcher, not any earlier study on the effect of CFV on DMS has been conducted in Pakistan. Therefore, the current study analyzed the impact of CFV on DMS for the developing economy of Pakistan.

2.1.1 The Impact of Institutional and Macro-economic Factors on Debt Maturity Structure

Many prior studies examined the effect of institutional and macro-economic variables on corporate DMS. Earlier research revealed that DMS is sensitive to institutional, macroeconomic, and firm-specific factors. Literature explained that the role of macro-economic factors is important in the determination of a firms' DMS selection. For example, some studies show that LTD and GDP are directly related, but STD and GDP are negatively related to each other, explaining that firms from higher economic growth countries borrow less STD and use more LTD (Alves & Francisco, 2015for developing countries; Awartani et al., 2016for Middle East and North american (MENA) Region; Bokpin, 2009; Gajurel, 2006in Nepalean context; Hajiha et al., 2014for Tehran; Piao & Feng, 2013for China; Turk, 2016by using a large sample of developing countries). However, according to some other studies, GDP is inversely related to LTD but directly related to STD. These results suggested that firms in fast-growing economies are less willing to borrow LTD because of risk considerations (Etudaiye-Muhtar et al., 2017for African country; Li et al., 2006for emerging economy). Bas et al. (2009) revealed that GDP is directly related to both LTD and STD.

Inflation is also an important macroeconomic variable that affects the firm DMS decisions. Many previous studies found an inverse relationship between inflation and DMS. Inflation burdens are continuously significant and negative suggesting that at a higher inflation rate, creditors are less inclined to borrow LTD because of the fear of bigger losses regarding the value of borrowed money in times of inflation. Such as (Awartani et al., 2016for MENA region; Etudaiye-Muhtar et al., 2017for African country; Fan et al., 2012for developing countries; Gonenc, 2003for Turkish companies; Hajiha et al., 2014for Tehran). However, according to Bokpin (2009) and Bas et al. (2009), inflation is directly related to LTD but an inversely related to STD.

Similarly, some other macroeconomic and institutional variables have been used in prior studies, which shows that macroeconomic and institutional variables have a significant effect on DMS decisions. Salehi and Sehat (2019) examined the relationship between DMS and institutional ownership by using data of financial variables from 143 listed companies in Tehran and found an insignificant relationship between DMS and institutional ownership. Similarly, Awartani et al. (2016) investigated the impact of institutional variables on DMS in MENA. The study results suggested that high-quality institutions encourage more usage of LTD in MENA. The usage of LTD in the MENA is specifically related to strong legal system, more effective regulatory framework, stronger creditors legal protection, and well-developed financial intermediaries.

Whereas, Turk (2016) empirically investigated the importance of the legal system on DMS by using a large sample of developing countries. Legal systems are measured by two variables (corruption and common laws). The study findings reveal that when country corruption rate is higher, firms use STD. On the other hand, the lower rate of corruption encouraged firms in underdeveloped economies to use LTD. Additionally, firms in common-law nations are more dependent on the LTD than firms in civil-law nations. Overall, the results reveal that efficient public governance and intense investors protection encouraged the firms to select LTD for financing purpose.

Similarly, Alves and Francisco (2015) investigated the effects of some institutional factors on DMS during the period of all financial crises. This study used a variety of institutional and macro-economic variables The findings suggest that in the presence of crises, STD followed an upward drift and LTD followed a downward drift due to an increase in imperfect information and financing breakdown. Hence, firms issue STD in all crises. Corruption is directly related to LTD but inversely related to STD. However, capital market development and bank development are directly related to LTD but inversely related to STD. Foreign direct investment and current account balance are directly related to STD but inversely related to LTD.

Additionally, Ruan et al. (2014) examined the ownership control and firms' DMS relationship in China. The study results conjecture that ownership control is an imperative factor, which significantly affects the firms' DMS. State control firms have more accessibility to LTD and use less proportion of STD. However, individual firms have very limited accessibility to LTD. While, STD is always an economically significant financing source for them.

Moreover, Hajiha et al. (2014) empirically examined the impact of macro-economic variables on DMS in Iran. The results indicate that money supply is inversely related to corporate DMS. Similarly, Fan et al. (2012) analyzed the institutional variables impact on DMS for thirty-nine developed and developing countries. The results of the study suggest that the selection of a firm's DMS is significantly influenced by the tax system and legal systems of the nation, corruption, and priorities of the capital suppliers. Particularly, firms from highly corrupt countries and where the laws system is weak choose STD. However, explicit bankruptcy codes and insurance deposits have a significant and direct impact on LTD. Inflation rate volatility has a significant and direct impact on STD in developed countries, but it is unrelated to developing countries.

Likewise, La Rocca et al. (2010) examined the local-institutional disparities in the DMS of small and medium enterprises (SME) in Italy. The results explain that both DMS and leverage work together as complementary factors and business financing decisions are affected by firm-level variables, but they are also dependent on the institutional environment where firms operate. Further, results declared that DMS was longer in that regions where stronger enforcement of laws. Whereas local financial development does not perform any vital role. Further, Bastos et al. (2009) investigated the impact of macro-economic and institutional variables on leverage for seven large economies of Latin America. The results conjecture that tax burden negatively affected the STD and business time is directly connected with STD. Additionally, found that both interest rate and tax rate are directly related to STD but inversely related to LTD.

Further, López-Iturriaga and Rodriguez-Sanz (2008) investigated the institutional determinants by using the data of ten advanced and underdeveloped economies and categorized them into common and civil law firms. The study findings revealed that firms form common-law nations choose LTD. However, firms from civil-law nations are more likelihood to select STD. Furthermore, the results recommend that the inclusion of some legal and institutional settings such as investors' legal protection, law enforcement, and financial information quality may help in explaining the firms' financial decisions.

Moreover, Li et al. (2006) investigated how ownership structure and institutional environment affected the non-listed firms' financing decisions in an emerging economy. The results suggested that institutional settings and ownership structures have different impacts on large and small size firms. Moreover, they found that a better legal environment is directly related to LTD. Gonenc (2003) also examined the DMS decisions under institutional settings in the Turkish markets by using a sample of listed Turkish industrial companies. The results declared that short-term DMS is considered the leading investment strategy in Turkey due to the country's high inflation rate volatility and political instability, both of which encourage short-term investments. However, DMS variations depends on the size of the firms. In contrast to small firms, large firms select more LTD but less STD.

Section 2.1 and 2.1.1 discusses studies that habe separately examined the relationship between CFV and DMS, as well as the impact of institutional and macro-economic variables on DMS. These studies suggest that the role of these factors is sensitive to DMS. According to the researcher knowledge, not any previous study in Pakistan has empirically analyzed the impact of institutional and macro-economic variable in the CFV-DMS relationship. These two variables are important in firms' DMS selection. Hence, there is a need to identify whether institutional and macro-economic variables strengthen or weakens the CFV-DMS relationship. This study covers this gap by examining the impact of institutional and macro-economic variable in the CFV-DMS relationship. The study results are very meaningful and will provide a strong explanation to corporate managers in this regard.

2.2 Cash Flow Volatility and Leverage

Despite the strong theoretical explanation of the relationship between CFV and leverage, there is inconsistent evidence in the empirical literature regarding the CFV and leverage relationship. There is a robust theoretical background to support the concept that volatility has an impact on the leverage policy. According to Merton (1974), the current value of debt-tax benefits declines as volatility increases, because it raises the likelihood of facing financial distress. According to Pecking Order Theory (hereafter POT) , developed by De Angelo and Masulis (1980) demonstrated that enterprises with unstable CF, make it impossible for lenders to predict future revenues using publicly available information. Hence, markets charge a premium to provide loans. Additionally, companies with unstable CF use minimum leverage to lessen the probability that they won't be able to realize profitable investments when they have less CF and to decrease the need for new equity issuance. Thus, there is an inverse association predicted among CFV and leverage in accordance with the Pecking Order Therory.

According to Terms of Trade Theory (Hereafter TOT), companies leverage level declines as CFV rises, in order to equalize the expenses and benefits which are connected with debt like bankruptcy costs, financial distress, and debt tax advantages, thus, maintaining the optimal debt (Titman and Wessels, 1988). Hence, both theories predicted that CFV-leverage have an inverse relationship. Leland (1994) derives the optimum level of capital structure by solving the Merton model and states that high volatility increases the risk of world states in which the firms cannot take an advantage of debt tax shields. In general, higher CFV is anticipated to be inversely connected to optimal leverage because it raises the likelihood of financial distress and decreases the PV of tax-shields.

However, the empirical literature explains the mixed results regarding the CFV and leverage relationship. Like, few studies explain a direct relationship, and many others explain the negative relationship, while numerous studies also report an insignificant CFV and leverage relationship. In addition, prior studies used different proxies to measure the CFV such as business risk, earning volatility, asset volatility, and cash flow volatility.

For example, Kim and Sorensen (1986) established the direct association among earning volatility and leverage. Toy et al. (1974) and Long and Malitz (1985) report that business risk has a positive relationship with the debt ratio for developed economies, explaining that higher earnings are associated with a higher debt ratio. Moreover, Shenoy and Koch (1996) explained the direct association among business risk and leverage by using a sample of sixteen manufacturing and non-manufacturing industries from the COMPUSTAT data set. Additionally, this study reported a direct CFV-leverage relationship. This result supports the IST reveals that high cash flow volatile firms use more leverage to signal their performance. Further, Nenu et al. (2018) also demonstrated a stock price volatility (Risk) and leverage direct relationship in ROME. Whereas various other prior studies show an insignificant relationship. For instance, Titman and Wessels (1988), revealed that volatility has an insignificant relationship with leverage. Likewise, Graham and Harvey (2001) presented a weak relationship between firm-specific risk and leverage by surveying 392 CFO’s regarding the capital budgeting, capital structure, and cost of capital with the joint effort of the financial executive institute (FEI) and Duke University.

Additionally, El Bahsh et al. (2018) report that earning volatility has a negative and insignificant relationship with leverage in Jordan, implying that as firms borrow more, their risk of bankruptcy increases. Hence, those firms that take more risk may decrease the leverage level. However, Huang and Song (2006) for China and Antoniou et al. (2006) for five developed countries (United States, Japan, United Kingdom, German, and France) exhibit that volatility has an insignificant relationship with leverage. While, Frank and Goyal (2009) measured risk by stock return volatility and reported an insignificant relationship among leverage and stock returns for firms in the United States. Ahsan et al. (2016) explained that business risk is directly related to leverage, implying that firms in Pakistan face a relatively high business risk. Hence, they attempt to shift their risk to short-term creditors by selecting the STD. Therefore, long-term creditors has a little influence on long- term financing decisions.

Whereas, the general conclusion is that CFV and leverage should be negatively related. The traditional argument has been that in the presence of bankruptcy costs, firms with unstable CF should choose less debt because they are more likely to bankrupt at any given level of debt (Parsons & Titman, 2009). Many other studies explained the negative linkages between leverage and volatility. Such as Wald (1999) empirically examined the capital structure determinants in five developed countries like U.S, UK, Japan, France, Germany, indicating a risk negative relationship with leverage in the United States, and a positive relationship found in Germany, Japan, France, and United Kingdom. While, Booth et al. (2001a) exposed that business risk has an inverse relationship with leverage in developing countries. Moreover, Bhaduri (2002) demonstrated that firms with high leverage are more prone to face financial difficulties. Hence, firms with volatile CF are more inclined to use less leverage. Allayannis and Weston (2003a) presented that both earning volatility and CFV are inversely related to firms' value. Similarly, Lee et al. (2014) explored the capital structure determinants by employing the survey data from seventy-eight CFO's in Korea. The results suggest that earning volatility is one of the important factors in Korea regarding firms' financing decisions.

Further, Nam et al. (2003) found that business risk has an inverse relationship with leverage by using a sample of S&P 500 index from 1986 to 1996. In the same way, to measure the probability of financial distress several studies used the term business risk and established an inverse relationship with leverage that can be seen from (Bradley et al., 1984b for US; Chaplinsky & Niehaus, 1993inside ownership sample extracted from corporate data exchange ; Harris & Raviv, 1991; Sakr & Bedeir, 2019 for Egypt; Wald, 1999for five developed countries). These results suggested that firms' leverage level drop when risk increases. This result supported the TOT, which indicates that leverage must not be used by risker firms or those firms who have a higher probability of default. It may be because the higher business risk is related to higher bankruptcy costs.

According to Friend and Lang (1988), earning volatility and leverage have an inverse relationship. Moreover, Sheikh and Wang (2011) report a leverage and earning volatility negative relationship for firms in Pakistan. Chen et al. (2014) also reveal that earning volatility and leverage have an inverse relationship for firms in the United States. Likewise, Gorbenko and Strebulaev (2010) described that asset volatility and leverage are directly related when the importance of temporary cash flow shocks is small relative to the permanent cash flow shocks.

Furthermore, some of the previous studies explained the inverse linkages between CFV and leverage. Like, Dudley and James (2015), examined the CFV relationship with leverage, indicating that volatility matters highly related to financially constrained firms and the issuance of debt. The study results suggested that financially constrained firms negatively related to CFV. When CFV is low, constrained firms aggressively issue debt. When CFV is high, firms face trouble in deleveraging, which leaves their industry vulnerable to or macroeconomic downturn. Constrained firms also started to hold the earnings from debt when CFV is low, but finance the returns from issuance of debt when facing high CFV. Similarly, Santosuosso (2015) demonstrates that CFV has an inverse relationship with leverage by examining a different level of CF for firms in Italy and concluded that firm with high CFV, use less LTD regardless of their average level of CF. Also, a negative relationship is found between total debt and CFV when firms operate at a lower level of CF. However, a similar relationship was not found for firms that have high levels of CF. Mosavi et al. (2015) reveal that CFV has an insignificant impact on leverage for listed companies in Tehran.

Additionally, Keefe and Yaghoubi (2016) investigated the CFV and leverage relationship. Their findings reveal that other things remaining constant, such as one STDEV rises from the mean of CFV, result in a twenty-four percent drop in LTD ratio, a twenty-six percent decline in the likelihood of holding debt that matures in greater than 10 years, and a thirty-nine percent rise in the likelihood of not selecting both STD and LTD. As a result, CFV is directly connected with STD but inversely with LTD.

Furthermore, Memon et al. (2018) demonstrated that CFV and leverage have an inverse relationship in China. Harris and Roark (2019) empirically investigated the cash flow risk relationship with leverage and operating CF for firms in the U.S. The study findings explain a CFV direct relationship with leverage which reflects that high cash flow volatile firms increase the debt level, but only in that case if firms have less operating CF. However, firms with high-operating CF do not increase their debt level in response to high CFV. It might be because, with higher operating CF, firms have sufficient internal resources to satisfy their needs.

In addition, Caglayan and Rashid (2014) demonstrated that macro-economic risk has a significant and inverse relationship with short-term leverage for non-financial firms (public and private) in UK. Furthermore, Rashid (2016) examined the influence of firm-specific factors and macro-economic risk on leverage for manufacturing firms in UK over the period from 1981 to 2009. The study findings indicate that the estimated speed of adjustment explains that firm specific as well as macro-economic risk has a considerable effect on the rate where firms shift their leverage towards the desired level. Moreover, results show that when both categories of risk are low, firms immediately shift leverage towards the desired level. It may be because firms adjust more cheaply when both categories of risk are low.

Likewise, Baum et al. (2017) estimated the role of risk in the process of adjustment for UK based non-financial firms. The findings reveal that when firm-specific risk is low and macro-economic risk is high, firms experience a financial surplus and immediately shift their capital structure at the above desired level. However, when both types of risk are low, firms experience a financial shortfall and immediately shift their capital structure below the desired level.

Hence, the results show inconsistent findings about the CFV and leverage relationship. Several studies have been done only for advanced economies such as the U.S, China, UK, France, and Germany. However, limited work has been done for emerging and developing economies. Developing countries have several institutional and country-level differences from developed countries. Hence, CFV may have influenced on leverage in a different way relative to developed countries. Therefore, this study fulfills this gap by analyzing the effect of CFV on leverage for the developing country of Pakistan.

2.2.1 The Effect of Institutional and Macro-economic Factors on Leverage

Several studies separately investigated the impact of institutional and macro-economic variables on leverage. Similarly, numerous studies explain the linkages between CFV and leverage which we have discussed in the previous section 2.3. However, there is a gap in the literature about how institutional and macro-economic variables affected the CFV and leverage relationship. Various studies explain the number of institutional and macro-economic factors that have a significant impact in determining the corporate capital structure. Like, Korajczyk and Levy (2003) examined the impact of macro-economic conditions and financing constraints on firms' leverage level. The study findings imply that firms under financial constraints choose their capital structure differently than those firms that are not facing financial constraints. Additionally, the results also indicate that unconstrained firms are more affected by macroeconomic conditions than constrained firms. Gajurel (2006) also analyzed how macroeconomic variables affected the capital structure in Nepal and explained that the impact of macroeconomic variables is significant for firms' capital structure selection. The study findings indicate that GDP growth and inflation are inversely related to leverage level. Whereas stock market capitalization is negatively related to leverage level. These findings exposed that a high level of economic growth encourage the usage of more LTD, and when capital markets develop, they become a substantial source of financing for corporations.

Whereas, Bokpin (2009) analyzed the impact of macroeconomic variables on leverage for thirty-four emerging countries. The study results suggested that inflation, GDP per capita, and interest rate have an inverse relationship with leverage. While bank credit is positively related to leverage. Bastos et al. (2009) investigated the country-specific factors such as legal, institutional, and economic environmental influences on leverage for Latin America. The results found that macroeconomic and institutional factors were not so robust, but the role of GDP growth is significant for the determination of corporate leverage. Likewise, Fan et al. (2012), Bas et al. (2009), and Booth et al. (2001a) for developed economies, used famous macro-economic indicators such as GDP growth, inflation, and monetary and fiscal policy variables, and their findings show that GDP growth and tax rates are directly related to firms' leverage level. However, inflation and interest rate are inversely related to leverage. These results consider that economic growth is a comprehensive variable that explains the variation of wealth in any economy. Moreover, results suggested that as countries are becoming richer, more financing becomes available. Consequently, expected economic growth is directly related to leverage for all kinds of firms. Economic growth also measures the firm's access to growth opportunities. For an individual firm, the growth rate can be used as a proxy of investment opportunity faced by the firms, and it influences on the projects' optimal investment. Hence, leverage is directly related to economic growth for all types of firms. The next variable inflation has an inverse relationship with leverage for all type of firms because contracts of debt are mostly nominal types of contracts and inflation can increase the riskiness of debt financing.

Similarly, the variable interest rate is inversely related to leverage for all types of firms. As the rate of interest increases, firms are not willing to invest in new projects because of expensive borrowing. The tax rate is directly related to leverage, and tax benefits associated with debt encourage firms to borrow more debts as the tax rate increases.

Likewise, Tian (2013) findings imply that economic growth is significantly and directly related to leverage ratio. This result supports the Pecking Order Theory (POT), which suggested that firms with the increased in growth opportunities may experience considerable information disparities and an increase in leverage ratio that may indicate satisfactory performance. Moreover, growing firms may not have sufficient funds to expand investment opportunities and may prefer external financing through the desirable mode of debt financing.

Additionally, Piao and Fang (2013) reveal that money supply and GDP growth have a direct and significant association with leverage levels in China. Amal et al. (2011) analyzed the influence of national development (financial development, macroeconomic and institutional quality) and industry characteristics on leverage for seven Latin American countries. Their results reveal that financial development, easy excess to external funds, and institutional quality are inversely related to leverage.

Further, Mokhova and Zinecker (2014) investigated the influence of macroeconomic factors monetary policy (hereafter MP) and fiscal policy (hereafter FP) variables on capital structure for seven different European countries. The study findings demonstrate that the impact of macroeconomic variables is significant in making financing decisions. Government debt has a significant and direct relationship with leverage for emerging markets, but an inverse relationship with leverage for developed markets. Tax revenue and income tax have an inverse and significant influence on leverage for developed markets. The MP variables and unemployment rate have a positive but insignificant influence on leverage for emerging markets. Inflation is directly related to leverage level in emerging markets but negatively related to developed markets. The results reported that interest rate has an insignificant impact on leverage for emerging markets. Lee et al. (2014) stated that market interest rate and credit rating are the significant determinants of corporate capital structure.

Moreover, Pindadoa et al. (2014) examined how macroeconomic policy variables affect the firms' financing decisions by using a sample of 33 international countries, which comprises of developed and emerging economies. In addition, this study measures the degree of financing at the firm level. Their findings show a significant and direct influence of MP variables on firms' financing decisions. MP may help the firms' access to debt irrespective of the level of financing constraints. Whereas, constrained firms are more prone to MP variables. Similarly, Dudley and James (2015) found that real GDP has an inverse relationship with both book and market leverage for U.S firms. Additionally, Keefe and Yaghoubi (2016) found that expected inflation has a direct relationship with leverage but an inverse relationship with credit rating for firms in the U.S. El Bahsh et al. (2018) investigated the industry-specific and country-specific determinants of leverage in Amman. Their findings reveal that corruption, inflation, and financial market development increase the opportunities for firms to get benefits from leverage. In addition, Industry-specific factors may reduce agency cost and refinance risk through the external usage of debt.

Likewise, Bernardo et al. (2018) investigated the influence of macroeconomics (GDP growth, per capita income, and inflation) and institutional factors (property rights, legal risk, minority rights, credit protection, corruption, and ethics) on capital structure in Latin American countries. Their findings reveal that all these institutional and macro-economic factors have a significant impact on the selection of firms' financing decisions.

Moreover, Frank and Goyal (2009) and Harris and Roark (2019) suggested that expected inflation is directly related to market leverage for firms in United State of America. Ahsan et al. (2016) found that inflation, exchange rate, and economic growth have an inverse relationship with firms' leverage in Pakistan. Pepur et al. (2016) stated that GDP growth is negative but insignificant to firms' leverage. Inflation and banking sector development are significantly and directly related to leverage level by using a data set of large corporation in Croatia. Their findings suggest that an increase in economic growth may reduce the firms' leverage level. In addition, higher rates of inflation may decrease borrowing costs, which enables firms to take out more loans. Additionally, the value of tax deductions increases because of the higher inflation rate (Frank & Goyal, 2009). The positive coefficient of banking sector development indicates that companies are highly dependent on the finance provided by the banking sector. Banking sectors make it easier for firms to borrow money from outside sources, which raises their level of leverage.

Further, Handoo and Sharma (2018) displayed that tax rate debt serving capacity significantly affects the firms' financing decisions. Memon et al. (2018) highlighted a positive relationship with both market and book leverage and GDP growth. Whereas shows an insignificant and inverse relationship between book leverage and inflation, a significant and direct linkage was found between inflation and market leverage for China.

Additionally, a number of previous studies describes the institutional variables relationship with leverage such as lower corruption level is related to lower debt ratios. Gonenc (2003) reveals that the characteristics of firms in turkey depend on the equity ownership of the managers, financial institutions, government, and stock markets. Bancel and Mittoo (2004) analyzed the determinants of leverage for sixteen European economies and reveal that institutional settings and global activities have a considerable influence on the firms' financing decisions. In addition, optimal leverage is determined by firms through trading-off cost and the benefit of financing. Li et al. (2006) analyzed the firms' leverage selection in China. The findings explain that ownership and governance structure significantly affects the leverage. Particularly, leverage level rises when both public-ownership and private-ownership exists while falling when foreign-ownership exist. Firms located in areas with more competitive banking sectors and safer legal environments have lower overall debt to assets ratios. Ownership and institutional variables may account for up to 7% of the overall variation in the decisions made by firms regarding leverage. Contrarily, only 13% of the variation can be attributed to firm characteristics. The findings show that institutional settings and ownership-structure have various effects on small size and large size firms. Additionally, small firms are more probability is to screen-off from the LTD markets.

Similarly, Antoniou et al. (2006) examined the leverage level of all those firms that are working in the bank-oriented and capital market-oriented economies. Their findings reveal that economic, environmental, and institutional variables such as, tax system, corporate governance practices, borrower-lender relationship, exposure to the capital market, and level of investor protection, have a considerable influence on the leverage level of all firms in the selected countries. Further, Lopez-Iturriaga (2008) analyzed the influence of institutional settings and legal system on firms' financing-decisions by employing a sample of ten developed countries. Their results show that legal and institutional settings such as the legal protection of investors (enforcement of laws, quality of financial information) have a considerable influence on the leverage level of all firms in the selected countries.

Further, La Rocca et al. (2010) analyzed the regional-level effects of institutional differences, by considering regional, financial development, and the effectiveness of regional enforcement system, on SMEs financing decision-making in Italy. Their findings suggest that leverage decisions made by firms are influenced by the firm specific factors as well as institutional environment (local enforcement system, ownership concentration). Moreover, firms' debt capacity is severely affected by local financial development.

Likewise, Kayo and Kimura (2011) analyzed the impact of firm-specific, industry-specific, and country-specific determinants of leverage in forty advanced and emerging countries. Their results imply that all factors related to firm-specific (profitability, growth opportunities, size, and tangibility), industry-specific (Munificence, Dynamism, and HH Index), and country-specific (stock market development, bond market development, financial system, and GDP growth) significantly affects the leverage in the overall sample.

Moreover, Fan et al. (2012) examined the influence of institutional factors on leverage for both advanced and underdeveloped countries. The results revealed that the country's legal and tax system, corruption, and the attitude of credit suppliers', explained a significant percentage of variation in the capital structure of all the selected firms. Particularly, firms use more debt in highly corrupted countries and where the implementation of the rule of law is very weak. High leverage is associated with deposit insurance and explicit bankruptcy codes. Furthermore, debt is used more frequently in those countries where the tax benefits of debt are higher.

Moreover, Caglayan and Rashid (2014) examined the effects of firm-specific factors and macro-economic risk on leverage for the overall manufacturing firms (both public and private) in the United Kingdom. Their results indicate both types of firms are equally affected by macroeconomic risk. Moreover, findings implied that GDP growth is inversely related to leverage for non-public firms but directly related to leverage for public firms. Alves and Francisco (2015) investigated the impact of some institutional factors on leverage during the period of all financial crises in forty-three developed and developing countries. This study used institutional factors such as (capital market development, corruption, banks development), and macroeconomic factors (current account balance and foreign direct investment). The results suggested that GDP growth, bank development, current account balance, foreign direct investment, and capital market development are inversely related to leverage. However, general government debt is directly related to leverage for all financial crisis periods. Their findings indicate that the more the country attempts to eliminate corruption, firms decrease their leverage. When countries implement anti-corruption measures, firms decrease their leverage.

Additionally, Ariss (2015) examined the influence of legal-system on leverage for the shipping firms in the developing countries. The results show that corruption increases the firms' leverage, but the impact of corruption is minimum when compared to the effect of a strong rule of law. Secondly, common law vs civil law discrepancies do not matter for corporate financing in developing economies. Additionally, the results implied that the differences financing decisions depend on the two components of their legal systems (integrity and strength of the laws).

Further, Rashid (2016) examined the influence of firm-specific factors and macro-economic risk on firms' leverage for manufacturing firms in UK over the period from 1981 to 2009. The results show that estimated speed of adjustment explain that firm-specific as well as macro-economic risk has a considerable effect on the rate where firms shift their leverage towards the desired level. Moreover, results show that when both categories of risk are low, firms immediately shift leverage towards the desired level. It may be because firms adjust leverage more cheaply when both categories of risk are low.

According to Etudaiye-Muhtar et al. (2017) firms in these countries have a higher saving rates, they generally have a higher leverage. Government bonds are inversely related to leverage. The large private sector, strong rule of law, and improved regulatory quality are positively related to leverage, but a weak institutional system has an inverse relationship with leverage. According to the researcher knowledge, this is the first study that has investigated the influence of institutional and macro-economic factors in the CFV and leverage relationship. It will significantly expand the body of corporate finance literature and the influence of these macro-economic and institutional variables may disturb the CFV and leverage relationship. Ahsan (2016) examined the capital structure adjustment rate towards the target for manufacturing firms in Pakistan. The findings implied that firms in Pakistan needed an adjustment of 24-51% per year to meet their capital structure target.

Moreover, macro-economic factors auch as inflation, exchange rate, and economic development make the business environment unstable.

From the review of the above literature, it has been observed that both institutional and macro-economic factors significantly affects the leverage. The purpose of this study is to examine the impact of macroeconomic and institutional variables for the effect of CFV on leverage for the developing economy of Pakistan. Macroeconomic and institutional variables may affect the CFV and leverage relationship.

2.3 Cash Flow Volatility and Investment Decision-Making

Numerous studies have investigated the various uncertainties associated with investment at the industry and aggregate level. Whereas limited studies have examined the association between investment and CFV. Theoretically, according to Modigliani and Miller (1958) firms' investment decisions must be decided independently from internally generated CF. Several empirical studies covering both developed and underdeveloped countries suggested a direct relationship among CF and investment, indicating that firms with higher CF invest more (Bates, 2005; Dang, 2011; DeAngelo et al. 2004; DeAngelo et al. 1994; Kinyanjui, 2014; Ajide 2017). The findings support the POT, revealing that firms initially use funds from internal sources, when it has ended, they borrow debt to control ownership, and finally, they tend to choose external equity to spread risk among different shareholders. Ullah (2017) displayed a positive relationship of CF with firms' investment decision-making in Pakistan. The results indicate that non-financial firms of Pakistan do not have easy access to cheap borrowing at a lower cost. Hence, when the CF increases, firms' investment in fixed assets increases in order to increase the production efficiency.

Although CF levels are not only a major determinant in investment decision-making, but their volatility also plays an important role in making investment spending, CFV has not received substantial attention up to the present. Theories of risk management explained that firms must retain smooth CF (Froot et al., 1993a). From the risk-management framework, Shapiro and Titman (1986), Tufano (1996), and Minton and Schrand (1999) reported that firms actively managed risk to get benefits by minimizing the CFV. In addition, these studies claimed that firms might reduce their costs by using external financing, which would increase the value of the firms. These findings suggest an inverse relationship between CFV and investment decision-making. Myers and Majluf (1984b) agreed with the financing pyramid in which firms rely on imperfect information when firms' managers have inside information and reveal that a financing pyramid can limit the investment from internally generated CF in order to avoid the risk. The financing pyramid is because of agency cost or information asymmetry which indicates financial constraints, and as a result, affects the firms' investment decision making. If the firm is limited to internally generated CF, the CFV acts as a major risk to the firms' investment.

The literature on CFV typically emphasizes on risk management because CFV is expensive for corporations. If the duration of CF is low, the cost of CFV may be attributed to underinvestment (Stulz, 1990), and there is an increased chance that firms will need relatively expensive external financing. It may be firms with high a CFV are usually assumed to be more risky, which makes expensive financing from an outside source accessible to firms (Froot et al., 1993a; Minton & Schrand, 1999). According to Minton et al. (2002) CFV is the key variable in predicting future CF and earning levels.

Further, few studies in the literature investigated the role of CFV in the context of investment cash flow sensitivities. For example, Fazzari et al. (1987) claimed that cash flow sensitivity must be important for financially constrained firms because it provides both internal and external financing. According to Gilchrist and Himmelberg (1995) small-size firms have higher investment cash flow sensitivity than large-size firms. In comparison to large firms, small firms face more financial constraints due to agency costs and information asymmetries.

Further, Boyle and Guthrie (2003b) proposed an investment model based on the assumptions of capital market frictions, where firms with higher levels of uncertainty about their ability to finance investments have a lower threshold to justify investments that result in higher investment levels and higher investment cash flow sensitivities. Contrary to the expectation of Boyle and Guthrie's model, Cleary (2006) finds that high investment cash flow sensitivities are associated with low cash flow volatility. Likewise, Pindado et al. (2011) explained the investment and CF sensitivity relationship by incorporating the role of the ownership structure of family-owned firms. Their findings explain that family-controlled corporations have lower investment cash flow sensitivities. This is possibily attributable to family corporations with no variations among CF, voting rights, and also to family corporations in which family members hold managerial positions. Overall, family-control corporations appear to mitigate investment inefficiencies that arise from capital market imperfections.

The literature shows that limited studies have examined the relationship between CFV and investment, and these studies were particularly conducted for developed economies. Such as Minton and Schrand (1999) used a sample of U.S firms and investigated the impact of CFV on discretionary investment. Their findings indicate an inverse relationship between CFV and investment, suggesting that CFV increases the demand of external-financing and makes internal-financing costly. Consequently, this affected the behavior firms' investment spending. Further, Allayannis and Weston (2003a) investigated the CFV relationship with an investment opportunity and firm value. The findings show that CFV has an inverse relationship with investment and firm value. Almeida et al. (2004) revealed that non-constrained firms have a low CFV compared to constrained-firms. The idea of Almeida et al. (2004) was extended by Acharya and Schaefer (2006), and they found an inverse relationship between CFV and investment by considering the element of cash holding.

Further, Booth and Cleary (2006) analyzed the relationship between CFV, financial-slack, and firms' investment decision-making in the existence of imperfect markets in the United State of America. The results suggested that constrained firms will support their balance sheet and show a weak relationship between future CF and investment in comparison to firms operating in a perfect capital market. Furthermore, results also indicated that a high level of financial slack causes a decrease in CF sensitivity in the presence of a high level of CFV. However, findings are ambiguous if firms increases or decreases their investment in case of less sensitivity. Similarly, Cohen (2014a) empirically analyzed the impact of CFV on firms' investment decision-making by considering the roe of cash holding for U.S. Their results endeavor that those firms who have high cash holding and are facing CFV should wait instead of increasing their investment. Whereas, firms which give up the real options of waiting may revert to investing in less favorable projects. Additionally, Keefe and Tate (2013) used a sample of manufacturing firms in North

America and study findings implied that firms reduce their investments when they persistently face high CFV. These results also showed that firms decrease their investments when they suffer both high CFV and negative CF growth realizations, and in the case of less cash holdings with high CFV and negative CF growth realizations. For unconstrained firms, these effects may be missing or are relatively less important. Overall, the findings are in line with the financial flexibility literature and contradict the real options literature.

Moreover, Mulier et al. (2014) examined the impact of CFV on investment cash flow sensitivity for six European countries, and their findings suggested that lower CFV is related to higher investment cash flow sensitivity. Additionally, the investment cash flow sensitivity depends on the cost of financing. The study findings contradict the literature. Like, Rashid (2011) measured how private firms react in case of uncertainty (measured financial market uncertainty and Idiosyncratic uncertainty) by utilizing the data of UK based private manufacturing firms over the time period from 1999-2008. The study results revealed that when firms face higher uncertainty, they significantly decrease capital investment expenditures. Therefore, both types of uncertainties have significantly and negatively affected the firms' investment behavior. Additionally, the study findings implied that private firms investment is more sensitive to idiosyncratic uncertainty as compared to financial market uncertainty. Ranjabr (2017) examined the role of CFV on the level of current investment for listed companies in Tehran. The results indicated that CFV is significantly and directly related to current investments and the size of this association is higher for growing companies. Similarly, Vengesai and Kwenda (2018) explored the relationship between CFV and firms' investment behavior for listed companies in Africa. The findings explained that CF is the significant determinant of firms' investment decision-making, but CFV also significantly affects the investment level of African firms. Moreover, the results indicate that CFV is significantly and inversely related to investment, even if firms are unconstrained but facing high CFV.

All of these studies have explained an inverse relationship between CFV and firm's investment behavior, but many of these findings are relevant to developed economies. In the literature, very few studies are available on developing economies. According to the best of researcher knowledge, not any prior research has investigated firms behavior in the context of CFV, particularly in Pakistan. Pakistan is one of the developing economies and CFV is an important variable that can affect the investment behavior of firms in Pakistan. There is a need to analyze the impact of CFV on firms' investment-spending behavior. This study covers this gap by exploring the relationship between CFV and firms' investment behavior in the context of Pakistan.

2.3.1 Role of Institutional Factors on Firm's Investment Decision-Making

Firm-specific variables not only determine the firms' investment behavior, but institutional variables are also play a key role in firms' investment decision-making. The firm-specific variables matter, but the role of institutional factors cannot be ignored as they can also affect investment decisions. Many prior studies investigated the impact of institutional variables on firms' investment decision-making both for developed and developing economies. Empirical and theoretical literature has focused on the relationship between institutional quality and corporate investment decision-making. There is evidence that country-level factors such as institutional quality can affect capital investment, implying that policymakers and regulators may affect the leverage and firms' investment decision-making. Additionally, by reducing the cost of corruption, improving the quality of regulation, and effective enforcement of the rule of law, the cost of capital can be decreased, and firm value may increase. Therefore, policymakers and regulators may affect corporate governance by influencing leverage (Lemma & Negash, 2013).

Theoretically, the impact of institutional factors on firms' investment decision-making is not entirely clear. The opinion of various authors is that corruption disturbs the structure of the institutional atmosphere, as it increases the operational cost, increases uncertainty, and therefore, discourages investment (Wheeler & Mody, 1992). Institutional quality (IQ) may be a good factor in investment; the reason is that good governance is related to economic growth and economic development which encourage firms to increase their investment (Shleifer & Vishny, 1993; Wei, 1997). By increasing investment costs and reducing earnings, weak institutions promote corruption. This increases the sunk cost of doing business and makes investors more sensitive to uncertainty, which is itself the result of weak institutions. It also contributes to increase political uncertainty.

Whereas the empirical findings explain the inconsistent results regarding the relationship between institutional quality and firms' investment decision-making. Such as according to Wheeler and Mody (1992) bureaucracy, regulatory frame-work, judicial transparency, bureaucratic barriers, and the level of corruption in the host country all are insignificant at the firm-level. Administrative performance and political risk are not significant in making the firms' investment decisions related to the location of production. Wei and Shleifer (2000) explained that corruption increases the cost of investment and decreases investment inflows. Likewise, political stability has a significant influence on corporate investment decisions-making. Whereas empirical results are mixed in the literature to some extent. Root and Ahmed (1979) , Frey and Schnieder (1979) claimed that the cumulative investment flows in developing economies were significantly influenced by political instability in the late 1960's.

Likewise, Sarkar and Hasan (2001) suggested that corruption affects the efficient use of investable resource by shifting resources from the productive sector to unproductive sectors, thereby reducing the sectoral investment capacity. Investments are therefore based on entrepreneurs' ability to pay bribes rather than their rates of return. Additionally, bribes are usually one of the main components of any act of corruption, it increase the cost of production, which in turn increases output prices, decreases demand, and ultimately reduces the incremental output-capital ratio of the activity (Rose-Ackerman, 1996).

Furthermore, Braun and Di Tella (2000), Kaufmann and Wei (1999) demonstrated that political rivalry reduces corruption and makes it pro-cyclical. These studies have also explained the existence of a positive relationship among firm growth, corruption, and investment. This could be due to firms' willingness to pay bribes as well as time wasted in bureaucracy. Weak institutions could hamper the rule of law and corruption, which could lead to increased growth and development because "speed money" payments and other illegal activities could outpace bureaucratic procedures. Additionally, accepting bribes from officials could motivate them to work more efficiently (Acemoglu & Verdier, 1998, 2000; Huntington, 2006; Leff, 1964).

Similarly, Wang and You (2012) stated that if financial markets are underdeveloped, corruption does not seem to be a significant barrier to firm growth. They contended that quick money can be used to prevent inefficient regulations and bureaucratic problems and may promote the firm growth that can be achieved through the country's good corruption component. Additionally, corruption is probably a factor in expanding the growth of a firm.

Likewise, Sarkar and Hasan (2001) explained that corruption weakens the institutions, which has inversely affected the economic growth by reducing the volume and efficiency of investments. Therefore, it would be helpful to develop a clear understanding of the macro-economic efficiency of investment. Overall, the findings indicated that a significant increase in economic growth can be achieved by reducing corruption. This point of view is in line with the argument made by Ajisafe (2016) who claimed that the negative effects of corruption are a big disaster for the economy and ineffective for growth and development.

According to Emerson (2006) corruption reduces the transparency of the local bureaucracy, which in turn acts as a tax imposed on foreign investors. It might also have an impact on the decisions of local partners. The use of a local partner to reduce the bureaucratic network increases its value. Additionally, it may reduce the effectiveness of an investor's intangible asset's and decrease the possibility that conflicts between local and foreign partners will be fairly resolved and it reduces the benefits of working with a local partner (Javorcik & Wei, 2009).

Moreover, Asiedu and Freeman (2009) analyzed how corruption affects the growth of firms' investment. The results demonstrated that corruption is inversely related to the growth of firms' investment in transitional countries, but this impact is insignificant in both African and Latin-American economies. Ayaydin and Hayaloglu (2014) investigated the impact of corruption on firms' growth in Turkey. Their findings explain a direct relationship among firm's growth and corruption. This means that accepting bribes from government officials could serve as a reward and increase their efficiency, since corruption is the cost that people must bear as a result of market-failure. In general, this is because illegal practices and payment in the form of "speedy money" would increase bureaucratic delays.

According to Fisman and Svensson (2007) bribes have a similar effect to taxes on firms, and a 1% point increase in bribery rates is associated with a 3% point reduction in firms' growth. When bribes are paid, capital investment is less effective because the optimal distribution of capital is disrupted and investment marginal-return per unit is lower. According to O'Toole and Tarp (2014) domestic, small, and medium-sized enterprises are more severely affected by this negative effect.

Corporate governance plays a multifunctional role in investment decision-making at the firm-level. Good corporate governance refers to the fact that a small number of company resources may be misused by the managers, resulting in higher allocation of resources and improved firm performance. Core et al. (1999) explained that the corporate governance of a firm is very poor and usually faces difficulties in operating the organization. Moreover, argued that a firm performance becomes continuously poor when managers aim to achieve their own goals rather than the goals of the organization. In the literature, various studies have investigated the relationship among corporate governance and firms' investment decision-making. Such as Bertrand and Mullainathan (2003) claimed that corporate governance significantly affects firm-level investment decision-making, and in particularly, firms that have strong corporate governance and may be less sensitive to cash inflows. Whereas, highly sensitive to growth opportunities. Bøhren et al.

(2007) explained the positive association between corporate-governance and real-investment decision-making at the firm level by collecting data of U.S non-financial firms. Additionally, evidence suggests that improved corporate governance enables efficient allocation of capital between firms. In other words, improved corporate governance encourages managers to increase their investments and put more efforts in searching a highly productive investment project and managing their investment efficiently. On the other hand, poor governance produces opportunities for underinvestment rather than overinvestment. Duc and Thuy (2013) investigate the relationship between corporate-governance and investment for firms in Vietnam. They suggest that board-size has a significant influence on corporate investment, and other corporate governance factors such as gender, the CEO’s dual role, and the working experience of board members have an insignificant impact on corporate investment-decision making.

Likewise, Ullah (2017) concluded that corporate governance indicators do not significantly affect the firms’ investment decision-making in Pakistan. Ajide (2017) examined the institutional determinants of firms’ investment in Nigeria. The study findings revealed that institutional quality factors such as regulatory quality, political stability, and control of corruption do not significantly affects the corporate investment decision-making. These results are consistent with Wheeler and Mody (1992), and their findings also show that institutional quality variables have an insignificant impact on corporate investment decision-making.

Similarly, Chang and Wei (2011) investigated the influence of corporate governance on individual firms’ investment decision-making for companies in Taiwan and found a positive relationship between them. Hence, the above literature explained the significance of institutional factors in firm-level investment. Most of the work in this context has been done for developed economies. Only few studies have investigated the role of institutional factors in firms' investment decision-making for developing economies. According to researcher knowledge, no prior research has been done in this regard. Pakistan is a developing country with several institutional and country-level differences from developed countries. Hence, this study urges to investigate the role of institutional factors on a firms' investment decision-making. Hence, the proposed study has investigated the institutional variables impact on firms' investment decision-making. The findings will exert an important contribution to the literature particularly for developing economies.

2.4 Cash Flow Volatility and Firms' Dividend Payout Policy

The relationship between dividend payout and CFV has received little attention in the literature. There are two well-known finance theories: ACT and IST which describe the theoretical relationship between CFV and dividend payout. Both theories propose the conflicting explanations regarding the relationship between CFV and dividend payout. Dividend cuts are generally associated with a significant drop in stock price or "wealth penalty" for shareholders. According to IST , to avoid the penalty, manager will choose a dividend policy where the declared distribution is lower than the anticipated income. Therefore, even if future cash flows are less than anticipated, this policy still permits the manager to retain the declared dividends. Therefore, IST suggests that if future CFV is higher, dividend distribution should be lower (Lintner, 1956; Miller & Modigliani, 1961). Empirical studies measured the firms' specific CFV by using different proxies such as business risk, earning volatility, risk, and CFV.

Empirical evidence supporting the IST explanation between risk and dividend payout. Like Bradley et al. (1998) established a CFV and dividend payment relationship using a sample of Real Estate Investment Trust (REITs). The findings support the idea that these two variables are inversely related, which asserts that firms dividend payment is lower when a high CFV is anticipated. The study findings support the IST hypothesis.

Further, Holder et al. (1998) stated that earning volatility is negatively associated with dividend payments for the United States because riskier firms have a much lower dividend payout ratio due to their higher transaction costs. According to Varouj Aivazian et al. (2003) and Jensen et al. (1992) business risk and dividend payment policy have a significant and inverse relationship.

Additionally, Rashid and Rahman (2008) also report an inverse re earning volatility and firms' dividend distribution policy inverse relationship for Bangladesh. Al-Kuwari (2009) also reveals an inverse relationship among firms' dividend distributions and business risk for GCC countries. Bokpin and Abor (2010) found an inverse but insignificant relationship among risk and dividend payments for emerging economies. The finding may indicate that the role of risk is not significant in determining the firms' decisions regarding dividend distribution in the context of emerging markets.

Moreover, Mirza and Azfa (2010) provided evidence that CF sensitivity and dividend distributions are inversely related for firms in Pakistan. According to Ullah et al. (2012) CFV and dividend distributions has an inverse relationship for firms in Pakistan. Mehta (2012) demonstrated an inverse correlation among business risk and dividend payout. The results indicate that firms with high dividend payout ratios are less risky to provide more growth opportunities. Alzomaia and Al-Khadhiri (2013) reported a significant and inverse relationship among business risk and dividend distributions for firms in Saudi Arabia. Musiega et al. (2013) demonstrated that business risk significantly affects the dividend distribution policy for firms in Kenya. Ahmad and Muqaddas (2017) indicated that risk is negatively related to dividend distributions for listed commercial banks in Pakistan. The results suggest that loan defaults hurt interest income, leading to lower profitability and dividend payments, which ultimately increases the risk of commercial banking of Pakistan.

However, ACT explained that when firms pay high dividends, it leads to lower free cash flows (FCF), which will create agency cost. The probability of agency cost increases when firms are persistently facing high CFV. Firms in the case of high CFV, can be paid higher dividends contrary to investments that do not maximize value. Therefore, this theory advocates that firms in case of high CFV will pay higher amount of CF as dividends (Jensen & Meckling, 1979; Rozeff, 1982; Wang et al., 1993).

There is also an empirical evidence that supports the agency cost explanation of the association between risk and dividend payout policy, as shown in the following studies (Dempsey & Laber, 1992; Rozeff, 1982). The empirical results were highly supported by the agency cost hypothesis. They demonstrated that due to asymmetric information, REITs have higher agency costs, leading to higher payout ratios. According to Fama and French (1998) firms with a high dividend payout ratio anticipate high future earnings growth compared to firms with a lower payout ratio. A low risk may be correlated with a higher payout ratio. Whereas a high payout ratio might be associated with lower risk. The findings are in line with the agency theory. Jing (2005) found that REITs pay significant additional funds to ignore agency problems when the future CF is volatile. This study results also reveals that IST has only a small influence on the dividend distribution policy. Hooi et al. (2015) found that earning volatility is significantly and directly related to both dividend yield and dividend distribution for firms in Malaysia.

Some other studies do not report any significant relationship among risk and dividend distribution. Like, Hosain (2016) revealed that risk and dividend distribution do not have any significant relationship for firms in Bangladesh. Amidu and Abor (2006) also explained that risk and dividend payout policy do not have any significant relationship for firms in Ghana, indicating that riskier firms pay lower dividends to their shareholders. Furthermore, when earnings are volatile, firms find it difficult to pay dividends. As a result, such firms will pay lower/ zero dividends. In contrast, firms with generally constant profitability can predict their future profits. As a result, they are more likely to distribute a bigger share of their earnings as dividends. However, some studies did not report any relationship among dividend distribution and risk. Like Almeida et al. (2015) did not find any type of relationship between dividend distribution and volatility for firms in Portugal. Kaźmierska (2015) also found that risk and dividend payout are inversely related to non-financial firms in Poland.

Moreover, Deng et al. (2013) investigated dividend distributions and investment relationship under CF uncertainty for China based firms. The findings indicated that firms maintain a higher investment level when face higher CF uncertainty rather than cutting dividends or spending. Yeo (2018) investigated the impact of FCF volatility on investment and dividend distribution decision-making. The findings revealed that higher FCF volatility may encourage firms to increase their investments and reduce dividends.

Therefore, previous studies on the relationship between firm-specific variation in CF and dividend payout have reported an inconsistent findings. However, very few studies have examined the relationship between CFV and dividend distribution, and they have only investigated this relationship for developed economies. According to the knowledge of researcher, no prior research has been investigated on the relationship between CFV and dividend distribution in the context of Pakistan. The CFV proxy better measures the variation in CF for firms. Pakistan is a developing country and it has several institutional and country-level differences from developed economies. Hence, the proposed study has investigated the CFV and dividend distribution relationship for manufacturing firms in Pakistan. The findings will impart a major contribution to the literature particularly for developing countries.

2.4.1 The Influence of Internal and External Factors on Dividend Payout Policy

Many empirical studies have investigated the impact of ownership structure, macroeconomic factors, and firm-specific internal factors on the corpoarte dividend payout behavior. Such as Hosain (2016) reported that ownership structure and dividend distribution policy have an inverse relationship for firms based in Bangladesh. Ullah et al. (2012) analyzed the relationship between dividend distribution and ownership-structure for firms in Pakistan. The findings implied an inverse association betweeb dividend distribution and managerial share ownership. However, a direct relationship is found between foreign and institutional ownership and dividend distribution policy.

Further, Ullah et al. (2012) examined the relationship between ownership-structure and dividend distribution policy relationship for firms in an emerging economy. The study findings implied that managerial-ownership and dividend distributions are inversely related. This could be explained by the use of managerial share ownership as an internal governance mechanism to balance the preferences of managers and shareholders. According to the ACT, institutional-ownership have a direct relationship with dividend distribution policy. Conflicts of interest can arise between managers, internal owners, and stockholders when there is a significant gap between management and ownership (Jensen & Meckling, 1976).

Moreover, Al-Shubiri (2011) found that business risk and institutional ownership are the important factors of firms' dividend payout policy. Similarly, Mirza and Azfa (2010) found that managerial-ownership and individual-ownership adversely related to dividend distribution policy. However, operating cash flow has a direct relationship with dividend payout. Ahmed and Javid (2008a) demonstrated that ownership structure (majority shareholders holding more than 5% of stocks) has a direct relationship with dividend payout policy. Khan (2006) investigated the corporate ownership structure by collecting a sample of 330 listed firms in United Kingdom.The findings revealed a negative relationship between dividend and ownership concentration. Furthermore, the results indicate that insurance companies' ownership and dividend payout are directly related to each other, but individual-ownership and dividend distribution policy are inversely related. Similarly, Sharma (2006) found a direct relationship between corporate-ownership and director-ownership with dividend distribution policy, while an inverse relationship found among square- corporate-ownership and dividend distribution policy. However, did not find any significant relationship among foreign-ownership and dividend distributions in the context of India.

Likewise, Chumari (2022) examined the CFV relationship with dividend payout policy for the listed companies in Kenya. The findings showed a direct association among dividend payout and CFV. The study stated that generally firms with good and stable cash flows are able to pay dividend easily compared with firms with unstable cash flow position.

Literature explained a direct relationship between corporate-tax rate and dividend distribution policy. Such as Amidu and Abor (2006) suggested a direct relationship between corporate-tax rate and dividend distributions policy. Gill et al. (2010) demonstrated a positive but insignificant relationship among corporate-tax rate and dividend payout for the manufacturing industry in the U.S. Regarding operating cash flows, theoretical and empirical literature explained a direct relationship between operating cash flows and dividend payout policy. Jensen (1986) proposed the FCF Hypothesis and stated that firms firstly want to spend their money on projects that will be profitable, and then pay dividends from the remaining funds. Given that of the three stream of cash flows (Operating, Investing, and financing), operating cash flows is considered to be the ones that the company would prefer to use for the dividend distribution, as they have a significant impact in determining the amount of output. For the companies, the most preferable funding source for dividend distribution is cash generated from operations.

Empirical literature also suggests that firms with stability in CF are more able to pay a higher dividend to stockholders relative to firms with unstable cash flows, because firms in a stable earning position are usually able to forecast approximately future earnings and, therefore, they are more likely is to distribute a higher dividend to stockholders (Amidu & Abor, 2006; Anil & Kapoor, 2008).

The literature reports the mix findings regarding the relationship between inflation and dividend distribution policy. Modigliani and Cohn (1979) explained a direct association between inflation and dividend payments. Most of the researcher agree that their results are puzzling and not sustainable in the long run. Jain and Rosett (2006) reexamine the puzzling results documented by Modigliani and Cohn (1979) and concluded that Modigliani and Cohn (1979) anomaly is a period-specific and direct relationship between inflation and dividend payment is not sustained in the long run. It is difficult for finance theory to explain the inverse relationship. Some claimed that at a higher price level, corporations might not be able to operate.

Moreover, Feldstein (1981) pointed out that inflation increases the tax burden on firms. This problem also has a macroeconomic component because inflation disturbs the price system and also increases the cost of transactions. Therefore, higher inflation rates can hamper the growth of the economy (Barro, 1996; Faria & Carneiro, 2001). In general, it will also negatively affect the stock market. The following empirical studies have demonstrated the inverse relationship between inflation and dividend distribution which can be shown in the following studies (Chen et al., 2005; Khan et al., 2018; Rashid & Rahman, 2008; Silalahi, 2021; Tarika & Seema, 2011). However, another part of empirical literature provided two explanations for the direct association between inflation and dividend payments. One the one hand, managers may try to implement an optimal dividend distribution policy because they believe that investors should obtain a specific level of real dividend income. On the other hand, inflation might simply cause an increase in the nominal value of corporate profits and, therefore, dividend payouts. The evidence for the inverse association between inflation and dividend payout is explained in the following studies (Amidu & Abor, 2006; Basse & Reddemann, 2011; N. Chen et al., 1986; Kaimba, 2010; Mehta, 2012; Mohiuddin et al., 2008).

The most common indicator used to evaluate the country's economic growth is Gross Domestic Product (GDP). Higher level of GDP directly affects the purchasing-power of consumers. Therefore, there will be an increase in the demand for the company products due to the increase in the company's revenue, which is good news.

Romus et al. (2020) stated that GDP growth directly affects the consumer purchasing power, resulting the company products demand increases. The company's sales will increase as a result of the rise in product demand, and a company's dividend payout policy is affected by profitability. The dividend policy is therefore directly related to an increase in GDP growth. The direct relationship between GDP growth and dividend payment can be seen from the following empirical studies (Amidu & Abor, 2006; Basse & Reddemann, 2011; Chen et al., 1986; Kaimba, 2010; Mohiuddin et al., 2008; Mundati, 2013; Nyamute, 1998).

Overall literature shows that many studies examined the relationship internal, macro-economic factors, and institutional ownership-structure with dividend payout policy. However, according to the researcher knowledge, not any prior research has examined the influence of firm-level internal factors, macro-economic factors, and institutional- ownership in the CFV and dividend distribution policy relationship. The impact of these factors is significant in deciding the dividend distribution policy and may have an impact on the CFV and dividend distribution policy relationship. Hence, this study investigated this relationship in the context of Pakistan.

2.5 Summary

The above literature suggested that the role of CFV is significant in making DMS, leverage, investment, and dividend policy decisions specifically at a firm level. The literature shows inconclusive results regarding the CFV relationship with firms' DMS, financing, investment, and dividend payout policy decisions. This is perhaps because most of the research has been done, as before, for developed economies. A few studies have been done on developing economies. Developing countries have several institutional as well as country-level differences from developed countries. Therefore, developing countries' findings may differ from developed economies. As a result, the literature shows inconsistent results. Pakistan is also a developing country, and it has several differences from developed economies. According to the researcher knowledge, not any prior research has examined the influence of CFV on DMS, leverage, investment, and dividend policy at the firm level for developing countries like Pakistan. Hence, this study covers this gap by empirically examining the influence of CFV on DMS, leverage, investment, and dividend payout decisions.

Moreover, the above literature explained how macroeconomic, institutional, and firm-level internal factors affect the firms' important decisions regarding DMS, leverage, investment, and dividend payout policy. Whereas not any study has been done in the literature, that investigated the CFV relationship with firms' DMS, leverage, investment, and dividend payment behavior by incorporating the influence of macro-economic, institutional, and firm-level internal variables. The proposed research first time empirically investigated the influence of these important factor in the CFV relationship with DMS, leverage, investment, and dividend payout decisions. The study findings will contribute significantly to the empirical literature, particularly in the context of developing economies.

CHAPTER 3

METHODOLOGY

This chapter is devoted to the explanation of a theoretical models used to explore the study objectives. The theoretical framework of CFV, DMS, and leverage is discussed in the first section (3.1). Section two (3.2) explains a theoretical model regarding the relationship between CFV and Investment. The theoretical framework of CFV and dividend payout policy are discussed in the final section. These sections contribute to formulating the theoretical modeling and exploring the key research hypothesis of the study**.**

3.1. Conceptual Framework of Cash Flow Volatility, Debt Maturity, and Leverage

Following the model Black and Scholes, (1973), we explain the direct association between CFV and the cost of debt. Black and Scholes, (1973) set the European call option price as:

$$Call_{BS}(V_t, \beta, r, T-t, \delta) = V_t N(d_1) - \beta e^{-r(T-t)} N(d_2) \quad (3.1)$$

Where $\boldsymbol{V_t}$ is the value of the primary asset, $\boldsymbol{\beta}$ denotes strike price, **r** shows the annual risk-free rate, $\boldsymbol{T-t}$ is the time in years till the date of expiry, and $\boldsymbol{\delta}$ explain the STDEV of the return of the asset, and

$$d_1 = \frac{[\ln\left(\frac{V_t}{\mathrm{B}}\right) + \left(r + \frac{\delta}{2}\right)(T-t)]}{\sqrt{\delta + (T-t)}} \quad (3.2)$$

$$d_2 = d_1 - \sqrt{\delta(T-t)} \tag{3.3}$$

Where N(d) is the cumulative standard Normal distribution.

Stoll (1969) illustrates the association among both European call and put options with the same strike price and ending date:

$$Put_{BS}(V_t, \mathrm{B}, r, T-t, \delta) = \mathrm{B}e^{-r(T-t)} Call_{BS}(V_t, \mathrm{B}, r, T-t, \delta) \tag{3.4}$$

Equation (4) explain the relationship of put-call parity. Both eq (1) and (4) indicate that prices of call options and put options rises when with volatility $\boldsymbol{\delta}$ rises

Further, Black and Scholes, (1973) and Merton (1973) identify that the option pricing model may be helpful to construct a model and extensively set the price of corporate equity and loans. Merton (1974) established a model to price the firm's debt and equity by utilizing the option pricing model. Due to debt constraints, equity holders in Merton's model own the firm $\boldsymbol{V_t}$ and purchase debt from creditors at **t = 0** with face values **β** that matures at **T** because of debt constraints, If the firm defaults at **T** when **B**≥$\boldsymbol{V_t}$, the creditors receive $\boldsymbol{V_t}$. If not, the debtors are paid back. Consequently, the unclear payment to the creditors is

$$D(V_t, T) = min(V_t, \mathrm{B}) \tag{3.5}$$

Black and Scholes(1973)and Merton (1974) used the formula to determine the firm value as:

$$Firm\ Value = Call_{BS}(V_t, \beta, r, T-t, \delta) + \mathrm{B}e^{-r(T-t)} - Put_{BS}(V_t, \mathrm{B}, r, T-t, \delta) \tag{3.6}$$

The equity value is set as

$$\mathrm{E}\ (V_t, T) = Call_{BS}(V_t, \beta, r, T-t, \delta) \tag{3.7}$$

The value of debt is set as

$D(V_t, T) = Be^{-r(T-t)} - Put_{BS}(V_t, B, r, T-t, \delta)$ (3.8)

Equation (3.7) illustrates that the equity value of a levered firm is equal to the call options on the assets held by the borrowed firms. However, equation (3.8) illustrates that the debt value is the risk-free debt price minus the put option price. As CFV increases the price of call and puts options lowers the debt price. In equation (3.7) high CFV raises the equity value. However, it drops the debt value in equation (3.8) as a result raises the marginal cost of debt.

Hence, the cost of debt is

$$R_D = \frac{B}{D(V_t, T)} - 1 \quad (3.9)$$

As a rise in $\boldsymbol{\delta}$ declines $\mathbf{D}(\boldsymbol{V_t}, \boldsymbol{T})$, and a rise in $\boldsymbol{\delta}$ also increases $\boldsymbol{R_D}$. Consequently, high CFV has a relatively higher cost of debt, indicating the following hypothesis.

H_1: Firms with high CFV use less leverage

Previous empirical research reveals that CFV has an inverse impact on leverage. The reason is that as the CFV increases, it increases the likelihood of financial distress which in turn lowers the present value of the debt tax-shield. Furthermore, Minton and Schrand (1999) display that CFV is directly related to the cost of debt. Therefore, when firms face high CFV, they use less leverage, thus the cost of debt can be reduced. Hence, we hypothesize that CFV is inversely related to leverage level.

H_2: Firms with high (low) CFV are more likely to issue debt with short (long) term maturities.

The application of Black and Scholes (1973) model for choosing a firm's capital structure leads to the conclusion that the cost of debt and DMS are directly related. Equation (3.8) explains that the debt value can be computed by deducting the risk-free debt from the put option with a face value of strike price. The first term of equation (3.8) risk-free debt $Be^{-r(T-t)}$ declines with maturity time T and second term Put_{BS}rises with maturity time T. Therefore, debt value $D(V_t, T)$ falls with maturity because of both terms, time value of money (First term) and (2nd term) the debt issuance (put option). As a result, equation (3.9) shows that debt cost rises with time to maturity.

The empirical literature also suggests that high CFV lead firms to choose STD maturities. Memon et al. (2018), Keefe and Yaghoubi (2016) suggested that when a firm chooses long-term maturity debt in case of high CFV, the value of debt decreases and thus decreases the marginal cost of debt. Therefore, firms are more inclined to issue STD when cash flows are highly volatile.

DeAngelo and Masulis (1980) claimed that high CFV reduces optimal DMS. While the growth rate of cash flows and transaction costs connected from rolling over debt increases the optimal DMS. Hence, we hypothesize that when firms experience high CFV, they are more likely to select STD maturity. Miltersen and Torous (2007a) also revealed that CFV has an inverse relationship with DMS. Therefore, our hypothesis is that firms with high CFV are more inclined to choose STD.

3.2. Theoretical Framework of Cash Flow Volatility and Investment Decision-Making

To explain the cash flow volatility relationship with investment decision-making, in this study we followed Booth and Cleary (2006), who adopted the simple linear model for firms' investment (I_t) decisions-making for many periods. In period 0, firms invest as well as increase financial capital. However, in period 1 firms create more investments but also generate CF (C_t) for the investment during the first time-period as well as funds for any CF deficiency. The funds needed for investment might be invested at zero period, first period or both in case of shortage of financial resources for the company.

For estimation purpose, we can adopt a simple version of Miller and F. Modigliani (1961) formula for investment opportunities

$$V_0 = \frac{C_1}{K} + \frac{I_1}{1+K}\,(NPV_1) \tag{3.10}$$

In equation (3.10), the firm value (V_0) is measured as the present value (PV) of the returns of initial investment, supposed for available to be perpetuity, added to the investment net present value (NPV) at period one.

The assumption of the Modigliani and Miller (1958) model is that all capital markets are clear, whereas to raise funds, firms mostly face a large share of internal and external cost of capital due to the costs of transaction, agency costs, managerial risk aversion, incomplete information, etc. Regardless of the specific source, assume that the value of the loss due to increase in external capital is convex as the amount increases. This assumption is in line with R. G. Hubbard (1997), when firms raise funds through various sources, including banks' STD, long-term bonds, and fresh equity, the external financing gap widens due to an increase in the marginal cost of capital.

The value of a firm can be determined by a dynamic programming problem by first describing the optimum investment amount at period t, as a real NPV owned in the firms value at period t-1, then explaining the optimal investment at period t-1, etc.

The problem at a T period is as follows:

$$\frac{\mathrm{MAX}}{\mathrm{I_t}} = V(I_t) - I_t - \gamma_t(I_t - (F_{t-1} - I_{t-1})(1+r) - C_t) \tag{3.11}$$

Value function V(.) is simply used for investment in T period. It shows that the PV of anticipated future CF discounted the firm's cost of capital from internal sources.

γ function shows loss value that comes from the firm's external capital $(F_{t-1} - I_{t-1})$ describes that financial-slack is a PV that can be accessed using the money left over from the previous period's investments, where the money earns a return on marketable-securities (*r)*. The optimal investment decisions occur when the following conditions hold:

$$V'(.) - I - \gamma_t'(.) = 0 \tag{3.12}$$

Capital markets appear to be perfect If there is no wedge involved in external capital, which is the case when $(\gamma_t'(.)) = 0$. Ordinary NPV criteria were used in this situation, there all projects are accepted till the investment of the last dollar ($) is decided by the firms' "internal" cost of capital, moreover, it raises the market value of a dollar.

From the aspect of financial constraints, wherever external capital is highly expensive for the firms and limited investment because of the incremental value $(V'(.))$is equivalent to one plus the cost of financing wedge (1+$\gamma'(.)$). Since the effect of financial constraints rises, the investment of a firm will decline. Whereas this constraint significance is dependent on the last period of existing funds and the financial slack. The optimum NPV at current period t, must be originated by substituting the (3.12) equation into (3.11) or

$$NPV^*_t = \text{NPV}(X_t, A_t) \tag{3.13}$$

X_t is the set of all explanatory variables which affect the V(.) like the internal and external cost of capital, $A_t$is the funds available at t period. Unlike the standard perfect markets model, the NPV function openly explicitly took into account financial slack and the results of the wedge among internal and external cost of capital.

The NPV of the prior period is uncertain, as the indefinite CF at period *t* affects the available funds. Therefore, the firm's decisions regarding its preceding period are :

$$\frac{\text{MAX}}{\text{I}_{t-1}} = V(I_{t-1}) - I_{t-1} - \gamma_{t-1}(I_{t-1} - A_t) + V_{t-1}(NPV^*_t + \text{r}(F_{t-1} - I_{t-1})) \tag{3.14}$$

First term $V(I_{t-1}) - I_{t-1} - \gamma_{t-1}(I_{t-1} - A_t)$ is similar to current period investment decision-making and the last-term exposes the NPV at period t and earnings from financing the financial-slack in marketable securities. In contrast to investment at a time-period t, firms with financial constraints analyse the worth of their available finance and spend them in today date rather than in the future. The reason is that because there is a fixed stock of available funds, present investment cut those funds for the upcoming period, which causes the financial constraints to manifest itself in the future.

Since at time t-1, volatility in CF at t period shows the volatility in the NPV function. A high CFV reduces the NPV for the next period for a given stock of an existing fund since the value function of an investment in existing funds increases monotonically but at a decreasing rate. This is supported by the concavity of the V(.) and the fact that the firm accepts first in highly profitable projects. As a result, other things remain constant, as the CFV increases firms may invest more, but the profitability of the project decreases until the consequences of financial constraint are eradicated; after that, an extra $ of CF is just worth a $, because it does not disturb the investment. Accordingly, an increase in volatility around a specific estimated CF increases the sensitivity of the financial constraint and decreases the PV of the expected NPV. Therefore, we hypothesize that an increase in CFV leads to a decrease in the level of firms' investment.

H_3: High CFV decreases the firms' investment level.

Many prior empirical studies also suggest the inverse relationship between CFV and firms' investment that can be shown from (Allayannis & Weston, 2003b; H. Almeida et al., 2004; Cohen, 2014a; Keefe & Tate, 2013).

3.3. Theoretical Framework for Cash Flow Volatility and Dividend Payout Policy

Both ACT and IST provided a conflicting explanation regarding the CFV and dividend distribution relationship .

3.3.1 Information Signaling Theory

The IST states that in the case of uncertainty in CF, managers would cut dividends if the firms cannot afford to pay the announced amount. To ignore any possible "wealth penalties," managers will select a dividend distribution policy in which the declared distribution is lower than the anticipated income. Future CFV increases the risk of future earnings, and vice versa. Therefore, the ICT predicts that the dividend payout should be lower when firms face high CFV (Lintner, 1956; M. H. Miller & F. Modigliani, 1961). Lintner (1956) proposed for the first time that changes in dividends should give useful information about future earnings. By extending this idea, M. H. Miller and F. Modigliani (1961) proposed that when markets are weak, investors can benefit from the information contained in dividends. Miller et al. (1987) asserted that changes in a firms' dividend can give investors information about its long-term earning. The signalling models of dividend are more accurate in forecasting when companies would increase their dividends, usually before or after an increase in earnings to signal a long-term trend.

M. H. Miller and K. Rock (1985) and Bhattacharya (1979b), and other earlier studies claimed that a dividend is a tool used by managers to inform investors of changes in expected profitability. The CFV is generally accepted as a reliable indicator of future earnings.

The following studies examine the relationship between CFV and dividend distribution such as (Eades (1982). All assume, directly or indirectly, that management is completely aligned with existing shareholders. According to this assumption, the market can derive private information about firms from the managerial decisions made by these firms. However, management may not be able to provide the market with reliable signals. Managers of poorly monitored firms have more incentive to maximize their own wealth than shareholders', in contrast to managers in strongly monitored firms .

3.3.2 Agency Cost Theory

Based on the ACT, an increase in dividends will reduce the FCF and tends to increase agency costs. The likelihood that agency cost will increase due to the changes in CF. When a firm's cash flow is more uncertain, an increased dividend payout can be used to offset undervalued investments. Therefore, ACT predicts that firms with a higher CFV will distribute a large percentage of those CF as dividend. Conflicts of interest between internal managers and external shareholders are the main cause of agency problems. The term "agency cost" refers to the additional expenses incurred by a principal (shareholder) when a manager acts as their agent.

According to the FCF hypothesis, proposed by Jensen (1986) states that management has an advantage in maximizing the FCF at its discretion by paying the small amount of dividends. Unnecessary expenses are made with surplus cash flow. This suggests a policy to reduce inefficient investment spending by promoting cash-flow payments. The payment of dividends to shareholders is considered as a control measure that lowers the agency cost related to overinvestment and FCF. According to Rozeff (1982) dividend payments will force the company to issue new securities and increase capital market monitoring, and reduce agency costs by reducing the resources under the control of managers.

In addition to Dempsey and Laber (1992), (Wang et al., 1993), and a number of other studies have provided empirical support for the ACT explanation. According to (Dempsey & Laber, 1992) the effectiveness of internal governance and dividend payments are related to agency cost. Therefore, the effectiveness of internal governance should be reflected in dividend payments. Dividends are used to replace internal governance. In general, the CFV reflects the business risk and dividend payment capacity of the companies. Both CF and CFV are the significant factors when managers decide the payout ratio.

According to IST, CFV and dividend payments are inversely related. However, the ACT states that firms with higher CFV can be used to prevent undervalued investments for firms. Therefore, ACT predicts that to avoid over-investment, a higher proportion of a firm's cash flow that is more volatile will be distributed as dividends.

3.4. Econometric Modeling

We have designed the empirical models after a comprehensive discussion of the theoretical models of the study. These models are developed in accordance with the objectives of the study.

3.4.1 Empirical Model for Cash Flow Volatility and Debt Maturity Structure

To determine the CFV relationship with DMS, the variables are constructed as follows: In the model, DMS is the dependent variable. In the literature, DMS is determined in several ways. Like Fan et al. (2012) estimated DMS as dividing the longer maturity debt by total debt. However, M. J. Barclay and C. W. Smith (1995) constructed the DMS as dividing the LTD (maturity of more than 3 years) by total debt. Memon et al. (2018) and Keefe and Yaghoubi (2016) used a novel methodology and created categories based on the selection of corporate debt at different maturity levels.

In this study, DMS1 is determined using a novel methodology and made categories based on the selection of corporate debt at different maturity levels followed by (Keefe & Yaghoubi, 2016; Memon et al., 2018), but with some amendments to the construction of DMS categories. The given below table explains the construction of DMS1 categories:

Table 3.1: Construction of Debt Maturity Structure Categories

DMS1	Debentures & long-term notes payable	Total long-term debt	Total short-term debt
i	No	No	No
ii	No	No	Yes
iii	No	Yes	May be
iv	Yes	Yes	May be

Note: Table 1. displays the DMS1 variable construction. The first column explains the DMS1 variable categories. “Yes” indicates that the firms are using that type of asset. Whereas “No” indicate that firms are not interested in that specific debt type. “Maybe” means firms may or may not choose that type of debt.

Table 3.1 shows the construction of DMS1. Category 1 is set as if firms do not choose any type of debt. Category 2 is set as if firms choose debt of short-term maturity. Category 3 is assigned if firms choose debt of long-term maturity, but do not choose any debentures or long-term notes payable. Category 4 shows the selection of long-term notes payable or debentures. In summary, when the categorical variable moves from 1 to 4, the firms’ DMS increases. Due to the unavailability of DMS data, this study considers the current liabilities as STD (mature within one year), and non-current liabilities as LTD (greater than one year) excluding debentures and note-payables. In the fourth category, added the non-current liabilities, debentures, and note payables. Various studies in the empirical literature used different proxies to measure the DMS. Therefore, this study also used the alternative measure of DMS2 followed by Demirgüç-Kunt and Maksimovic (1999) and constructed DMS2 by taking the ratio of long-term debt (LTD) to total debt (TD).

To investigate the impact of CFV on DMS1 of a firm, this study applied the ordered probit model followed by Memon et al. (2018), Keefe and Yaghoubi (2016), Papke and Wooldridge (1996), and Kieschnick and McCullough (2003).

$$\Pr(DMS_1 > m \mid c, Z_t, v_j) = \varphi\,(\beta CFV_t + Z_t\delta' + v_j - c_m) \quad (3.15)$$

DMS1 is the debt maturity structure which is the dependent variable of the model. **m** indicates the number of categories, here four categories of the DMS1 variable are selected, that is, **m=4, c** indicates the cut points set, thus, in this model the cut points are **c = 3**, $\boldsymbol{Z_t}$ is a matrix of control variables such as leverage, return on assets, firms size, tangibility, liquidity, growth opportunities, and corporate tax rate, $\boldsymbol{V_j}$ error term follows the standard normal distribution **N(0,1). φ** represent the commutative distribution function of the standard normal distribution**,** $\boldsymbol{CFV_t}$ is the explanatory variable taken as a CFV measure. β is the slope coefficient. δ' is the K x 1, where K is the number of control variables. We estimate this model by applying an ordered probit model because this model dependent variable is based on categories.

The important independent variable of this model is CFV. The variable **CFV** is measured by taking the standard deviation of earnings before interest and taxes (EBIT) scale by the firms' total assets used for the CFV proxy by using the ten years window followed by (Friend and Lang, 1988; Dierker et al. 2013). According to the screening theory, only large-size firms can use LTD , and firms with high CFV are usually excluded from the LTD market (Diamond, 1991; Stiglitz & Weiss, 1981). According to S. Sarkar (1999), volatility makes financial distress more probable, which increases the risk of bankruptcy. Therefore, to avoid this risk, firms are more likely to choose STD maturity. According to IST, a high CFV increases the probability that a firm will change in its capital structure and choose the STD maturity to reduce the cost of bankruptcy (Diamond, 1991; Flannery, 1986b). Volatility also increases the probability of financial distress, which increases the bankruptcy risk. To ignore this risk, firms are more likely to choose STD maturity (Kane et al., 1985; S. Sarkar, 1999; Stohs & Mauer, 1996a). Hence, we expect an inverse CFV and DMS relationship.

Further, the current study included the important firm-specific determinants as control variables in this model. Such as Leverage **(LEV)** is calculated as the ratio of firms' total debt to total assets followed by (Antoniou et al., 2006; Cai et al., 2008; Sajid et al., 2012). According to the theoretical and empirical literature, leverage may be positively related to DMS or may be negatively related to DMS as literature provided the contradictory arguments. According to the liquidity risk hypothesis, leverage has a direct relationship with DMS. The hypothesis of liquidity risk predicts that firms choose longer DMS in case of high leverage to avoid the likelihood of a liquidity crisis, thereby delaying exposure to bankruptcy risk (Diamond, 1991; Flannery, 1986a).

According to Morris (1992) LTD can help firms to delay their exposure to the risk of bankruptcy. As a result, highly levered firms select LTD. Stohs and Mauer (1996a) there is no doubt that a higher percentage of LTD results in a longer average debt maturity. Leland and Toft (1996) conclude that firms with a low level of leverage are more likely to be financed by STD and that level of leverage also depends on DMS.

In contrast, Dennis et al. (2000) explain that leverage and DMS are inversely related. They claim that this happens because agency costs of underinvestment may be limited by reducing leverage and choosing the short-term DMS. This argument is supported by the agency cost of underinvestment which highlights the importance of STD in reducing agency problems such as underinvestment and assets substitution (Brounen et al., 2004; Myers, 1977).

The next control variable return on assets (ROA) is measured as a proxy for firms' profitability. It is calculated as the ratio of earnings before interest, tax, and depreciation (EBITD) to total assets followed by (Keefe & Yaghoubi, 2016; Kester, 1986; Memon et al., 2018; Wald, 1999). According to the tax hypothesis, profitability is likely to have a positive relationship with DMS, because profitable firms have higher taxable income and consequently receive higher tax benefits from LTD. Taxability has an impact on firms' DMS because choosing LTD over STD may result in a tax timing opportunity to repurchase and reissue debt (Brounen et al., 2004; Myers, 1977).

The firms' size (SIZE) variable has been measured by taking the natural logarithm of total assets followed by (Huang, 2006; Sajid et al.,2012; Antanious et al., 2006; Deesmok, 2009). According to the theory of agency cost hypothesis by Myers (1977) and the signaling hypothesis by Flannery (1986a), we anticipate a direct relationship among firms' size and DMS. The signaling hypothesis stated that large firms have less imperfect information and high tangible assets relative to upcoming investment opportunites, therefore, easy access to LTD markets. The ACT hypothesis claimed that agency conflict among lenders and shareholders, like risk transfer and claim dilution, can be more severe for small firms. As a result, bondholders attempt to reduce risk by limiting the LTD lending and increasing STD lending.

The variable tangibility (TANG) is calculated by taking the ratio of fixed assets to total assets followed by (Fan et al., 2012; Keefe & Yaghoubi, 2016; Memon et al., 2018; Rajan & Zingales, 1995). According to the maturity matching principle (hereafter MMP), Myers (1977), tangibility is anticipated to be directly related to DMS. Firms with a high ratio of tangible assets to total assets should have a higher borrowing capacity, because these types of firms can easily match borrowing maturity with assets maturity. Hence, firms use more LTD with higher asset tangibility (M. J. Barclay & C. W. Smith 1995; Maksimovic & Demirguc, 1996).

Further, the variable liquidity (LIQ) is measured as the ratio of current assets to current liabilities followed by (Cai et al., 2008; Deesomsak et al., 2009). Liquidity is inversely related to DMS. It might be because firms with higher business risk are more likely to face higher agency costs, prompting them to lower agency costs by shortening the debt maturity. Therefore, it is anticipated that DMS and liquidity have a negative relationship (Kane et al., 1985).

The variable growth opportunities (GROW) are measured by taking the percentage changes in total assets. Growth opportunities may be positively or negatively related to DMS. According to the underinvestment theory, the firm should choose more STD if growth opportunities are higher (Myers, 1977). In contrast, overinvestment theory claimed that LTD may help to restrict the management behavior of overinvestment. Hence, the sign of growth opportunities is predicted to be positive (Hart & Moore, 1994).

The variable tax rate (TAX) is measured as the ratio of a firm's tax expense to pre-tax profit followed by (Cai et al., 2008; Sajid et al., 2012). According to tax theory, Kane et al. (1985) the tax shield advantage and DMS are negatively related. The reason is that the trade-off between three factors, flotation costs, bankruptcy costs, and tax shield benefits determines the optimal DMS. As flotation costs increases, the DMS decreases while bankruptcy cost increases. However, according to the Tax Hypothesis, Brick and Ravid (1985), profitability is expected to be directly related to DMS, because profits receive higher tax benefits from LTD due to their higher taxable income. This effect may be possible because of the upward-sloping yield curve or intrinsic structure of corporate debt. Taxability has an impact on firms' DMS, as choosing LTD over STD may provide tax timing opportunity for re-purchase and re-issuance of debt (Brounen et al., 2004; Myers, 1977).

Next, to examine the impact of CFV on DMS2, this study used the following dynamic panel econometric model followed by Dang (2011) and Fan et al. (2012).

$$DMS2_{it} = \beta_0 + \beta_1 DMS2_{it-1} + \beta_2 CFV_{it} + \beta_3{}' Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \tag{3.16}$$

The dynamic panel regression model is estimated by using another proxy DMS2, as the dependent variable which is calculated as the ratio of long-term debt to total debt, and it is restricted between zero and one. Firm-level heterogeneity may be important for DMS. Where subscript i refers to firm-specific and t refers to the period. The symbols τ_i are firm-specific effects, ω_t time-specific effect and ε_{it} shows the error term which is supposed to be identically and independently distributed with N (0,1). This study selects the fixed effect (FE) model which is based on the value of Hausman test. Hence, the results of the FE model are best in our study. To address the problem of firm-specific effects and endogeneity in panel settings, this study used the dynamic panel regression equation by using lagged values as instruments. The dynamic panel regression model is estimated by two-way fixed effect, difference GMM, and system GMM.

3.4.1.1 Cash Flow Volatility and Debt Maturity Structure: Role of Institutional and Macro-economic and Factors

Financing decisions cannot be made by the companies in isolation, both internal and external factors have a significant influence while making such decisions. The role of external factors such as macroeconomic and institutional factors in corporate financing decision-making is significant. Macroeconomic and institutional factors are the most crucial factors of the economy. These factors are not under the control of the firms' management. The firm's CF, DMS, and leverage are affected by the heterogenous effect of these macroeconomic and institutional variables. Hence, the proposed study we have analyzed the impact of these variables in the CFV and DMS relationship. Hence, in this study, we have used the following macroeconomic factors as moderators: inflation, GDP growth, money supply, and interest rate. Similarly, we have used institutional factors as moderators like bank deposits, corruption, political stability, rule of law, and regulatory quality.

In addition, to empirically examines the interactive role of macro-economic factors in the CFV and DMS1 relationship, this study extended the equation (3.15).

$$Pr(DMS1_{it} > m| \, c, Z_{it}, v_j) = \emptyset(\alpha CFV_{it} + \beta MAC_t + \gamma(CFV_{it}{}^{*}MAC_t) + Z_{it}\delta' + v_j - c_m) \quad (3.17)$$

MAC_t shows the list of macroeconomic variables. This study used the four macroeconomic variables such as inflation, GDP growth, money supply, and interest rate in period t. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}MAC_t$ is the CFV interaction with macroeconomic variables in period t.

Next, to investigate the impact of macroeconomic factors in the CFV and DMS2 relationship, the following equation has been used in dynamic form by extending the equation (3.16).

$$DMS2_{it} = \gamma_0 + \gamma_1 DMS2_{it-1} + \gamma_2 CFV_{it} + \gamma_3 MAC_t + \gamma_4 (CFV_{it}{}^{*}MAC_t) + \gamma_5{}' Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \tag{3.18}$$

Where, $\mathrm{DMS2}_{\mathrm{it}-1}$ is the lag of the dependent variable and coefficients of $\frac{\partial DMS2_{it}}{\partial CFV_{it}} = \gamma_2 + \gamma_4 MAC_t$ explain the effect of macroeconomic variables in the CFV and DMS2 relationship. If both coefficients γ_2 and γ_4 have opposite signs, indicating that role of macroeconomic factors play a substitution role to explain the CFV and DMS2 relationship. However, if both coefficients' signs are the same then the role of macroeconomic factors is complementary in explaining the candidate variables' relationship. τ_i is firm-specific and ω_t time-specific non-stochastic effects.

In addition, to empirically analyzed the interactive impact of institutional variables in the CFV-DMS relationship we have used the following equation by extending the equation (3.15).

$$\Pr(DMS1 > m|\ c, Z_{it}, v_j) = \emptyset(\alpha CFV_{it} + \ \beta INST_t + \sigma(CFV_{it}{}^{*}INST_t) + \ Z_{it}\delta' + v_j - c_m \tag{3.19}$$

Where $INST_t$ represent the institutional variables such as bank deposits, corruption, rule of law, political stability, and regulatory quality. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}INST_t$ is the CFV interaction term with institutional variables in period t. α, β,σ,δ are the slope coefficients. φ is the commutative distribution function of the standard normal distribution.

Similarly, to investigate the role of institutional factors in the relationship between CFV and DMS2, the following equation has been used in dynamic form by extending the equation (3.16)

$$DMS_{2it} = \sigma_{11} + \sigma_{12}DMS_{2it-1} + \sigma_{13}CFV_{it} + \sigma_{14}INST_t + \sigma_{15}(CFV_{it}{}^{*}INST_t) + \sigma_{16}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \quad (3.20)$$

Where, $DMS2_{it-1}$ is the lag of the dependent variable and coefficients of $\frac{\partial DMS2_{it}}{\partial CFV_{it}} = \sigma_{13} + \sigma_{15}INST_t$ explain the effect of institutional variables in the CFV and DMS2 relationship. If both coefficients σ_{13} and σ_{15} have opposite signs, indicating that role of institutional factors play a substitution role to explain the relationship between CFV and DMS2. However, if both coefficients' signs are similar then the role of institutional factors is complementary in explaining the candidate variables' relationship. τ_i is firm-specific and ω_t time-specific non-stochastic effects.

3.4.2 Empirical Model for Cash Flow Volatility and Leverage

To investigate empirically the effect of CFV on capital leverage, this study followed the (Bernardo et al., 2018; E. Dudley & C. M. James, 2015; Fan et al., 2012; Mursalim & Kusuma, 2017).

$$LEV_{it} = \alpha_0 + \alpha_1 LEV_{it-1} + \alpha_2 CFV_{it} + \alpha_3{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \quad (3.21)$$

Where leverage LEV_{it} is the dependent variable of this model. Leverage is calculated by using book-to-debt ratios (BDR1 and BDR2). BDR1 is calculated by taking the ratio of (total liability/ total liability + common shareholder equity). BDR2 is calculated by taking the ratio of total long-term liability/total long-term liability + common shareholder equity (Keefe & Yaghoubi, 2016; Memon et al., 2018). Explanatory variables include cash flow volatility (CFV_{it}). Z_{it} is the matrix of control variables such as return on assets, firms' size, tangibility, liquidity, growth opportunities, and non-debt tax shield. ε is the error term. Subscript **(i)** denotes the firm-specific, and **t** is the time period. α_0 is the constant parameter, $\alpha_3{}'$ is the Kx1, where K is the control variables, α_1, α_2 are the slope coefficient. τ_i is firm-specific and ω_t time-specific non-stochastic effects.

The explanatory variable cash flow volatility (CFV) is assumed to be inversely related to leverage. Both TOT and POT predict that CFV is inversely related to leverage. The TOT demonstrate that firms' leverage declines as CFV increases to balance the cost connected with debt like the cost of financial distress and bankruptcy, and benefits of debt, such as the tax advantage of debt, and maintain an optimal level of debt (Titman and Wessels, 1988). According to the POT proposed by DeAngelo and Masulis (1980), investors with CFV are unable to predict future earnings using publicaly available information. Due to this reason, the market is willing to pay more debt. Firms with CFV also maintain leverage at a minimum level to decrease the likelihood that they will not be able to make the investments profitable when they have a less CF and to avoid issuing fresh equity. Thus, POT predicts an inverse association among CFV and leverage. Moreover, Merton (1974) claimed that volatility increases the likelihood of experiencing financial hardship, which reduces the tax advantages of debt. Therefore, we expect an inverse relationship among CFV and leverage.

Following firm-specific determinants are included in the model as a control variable such as return on assets, firm' size, tangibility, liquidity, growth opportunities, and non-debt tax shield. The variable return on assets (ROA) is used as a proxy for profitability. Return on assets may be directly or inversely related to leverage. According to the POT, a highly profitable firm is more likely to substitute debt for internally generated fund and maintain a fixed level of investmen. Hence, we expect an inverse relationship between profitability and leverage level. Whereas, when there is an imperfect information about the firm quality, highly profitable firms may select the high level of debt to signal their quality in the market and do not want to increase external equity to avoid potential dilution of ownership (Myers, 1984). In contrast, the hypothesis of TOT, predicts a direct relationship because highly profitable firms have a low chance of bankruptcy (Fama & French, 2002). Additionally, La Rocca et al. (2009) claim that highly profitable firms are more likely to choose more debt in order to get advantages through tax shield (Frank & Goyal, 2003, 2009). Further, Rajan and Zingales (1995) claim that creditors do not like to offer loans to firms that have higher current cash flows.

The impact of firm size on leverage is unclear. According to the TOT, bankruptcy cost decreases as firm size increases. Hence, firms' size and bankruptcy cost are expected to be directly related. According to Titman and Wessels (1988) large firms have a propensity to be more diversified, which lowers the risk of default and suggests a direct relationship among firm size and leverage. Furthermore, Diamond (1989) recommends that large firms have more credibility in the loan market, they can take on more debt at a lower cost. Similarly, Rajan and Zingales (1995) argued that large firms are more transparent and get benefit from lower debt costs.

According to the viewpoint of POT by Myers (1984), an inverse relationship exists among firm's size and leverage. The size of a firm may be used to measure information asymmetry between corporate insiders and financial markets. Therefore, large firms are more able to overcome imperfect information, making it easier for them to raise both equity and debt from external financing.

The variable tangibility (TANG) is expected to be directly related to leverage. When a firm faces trouble in paying its debt obligations, the tangible asset may be utilized as collateral or sold. The TOT explained that a large proportion of fixed assets results in decreases the agency and bankruptcy costs, because creditors claims can be more easily supported (M. C. Jensen & Meckling, 1976). Therefore, firms with more fixed assets have lower agency costs. The POT by Myers (1984) assumes that firms choose debt over equity because debt is considered safer and has less agency costs. Therefore, a direct relationship between tangibility and leverage is expected.

The variable liquidity (LIQ) and leverage are anticipated to be directly or inversely related to leverage. According to the TOT by Titman and Wessels (1988) the liquidity of a company is determined by its ability to pay STD. A highly liquid company has the ability to pay its STD, suggesting a direct relationship between liquidity and leverage. On the other hand, the POT by Myers (1984) claims that firms choose internal finance over external financing. Due to their ability to generate liquid reserves from retained earnings, highly liquid companies may choose to fund their projects internally rather than through debt. Therefore, it is anticipated to have an inverse relationship between liquidity and leverage. Furthermore, ACT by Myers (1977) the liquidity of a company may also be used to show how shareholders manage them at the expense of bondholders. This explains an inverse relationship between liquidity and leverage. Therefore, liquidity is expected to be directly or inversely related to leverage.

The growth opportunities (GROW) are expected to be positively or negatively related to leverage. According to the TOT by Titman and Wessels (1988) predict that companies with more investment opportunities use less leverage because they have a large incentive to manage the opportunistic behaviour of their managers and prevent underinvestment and asset substitution, which can happen when there is a conflict between the interests of bondholders and shareholders.

However, POT by Myers (1984) explains a direct association among growth opportunities and leverage, as debt normally increases when investments exceed retained earnings, suggesting that firms with rapid growth opportunities need more debt due to a lack of internal sources. Therefore, growth opportunities are expected to be directly or may be inversely related to leverage. The variable non-debt tax shield (NDTS) is anticipated to be inversely related to leverage. If a company frequently reports low or negative earnings, tax shield benefits on the use of debt financing may be diminished or even eliminated, as a result, the firms would be responsible for paying the interest. Non-debt tax shields (NDTS) can replace the tax-shield advantage, indicating a conflict between NDTS and leverage (DeAngelo & Masulis, 1980). Firms that have a higher cost of depreciation as a percentage of total assets do not required to use interest payments on debt to reduce their tax base (Byoun, 2008). In other words, the TOT claims that a large non-debt tax shield reduce the likelihood of tax benefits on debt. It follows that an inverse association among NDTS and leverage is expected.

3.4.2.1 Cash Flow Volatility and Leverage: Role of Macroeconomic and Institutional Factors

In the current study, we have also examined the influence of macro-economic and institutional variables in the CFV-leverage relationship. This relationship is examined by extending the baseline model of leverage (equation 3.21).

$$LEV_{it} = \alpha_{11} + \alpha_{12}LEV_{it-1} + \alpha_{13}CFV_{it} + \alpha_{14}MAC_t + \alpha_{15}(CFV_{it}{}^{*}MAC_t) + \alpha_{16}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \quad (3.22)$$

Where, $\mathrm{LEV_{it-1}}$ is the lag of the dependent variable leverage. MAC_t shows the list of macroeconomic variables. This study used the four important macro-economic variables like inflation, GDP growth, money supply, and interest rate in period t. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}MAC_t$ is the CFV interaction term with macro-economic variables in period t. This term $\frac{\partial LEV_{it}}{\partial CFV_{it}} = \alpha_{13} + \alpha_{15}MAC_t$ explains the magnitude and direction of the relationship of macro-economic variables with CFV and leverage.

Similarly, to capture the impact of institutional variables in the CFV-leverage relationship, the baseline model of the leverage equation (3.21) is extended in the following way

$$LEV_{it} = \alpha_{21} + \alpha_{22}LEV_{it-1} + \alpha_{23}CFV_{it} + \alpha_{24}INST_t + \alpha_{25}(CFV_{it}{}^{*}INST_t) + \alpha_{26}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it} \quad (3.23)$$

Where $INST_t$ represent the institutional variables such as bank deposits, corruption, rule of law, political stability, and regulatory quality. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}INST_t$ is the CFV interaction term with institutional variables in period t. The term $\frac{\partial LEV_{it}}{\partial CFV_{it}} = \alpha_{23} + \alpha_{25} INST_t$ shows the effect of institutional factors on CFV and leverage relationship.

3.4.3 Empirical Model for Cash Flow Volatility and Investment Decision- Making

To investigate the relationship among CFV and firms' investment decision-making, Minton and Schrand (1999) and Lang et al. (1996) model was extended to the dynamic panel model as shown by Judson and Owen (1999) which allows the observation of multiple phenomena overtime for the same firms because the investment trends are dynamic and current investment is derived from previous investments.

According to (Varouj Aivazian et al., 2005) firms generally prefer to smooth out their investment patterns because past performance affects current performance. The lag of investment variable may help to investigate the effects of past investment trends on current levels of investment. The lagged dependent variable eliminates any autocorrelation related to model misspecification (Arellano & Bond, 1991). Investment dynamics are recorded overtime, and model estimations take Nickell bias and report a problem of endogeneity in fixed effects. Moreover, a dynamic model allows a process of partial adjustment (Baum et al., 2001).

Various studies of corporate finance report high levels of endogeneity and serial correlation due to the presence of multiple independent variables in the model (Flannery &

Hankins, 2013), there is an estimation technique required that overcome this problem. Earlier studies such as Minton and Schrand (1999) and Lang et al. (1996) supposed unobservable individual effects and estimated a pooled regression method. The method of pooled regression is ineffective since $\boldsymbol{\mu_i}$ is not directly observeable and it is correlated with the other independent variables (Antoniou et al., 2008). Even if we take the first differences of the variables to remove the time-invariant fixed effects, OLS will remain incompetent due to the link between $\Delta INV_{i,t}$ $\left(INV_{i,t} - INV_{i,t-1}\right)$ and $\Delta\varepsilon_{i,t}$ $\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)$. Additionally, there is a significant amount of variation amongst firms. Fixed effects estimators are used in most of the studies. However, endogeneity issues cannot be handled by a fixed estimator, these problems can be handled using the instrumental variables (IV) technique.

However, the instrumental variable (IV) developed by Anderson and Hsiao (1982) may not be successful because it does not take advantage of all the moments that already exist and because it is difficult to locate the instruments. Muñoz (2013) noted that possible measurement errors, omitted factors, potential bi-directional causality, and the presence of endogenous variables are the root causes of endogeneity issues. As a result, shows the strong correlation between the error term and the explanatory variables.

Lagged investment is used as an independent variable to captures autocorrelation with the error term in a dynamic bias model that is incompatible with the IV and conventional econometrics methods. The terms that capture the random variation in the model are needed for these types of models. The presence of heteroscedasticity and serial correlation resulting from idiosyncratic disturbances is outside the fixed effects given the endogenous independent variables. The system GMM demonstrates that it is an appropriate estimating method in such circumstances (Roodman, 2006).Usage of additional instruments as lagged first difference variable ($INV_{i,t-1}$). This might solve the weak instrument problem with the difference GMM method.

Hence, in the current study we have investigated the relationship between CFV and firms' investment decision-making by applying a dynamic panel model followed by Keefe and Tate (2013) and Vengesai and Kwenda (2018). We have estimated this model by applying the system-GMM and by considering that in our study the data set is based on panel and unbalanced, and that model time period (T) is smaller than the number of cross-sections. The system GMM estimator proposed by (Blundell & Bond, 1998). The advantages of the step system- GMM include the application of orthogonal parameters on the variance-covariance capacity control for the correlation of error term across the period, and the ability to handle firm-level simultaneity, heteroscedasticity, and endogeneity problems (Antoniou et al., 2008).

The current study expressed the dynamic Panel model in the following given below equation

$$INV_{it} = \rho_0 + \rho_1 INV_{it-1} + \rho_2 CFV_{it} + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it} \tag{3.24}$$

Where I_{it} is the investment of ith firm in period t, it is explained as the purchase of the firms' fixed tangible assets scaled by the firms' total assets followed by (Rashid, 2016; Vengesai and Kwenda, 2018). INV_{it-1} is the lagged investment variable taken as the explanatory variable followed by (Lang et al., 1996; Martinez-Carrascal & Ferrando, 2008; Pacheco, 2017; Rashid, 2016; Vengesai & Kwenda, 2018). CFV_{it} cash flow volatility is the explanatory variable in year t of firm i. Z_{it} is the matrix of control variables which explains the firms' investment behavior such as Tobin Q, firms' size , leverage, operating cash flow, and liquidity in period t. δ' is the Kx1, where K is the number of control variables. γ_o is the constant parameter, η_i is the unobservable firms' fixed effect which capture the firms specific characteristics. φ_t are the time specific non-stochastic effects. ρ_0 is the intercept, $\rho_1, \rho_2, and\ \delta$ are the slope coefficients of the model. $\varepsilon_{i,t}$ capture the effect of cross-section variables that change over the period, but their changes are not observable.

The cash flow volatility (CFV) variable is predicted to be inversely related to investment in the line of Minton and Schrand (1999), when companies face financial difficulties, they may decide to delay existing investments. Under these circumstances, financial constraints strengthen the inverse CFV and investment relationship. Moreover, stated that CFV increases the need for external financing due to the cost associated with internal financing which affects the investment strategy of companies.

Tufano (1996), Lessard and Lightstone (1990), and Shapiro and Titman (1986) for risk management reveal that those firms active in risk management obtain more benefits from decreasing the CF sensitivity. Firms with high CFV, face higher financing costs which reduces the NPV of investments. Therefore, the role of stable cash flows is significant for corporate investment decision making.

In the context of cash holding and cash sensitivity, Opler et al. (1999) explained that firms with a high level of CF retain the higher cash holding , which in turn, CFV will make a higher need for precaution and increases the level of cash holding. In this regard, an increase in the level of cash holding decreases the investment level. While cash holding and investment decisions do not dependend on each other. Moreover, cash holdings lead to decrease in investment. Therefore, if CFV increased in cash holding, the level of investment would decline.

The lagged investment term (INV_{t-1}), we expect a positive coefficient of lagged investment in line with the studies of (Lacerda et al., 2007; Pacheco, 2017). These studies suggested that investment displays persistence.

The control variable Tobin Q is used to measure growth opportunities taken as the market value of assets to book value of assets followed by (Erickson & Whited, 2000; Tobin, 1969). Tobin (1969) a company's investment level should be determined by the relationship between the replacement cost of capital and the present value of the installed capital. This ratio is called Tobin's Q. According to the Q theory of investment, firms interested to increase their capital if Q is greater than one and decrease their capital stock if Q is less than one. If Q is greater than one, a firm can invest $1 in capital (at replacement cost) and make a profit with a present value greater than $1. Empirical studies such as Lange et al. (2000) and Saquido (2003) established an inverse relationship between growth opportunities and investment with a decreasing Tobin's Q ratio (if $Q<1$). In contrast, this relationship becomes positive for firms that have a high Tobin's Q ratio (if $Q >1$).

The variable firm size (SIZE) is anticipated to be directly or inversely related to corporate investment decision-making. Literature reports mixed views regarding the relationship between firm' size and corporate investment decision-making. Some of the studies (Adelegan & Ariyo, 2008; Jangili & Kumar, 2010; Ruiz-Porras & Lopez-Mateo, 2011; Yu, 2003) recommend a direct association among firm size and corporate investment-decision making. They argued that large firms are move towards diversification, they take advantage of easy access to the equity market and borrowed funds by paying the lower interest rate. This financial constraint may affect the level of investment.

Additionally, G. A. Bokpin and Onumah (2009) and Ninh (2007) determined that firm size is the major factor that determined the corporate investment decision-making because managerial capacity or human resources may not control all issues if the firm size is large. Hence, large-size firms decrease their investment. Likewise, Pacheco (2017) suggests an inverse relationship between firms' size and investment assuming that small firms grow faster than large firms, and therefore need higher investments. Additionally, small companies' investment projects are often younger and less experienced, considered riskier, which increases financing costs. These firms also tend to be less diversified and have fewer assets that can be used as collateral to secure loans. Therefore, we expect that firms' size is expected to be positively or negatively related to investment decision-making.

Next, the control variable cash flow (CF) is computed as earnings before interest, taxes, and depreciation followed by (Cohen, 2014a; Mirza & Azfa, 2010). Investment decisions made by firms are significantly influenced by CF. The existence of CF provides firms more growth opportunities. The first argument given by M. C. Jensen (1986) is based on ACT for FCF. He suggested that managers are more concerned with investment decisions that allocate FCF to low profitable projects. The second argument given by Myers and Majluf (1984a) is based on imperfect information. They stated that due to the problem of imperfect information the cost of external financing is higher than the internal financing. Hence, sometimes firms leave the projects even if they have positive NPV.

Fazzari et al., (1987) explored the financing constraints and firms' investment relationship by employing the data of U.S non-financial firms. They suggested that financially constrained firms are more dependent on the CF they used in their capital investment decisions. The following number of studies report the direct and significant relationship between CF and the rate of corporate investment (Cleary, 1999; Fazzari et al., 1987; Hoshi et al., 1991; Hubbard et al., 1995; Kaplan & Zingales, 1997; Sun & Yamori, 2009; Vermeulen, 2000). Hence, a direct relationship between CF and firms' investment decision-making is expected.

The impact of corporate leverage (LEV) on investment decision-making is significant in corporate finance. Leverage role is very important in making corporate financing decisions. Leverage is one of the most important types of debt that a company can utilize to raise money through both STD and LTD among all other financing strategies.

The Theoretical literature explains that financial leverage has an inverse relationship with corporate investment. Myers (1977) and Zwiebel (1996) also explored an inverse relationship between leverage and investment and concluded that when there is imperfect information and business risk, lenders may face problems in access to credit. According to Ooi (1999) due to the low risk of bankruptcy and the higher tax rate, large profitable firms prefer to reinvest their profit in the expansion of their business. Whereas, Titman and Wessels (1988) also reported that leverage is inversely related to profitability. They argued that successful businesses are more likely to use internal reserves than an external source of financing. Titman and Wessels (1988) explained that asset growth increases the firm value, but these assets do not generate ongoing taxable income which may not be assured. Hence, they determined the negative relationship between debt and industry expansion opportunities.

Cantor (1990) explored the relationship between leverage and corporate investment. The study findings concluded that those firms that have high CF may collect a huge amount of reserves and these reserve firms can be used for new investments in that year when they achieve low profitability. However, the firm's less indebted CF prevents it from maintaining the reserves and it must sometimes reduce its investment while facing the cost of financial distress. Therefore, a highly levered firms, investment is very sensitive to CF and shows a large variation in the level of investment across the period.

Overall, numerous researchers explain the leverage and investment relationship such as (Ahn et al., 2006; Varouj Aivazian et al., 2005; Firth et al., 2008; M. C. Jensen, 1986; McConnell & Servaes, 1995; Myers, 1977). All of these studies report an inverse relationship between leverage and investment for firms with low growth opportunities in developed economies. Therefore, leverage and firms' investment inverse relationship are expected.

The variable liquidity (LIQ) is predicted to be directly related to firms' investment decision-making consistent with the empirical studies (Lang et al., 1996; Martinez-Carrascal & Ferrando, 2008). These studies recommend that firms with less liquidity constraints increase their investment. By providing more and relatively inexpensive internal funds and increasing firms' collateral, liquidity seems to promote investment. The investment-cash flow hypothesis was also confirmed by these results.

3.4.3.1 Cash Flow Volatility and Investment Decision-Making: Role of Institutions

In both theoretical and empirical research, the relationship between institutional variables and firms' investment decision-making has been highlighted. In the current study, we are interested to investigate the role of institutions in the CFV and firms' investment decision-making relationship, because firms' CFV and their investment decisions are very sensitive to the changing in institutional variables. Therefore, to analyze the interactive role of institutions in the CFV and investment decision making relationship, we have used the following model by extending the equation (3.24).

$$INV_{it} = \rho_{11} + \rho_{12}INV_{it-1} + \rho_{13}CFV_{it} + \rho_{14}INST_t + \rho_{15}(CFV_{it} * INST_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it} \qquad (3.25)$$

Where $INST_t$ represent the institutional variables such as corruption, rule of law, political stability, regulatory quality, institutional quality, and institutional ownership. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}INST_t$ is the CFV interaction term with institutional variables in period t. The term $\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{13} + \rho_{15}INST_t$ describes the magnitude and direction of the relationship of institutional variables with CFV and investment.

3.5.1 Empirical Model for Cash Flow Volatility and Dividend Payout Policy

To investigate the relationship between CFV and dividend distribution policy at the firm level, we employed a dynamic panel model followed by Bostanci et al. (2018), Hosain (2016), and Brahmaiah et al. (2018).

The dynamic panel model can be expressed in the following equation

$$DPO_{it} = \delta_0 + \delta_1 DPO_{i,t-1} + \delta_2 CFV_{i,t} + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \qquad (3.26)$$

where dependent variable DPO_{it} is the dividend payout in year t of firm i, measured as dividend per share/ earning per share followed by (Ali et al., 2015; Irandoost et al., 2013; Murage, 2016; Zakaria et al., 2012). Explanatory variables include $DPO_{i,t-1}$ is the previous year dividend payout of firm i, and CFV denotes the cash flow volatility in year t of firm i. Z_{it} is the matrix of control variables such as profitability, liquidity, firms' size, leverage, and growth opportunities of firm i in t period. Subscript (i) denotes the firm-specific, **t** is the time period. μ_i shows the unobservable firms fixed effect, π_t is the time specific non-stochastic effects. δ_0 is the intercept, δ_1, δ_2 are the slope coefficients of the model. σ' is the Kx1, where K is the control variables, $\varepsilon_{i,t}$ measure the effect of cross-sectional variables that is unobservable across the period.

The lagged dependent variable previous year's dividend payout ($DPO_{i,t-1}$) is used as an explanatory variable of the model. Numerous studies including Baltagi (2008) and Anderson and Hsiao (1981) claimed that the lag of the dependent variable should be used as an independent variable in the model if dynamic panel analysis is to be used to test the unbiased and consistent estimators. Hence, by considering the arguments of Baltagi (2008), Greene (2003a), and Anderson and Hsiao (1981) we have employed the dynamic panel model. According to our expectation lagged dividend payout is expected to be positively related to dividend distribution policy in line with the study of Lintner (1956) stated that historical dividends are crucial in determining the current dividends. Likewise, numerous empirical studies demonstrated that corporate previous year dividend payment significantly affects the current year dividend payments (Ahmed and Javid (2008a).

Another explanatory variable of this model is the CFV. There is inconsistent evidence in the literature regarding the relationship between CFV and dividend distribution policy. CF play a crucial role in determining the firms' dividend pay-out policy (Amidu & Abor, 2006). The correlation between CFV and dividend payout has been investigated in a number of research, but the findings have been conflicting. Some empirical studies found that CFV has an inverse impact on dividend payout policy (Bradley et al., 1998; Chay & Suh, 2009; Minton & Schrand, 1999). The possibility of a future CF shortage could make it difficult for the company to pay its obligations as indicated by the CFV (Deng et al., 2013). As a result of CFV, risk increases as the level of decreases (Keefe & Yaghoubi, 2016; Memon et al., 2018) which could make external equity more expensive (Chay & Suh, 2009), and in turn negatively affects the dividend distribution (Chay & Suh, 2009; Mirza & Azfa, 2010). However, according to Deng et al. (2013) and Daniel et al. (2007) firms with high CFV do not decrease their dividends. Earlier, Jing (2005) suggested that when firms facing CFV might increase dividend payments to prevent overinvestment.

According to IST, dividend reductions generally result in a considerable drop in stock price or a "wealth penalty" for shareholders. The manager chooses a dividend strategy where the declared distribution is less than the expected income in order to avoid penalties. Hence, IST suggests that if the CFV is higher, dividend should be lower (Lintner, 1956; Miller & F. Modigliani, 1961). Empirical evidence also supports the IST explanation that can be found from (Bhattacharya, 1979a; Kose, 1985; Miller & K. Rock, 1985).

According to empirical studies, the variable liquidity (LIQ) has a direct relationship with the dividend distribution, indicating that highly liquid firms are more likely to pay out more dividend payments than firms with higher liquidity constraints (Ahmed and Javid (2008b). Hence, we expect a direct relationship among CFV and dividend payments. Dividend distribution are typically based on CF, that shows the firms' capacity to distribute dividends. Companies with poor liquidity situations, pay less dividends.

The Variable fixed assets turnover (FAT) is used to calculate the firm's performance ratio (Chowdhury & Chowdhury, 2010). This ratio measures the efficiency with which a company's fixed assets earn sales revenues. A high value indicates that the company's assets are generating revenue, which leads to higher dividend payments. If the value is low indicates that the company's assets are inefficient or more funding is required to modernize it. Therefore, it is anticipated that fixed assets and dividend payments are directly related (Chowdhury & Chowdhury, 2010; Rehman, 2016)

Tobin Q variable has been used as a proxy for investment opportunities that are anticipated to be inversely related to dividend distribution policy in the line of Miller and Modigliani (1961), claimed that when markets are inefficient dividend distributions and investment opportunities can be correlated. Companies with more growth and investment potential would prefer to issue small dividends in order to raise funds for investments. This argument is in line with the FCF hypothesis by Copland (1989) and the POT by Myers (1984) and the following empirical research supports it as well (Barclay & Smith 1995; Alli et al., 1993; Batool & Javid, 2014; Brockman & Unlu, 2009; Fama & French, 2002; Gul, 1999).

3.5.1 Cash Flow Volatility and Dividend Payout Policy: Role of Internal and External Factors

According to the theoretical and empirical literature, both IF and EF significantly affect the firms' dividend payout policy. Firms' CFV is also sensitive to firms' level IF and EF. To investigate the influence of IF in the CFV and dividend distribution relationship, in this study we have used the following model by extending the equation (3.26).

$$DPO_{it} = \delta_{11} + \delta_{12}DPO_{i,t-1} + \delta_{13}CFV_{i,t} + \delta_{14}IF_{it} + \delta_{15}(CFV_{it} * IF_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \quad (3.27)$$

Where IF_{it} represent the firms' level internal factors such as operating cash flows (OCF) and corporate tax rate (TR). CFV_{it} is the cash flow volatility of ith firms in t period.

$CFV_{it}{}^{*}IF_{it}$ is the CFV interaction term with firm-level internal factors in period t. The term $\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{13} + \delta_{15} IF_{it}$ capture the effect of firm-level internal factors for CFV and dividend payout relationship.

Likewise, to examine the influence of EF on CFV and dividend distribution relationship extended the equation (3.26) by adding constitutive and interaction terms.

$$DPO_{it} = \delta_{21} + \delta_{22} DPO_{i,t-1} + \delta_{23} CFV_{i,t} + \delta_{24} EF_t + \delta_{25}(CFV_{it} * EF_t) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \quad (3.28)$$

Where EF_t represent the external factors which includes macro-economic factors (inflation and GDP growth), and institutional ownership. CFV_{it} is the cash flow volatility of ith firms in t period. $CFV_{it}{}^{*}EF_{it}$ is the CFV interaction with external factors in period t. The term $\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{23} + \delta_{25} EF_{it}$ describes the impact of external factors in the CFV and dividend distribution relationship.

3.6 Data sources and Variables Construction

3.6.1 Data Sources

This study used an unbalanced panel data set of 380 listed non-financial firms of Pakistan covering the period from 1999-2018. We have used the positivistic approach for the selection of non-financial firms. The nature of data is panel in our study. The sample consists of the overall sectors of listed non-financial firms. The selected non-financial firms' balance sheets were extracted from the published source of the State Bank of Pakistan (SBP). This study used a convenient sampling technique to select the sample size. Additionally, this study selected firms that meet the following criteria (i) the firms must be listed on the Karachi Stock Exchange (KSE) during the sample period from 1998-2018 (ii) the availability of complete information on all firm-specific variables of the study. The financial account is the account of Financial Assets (such as loans, shares, or pension funds). The non-financial account deals with all the transactions that are not in financial assets, such as output, tax, consumer spending and investment in fixed Assets. CFV is the important variable of study. We have calculated this variable by taking the data of firms operating income and total assets and constructed CFV by taking the ratio of operating income scaled by the total assets. Similarly, the important independent variables of this study are DMS, leverage. Investment, and dividend payout policy. For the construction of DMS and leverage variable LTD and STD data extracted from the selected listed firms balance sheets. Similarly, investment variable is calculated by taking the ratio of firm fixed tangible assets scaled by total assets and dividend payout policy is construted as by taking the ratio of dividend per share scaled by the earning per share extracted from the listed non-financial firms balance sheets. Furthermore, Firms-specific variables data also has been extracted from the listed non-financial firms balance sheets.

The macroeconomic and institutional variables are also used in this study. Data concerning the selected macroeconomic variables such as inflation, GDP growth, and interest rate, bank deposits, data extracted from the source of world development indicator (WDI), and money supply (M_2) data have been extracted from the various issues of the economic survey of Pakistan. Data concerning the institutional variables (political stability, rule of law, regulatory quality) were extracted from the sources of the world governance indicator (WGI) and corruption variable data extracted from the international country risk guide (ICRG). We have collected all variables data from the authentic sources.

Further, we have not used the interpolation and extrapolation method by keeping in mind the quality of data. The validate the health of data we calculated the summary statistics of all variables. For diagnostic testing, we used the Hausman-J test to check the instruments validity and AR(2) test has been used to check the second-order serial correlation.

3.6.2 Variables Construction

The table below provides a brief description of the variables

Table 3.2: Variables Description

Explanatory variables	Measurement	Sources
Debt Maturity Structure (DMS2)	Long-term debt to total debt (DemirgüçKunt & Maksimovic, 1999; Memon et al., 2018)	Firms'Balance Sheets
Leverage (LEV)	BDR1 = Ratio of total liability/ total liability + common shareholder equity. BDR2 = total long-term liability/total long-term liability + common shareholder equity (Keefe & Yaghoubi, 2016; Memon et al., 2018).	Firms' Balance Sheets
Investment (INV)	Purchase of firms' fixed tangible assets scaled by the firms' total assets followed by (Rashid, 2016; Vengesai and Kwenda, 2018)	Firms' Balance Sheets
Dividend Payout (DPO)	Dividend per share/ earning per share (Ali et al., 2015; Irandoost et al., 2013; Murage, 2016; Zakaria et al., 2012).	Firms' Balance Sheets
	Firm-Specific Variables	
CFV	Standard deviation of earnings before interest, taxes, and depreciation (EBITD) scaled by the firm's total assets using ten years window followed by (Friend & Lang, 1988; Keefe & Yaghoubi, 2016)	Firms' Balance Sheets
Leverage (LEV)	Ratio of firms' total debt to total assets (Cai et al., 2008; Sajid et al., 2012).	Firms' Balance Sheets

Return on assets (ROA)	Ratio of EBITD as % of total assets (Mateus and Terra 2013; Qiuyan et al., 2012)	Firms' Balance Sheets
Firms Size (SIZE)	Natural logarithm of local sales (Huang & Song, 2006; Lemma & Negash, 2013).	Firms' Balance Sheets
Tangibility (TANG)	Ratio of fixed assets to total assets (Fan et al., 2012; Memon et al. 2018)	Firms' Balance Sheets
Liquidity (LIQ)	Ratio of current assets to current liabilities (Cai et al., 2008; Deesomsak et al., 2009)	Firm's Balance Sheets
Growth opportunities (GROWTH)	Percentage change in total assets (Heyman et al., 2008; Orman & Koksal 2017)	Firm's Balance Sheets
Tax Rate (TAX)	Ratio of firms' tax expense to pre-tax profit (Cai et al., 2008; Sajid et al.,2012)	Firm's Balance Sheets
Fixed Assets Turnover (FAT)	Net Revenue/Net Fixed assets (Chowdhury & Chowdhury, 2010; Rehman, 2016)	Firm's Balance Sheets
Tobin Q	Market value of assets to book value of assets followed by (Erickson & Whited, 2000; Rehman, 2016; Rostamlu et al., 2016)	Firms' Balance Sheets
Operating Cash Flow (CF)	Earnings before interest, taxes, and depreciation (Cohen, 2014; Mirza & Azfa, 2010)	Firms' Balance Sheets
	Macro-economic Variables	
Inflation (INF)	Inflation, CPI (annual %) (Keefe & Yaghoubi, 2016; Memon et al., 2018)	WDI
GDP Growth (GDPG)	GDP Growth (annual %) (Etudaiye Muhtar et al., 2017; Keefe & Yaghoubi, 2016)	WDI
Money Supply (MS)	Money Supply (M2) (Hajiha et al., 2014; Mokhova & Zinecker, 2014)	Economic Survey of Pakistan
Interest Rate (INTEREST)	Lending interest rate (%) (Antoniou et al., 2008; Bokpin, 2009)	WDI

	Institutional Variables	
Bank Deposit (BD)	Bank deposits as percentage of GDP (Ajide, 2017; Fan et al., 2012)	WDI
Rule of Law (RL)	Range -2.5 (weak) to 2.5 (strong) Rule of law (Etudaiye-Muhtar et al., 2017; Touil and Mamoghil 2020)	WGI
Corruption (CORR)	Corruption Index data range (0-6) where 0 shows low corruption, 6 indicates high corruption followed by (Ajide, 2017; Fan et al., 2012).	ICRG
Political Stability (PS)	Range -2.5 (weak) to 2.5 (strong) followed by (Ajide, 2017; Fan et al., 2012).	WGI
Regulatory Quality (RQ)	Range -2.5 (weak) to 2.5 (strong) followed by (Ajide, 2017; Fan et al., 2012).	WGI
Institutional Quality (IQ)	Computed through principal component analysis (PCA) by using the following variables: Government stability, Socioeconomic condition, Investment profile, internal and external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality (Ahmad & Muqaddas, 2017; Ullah et al., 2012)	ICRG
Institutional Ownership (IO)	Proportion of share held by institutions to total shares held by the firms (Alzomaia & Al-Khadhiri, 2013; Amidu & Abor, 2006)	Firms' Balance Sheets

3.7 Estimation Techniques

To estimate the impact of CFV on DMS1, this study used an econometric technique of ordered probit regression. Various studies in the literature suggest that the ordinary least square regression is not appropriate especially when the dependent variable of the model is based on categories. In this case, the suitable model is ordered probit regression (Greene, 2003). An ordered probit is a generalized form of extensively used probit analysis in the case of more than two ordinal outcomes of the dependent variable. The ordered probit model estimates the association between a set of explanatory variables and an ordinal variable. In this study, the debt maturity structure (DMS1) model is estimated by ordered probit regression followed by (Keefe & Yaghoubi, 2016; Memon et al., 2018). In this model, the dependent variable is an ordinal variable and a set of explanatory variables. Therefore, used an ordered probit model. It follows the cumulative standard normal distribution.

Next, to estimate the remaining baseline models and moderator effects, in the very first step, the Hausman test were performed to determine which model is appropriate, fixed, or random effect. After that to control the firm heterogeneity and time-invariant, this study used a dynamic panel regression which is estimated through two-way fixed effect (FE), system GMM (hereafter SYS-GMM) proposed by Blundell and Bond (1998), and difference GMM (hereafter DIFF-GMM) proposed by (Arellano & Bover, 1995). Dynamic panel regression handles the issue of endogeneity and robustness. we have used lagged values as instruments. In addition, to check the validity of the instrument, Hansen- J test has been used, underlying the null hypothesis of "Instruments are valid", and the hypothesis that the error term has no serial correlation, AR (1) and AR (2) tests have been used for 1st order and 2nd order serial correlation, asymptotically distributed as N (0,1) with the H_o of no 1st and 2nd order serial correlation, correspondingly.

The difference GMM estimator proposed by Arellano and Bond (1991), differences over time remove firm-specific effects, resulting in the MA (1) disturbance term.

$$\Delta\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{i,t-1}$$

Due to this MA (1), one period lagged endogenous regressors are not valid instruments and Arellano and Bond (1991) suggest that lags of at least two periods should be used as instruments to measure the current variation in endogenous variables. Using these moment conditions, Arellano and Bond (1991) suggest an alternative GMM estimator that may be applied in two steps. Although this estimator is reliable, samples with few time-series observations may show significant biases in the reported standard errors (Windmeijer, 2005). Hence, we prefer to apply only the first-step system and one-step difference GMM estimator (see Bhatti et al., 2013).

CHAPTER 4

RESULTS AND DISCUSSION

The brief discussion of the study results is given in this chapter. This chapter is divided into four sections. The first section (4.1) presents the interactive role of macroeconomic and institutional variables in the CFV and DMS relationship. The second section (4.2) describes the interactive role of institutional and macro-economic variables in the CFV and leverage relationship. Section (4.3) displays the impact of institutional factors on the CFV and corporate investment relationship. Finally, section (4.4) explains the role of an internal and external factors in the CFV and firms' dividend payment relationship.

4.1 Cash Flow Volatility and Debt Maturity Structure: Role of Macroeconomic and Institutional Factors

The descriptive stats of the DMS2, firm's specific determinants, macroeconomic factors, and institutional factors are given in table 4.1.1 for the overall sample of 380 listed non-financial firms of Pakistan for the period of 1999-2018. We consider cash flow volatility, leverage, return on assets, firms' size, liquidity, tangibility, growth opportunities, and corporate tax rate as firm-specific determinants of DMS. Additionally, we normalize these firm-specific determinants to standardize the unit of measurement. This process reduced their percentiles values to the range between zero and hundred. The percentile value explains the variable at low (P25), medium (P50), and high (P75) levels. The percentile values of other variables such as DMS2, macroeconomic, and institutional are also between zero and a hundred.

Table 4.1.1: Summary Statistics

Variables	N	Mean	STDEV	Min	Max	P25	P50	P75
DMS2	5355	0.3003	0.2305	0.0000	3.9492	0.1215	0.2641	0.4335
CFV	6095	172.21	5093.28	0.0000	207295.8	0.0380	0.0671	0.1715
LEV	6090	8.6683	190.49	0.0005	5690.56	0.4551	0.6339	0.7890
ROA	6069	37.1880	1572.17	-7621.4	95274.36	-2.4194	2.8065	9.7523
SIZE	6112	7.4436	2.1162	-4.3559	13.7810	6.3020	7.4212	8.6952
LIQ	6064	197.51	1692.99	0.0000	87503.722	62.358	99.1589	144.31
TANG	6048	2.5054	41.2703	0.0001	1447.974	0.3187	0.4916	0.6641
GROWTH	5715	30.9401	1324.86	-99.965	99900	-2.8279	5.1934	18.8233
TAX	5468	0.2465	7.1918	-149.72	390.19	-0.0038	0.1569	0.3227
INF	7600	7.4350	4.4318	2.5293	20.29	3.9250	7.3170	9.3730
GDPG	7600	4.3840	1.5732	1.6067	7.5470	3.1690	4.5360	5.6660
MS	7220	13.29	2.8721	8.6208	17.92	11.7400	13.22	14.76
INTEREST	5700	11.19	2.3446	7.2575	14.53	8.7550	11.73	13.52
BD	7600	31.06	6.684	24.63	57.9	28.15	30.301	32.36
CORR	7600	4.106	0.2533	3.5	4.5	4	4	4.2917
RL	7600	-0.8141	0.0865	-0.9689	-0.6253	-0.8856	-0.8177	-0.758
PS	7600	-2.049	0.5968	-2.81	-1.103	-2.588	-2.328	-1.566
RQ	7600	-0.6373	0.1034	-0.9053	-0.4823	-0.7073	-0.6306	-0.5742

Notes: Author own calculations
This table variables summary stats shows the number of observations, mean, standard deviation, minimum value, maximum value, 25th percentile, 50th percentile (median), and 75th percentile.

The value of the standard deviation of all variables is minimum except cash flow volatility, which indicates that cash flow volatility is a highly volatile variable in our model. The other summary statistics summarized the mean, minimum value, maximum value, and percentiles at the 25th, 50th, and 75th levels.

Table 4.1.2: Pairwise Correlation among Explanatory Variables

Pairwise correlation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	**CFV**	1																
2	**LEV**	0.482	1															
3	**ROA**	0.045	-0.076	1														
4	**SIZE**	-0.18	-0.305	0.067	1													
5	**LIQ**	-0.018	-0.156	0.067	-0.024	1												
6	**TANG**	-0.053	0.091	-0.221	-0.130	-0.192	1											
7	**GROWTH**	-0.001	-0.023	0.045	0.019	0.000	-0.037	1										
8	**TAX**	0.004	0.017	0.409	-0.004	-0.004	0.000	-0.006	1									
9	**INF**	0.003	0.008	0.028	-0.090	-0.029	0.027	0.009	-0.010	1								
10	**GDPG**	0.0252	0.0159	-0.0145	-0.0377	-0.0191	0.0214	0.0302	0.0025	-0.766	1							
11	**MS**	0.018	0.028	0.042	-0.125	-0.028	0.058	0.049	0.006	-0.110	0.325	1						
12	**INTEREST**	-0.014	-0.004	0.036	-0.008	0.014	-0.007	-0.014	0.006	0.701	-0.871	0.002	1					
13	**BD**	-0.008	-0.006	-0.033	0.062	-0.010	-0.009	0.001	-0.006	-0.244	0.337	-0.163	-0.474	1				
14	**CORR**	0.042	0.037	0.030	-0.192	-0.050	0.075	0.063	-0.005	-0.081	0.580	0.728	0.369	-0.043	1			
15	**RL**	-0.028	-0.028	-0.037	0.151	0.042	-0.052	-0.035	-0.012	-0.596	0.252	-0.162	-0.394	0.474	-0.251	1		
16	**PS**	0.040	0.041	0.022	-0.180	-0.053	0.084	0.068	0.006	-0.199	0.690	0.524	-0.579	0.217	0.866	-0.141	1	
17	**RQ**	-0.022	0.003	0.022	0.012	0.008	0.025	0.025	0.007	0.082	-0.168	0.333	0.166	0.226	-0.040	0.127	0.115	1

Source: Authors' own calculations
Notes: This table report the results of pairwise-correlation among independent variables.

Table 4.1.2 provides the pairwise correlation matrix among the explanatory variables of the model. The findings show that CFV is positively related to leverage, return on assets, tax, inflation, GDP growth, money supply, corruption, and political stability, but it is inversely related to size, liquidity, tangibility, growth opportunity, interest rate, bank deposits, rule of law, and regulatory quality. Macroeconomic factors, such as inflation are positively related to CFV, leverage, return on assets, tangibility, growth opportunity, bank deposit, and regulatory quality, whereas inflation is negatively related to firms' size, liquidity, corporate tax rate, GDP growth, money supply, bank deposits, corruption, rule of law, and political stability. The variable GDP growth is directly related to CFV, leverage, tangibility, growth opportunity, corporate tax rate money supply, bank deposit, rule of law, political stability, and corruption. However, GDP growth has an inverse relationship with return on assets, size, liquidity, inflation, interest, and regulatory quality. The variable money supply is directly related to all variables except firms' size, liquidity, bank deposits, and rule of law, which are negatively associated with money supply. The variable interest-rate is directly related to return on assets, liquidity, corporate tax rate, inflation, money supply, corruption, and regulatory quality while having an inverse relationship with CFV, leverage, size, tangibility, growth opportunities, rule of law, GDP growth, bank deposits, and political stability.

The institutional variable bank deposit is directly related to firms' size, growth opportunities, GDP growth, rule of law, political stability, and regulatory quality. Whereas, it is inversely related to CFV, leverage, return on assets, liquidity, tangibility, tax rate, inflation, money supply, interest rate, and corruption. Similarly, the variable corruption is positively related to CFV, leverage, return on assets, tangibility, growth opportunities, GDP growth, money supply, interest rate, and political stability while negatively relating to size, liquidity, corporate tax rate, inflation, bank deposits, rule of law, and regulatory quality. The variable rule of law is positively related to firms' size, liquidity, GDP growth, bank deposits, and regulatory quality but it is directly related to the remaining variables. The political stability variable is positively related to all variables except firms' size, liquidity, inflation, interest rate, and rule of law, which are inversely related to political stability. The variable regulatory quality is directly associated with all variables except cash flow volatility, GDP growth, and corruption, which are negatively related to regulatory quality. After descriptive analysis, we conducted an ordered probit regression analysis to test the hypothesis, which states that when CFV increases (decreases), the more likely is that firms tend to choose STD (LTD).

Table 4.1.3: Cash Flow Volatility and Maturity Structure of Debt

	Dependent Variable: DMS1	
Variables	**(1) General Model**	**(2) Specific Model**
CFV_10	-0.0600***	-0.0700***
	(0.002)	(0.000)
LEV	0.0439	-
	(0.994)	
ROA	-0.496***	-0.4661***
	(0.001)	(0.002)
SIZE	0.182***	0.1394**
	(0.000)	(0.000)
LIQ	-0.0002**	-0.0165**
	(0.018)	(0.023)
TANG	-0.0285**	-0.0290***
	(0.012)	(0.003)
GROWTH	-0.0118	-
	(0.408)	
TAX	0.0083***	0.0073***
	(0.002)	(0.005)
δ^2_u	1.014**	0.9410**
Log Likelihood	-2074.68	-2628.47
$\chi 2$	197.46***	140.43***
	(0.000)	(0.000)
Obs	5069	5414
No of Firms	372	372

Source: Authors own calculation
Notes: P values given in parentheses, *** p<0.01, ** p<0.05, * p<0.10
δ^2_u = Variance of error term. Dependent variable is DMS1 based on categories. We have used a general to specific approach as suggested by Hendry (1995). By following this approach, we dropped the insignificant variables (LEV and GROWTH) sequentially to get the final model parsimony. Column (2) shows the result of final selected model. Cash flow volatility (CFV)is the independent variable of this study. Both models are estimated using an ordered probit regression technique.

The results of baseline model CFV and DMS1 are reported in table 4.1.3. We estimate the general model by using CFV as an independent variable, and control variables include leverage, return on assets, firms' size, liquidity, tangibility, growth opportunity, and tax rate. In the general model two control variables, such as leverage and growth opportunity, are statistically insignificant, which enables us to sequentially exclude them from the ordered probit regression analysis[2]. Therefore, the estimation of specified model is done by removing the insignificant control variables. Therefore, the firm-level determinants CFV and other control variables like return on assets, firm' size, liquidity, tangibility, and corporate tax rate are highlighted in a specific model. The impact of these variables on DMS1 is separately discussed below.

The specific model is given in column (2). All of the variables included in the specific model are statistically significant. The CFV coefficient is statistically significant and negative at the 1% level. The CFV negative coefficient recommends that as CFV increased by 1%, the probability of using the STD (LTD) increases (decreases) by 7%. The results are consistent with our hypothesis and reasoning based on the theoretical literature. According to Sarkar (1999), CFV raises the possibility of financial distress, which in turn increases the risk of bankruptcy. Hence, there are more chances that firms select STD to avoid this risk. According to IST, the higher the CFV, the more probability is that firms may change their capital structure and select STD to lowers bankruptcy cost (Flannery, 1986; Diamond, 1991). According to the screening theory, small-size firms are excluded from the LTD market when CFV is high, but large-size firms can choose LTD

[2] We have also estimated this model by using ordered logit regression. Results are given in appendix (see table A7-A12).

maturity (Diamond, 1991; Stiglitz & Weiss, 1981). This result is also similar to the following empirical studies (Memon et al., 2018; González, 2017; Keefe & Yaghoubi, 2016). Overall, results confirm our hypothesis and indicate that when firms facing high CFV borrow STD.

The control variable return on assets is significantly and inversely related to DMS1 at a 1% significance level. As the return on assets increases by one percent, the probability of holding STD maturity increases by 46.61 percent. This result is according to our expectations and in line with the literature. According to Myers and Majluf (1984), there is an inverse association among return on assets and DMS1. This relationship is based on the claim that successful companies use less debt than less profitable companies because profitable companies are expected to have sufficient internal funds to finance their business operation and projects. It may be because companies make their financing decisions according to the hierarchical order. First, firms are likely to raise capital through reserves, secondly, by issuing debt, and lastly, by issuing new equity. Under this framework, highly profitable firms with higher reserve ratios may issue STD. Therefore, the return on assets coefficient must be negative. Our results are in line with following empirical studies (Abor, 2007; Alcock et al., 2012; Céspedes et al., 2010; Keefe & Yaghoubi, 2015; Leary & Roberts, 2005; Mateus & Terra, 2013; Qiuyan et al., 2012; Rajan & Zingales, 1995; Serrasqueiro & Rogão, 2009; Sheikh & Wang, 2011; Upneja & Dalbor, 2000).

The next variable firms' size is positively affected by the DMS1. The firm-size variable is statistically significant at the 5% level. As firm size increases by one percent, the LTD maturity is likely to increase by 13.94 percent. The positive sign of firm-size supports the signalling hypothesis, which claims that large firms have more tangible assets, less imperfect information regarding potential investment opportunities, making it easier access for firms in the LTD market (Flannery, 1986). According to the ACT hypothesis, the agency problem among stockholders and lenders, which includes risk shifting and dilution of claims, is particularly sensitive for small firms. Accordingly, by limiting the duration of DMS, bondholders try to reduce the risk associated with lending to small-size firms (Myers, 1977). Additionally, transaction costs can influence the issuance of STD and LTD. Titman and Wessels (1988) stated that small size firms are more probability is to issue STD due to less fixed costs related with the issuance of debt, whereas large-size firms are more likelihood is to select LTD in order to get benefit from economies of scale. The same finding are reported in the following studies (Alcock et al., 2012; Antoniou et al., 2006; Cai et al., 2008; Custódio et al., 2013; Deesomsak et al., 2009; El Ghoul & Zheng, 2016; Fan et al., 2012; González, 2017; Keefe & Yaghoubi, 2015; Körner, 2007; Memon et al., 2018; Ozkan, 2000; Shah & Khan, 2007). These empirical studies support the claim that easy access to capital markets, less asymmetric information, low transaction costs, reputational concerns, and problems associated with poor benefits are the significant factors that encourage large-size firms to select LTD.

The liquidity coefficient is negative and significant at a five percent level. The liquidity coefficient negative sign suggests that as firms' liquidity increases, the more likely it is that the long-term (short-term) DMS category decreases (increases) by 1.65%. This inverse relationship supports the idea of the liquidity risk hypothesis, which stated that highly liquid firms are not able to issue LTD, it may be because the cost of agency is connected with the FCF. Liquid assets do not motivate the borrowing of LTD because lenders are exposed to risk, and the manager may select risky projects, or the position of firm may fluctuate over time (Antoniou et al., 2006; Myers & Rajan, 1998). According to Kane et al. (1985) riskier firms are more chances to face higher cost of agency, thus, they have an incentive to decrease agency costs by selecting STD. The findings are consistent with the following empirical studies (Deesomsak et al., 2009; Mateus & Terra, 2013).

The tangibility variable is significantly and inversely related to DMS at a one percent level. The results show that as firms' asset tangibility increases by one percent, the chance of holding the LTD maturity decreases by 2.90%. The negative sign of tangibility is not according to our expectations. However, our result supports the empirical findings of Sheikh and Wang (2011) for Pakistan and Abor (2008) for Ghana. This negative relationship may be because firms with a higher ratio of fixed assets and with stability in earnings can easily generate funds from internal sources to avoid external financing. The same results are reported in some other studies (Dang, 2011; Keefe & Yaghoubi, 2015; Keefe & Yaghoubi, 2016; Leary & Roberts, 2005; Lee & Moon, 2011; Lemma & Negash, 2012; Memon et al., 2018).

The corporate tax rate is significantly and directly related to DMS. The coefficient of tax-rate reveals that as the tax rate increases by 1%, the likelihood of holding LTD maturity increases by 0.73%. These results support the idea of the tax hypothesis proposed by Brick and Ravid (1985) who assert that the direct effect of the tax rate on DMS is due to the high tax shield benefits for LTD. This effect can be achieved due to an upward-sloping yield curve or intrinsic structure of corporate debt. In addition, they claim that the issuance of LTD decreases the firm's expected tax liability, and as a result, increases the current market value of the firm. When the tax rate increases it encourages the firms to issue LTD to get benefit from the debt tax shield. Moreover, similar findings are reported in the following studies (Antoniou et al., 2006; Barclay & Smith 1995; Custódio et al., 2013; Elyasiani et al., 2002; Fan et al., 2012; Newberry & Novack, 1999; Stephan et al., 2011). Overall, the results concluded that CFV is more likely to be inversely related to DMS1. The control variables' return on assets, liquidity, and tangibility are more likely to be inversely related to DMS1 while the firm size and corporate tax rate are more likely to be directly related to DMS1.

Next, to analyze the impact of macro-economic factors in the CFV-DMS1 relationship, the results of ordered probit regression are given in below table 4.1.4.

Table 4.1.4: Cash Flow Volatility and Debt Maturity Structure: Role of Macroeconomic Variables

Variables	(1) Baseline	(2) INF	(3) GDPG	(4) MS	(5) INTEREST
CFV_10	-0.0007***	-0.0004***	-0.0003***	0.0001	-0.0015***
	(0.000)	(0.000)	(0.000)	(0.914)	(0.000)
Mac	-	-0.2740***	-0.0668***	-0.0767***	0.0455***
		(0.000)	(0.000)	(0.000)	(0.004)
Mac*CFV	-	-0.0083***	-0.0001***	-0.0053***	0.0096**
		(0.000)	(0.002)	(0.000)	(0.029)
ROA	-0.4661***	-0.4393***	-0.4658***	-0.4108***	-0.5697 ***
	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)
SIZE	0.1394***	0.1469***	0.1408***	0.1686***	0.3630***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LIQ	-0.0165**	-0.0171**	-0.01711**	-0.0180**	-0.0128
	(0.023)	(0.023)	(0.013)	(0.017)	(0.176)
TANG	-0.0290***	-0.0316***	-0.0296***	-0.0303***	0.7914
	(0.003)	(0.001)	(0.002)	(0.002)	(0.106)
TAX	0.0073***	0.0070***	0.0074***	0.0078***	0.0084***
	(0.005)	(0.006)	(0.005)	(0.002)	(0.005)
χ^2	140.43***	578.11***	435.32***	239.46***	112.04
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log Likelihood	-2628.47	-2614.1642	-2617.115	-2377.46	-1659.40
δ^2_u	0.9410**	0.9560**	0.9529**	1.0682**	1.2519**
Obs.	5414	5414	5414	5236	4501
No. of Firms	372	372	372	372	369

Notes: Dependent variable is DMS1. ***, **, * are one, five & ten percent significance levels. P-values are given in parentheses. δ^2_u is the variance of the error term. Row-wise MAC abbreviation used for macroeconomic variables. Column one report the findings of baseline model, the impact of CFV on DMS. Column (2) reports the findings of role of inflation in the relationship between CFV and DMS. Column (3) shows the GDP growth role in the relationship between CFV and DMS. Column (4) indicates the money supply role in the relationship between CFV and DMS. Column (5) findings indicate the role of interest rate in the relationship between CFV and DMS.

The baseline model results are reported in first column, which shows the impact of CFV on DMS1. The results of this relationship are briefly discussed in the previous section. The variable inflation (Column 2) is negatively significant at a one percent level and exhibits that when the inflation rate is high in the economy, there are more chances is that firms select STD maturity. The coefficient associated with inflation shows that as inflation increases by one percent, the probability of choosing STD increases by 27.40 percent. Inflation is generally considered an indicator that explains the capacity of the government to control the economy, which also provides information about the stability of the present in long-term agreements. Since debt agreements are typically written in nominal terms, a high rate of inflation raises the interest rate risk that businesses must deal with and may lead lenders to exclude from the LTD market. The following studies supports this claim (Fan et al., 2012; Keefe & Yaghoubi, 2016; Memon et al., 2018). The CFV*INF interaction term is also negative and significant which implies that if the inflation rate is high in a country, cash flow volatile firms tend to use STD.

Similarly, the coefficient associated with GDP growth (Column 3) is negatively significant at a one percent level. The GDP growth coefficient shows that when GDP growth increases by one percent, the probability of selecting STD increases by 6.68 percent. This evidence supports the claim of Myers (1977) who stated that firms can overcome the problems of underinvestment by choosing STD maturity. In addition, when the GDP growth rate is higher in the economy, the economic situation is better, and there are more investment chances; with more investment chances, banks still offer short-term loans to avoid risk. Therefore, the corporate DMS is the STD. This result supports the existing empirical study of (Etudaiye-Muhtar et al., 2017). The interaction term

CFV*GDPG is also negative and significant which indicates that if economic growth is higher in a country, cash flow volatile firms select STD.

The variable money supply (Column 4) is negatively significant at a 1% level, reveals that when the money supply increases in the economy, the more chances is that firms decrease their LTD and choose STD to avoid the cost of agency. The coefficient of money supply indicates that as money supply increases by 1%, the probability of borrowing STD rises by 7.67%. This result is also similar with (Hajiha et al., 2014; Mokhova & Zinecker, 2014). The interaction term CFV*MS is significant and negative indicating that if the money supply is high in a country cash flow volatile firms lead to the use of debt of short-term maturities.

The variable interest rate (Column 5) appears to be directly related to DMS1 at a one percent level, which indicates that as the country's interest rate increases by one percent, there is a 4.55 percent chance that the firm will select LTD. The positive sign of interest rate is according to our expectations and supports the findings of Rehman (2016) and Antoniou et al. (2006) who claim that when interest rate increases, it offers more tax savings to firms. Thus, firms choose LTD. Moreover, this result supports the tax hypothesis of Brick and Ravid (1985) which stated that LTD increase tax gain if upward sloping is the term structure of interest. The interaction term CFV*INT is positive and significant at a five percent level which reveals that if the interest rate is higher in a country, firms with high CFV select LTD.

The control variable results are consistent with the baseline model. The detailed results of control variables are briefly discussed in the previous section. Moreover, the comprehensive discussion of interactive terms (CFV*MAC) is given in table 11 results description.

Next, to analyze the influence of institutional factors in the CFV and DMS1 relationship, the results of ordered probit regression are presented in table 7. The coefficient associated with bank deposits (column 2) is statistically significant and negative at a 1% level. A 1% increase in bank deposits is more likely to increase STD by 1.73 percent. It may be because firms in countries where a large number of banking sectors exist tend to use more short-term financing because banks usually have more short-term loans. Thus, they may have an advantage in borrowing STD. This result supports the findings of (Claessens et al., 2007; Demirgüç-Kunt & Maksimovic, 1999; Fan et al., 2012). The interaction term CFV*BD is negative and significant at a 1% level, suggesting that cash flow volatile firms select STD, if the rate of bank deposits increases in an economy.

In column (3) the corruption coefficient is negative (-0.7402) and statistically significant at a one percent level, which reveals that the corruption index is inversely related to DMS1. This result indicates that increased usage of STD is linked to a high level of corruption. Firms in a highly corrupt country have more chances to select STD which mostly reflects firms facing difficulties in access to LTD in a low-quality institutional environment. A high level of corruption may raise the cost of LTD because of costly bribes that firms may have to pay to government officials or bankers in order to get such type of risky loans. Thus, LTD is inversely related to the level of corruption in a country (Ajide, 2017; Alves & Francisco, 2015; Awartani et al., 2016; Bernardo et al., 2018; Fan et al., 2012; Turk, 2016).

Table 4.1.5: Cash Flow Volatility and Debt Maturity Structure: Role of Institutional Variables

	Ordered Probit Regression					
	(1) **Baseline**	**(2)** **BD**	**(3)** **COR**	**(4)** **RL**	**(5)** **PS**	**(6)** **RQ**
CFV_10	-0.0007***	0.00321***	0.0027***	-0.0004*	-0.0002**	-0.0004
	(0.000)	(0.000)	(0.000)	(0.094)	(0.046)	(0.842)
INST	-	-0.0173***	-0.7402***	1.9413***	0.2158**	0.2324
		(0.000)	(0.000)	(0.000)	(0.025)	(0.405)
CFV*INST	-	-0.0001***	-0.0018***	0.0004	0.0004***	0.0008***
		(0.000)	(0.000)	(0.299)	(0.001)	(0.008)
ROA	-0.4661***	-0.5204***	-0.4312***	-0.3847**	-0.5100***	-0.4799***
	(0.002)	(0.001)	(0.004)	(0.011)	(0.001)	(0.002)
SIZE	0.1394***	0.1661***	0.1154***	0.1310***	0.1937***	0.1400***
	(0.000)	(0.000)	(0.003)	(0.001)	(0.001)	(0.000)
LIQ	-0.0165**	-0.0171**	-0.0186***	-0.0179**	-0.0148**	-0.0165**
	(0.023)	(0.018)	(0.009)	(0.014)	(0.045)	(0.023)
TANG	-0.0290***	-0.0283***	-0.0284***	-0.0323***	-0.0285***	-0.0285***
	(0.003)	(0.003)	(0.005)	(0.001)	(0.002)	(0.003)
TAX	0.0073***	0.0080***	0.0069***	0.0068***	0.0080***	0.0074***
	(0.005)	(0.004)	(0.006)	(0.004)	(0.003)	(0.005)
δ^2_u	0.9410**	0.9453**	0.9910**	0.9729**	0.9378**	0.9421**
Log-likelihood	-2395.297	-2612.50	-2599.85	-2605.09	-2617.29	-2627.40
χ^2	140.43***	226.42***	176.13***	179.11***	205.59***	131.83***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	5414	5414	5414	5414	5414	5414
No. of Firms	372	372	372	372	372	372

Notes: P-values given in brackets, ***, **, * significance at one, five and ten percent significance level. δ^2_u = Variance of error term.
INST= Institutional Variable.
Dependent variable is DMS_1.
Row wise INST abbreviation we have used for each Institutional variable. Column (1) shows the results of baseline model, impact of CFV on DMS. Column (2) report the findings of bank deposits role in the relationship of CFV and DMS_1. Column (3) explains the corruption role in the relationship of CFV and DMS_1. Column (4) indicates the role of rule of law role in the relationship of CFV and DMS_1. Column (5) findings indicate the role of political stability in the relationship of CFV and DMS_1. Column (6) report the results of regulatory quality in the relationship of CFV and DMS_1.

In Column (4), the rule of law coefficient (1.9413) is positive and statistically significant at 1%. When there is a strong implementation of rule of laws, it more challenging for managers to expropriate investors. Hence, firms with a strong implementation of a rule of law use more LTD. Investors are more confident about the safety of their funds when there is a strong legal system. Hence, they encourage long-term lending. The findings are similar with (Awartani et al., 2016; Demirgüç-Kunt & Maksimovic, 1999; Etudaiye-Muhtar et al., 2017; González, 2017; La Rocca et al., 2010; Touil & Mamoghli, 2020). However, the CFV*RL is positive and significant in our model.

In column (5) the coefficient associated with political stability (0.2158) is significant and positive. This indicates that if firms are located in a politically stable country, the more chances are that firms select LTD. The findings are consistent with Guscina (2008) who stated that when political stability increases in the country, institutional and political environments become more stable. Hence, political stability is directly associated with the development of domestic debt markets because it increases the tradability and the country's ability to choose debt of longer maturity. Therefore, when a country becomes more politically stable, the more likely is that firms choose longer DMS. In addition, political stability is directly related to good contract performance and strong legal protection for creditors; this inclined firms to reduce information asymmetry and bankruptcy cost, which will lead increase the usage of LTD (Aisen & Veiga, 2013; Arosa et al., 2014; Touil & Mamoghli, 2020). The interactive term CFV*PS is positively significant at a one percent level which indicates that if political stability increases in a country, firms with volatile cash flows select debt of long-term maturities.

In column (6), the variable, regulatory quality, is positive but statistically insignificant and indicates no impact of regulatory quality on DMS1. In this table, we temporarily ignore the description of interaction terms. A brief explanation of interaction terms is given in table 12 results description. The findings of control variables are similar with the previous tables. Whereas, if regulatory quality system is strong in a country, firms with high CFV select LTD.

Further, we also estimated the marginal effects, and the result of baseline model marginal effects[3] relative to each base category (outcomes) is given in below table 4.1.6.

[3] We have also estimated the marginal effects of interactive models. The result tables are given in appendix, and their results are in line with the analysis of ordered probit regression.

Table 4.1.6:Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure

	Dependent Variable Debt Maturity Structure			
Variables	**Outcome (1) Dy/Dx**	**Outcome (2) Dy/Dx**	**Outcome (3) Dy/Dx**	**Outcome (4) Dy/Dx**
CFV_10	0.0113	0.0767***	-0.0213***	-0.0565***
	(0.312)	(0.000)	(0.005)	(0.000)
ROA	0.0807	0.0549***	-0.0153*	-0.0404***
	(0.353)	(0.004)	(0.051)	(0.003)
SIZE	-2.415	-0.0164***	0.0046*	0.0121***
	(0.389)	(0.001)	(0.052)	(0.000)
LIQ	0.0285	0.0019**	-0.0540*	-0.0143**
	(0.337)	(0.025)	(0.069)	(0.027)
TANG	0.0502	0.0034***	-0.0095**	-0.0251***
	(0.311)	(0.003)	(0.022)	(0.004)
TAX	-0.0127	-0.0864***	0.0240*	0.0636***
	(0.359)	(0.007)	(0.059)	(0.005)
n	5414	5414	5414	5414

Source: Author's own Calculation
Notes: P-values in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.10$.
This table reports the results of baseline model marginal effects. Where CFV is the cash flow volatility under a ten-year window size, control variables include ROA = return of assets, SIZE= firm's size, LIQ= liquidity, TANG= Tangibility, TAX= Tax rate, n=no of observation. Outcome 1-4 are reported according to each base category.

The results of baseline model marginal effects for each DMS category are reported in table 8. The results of outcome one (category firms are not using any type of debt) show that all variables are statistically insignificant. Under outcome 2 (category defined as firms using only STD), all variables are significant under different significance levels.

In column (2), the coefficient of CFV is positive and significant at 1% level, which indicates that as CFV increases, it is more likely that firms hold more STD. Similarly, the variable, return on assets, is positive and statistically significant at a 1% level, which indicates that return on assets is directly related to STD maturity. The firm size variable coefficient is negative and significant at 1% level and reveals that as firms' size increases, the more chances there are that firms decrease their STD maturity. The coefficient associated with liquidity and tangibility is significant and positive at 1 and 5% levels revealing that both liquidity and tangibility are directly related to STD maturity. Whereas the tax rate is negatively significant at 1%, which indicates that when the tax rate increases, it is more likely that firms reduce their short-term maturity debts.

The results of outcomes (3) and outcome (4) are related to LTD. Under both outcome levels, the coefficient of CFV is negatively significant at 1% level, which confirms that as CFV increases, there are more chances that firms reduce their long-term maturity debts. Similarly, the coefficient associated with return on assets is positive under both outcome levels, which indicates that as a return on assets increases, it is more likely that firms decrease the LTD maturity. On the other hand, the variables liquidity and tangibility change signs from positive (Outcome 2) to negative (Outcome 3&4) and indicates that as firms' liquidity and tangibility increase, the more likely it is that they reduce the LTD maturity.

The variable firms' size changes signs from negative to positive under long-term maturity categories at one and five percent level, which indicates that as firms' size increases, it is more likely that they choose long-term maturity debts. In addition, the variable tax rate changes sign from negative (Outcome 2) to positive (outcome 3 &4) at ten and one percent significance level, which indicates that when the tax rate increases, it is more probability that firms hold LTD to get more tax shield advantages on LTD.

Overall, the results of marginal effects are similar to the ordered probit regression model, and all of the variables' results in relation to DMS1 categories are consistent with the empirical and theoretical literature.

Next, given below table 4.1.7 the results of the dynamic panel model such as the two-way fixed-effect, one-step system, and one-step difference GMM for the baseline model are reported.

Table 4.1.7: Cash Flow Volatility and Debt Maturity Structure Relationship: Using an Alternative proxy of Debt Maturity Structure

	(1)	(2)	(3)	(4)
Variables	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
CFV_10	-0.0252**	-0.0105**	-0.0055***	-0.0237**
	(0.019)	(0.016)	(0.007)	(0.010)
Control Variables				
LEV	-0.0247	3.3846***	1.2358**	-0.2417
	(0.969)	(0.004)	(0.017)	(0.950)
SIZE	-1.8436***	1.8256**	-0.0177	1.71487
	(0.004)	(0.019)	(0.974)	(0.737)
LIQ	0.0112**	0.0154***	0.0088**	0.0065
	(0.047)	(0.002)	(0.030)	(0.229)
TANG	0.0182	0.9632***	0.4574***	1.6941
	(0.890)	(0.000)	(0.000)	(0.140)
GROWTH	-0.0193	0.0067**	0.0177**	-0.0387
	(0.707)	(0.020)	(0.034)	(0.545)
DMS ($_{t-1}$)	0.8059***	-	0.5821***	0.7290
	(0.000)		(0.000)	(0.000)
Constant	17.09***	10.35**	11.98***	-
	(0.001)	(0.010)	(0.002)	
Obs.	4813	4974	4813	4356
No. of Firms	368	369	368	364
Time Dummies	Yes	-	Yes	Yes
No of Instruments	54	-	-	46
F-stats	31.55***	10.56***	66.19***	15.03***
	(0.000)	(0.000)	(0.000)	(0.000)
Diagnostic Tests				
Hansen-J Test (P-Values)	0.587	-	-	0.628
AR (2) (P-Values)	0.297	-	-	0.347
Instruments				
IYears_2000	2.205887**	-	-	9.0460**
	(0.028)			(0.026)
IYears_2001	-3.6529*	-	-	3.0408*
	(0.081)			(0.075)
IYears_2002	-1.0329	-	-	4.8850*
	(0.651)			(0.052)
IYears_2003	1.4477	-	-	6.8478**
	(0.480)			(0.035)
IYears_2004	1.2378	-	-	5.9044
	(0.530)			(0.366)
IYears_2006	-0.3841	-	-	1.6187
	(0.825)			(0.723)
IYears_2007	-1.0075	-	-	0.0001***
	(0.601)			(0.007)
IYears_2008	1.0406	-	-	1.4549*
	(0.5770			(0.065)
IYears_2009	14.8466***	-	-	15.024***
	(0.000)			(0.000)
IYears_2010	1.5503	-	-	2.75933**
	(0.462)			(0.047)

IYears_2011	-0.56587	-	-	0.36990*
	(0.776)			(0.092)
IYears_2012	2.6026	-	-	2.9907**
	(0.257)			(0.024)
IYears_2013	3.2411	-	-	2.9907**
	(0.123)			(0.024)
IYears_2014	0.7768	-	-	0.8858*
	(0.709)			(0.064)
IYears_2015	1.6182	-	-	1.3632**
	(0.515)			(0.040)
IYears_2016	1.3093	-	-	0.7445*
	(0.551)			(0.056)
IYears_2017	0.9829*	-	-	-0.0157*
	(0.063)			(0.098)
IYears_2018	1.3797***	-	-	0.0744*
	(0.001)			(0.056)

Notes: Dependent variable is DMS2 calculated as the ratio of long-term debt to total debt.
This table report the results of one-step system GMM, fixed effect, two-way fixed effect, one-step difference GMM**.** By following General to specific approach as suggested by Hendry (1995) we dropped the insignificant variables like return on assets (ROA) and Tax rate (TAX) in order to get the final model parsimony. Hansen-J test P- values show that instruments are valid. AR (2) p-values indicate that no second order serial correlation exists in our model.

Table 4.1.7 reports the effect of CFV on DMS2 under the one-step SYS GMM, FE, two-way FE, and one-step DIFF GMM models. In these four models, the CFV shows an inverse relationship with DMS2. Under the system GMM model, the coefficient of CFV is (-0.0252), which indicates that as CFV increases by one percent, it leads to a decrease in firms' DMS2 by 2.52 percent. In other words, when firms' CFV increases, they decrease their LTD. Remaining models report the same results related to CFV. Additionally, our results are also consistent with the previous analysis of ordered probit regression. This result also supports the theoretical and empirical literature.

Next, table 4.1.8 reports the results of dynamic panel models such as two-way FE, One-step SYS GMM, and one-step DIFF GMM for interactive analysis, which explains the influence of macro-economic factors in the CFV and DMS2 relationship.

Table 4.1.8: Cash Flow Volatility and Debt Maturity Structure: Role of Macroeconomic Factors Using an Alternative Proxy of Debt Maturity Structure

	INF				GDPG			
Variables	**One-step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
CFV_10	0.0384***	-0.0159***	0.0009	0.0270***	-0.0477***	-0.0065	-0.0480***	-0.0859***
	(0.000)	(0.007)	(0.786)	(0.000)	(0.000)	(0.399)	(0.000)	(0.000)
Mac	-0.2093**	0.1815**	-4.8417**	-0.7321 **	0.5557**	-1.0449***	-2.2122**	1.5650
	(0.034)	(0.013)	(0.036)	(0.022)	(0.045)	(0.000)	(0.033)	(0.245)
Mac*CFV	-0.0038***	0.0010***	-0.0013***	-0.0033***	0.0144***	-0.0012	0.0101***	0.0169***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.531)	(0.000)	(0.000)
Control Variables								
LEV	0.9332	3.4769***	1.2015**	-0.7703	0.9262	3.5602***	1.2139**	7.0584
	(0.189)	(0.003)	(0.022)	(0.824)	(0.271)	(0.002)	(0.020)	(0.215)
SIZE	1.5795**	1.8725**	-0.0348	4.9898	2.2819***	2.0594***	-.0170593	2.3289
	(0.035)	(0.016)	(0.950)	(0.327)	(0.003)	(0.008)	(0.975)	(0.828)
LIQ	-0.0049**	0.0154***	0.0088**	-0.0040	-0.0051**	0.0149***	0.0088**	-0.0053
	(0.015)	(0.003)	(0.030)	(0.167)	(0.010)	(0.003)	(0.030)	(0.201)
TANG	0.2231**	0.9729***	0.4591***	0.9901*	0.2286**	0.9588***	0.4600***	1.0902*
	(0.010)	(0.000)	(0.000)	(0.078)	(0.032)	(0.000)	(0.000)	(0.099)
GROWTH	0.0669	0.0066	0.0177**	0.0339	-0.00804	0.0076	.017694	-0.3168***
	(0.207)	(0.019)	(0.034)	(0.635)	(0.906)	(0.019)	(0.034)	(0.007)
DMS ($_{t-1}$)	0.7145***	-	0.5824***	0.6693***	0.7047***	-	0.5827***	0.7121***
	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Constant	-2.3199	8.4592	33.2311***	-	-11.5533*	12.9263***	21.37918***	-
	(0.653)	(0.179)	(0.000)		(0.063)	(0.039)	(0.000)	
Obs.	4813	4974	4813	4356	4813	4974	4813	4356
No. of Firms	364	369	368	364	368	369	368	364
Time Dummies	Yes	-	Yes	Yes	Yes	-	Yes	Yes
No of Instruments	64	-	-	50	46	-	-	34
F-stats	82.93***	9.62***	62.24***	27.74***	62.39***	11.37***	63.79	15.05***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Diagnostic Tests								
Hansen-J Test (P-Values)	0.177	-	-	0.274	0.357	-	-	0.525
AR (2)	0.192	-	-	0.264	0.275	-	-	0.698

(P-Values)

Instruments								
Iyears_2000	2.6399*	-	-	-	4.9590***	-	-	5.8500
	(0.010)				(0.000)			(0.462)
Iyears_2001	-3.4707 **	-	-	-7.0780***	-0.4440	-	-	0.9791
	(0.026)			(0.000)	(0.770)			(0.908)
Iyears_2002	-0.828533	-	-	-5.1947***	2.3627	-	-	3.281362
	(0.671)			(0.006)	(0.178)			(0.727)
Iyears_2003	-			-4.9160**	1.9410	-	-	1.8995
				(0.032)	(0.237)			(0.669)
Iyears_2004	-0.5765*	-	-	-3.5892**	-	-	-	-
	(0.073)			(0.083)				
Iyears_2005	-3.033*	-	-	-6.2941**	-1.2594	-	-	2.5598
	(0.093)			(0.017)	(0.519)			(0.515)
Iyears_2006	-2.8678**	-	-	-8.0222***	-2.2217*	-	-	-5.0892
	(0.023)			(0.005)	(0.057)			(0.058)
Iyears_2007	-3.7410**	-	-	-9.9344***	-2.9024**	-	-	-6.8092***
	(0.008)			(0.004)	(0.019)			(0.007)
Iyears_2009	13.150***	-	-	9.3105***	13.273***	-	-	8.8889***
	(0.000)			(0.001)	(0.000)			(0.000)
Iyears_2010	0.8838	-	-	-3.1912	2.2089*	-	-	-
	(0.450)			(0.237)	(0.086)			
Iyears_2011	-2.1663*	-	-	-7.0533**	-1.1267	-	-	-3.30425
	(0.061)			(0.040)	(0.289)			(0.241)
Iyears_2012	0.5931	-	-	-5.8629	1.0660	-	-	-4.5320
	(0.680)			(0.193)	(0.427)			(0.302)
Iyears_2013	0.0166	-	-	-7.2422	0.8951	-	-	-3.50347
	(0.990)			(0.174)	(0.434)			(0.598)
Iyears_2014	-2.7797	-	-	-10.623	-2.3231	-	-	-8.4509
	(0.065)			(0.067)	(0.112)			(0.247)
Iyears_2015	-3.1364*	-	-	-13.316	-1.5605	-	-	-9.2054
	(0.087)			(0.086)	(0.320)			(0.254)
Iyears_2016	-4.7082**	-	-	-13.3258	-2.7512	-	-	-11.0002
	(0.012)			(0.074)	(0.100)			(0.247)
Iyears_2017	-4.7082**	-	-	-14.896*	-3.9269	-	-	-10.034
	(0.012)			(0.060)	(0.008)			(0.344)
Iyears_2018	-4.3096**	-	-	-14.094*	-4.1636**	-	-	-11.838
	(0.018)			(0.076)	(0.013)			(0.299)

	MS				INTEREST			
Variables	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
CFV_10	0.0958*	-0.0399***	0.0063	0.1110 ***	0.1414***	0.0167	0.0650***	0.1221***
	(0.059)	(0.000)	(0.184)	(0.000)	(0.000)	(0.431)	(0.000)	(0.000)
Mac	-0.2612*	-0.3038***	-11.2926**	-0.2772	1.6637***	1.0825***	-1.0316	-0.9808*
	(0.056)	(0.000)	(0.036)	(0.482)	(0.000)	(0.000)	(0.430)	(0.098)
Mac*CFV	-0.0068*	0.0007***	-0.0013***	-0.0093***	-0.0111***	-0.0019	-0.0055***	-0.0091***
	(0.063)	(0.001)	(0.000)	(0.000)	(0.000)	(0.208)	(0.000)	(0.000)
Control Variables								
LEV	0.8131	4.0735***	1.2029**	3.8700	0.9760	4.3994***	1.3731**	0.5094
	(0.337)	(0.001)	(0.023)	(0.387)	(0.191)	(0.003)	(0.047)	(0.912)
SIZE	1.8958**	3.1884***	-0.0357	3.5870	-0.4036	3.1437***	0.1166	3.2451
	(0.023)	(0.000)	(0.949)	(0.671)	(0.466)	(0.001)	(0.883)	(0.519)
LIQ	-0.0057***	0.0154***	0.0088**	-0.0050	0.0115**	0.0163***	0.0099**	0.0117
	(0.005)	(0.003)	(0.030)	(0.132)	(0.017)	(0.004)	(0.028)	(0.270)
TANG	0.2688***	0.9231***	0.4604***	0.9270	11.6131**	27.46***	18.61***	4.8543
	(0.005)	(0.000)	(0.000)	(0.116)	(0.056)	(0.000)	(0.000)	(0.836)
GROWTH	0.03803	0.0062***	0.0177**	-0.1941**	-0.0331	0.0074***	0.0200**	-0.0684
	(0.587)	(0.011)	(0.034)	(0.028)	(0.537)	(0.051)	(0.010)	(0.280)
DMS $_{(t-1)}$	0.6973***	-	0.5823***	0.6896***	0.7666***	-	0.5366***	0.6919***
	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Constant	-9.9538*	14.89***	113.34**	-	-9.1814	-26.78***	8.2201	-
	(0.098)	(0.017)	(0.016)		(0.155)	(0.003)	(0.329)	
Obs.	4813	4974	4813	4356	4813	4325	4187	3764
No. of Firms	368	369	368	364	365	367	365	359
Time Dummies	Yes	-	Yes	Yes	Yes	-	Yes	Yes
No of Instruments	46	-	-	34	60	-	-	46
F-stats	55.13***	9.64***	64.19***	21.73***	37.30***	13.80***	68.65***	15.97***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Diagnostic Tests								
Hansen J Test (P-Values)	0.195	-	-	0.561	0.440	-	-	0.766
AR (2) (P-Values)	0.236	-	-	0.379	0.536	-	-	0.623
Instruments								
Iyears_2000	5.6326***	-	-	-	-	-	-	
	(0.000)							
Iyears_2001	-	-	-	-6.1496 ***	-	-	-	
				(0.000)				
Iyears_2002	1.0555	-	-	-3.4820	-	-	-	
	(0.505)			(0.124)				
Iyears_2003	1.6377 **	-	-	-0.2197	-	-	-	
	(0.030)			(0.918)				
Iyears_2004	-	-	-	-	-	-	-	
Iyears_2005	-2.296037	-	-	-0.9428	-4.6926**	-	-	-1.091
	(0.270)			(0.792)	(0.013)			(0.597)
Iyears_2006	-1.7000	-	-	-8.1359*	-9.0073***	-	-	-1.692
	(0.172)			(0.090)	(0.000)			(0.329)
Iyears_2007	-3.7823 **	-	-	-9.8935**	-11.2705***	-	-	-2.914
	(0.023)			(0.044)	(0.000)			(0.128)
Iyears_2008	-1.8377	-	-	-9.582041	-11.063***	-	-	-0.5188
	(0.212)			(0.156)	(0.000)			(0.787)
Iyears_2009	13.983	-	-	1.006171	-	-	-	14.2477***
	(0.000)			(0.907)				(0.000)
Iyears_2010	1.337	-	-	-9.426788	-11.8107***	-	-	2.0632*
	(0.372)			(0.242)	(0.000)			(0.064)
Iyears_2011	-2.2583	-	-	-10.73066	-14.348***	-	-	1.223
	(0.140)			(0.184)	(0.000)			(0.394)
Iyears_2012	1.1252	-	-	-10.23653	-10.085***	-	-	0.5205
	(0.531)			(0.256)	(0.000)			(0.816)
Iyears_2013	0.8555	-	-	-8.115253	-7.0629***	-	-	-2.704725
	(0.602)			(0.383)	(0.000)			(0.308)

Iyears_2014	-1.2800 (0.447)	-	-	-13.02954 (0.216)	-9.1963*** (0.000)	-	-	-4.0933 (0.301)
Iyears_2015	-0.4150* (0.083)	-	-	-13.03316 (0.235)	-6.0853*** (0.000)	-	-	-6.04944 (0.211)
Iyears_2016	-1.346 (0.473)	-	-	-13.615 (0.222)	-4.2324*** (0.003)	-	-	-7.2214 (0.199)
Iyears_2017	-2.8405 (0.120)	-	-	-13.63076 (0.256)	-3.2978 (0.0022)	-	-	-7.165074 (0.209)
Iyears_2018	-1.8103 (0.372)	-	-	-15.49751 (0.249)	-3.8164** (0.016)	-	-	-7.1340 (0.306)

Notes: As for table 4.1.7.Except this table reports the results of one-step system GMM, fixed effect, two-way fixed effect, and one-step difference GMM.

Table 4.1.8 explains the impact of macroeconomic variables in the CFV and DMS2 relationship. Macroeconomic variables such as inflation and money supply show a significant and inverse relationship with DMS2 in all models. Both inflation and money supply results are similar with the ordered probit regression. GDP growth reports a significant and direct relationship with DMS2 under a one-step system GMM but a positive and insignificant relationship under a one-step difference GMM while under the FE and two-way FE, GDP growth shows an inverse relationship with DMS2. The FE and two-way FE results related to the GDPG variable are consistent with the ordered probit regression. The variable interest rate shows a positive relationship with DMS2 under a one-step SYS GMM and FE models and these results are consistent with the ordered probit regression while the two-way FE shows an inverse relationship with DMS2. However, under a one-step DIFF GMM, the interest rate reports an inverse but insignificant relationship with DMS2. Overall, except for GDPG, all of the macro variable results in a one-step SYS GMM are consistent with the ordered probit regression.

To examine the conditional effect of CFV and inflation on DMS2, the partial derivative of the above equation has been taken with respect to CFV.

$$DMS2_{it} = \gamma_{11} + \gamma_{12}DMS2_{it-1} + \gamma_{13}CFV_{it} + \gamma_{14}InF_t + \gamma_{15}(CFV_{it}{}^{*}InF_t) + \gamma_{16}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS2_{it}}{\partial CFV_{it}} = \quad 0.0384 - 0.0038INF_t \qquad (4.1)$$

where both γ_{13} and γ_{15} have opposite signs in the system GMM, which explains that the partial increases in inflation lead to create a CFV inverse effect on DMS2 because the country inflation rate increases, cash flow volatile firms decrease the LTD. This result shows that inflation makes a weak CFV and DMS2 relationship. This result is consistent with the other models except for the FE model where the interaction term coefficient is significant and positive which explains inflation strengthens the CFV relationship with DMS.

Similarly, equation (4.2) shows the interactive impact of GDP growth in the CFV and DMS2 relationship.

$$DMS2_{it} = \gamma_{21} + \gamma_{22} DMS2_{it-1} + \gamma_{23} CFV_{it} + \gamma_{24} GDPG_t + \gamma_{25} (CFV_{it}{}^{*} GDPG_t) + \gamma_{26}{}' Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS2_{it}}{\partial CFV_{it}} = \quad \text{-0.0477 + 0.0144} GDPG_{it} \tag{4.2}$$

Both coefficients in equation (4.2) have opposite signs in the system GMM model, but the GDP growth coefficient positive value indicates that with a partial increase in GDP growth, cash flow volatile firms increase the long-term maturity structure of debts. Overall, findings report that the variable GDP growth strengthens the CFV and DMS2 relationship. This result is consistent with the other models except for the FE model where the coefficient of an interactive term is negatively significant, implying that the GDP growth creates a weak CFV and DMS2 relationship.

Equation (4.3) shows the interactive role of MS in the relationship between CFV and DMS2.

$$DMS2_{it} = \gamma_{31} + \gamma_{32} DMS2_{it-1} + \gamma_{33} CFV_{it} + \gamma_{34} MS_t + \gamma_{35} (CFV_{it}{}^{*} MS_t) + \gamma_{36}{}' Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS2_{it}}{\partial CFV_{it}} = \quad \text{0.0958 - 0.0068} MS_{it} \tag{4.3}$$

Both coefficients in equation (4.3) also have opposite signs in the system GMM model and indicate that as partial increases in money supply, firms with volatile cash flow tend to decrease in the LTD maturity. Overall, findings report that the money supply also weakens the CFV and DMS2 relationship. This result is in line with the other models except for the FE model where both coefficients have opposite signs as compared to the other models. The findings of FE model show that the role of money supply strengthens the CFV relationship with DMS2.

Similarly, equation (4.4) reports the interactive role of interest rate in the CFV and DMS2 relationship.

$$DMS2_{it} = \gamma_{41} + \gamma_{42}DMS2_{it-1} + \gamma_{43}CFV_{it} + \gamma_{44}INT_t + \gamma_{45}(CFV_{it}{}^{*}INT_t) + \gamma_{46}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS2_{it}}{\partial CFV_{it}} = 0.1414 - 0.0111\ INTEREST_{it} \tag{4.4}$$

Both coefficients in equation (4.4) have opposite signs in the system GMM model, implying that as partial increases in interest rate, firms with volatile cash flows decrease the long-term maturity structure of debts. Overall, findings report that interest rate also weakens the CFV and DMS2 relationship. Overall, all of the macroeconomic variables moderating effects show that they play a substitution role in explaining the CFV relationship with DMS2.

To estimate the effect of CFV on DMS2, this study assumes the macroeconomic variables at different levels of percentiles. The result of each macroeconomic variable at a low, median and high level of percentiles are given in table 4.1.9.

Table 4.1.9: Conditional Effects of Cash Flow Volatility on Debt Maturity Structure at Varying Levels of Macroeconomic Factors

	INF				GDPG			
Percentiles	**One-Step SYS-GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS-GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
P_{25} (low)	-0.0234***	-0.0119***	-0.0041*	-0.0139***	-0.0019	-0.0103**	-0.016***	-0.0321***
	(0.001)	(0.009)	(0.077)	(0.002)	(0.663)	(0.012)	(0.000)	(0.002)
P_{50} (Median)	-0.0104**	-0.0085**	-0.0083***	-0.0042	0.0178***	-0.0119***	-0.0018	-0.0090
	(0.039)	(0.017)	(0.000)	(0.345)	(0.001)	(0.008)	(0.425)	(0.411)
P_{75} (High)	0.0026	-0.0065**	-0.0109***	0.0027	0.0341***	-0.0132**	0.0097***	0.0102
	(0.561)	(0.034)	(0.000)	(0.510)	(0.000)	(0.022)	(0.002)	(0.452)
	MS				INTEREST			
Percentiles	**One-Step SYS-GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
P_{25} (low)	-0.0265***	-0.0728***	0.0145**	0.0017	0.0438***	-0.0001	0.0627***	0.0426***
	(0.007)	(0.000)	(0.033)	(0.827)	(0.000)	(0.988)	(0.000)	(0.002)
P_{50} (Median)	-0.0203**	-0.0078**	-0.0103***	-0.0121	0.0107	-0.0059	0.0611***	0.0156
	(0.011)	(0.035)	(0.000)	(0.138)	(0.173)	(0.159)	(0.000)	(0.213)
P_{75} (High)	-0.0142**	0.0272***	-0.0122***	-0.0264***	-0.0093	-0.0093***	-0.0572***	-0.0006
	(0.028)	(0.000)	(0.000)	(0.004)	(0.136)	(0.001)	(0.000)	(0.963)

Notes: ***, **, * are one, five, and ten percent levels of significance. P_{25}, P_{50}, P_{75} are the 25th ,50th and 75th percentiles. P- values are given in parenthesis

To analyze the conditional impact of CFV on DMS2 at different percentiles (25th, 50th, 75th) of macro variables, this study estimated the conditional analysis. Table 4.1.9 shows the conditional effects of macroeconomic factors, evaluated at the 25th, 50th, and 75th percentiles.

Regarding inflation, the system GMM results show a significant, negative sign at lower and median levels while at a higher level, it becomes insignificant with a positive sign. The magnitude of the coefficients is decreasing over percentiles. The FE and two-way FE model results indicate that coefficients carry a negative sign at all levels. The one-step DIFF-GMM shows that the coefficient of inflation carries an inverse sign at a lower level, negative and insignificant at the median, positive and insignificant at a higher level, but the magnitude of the coefficients is decreasing over percentiles. Overall, the results of the conditional effect indicate the adverse effect of CFV on DMS2 at the varying level of inflation. It may be because, in the presence of inflation in an economy, firms use STD because creditors are reluctant to increase LTD and they are concerned about a bigger loss of value on loaned capital in an inflationary environment (Awartani et al., 2016).

Regarding GDP growth, results show the inverse impact of CFV on DMS2 at a lower level of GDP growth in all three models. However, an improvement in GDP growth eases the initial, adverse effect at a higher level (75^{th} percentile) in both one-step SYS GMM and two-way FE models. However, the coefficient of GDP growth is insignificant at both median and higher levels of one-step difference GMM, but the magnitude of the coefficients is increasing over percentiles. The GDP growth is negative and significant at all levels under FE. Overall, the majority of the results indicate that at higher GDP growth, the impact of CFV on DMS2 is positive. It may be because when economic growth is higher, CFV firms tend to start LTD maturity because in developing economies, an investment opportunity arises, and firms undertake higher investments. As a result, they borrow LTD (Jensen, 1986).

The impact of CFV on DMS2 is negative at varying levels of MS in the one-step SYS-GMM model. However, the two-way FE model at a lower level of money supply displays a CFV positive relationship with DMS2. At a higher and median level, it displays that CFV and DMS2 are inversely related. The findings of one-step DIFF-GMM show a positive but insignificant coefficient of MS at a lower level, negative and insignificant at the median level, but display negative and significant at a higher level. FE model results show that MS is negative and significant at varying levels. Overall, results indicate that when the increased in money supply in the economy, cash flow volatile firms reduce the LTD to decrease the agency cost. In addition, when the money supply increases in the economy, enterprises have higher opportunities of investment based on ACT (Jensen & Meckling, 1976). Enterprises start to choose STD maturity to alleviate agency- costs because of the under-investment and over-investment hypothesis. Therefore, an increased in money supply promotes the usage of STD in the economy.

Regarding interest rate, the conditional effect results report the positive effect of CFV on DMS2 at an initial level under the one-step SYS-GMM but positive and insignificant at the median level. However, at a higher level, the impact of CFV on DMS2 is negative and insignificant, but the magnitude is decreasing over percentiles. The two-way FE model reports that at a lower and median level, CFV explain a direct and significant impact on DMS2, but at a higher level, CFV reports a significant and inverse impact on DMS2. The One-step DIFF-GMM model results reveal that at a lower level of interest rate, CFV shows a direct relationship with DMS2, positive and insignificant at the median level, negative and insignificant at the higher level, but the magnitude is decreasing at both levels. The results of FE model report that the inflation coefficient is negative but insignificant at lower and median levels, while negative and significant at a higher level.

Overall, the findings from all models indicate that when the interest-rate is high in the economy, having CFV, firms decrease their LTD. It may be because the higher the cost of borrowing, firms are not willing to borrow more LTD and prefer to choose STD. Similarly, the interactive role of institutional variables in the CFV- DMS2 relationship is given in table 4.1.10.

Table 4.1.10 : Cash Flow Volatility and Debt Maturity Structure: Role of Institutional Variables by using an Alternative Proxy of Debt Maturity Structure

Variables	BD				PS				CORR			
	One-Step SYS GMM	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
CFV10	-0.3522***	-0.072**	-0.0361**	-0.263***	-0.2798*	-0.0110**	0.0024**	0.2420**	0.0048**	4.7380**	2.7015***	0.5807*
	(0.007)	(0.038)	(0.012)	(0.000)	(0.058)	(0.082)	(0.049)	(0.031)	(0.010)	(0.010)	(0.008)	(0.061)
INST	-0.2111***	-0.266**	-0.1242***	-0.6449**	0.9850	-3.8225***	3.1504***	13.7764	-0.0788**	-4.4942*	-3.7852***	-0.0247
	(0.000)	(0.005)	(0.000)	(0.037)	(0.442)	(0.004)	(0.006)	(0.120)	(0.046)	(0.063)	(0.008)	(0.677)
CFV*INST	0.0121***	0.0024*	0.0012**	0.0086***	-0.0977*	-0.0032*	0.0024**	-0.0865*	-1.2201*	-1.1867***	-0.6763***	0.1298*
	(0.007)	(0.070)	(0.025)	(0.000)	(0.069)	(0.086)	(0.012)	(0.041)	(0.095)	(0.009)	(0.008)	(0.055)
Control Variables												
LEV	0.6748	3.8774**	1.5659***	5.2334	0.0713	2.7220	0.0032***	0.71484	0.0054	3.0750***	1.0822**	0.0778
	(0.349)	(0.021)	(0.002)	(0.307)	(0.898)	(0.019)	(0.000)	(0.879)	(0.385)	(0.007)	(0.020)	(0.285)
SIZE	0.8381	2.716***	0.4782	9.0615	-1.591***	0.3277	-	6.6283	0.2098	1.1121	-0.4915	0.1223
	(0.236)	(0.021)	(0.201)	(0.151)	(0.003)	(0.743)		(0.297)	(0.765)	(0.193)	(0.208)	(0.137)
LIQ	-0.0086	0.0152***	0.0093**	-0.0028	0.0053	0.0149***	0.0082**	-0.00208	0.0067	0.0148***	0.0090**	-0.0009
	(0.175)	(0.003)	(0.024)	(0.748)	(0.338)	(0.003)	(0.032)	(0.794)	(0.187)	(0.002)	(0.023)	(0.886)
TANG	0.1192	0.9532***	0.4426***	1.3151**	0.0434	0.9954***	-	1.7419	0.0020	1.0472***	0.4950***	-0.0013
	(0.229)	(0.000)	(0.000)	(0.047)	(0.726)	(0.000)		(0.163)	(0.430)	(0.000)	(0.000)	(0.994)
GROWTH	0.1354*	0.0065**	0.0124	0.1046	0.0303	0.0085**	0.0164*	0.12252	-0.0012	0.0078**	0.0156	-0.1328*
	(0.094)	(0.018)	(0.126)	(0.516)	(0.649)	(0.022)	(0.053)	(0.218)	(0.980)	(0.027)	(0.062)	(0.085)
DMS(t-1)	0.6985***	-	0.5711***	0.5225***	0.8011**	-	0.5933***	0.5476***	0.7283***	-	0.5737***	0.6331***
	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Constant	11.1543**	11.52**	10.16***	-	21.03***	13.87	16.06***	-	40.61**	34.65**	29.59***	-
	(0.025)	(0.066)	(0.000)		(0.000)	(0.042)	(0.000)		(0.023)	(0.012)	(0.000)	
Obs	4813	4974	4813	4356	4813	4974	4832	4356	4815	4974	4813	4358
No. of Firms	368	369	368	354	368	369	370	364	368	369	368	364
Time Dummies	Yes	-	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
No of Instruments	55	-	-	45	55	-	-	42	73	-	-	50
F-stats	37.33**	13.17***	130.09***	42.00***	42.54***	8.98***	459.06***	12.06***	34.17***	10.36***	126.17***	11.27***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Diagnostic Test												
Hansen- J Test (P-Values)	0.240	-	-	0.379	0.406	-	-	0.780	0.144	-	-	0.635
AR (2) (P-Values)	0.158	-	-	0.112	0.183	-	-	0.388	0.242	-	-	0.377
Instruments												
Iyears_2000	-	-	-	-	-	-	-	-	-	-	-	-
Iyears_2001	-6.3678*** (0.000)	-	-	-6.0057 *** (0.000)	-7.064*** (0.000)	-	-	-6.226*** (0.000)	-5.943*** (0.000)	-	-	-5.835*** (0.000)
Iyears_2002	-3.2188** (0.051)	-	-	-2.9841* (0.076)	-5.063** (0.01)	-	-	-3.807** (0.038)	-3.188 (0.100	-	-	-4.525** (0.010)
Iyears_2003	-2.6857 (0.122)	-	-	-2.2741 (0.309)	-3.045 (0.123)	-	-	3.810 (0.205)	-2.693 (0.177)	-	-	4.223 (0.383)
Iyears_2004	-4.4361** (0.022)	-	-	-4.4371 (0.164)	-4.639** (0.040)	-	-	-0.209 (0.935)	-2.693 (0.177)	-	-	-0.6387 (0.876)
Iyears_2005	-7.3974*** (0.009)	-	-	-	-7.157** (0.030)	-	-	-4.624 (0.182)	-4.615* (0.067)	-	-	-6.077 (0.222)
Iyears_2006	-5.9378*** (0.000)	-	-	-9.3661*** (0.000)	-6.512*** (0.000)	-	-	-2.455 (0.153)	-8.216** (0.022)	-	-	-2.230 (0.339)
Iyears_2007	-6.2470*** (0.000)	-	-	-10.8584** (0.000)	-6.512*** (0.000)	-	-	1.259 (0.594)	-8.540** (0.028)	-	-	0.734 (0.838)
Iyears_2008	-5.0533*** (0.000)	-	-	-10.815*** (0.004)	-4.227** (0.013)	-	-	6.705 (0.108)	-10.340** (0.020)	-	-	7.662 (0.251)
Iyears_2009	9.3336*** (0.000)	-	-	0.7635 (0.893)	10.903*** (0.000)	-	-	23.018*** (0.000)	-9.509* (0.060)	-	-	25.12*** (0.001)
Iyears_2010	-2.6257** (0.042)	-	-	-9.007* (0.083)	-0.8367 (0.387)	-	-	14.407*** (0.006)	4.967 (0.356)	-	-	16.38** (0.057)
Iyears_2011	-6.0819*** (0.000)	-	-	-14.473** (0.022)	-3.616*** (0.001)	-	-	11.221** (0.026)	-6.924 (0.187)	-	-	17.77** (0.039)
Iyears_2012	-1.9341 (0.170)	-	-	-10.742 (0.101)	-	-	-	16.015*** (0.004)	-9.930* (0.082)	-	-	14.57** (0.039)
Iyears_2013	-2.2665 (0.104)	-	-	-10.746* (0.084)	-0.396 (0.691)	-	-	13.611*** (0.002)	-6.823 (0.264)	-	-	10.36 (0.073)
Iyears_2014	-4.6452*** (0.000)	-	-	-13.619** (0.040)	-3.142*** (0.001)	-	-	9.633*** (0.009)	-6.779 (0.282)	-	-	7.273** (0.037)

Iyears_2015	-3.1330 (0.028)	-	-	13.164* (0.073)	-2.538** (0.010)	-	-	7.057 (0.004)	-9.551 (0.145)	-	-	7.274 (0.058)
Iyears_2016	-3.6349 (0.009)	-	-	-13.396** (0.054)	-3.149*** (0.001)	-	-	7.1009*** (0.006)	-8.684 (0.224)			7.274** (0.058)
Iyears_2017	-5.641043 (0.009)	-	-	-16.108** (0.028)	-4.962*** (0.000)	-	-	2.2198 (0.162)	-9.620 (0.183)			2.579 (0.274)
Iyears_2018	-	-	-	-	-5.026*** (0.000)	-	-	-	-11.393 (0.140)			-

Continue………

Variables	RQ				RL			
	One-Step SYS GMM	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**
CFV_10	2.7800**	1.1907**	0.7502**	-0.8174*	-0.0070*	0.0235	-0.0025*	-0.0118*
	(0.025)	(0.029)	(0.018)	(0.053)	(0.062)	(0.585)	(0.079)	(0.054)
INST	0.0681*	-8.096	0.3285*	0.2702**	0.1178	2.0858	-0.1203*	0.1178
	(0.099)	(0.004)	(0.078)	(0.019)	(0.510)	(0.559)	(0.087)	(0.510)
CFV*INST	0.0058**	0.0025**	0.0016**	-0.011*	-0.0075*	0.0364	-0.0026*	-0.0131*
	(0.025)	(0.029)	(0.018)	(0.056)	(0.062)	(0.438)	(0.079)	(0.053)
Control Variables								
LEV	0.0127	0.0286**	0.0087	0.0589	0.0129	3.3621***	0.0120	-0.0219
	(0.126)	(0.036)	(0.164)	(0.499)	(0.120)	(0.004)	(0.182)	(0.798)
SIZE	1.4771*	1.5634*	-0.2784	0.0497	1.6049**	1.770**	-0.1306	-0.0369
	(0.073)	(0.054)	(0.618)	(0.604)	(0.026)	(0.025)	(0.841)	(0.560)
LIQ	-0.0049**	0.0152***	0.0087**	-0.0047	-0.0044**	0.0155***	0.0122*	-0.0082***
	(0.032)	(0.003)	(0.030)	(0.620)	(0.043)	(0.002)	(0.058)	(0.008)
TANG	0.0060	0.0046***	0.0039	-0.0182	0.0042	0.9601***	0.0029	0.0175
	(0.145)	(0.406)	(0.123)	(0.395)	(0.299)	(0.000)	(0.419)	(0.441)
GROWTH	0.1307**	0.0067**	0.0177**	0.1308	0.1110*	0.0069**	0.0120	0.0919
	(0.046)	(0.016)	(0.034)	(0.213)	(0.077)	(0.021)	(0.198)	(0.083)
DMS ($_{t-1}$)	0.6598***	-	0.5834***	0.5889***	0.6656***	-	0.5807***	0.7103***
	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Constant	4.1163	8.0060	29.73***	-	-6.7367	12.50*	-	-
	(0.482)	(0.238)	(0.000)		(0.413)	(0.091)		
Obs	4815	4976	4815	4358	4815	4974	4404	4358
No. of Firms	368	369	368	364	368	369	364	364
Time Dummies	Yes	-	Yes	Yes	Yes	-	Yes	Yes
No of Instruments	46	-	-	34	46	-	-	50
F-stats	28.29***	13.83***	69.59***	11.64***	36.21***	12.99***	39.67***	15.61
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Diagnostic test								
Hansen- J Test (P-Values)	0.253	-	-	0.116	0.248	-	-	0.180
AR (2) (P-Values)	0.475	-	-	0.299	0.217	-	-	0.116
Instruments								
Iyears_2000	-2.4394*	-	-	-1.8032	6.6950***	-	-	10.64
	(0.075)			(0.486)	(0.002)			(0.191)
Iyears_2001	0.4780	-	-	0.9075	0.4435	-	-	4.5410
	(0.781)			(0.723)				

					(0.835)			(0.580)
Iyears_2002	-0.0447	-	-	-1.1386	3.1075	-	-	6.4902
	(0.781)			(0.470)	(0.188)			(0.410)
Iyears_2003	-6.472***	-	-	-10.104	4.2461**	-	-	7.1771
	(0.009)			(0.122)	(0.044)			(0.341)
Iyears_2004	-7.110***	-	-	-	2.7261	-	-	5.4296**
	(0.000)				(0.182)			(0.043)
Iyears_2005	-7.2814***	-	-	-10.104	0.1986	-	-	1.7521*
	(0.000)			(0.122)	(0.913)			(0.071)
Iyears_2006	-6.021***	-	-	-13.10*	-0.6121	-	-	0.4328*
	(0.000)			(0.075)	(0.742)			(0.094)
Iyears_2007	9.109***	-	-	-13.25	0.5700	-	-	1.3987*
	(0.000)			(0.100)	(0.755)			(0.068)
Iyears_2008	-6.0218***	-	-	-12.433	15.189***	-	-	15.85***
	(0.000)			(0.143)	(0.000)			(0.000)
Iyears_2009	9.1099***	-	-	1.471	3.0671	-	-	3.810
	(0.000)			(0.876)	(0.144)			(0.234)
Iyears_2010	-2.478*	-	-	-8.565	0.2296	-	-	0.898*
	(0.078)			(0.336)	(0.906)			(0.074)
Iyears_2011	-5.386**	-	-	-10.845	3.486	-	-	4.0398*
	(0.000)			(0.264)	(0.124)			(0.086)
Iyears_2012	-1.2198	-	-	-5.843	3.384*	-	-	4.1576**
	(0.459)			(0.551)	(0.092)			(0.042)
Iyears_2013	-1.864	-	-	-6.612	0.6952	-	-	1.3817**
	(0.252)			(0.528)	(0.739)			(0.045)
Iyears_2014	-4.390**	-	-	-9.792	1.8621	-	-	1.3817**
	(0.006)			(0.381)	(0.429)			(0.035)
Iyears_2015	-4.3905***	-	-	-10.18	1.0596	-	-	2.2842**
	(0.006)			(0.409)	(0.647)			(0.014)
Iyears_2016	-4.336***	-	-	-11.112	-0.5512	-	-	1.4036***
	(0.009)			(0.378)	(0.791)			(0.005)
Iyears_2017	-6.844***	-	-	-15.107	-0.324**	-	-	1.4037**
	(0.000)			(0.282)	(0.034)			(0.029)
Iyears_2018	-6.462	-	-	-15.078	-0.3217	-	-	-0.2486*
	(0.482)			(0.315)	(0.883)			(0.078)

Notes: As for table 7. Except this table report the results of system GMM**.** Dependent variable is DMS_2 constructed by taking the ratio of long-term debt to total debt. Hansen-J test P- values show that instruments are valid. AR (2).
P-values indicate that no second-order serial correlation exists in our model.

Table 4.1.10 explains the result of one-step SYS-GMM, FE, two-way FE, and one-step DIFF- GMM. The sign of bank deposits, corruption, political stability, and regulatory quality is similar to table 4.1.5. However, the sign of rule of law is different in a two-way FE, and positive and insignificant results are found in one-step SYS-GMM and one-step DIFF-GMM.

To examine the conditional effect of CFV and bank deposits on DMS2, the partial derivative has been taken with respect to CFV in the following equation.

$$DMS2_{it} = \gamma_{51} + \gamma_{52}DMS2_{it-1} + \gamma_{53}CFV_{it} + \gamma_{54}BD_t + \gamma_{55}(CFV_{it}{}^{*}BD_t) + \gamma_{56}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS_{2it}}{\partial CFV_{it}} = \gamma_{53} + \gamma_{55}BD_{it} \tag{4.5}$$

$$= -0.3522 + 0.0121\ BD_{it}$$

Where both γ_{53}<0 and, γ_{55} >0 have opposite signs in the one-step SYS-GMM model, which explains that a partial increase in bank deposits leads creates a CFV direct impact on DMS2. As bank deposits increases, cash flow volatile firms increase their long-term debt. This result shows that role of bank deposits strengthens the CFV relationship with DMS2. Further, the results explain that bank deposits play a substitution role in explaining the CFV relationship with DMS2. This result is similar with the findings of other models.

Similarly, in order to analyze the interactive role of CFV and political stability, the above equation derivative has been taken with respect to CFV.

$DMS2_{it} = \gamma_{51} + \gamma_{52} DMS2_{it-1} + \gamma_{53} CFV_{it} + \gamma_{54} PS_t + \gamma_{55} (CFV_{it}{}^{*} PS_t) + \gamma_{56}{}' Z_{it} +$

$\tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial DMS_{2it}}{\partial CFV_{it}} = \gamma_{53} + \gamma_{55} PS_{it} \tag{4.6}$$

$= -0.2798 - 0.0977\ PS_{it}$

Where both γ_{53}<0 and, γ_{55} <0 have similar signs, revealing that a partial increase in political stability creates a CFV inverse relationship with DMS2. It may be because Pakistan is not a politically stable country, and therefore, political uncertainty makes the CFV inverse relationship with DMS2. In other words, if there is political instability in a country, firms experience CFV and tend to decrease long-term debt. Additionally, results indicate that the role of political stability plays a complementary role in explaining the CFV relationship with DMS2. The findings are similar with the other models except for the FE model. The interactive term in the FE model is positively significant which implies that political stability makes the strong CFV and DMS2 relationship. Overall, all the model results show that political stability plays a complementary role in explaining the CFV relationship with DMS2.

Additionally, to analyze the interactive role of CFV and corruption, the above equation a partial derivative has been taken with respect to CFV

$DMS2_{it} = \gamma_{61} + \gamma_{62} DMS2_{it-1} + \gamma_{63} CFV_{it} + \gamma_{64} PS_t + \gamma_{65} (CFV_{it}{}^{*} PS_t) + \gamma_{66}{}' Z_{it} +$

$\tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial DMS_{2it}}{\partial CFV_{it}} = \gamma_{63} + \gamma_{65} CORR_{it} \tag{4.7}$$

$= 0.0048 - 1.2201\ CORR_{it}$

Where both γ_{63}>0 and, γ_{65} <0 have opposite signs in one-step SYS-GMM, which indicates that a partial increase in corruption explains a CFV inverse relationship with DMS2. The findings are similar with the other models results. The results show that the impact of corruption weakens the CFV relationship with DMS2. If the corruption rate is high in a country, firms experience CFV and tend to decrease long-term debt. Overall, this result is similar with the findings of other models except for the one-step DIFF-GMM model which implies that corruption makes a strong CFV and DMS2 relationship.

Likewise, to analyze the interactive role of CFV and regulatory quality, in the above equation partial derivative has been taken with respect to CFV

$$DMS2_{it} = \gamma_{71} + \gamma_{72}DMS2_{it-1} + \gamma_{73}CFV_{it} + \gamma_{74}RQ_t + \gamma_{75}(CFV_{it}{}^{*}RQ_t) + \gamma_{76}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial DMS_{2it}}{\partial CFV_{it}} = \gamma_{73} + \gamma_{75}RQ_{it} \qquad (4.8)$$

$$= 2.7800 + 0.0058RQ_{it}$$

Where both γ_{73}>0 and, γ_{75} >0 have similar signs, which explains that partial increase in regulatory quality in a country, the CFV direct relationship with DMS2. Overall, the result indicates that regulatory quality strengthens the CFV and DMS2 relationship. The findings are in line with the other models. All of the models explain that regulatory quality plays a complementary role in explaining the CFV relationship with DMS2.

Additionally, the impact of variable rule of law is analyzed in the relationship between CFV and DMS2, in the above equation partial derivative has been taken with respect to CFV.

$DMS2_{it} = \gamma_{81} + \gamma_{82}DMS2_{it-1} + \gamma_{83}CFV_{it} + \gamma_{84}RL_t + \gamma_{85}(CFV_{it}{}^{*}RL_t) + \gamma_{86}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial DMS_{2it}}{\partial CFV_{it}} = \gamma_{83} + \gamma_{85}RL_{it} \tag{4.9}$$

$$= -0.0070 - 0.0075RL_{it}$$

Where both γ_{83}<0 and, γ_{85} <0 have similar signs, which explains that a partial increase in rule of law in a country displays the CFV inverse relationship with DMS2. It may be because in Pakistan rule of law is not properly implemented. As a result, firms experience CFV and decrease the selection of long-term debts. Consequently, the role of rule of law weakens the CFV relationship with DMS2. Overall, all of the model results show that rule of law plays a complementary role in explaining the CFV relationship with DMS2.

Overall, political stability, rule of law, regulatory quality, and CFV role is complementary in explaining the relationship with DMS2. Bank deposits, corruption, and CFV play a substitutional role in this regard.

We determine the conditional effects of CFV on DMS at different percentiles of institutional factors (bank deposits, political stability, corruption, rule of law, and regulatory quality). The results of the conditional effects of CFV on DMS at different levels of institutional factors are reported in table 4.1.11.

Table 4.1.11: Impact of Cash Flow Volatility on Debt Maturity Structure given Institutional Variables Level

	Dependent variable Debt Maturity Structure												
	BD				**PS**				**CORR**				**Reference**
Percentiles	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	
P_{25} (low)	-0.0115* (0.050)	-0.0045 (0.359)	-0.0017*** (0.004)	-0.022*** (0.006)	-0.0268*** (0.005)	-0.0026 (0.278)	-0.0058*** (0.000)	-0.5954** (0.011)	-0.0078 (0.380)	6.1039** (0.010)	-0.0037** (0.026)	0.0061 (0.136)	Table 12
P_{50} (Median)	0.0145* (0.070)	0.0007 (0.923)	0.0009** (0.035)	-0.0037 (0.666)	-0.0522** (0.022)	-0.0035 (0.195)	-0.0051*** (0.000)	-0.850*** (0.009)	-0.0078 (0.380)	6.1039** (0.010)	-0.0038** (0.026)	0.0023 (0.308)	Table 12
P_{75} (High)	0.0394** (0.016)	0.0057 (0.545)	0.0034** (0.042)	0.0140 (0.173)	-0.1267** (0.045)	-0.0060 (0.108)	-0.0030* (0.060)	-1.598*** (0.008)	-0.0043** (0.039)	6.0544** (0.010)	-0.199*** (0.007)	-0.0051* (0.054)	Table 12

	RL				**RQ**				
Percentiles	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**One-Step SYS GMM**	**FE**	**Two-Way FE**	**One-Step Diff GMM**	**Reference**
P_{25} (low)	0.6576* (0.061)	-0.7625 (0.695)	2.3313* (0.078)	1.1504* (0.052)	2.7759** (0.024)	1.1890** (0.029)	-0.0065** (0.024)	-0.0743* (0.054)	Table 12
P_{50} (Median)	0.6066* (0.061)	-0.7625 (0.695)	2..1524* (0.078)	1.0614* (0.052)	2.7764** (0.024)	1.1892** (0.029)	-0.0061*** (0.007)	-0.0751* (0.054)	Table 12
P_{75} (High)	0.5618* (0.061)	-0.7625 (0.695)	1.9951* (0.078)	0.9830* (0.052)	2.7767** (0.024)	1.1893** (0.029)	-0.0059*** (0.004)	-0.0757* (0.054)	Table 12

Notes: ***, **, * are one, five and ten percent level of significance. P_{25}, P_{50}, P_{75} are the 25^{th} ,50^{th} and 75^{th} percentiles. P- values are given in parenthesis

Table 4.1.11 report the conditional effects of CFV and DMS at varying levels of institutional variables. The results of one-step SYS GMM, two-way FE, and two-step DIFF-GMM show that bank deposits are negatively significant at a lower level. However, at median and higher levels, the coefficients of bank deposits become positively significant under the one-step SYS-GMM and two-way FE. Whereas, under one-step DIFF-GMM, the coefficient of bank deposit is negative and insignificant at the median level but positive and insignificant at a higher level. The coefficient under FE is insignificant at all levels. Overall, results report that at a higher level of bank deposits, cash flow volatile firms choose long-term debts in order to get more tax shield advantages on debt.

Regarding political stability, the conditional effects indicate that the initial adverse effect of CFV on DMS is persistent at the median and higher levels of political stability in all models. Under FE, the coefficients are negative but insignificant in all models. It may be because the unstable political environment of Pakistan strengthens the adverse effect of CFV on DMS at all levels. Hence, in the presence of an unstable political environment, highly cash flow volatile firms decrease long-term maturity debt.

The results of conditional effects for corruption show that the adverse and insignificant effects of corruption are carried out at lower and median levels under a one-step SYS-GMM. Whereas, at a higher level, the coefficient is still negative but significant under the one-step SYS-GMM. The coefficients are insignificant under the FE effect model at all varying levels. The results of the two-way FE model carry a negative sign at all levels. The results of the one-step DIFF-GMM report that the coefficient of corruption is positive and insignificant at low and median levels but negative and significant at a higher level. Overall, when the corruption rate is high in a country, the CFV relationship with DMS is still negative. It may be because when corruption rate is high in a country, cash flow volatile firms decreased the LTD.

Regarding the rule of law, the conditional effects reveal that the initial, direct, and significant effect of CFV on DMS is persistent at the median and higher levels of percentiles in all models except the FE model. However, the magnitude of the coefficients declined over percentiles. All the coefficients are insignificant at varying levels under the FE. Therefore, the results indicate that due to the weak implementation of rule of law system in a country, firms with high volatility in cash flows decrease the issuance of long-term maturity debt.

Similarly, the conditional effects of regulatory quality show the direct and significant effect of CFV on DMS at varying levels in the model of the one-step SYS-GMM and FE model. However, there is a significant and inverse impact of CFV on DMS over the percentiles under the two-way FE and one-step DIFF-GMM model. Whereas the magnitude of the rule of law coefficient is increasing over percentiles. Overall, the results indicate that due to the improvement of a regulatory quality system in a country, cash flow volatile firms select long-term debt to get tax shield advantages on the longer maturity structure of debt.

The next section, 4.2, explains the impact of macro-economic factors in the CFV-leverage relationship.

4.2. Cash Flow Volatility and Leverage: Role of Macroeconomic and Institutional Factors

The descriptive stats of the BDR1 and BDR2, firms-specific determinants, macroeconomic factors, and institutional factors are given in table 4.2.1 for the overall sample of 380 listed non-financial firms of Pakistan over the period of 1999-2018. We consider cash flow volatility, return on assets, firms' size, liquidity, and tangibility as firm-specific determinants of capital structure.

Table 4.2.1. Summary Statistics: Cash Flow Volatility and leverage: Role of Macro-economic and Institutional Factors

Variables	N	Mean	Min	Max	STD	P25	P50	P75
BDR1	6090	867.91	0.0465	569056.4	19048.7	45.51	63.39	78.90
BDR2	5991	77.3314	0.0035	100	20.219	68.93	83.37	92.01
CFV	6095	172.21	0.000	207295.8	5093.28	0.03806	0.0671	0.1716
ROA	6069	37.188	-7621.4	95274.36	1572.17	-2.4194	2.8065	9.7523
SIZE	6112	7.4436	-4.356	13.78	2.1162	6.302	7.4212	8.6952
LIQ	6063	197.54	0.0028	87503.72	1693.13	62.40	99.171	144.32
TANG	6048	250.54	0.0151	144797.4	4127.03	31.878	49.155	66.414
INF	7600	7.435	2.5293	20.28	4.43	3.925	7.317	9.372
GDPG	7600	4.384	1.6067	7.547	1.573	3.169	4.536	5.667
MS	7220	13.29	8.6207	17.92	2.87	11.74	13.22	14.76
INTEREST	5700	11.19	7.257	14.53	2.345	8.755	11.73	13.52
BD	7600	31.06	24.62	57.9	6.684	28.14	30.3	32.35
PS	7600	-2.0488	-2.81	-1.103	0.597	-2.5881	-2.3284	-1.5658
RL	7600	-0.8141	-0.9687	-0.6253	0.087	-0.8856	-0.8177	-0.758
CORR	7600	-0.6373	-0.9053	-0.4823	0.253	-0.7074	-0.63055	-0.5742
RQ	7600	-0.6373	-0.9053	-0.4823	6.684	-0.7073	-0.6305	-0.5742

Notes: Author's own calculations
The table report the summary stats of all variables which is included in the model.

We normalize these firm-specific determinants to standardize the unit of measurement. This process reduced their percentiles values to the range between zero and hundred. The percentile value explains the variable levels at lower (P25), medium (P50), and higher (P75). Other variable percentile values such as BDR1, BDR2, macroeconomic, and institutional variables are also between zero and hundred. The value of the standard deviation of all variables is minimum except cash flow volatility, which indicates that cash flow volatility is a highly volatile variable in our model. The other summary statistics summarized the mean, minimum value, maximum value, and percentiles at the 25th, 50th, and 75th levels.

Table 4.2.2: Correlation Matrix

S.#		**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
(1)	**BDR1**	1															
(2)	**BDR2**	0.5789	1														
(3)	**CFV**	-0.0814	-0.0949	1													
(4)	**ROA**	-0.025	-0.0719	-0.0013	1												
(5)	**SIZE**	0.2323	0.2851	-0.1517	0.1659	1											
(6)	**LIQ**	-0.3174	-0.1454	-0.0228	0.1471	-0.0188	1										
(7)	**TANG**	-0.0895	0.2025	0.0301	-0.2634	-0.161	-0.2391	1									
(8)	**INF**	-0.0117	-0.0041	-0.0322	0.0381	-0.0861	-0.0155	0.0316	1								
(9)	**GDPG**	0.0342	-0.0259	0.1335	-0.0243	-0.0227	-0.0525	0.0388	-0.7505	1							
(10)	**MS**	0.0041	-0.0586	0.1125	0.032	-0.1339	-0.0598	0.092	0.0198	0.3122	1						
(11)	**INT**	-0.0462	0.0209	-0.095	0.0446	-0.0197	0.0487	-0.0241	0.709	-0.8787	-0.1924	1					
(12)	**BD**	0.052	-0.0021	0.0524	-0.0243	0.0745	-0.0125	-0.0123	-0.2526	0.348	-0.3087	-0.4755	1				
(13)	**CORR**	0.0104	-0.0473	0.1728	0.0391	-0.1597	-0.0819	0.1029	-0.0575	0.5864	0.5192	-0.3839	-0.0253	1			
(14)	**RL**	0.009	0.0417	-0.0383	-0.0278	0.1363	0.0435	-0.0782	-0.5767	0.2141	-0.6451	-0.371	0.4685	-0.2829	1		
(15)	**PS**	0.0275	-0.061	0.1879	0.0131	-0.1377	-0.0943	0.1157	-0.1855	0.6963	0.5322	-0.592	0.2274	0.8792	-0.1537	1	
(16)	**RQ**	-0.0144	-0.0428	0.0063	0.0319	0.0326	0.0102	0.0296	0.0912	-0.1738	-0.2696	0.1481	0.2324	-0.0525	0.1538	0.1071	1

Source: Authors own calculations
Notes: This table reports the results of pairwise correlation among explanatory variables.

Table 4.2.2 explains the correlation of leverage ratios (BDR1 and BDR2), CFV, macro-economic factors, and institutional factors. BDR1 report a negative association with cash flow volatility, return on assets, liquidity, tangibility, inflation, interest rate, and regulatory quality while a positive relationship is found with firms' size, GDP growth, money supply, bank deposits, corruption, rule of law, and political stability. Simultaneously, BDR2 negative relationship is found with all variables except firms' size, tangibility, interest rate, and rule of law. The correlation of the remaining variables is explained in the previous section. Next, we display the association between cash flow CFV and CS. We have estimated the cash flow volatility relationship with CS by using two proxies (BDR1 and BDR2). We apply the Hausman test, and based on the results, it is decided that the FE model is suitable for our analysis.

Next, given below table 4.2.3, there are reported results of a two-way FE, one-step SYS-GMM, and one-step DIFF-GMM for baseline models.

Table 4.2.3: Cash Flow Volatility and Leverage

	Dependent Variable							
	BDR1				BDR2			
Variables	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**
CFV_10	-0.0349***	-0.0009***	-0.0040***	-0.0022**	-0.0064***	-0.0017**	-2.2196*	-1.2430**
	(0.000)	(0.000)	(0.000)	(0.038)	(0.000)	(0.035)	(0.090)	(0.046)
ROA	-0.1887**	-03814***	-0.0120	-0.7664	-1.2771***	-0.3695*	2.6817	2.3804
	(0.045)	(0.002)	(0.370)	(0.602)	(0.000)	(0.071)	(0.192)	(0.340)
SIZE	0.5528***	0.0286***	0.0062*	-1.8889	0.9626***	0.050***	1.0469*	-0.0048
	(0.000)	(0.000)	(0.064)	(0.443)	(0.000)	(0.000)	(0.054)	(0.999)
LIQ	-0.9792***	-0.4621***	-0.0179	8.2453	-	0.5575	-	-
	(0.000)	(0.000)	(0.567)	(0.409)		(0.680)		
TANG	0.3177**	-0.2582	-	-	0.2418***	1.5258***	0.5799	2.5850
	(0.045)	(0.112)			(0.000)	(0.000)	(0.649)	(0.200)
CONSTANT	1.7509**	2.9057***	0.1260	-	0.9179***	2.5548*	-1.984	-
	(0.012)	(0.001)	(0.198)		(0.000)	(0.093)	(0.193)	
BDR_{t-1}	-	0.6520***	0.9092***	0.8416***	-	0.5753***	0.7933***	0.7268***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-STAT	483.10***	378.14***	96.62***	20.64***	41.03***	81.66***	40.32***	20.64***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	54	48	-	-	49	43
AR (2) P value	-	-	0.220	0.214	-	-	0.740	0.741
Hansen-J Test	-	-	0.129	0.303	-	-	0.751	0.512
No of firms	376	376	376	374	369	369	369	364
Time Dummy	-	Yes	Yes	Yes	-	Yes	Yes	Yes
Observation	5853	5497	5547	5146	5231	4782	4787	4334

Notes: Dependent variables BDR1 and BDR2. BDR1 is calculated as Total liability/ Total liability + common shareholder equity BDR2 is measured as long-term liabilities/long-term liabilities + common shareholder equity. By following the General to specific approach as suggested by Hendry (1995). we dropped the insignificant variables to get the final model parsimony. Hansen-J test P- values show that instruments are valid. AR (2) P values indicate that no second-order serial correlation exists in our model.

Table 4.2.3 explains the CFV relationship with BDR1 and BDR2[4]. The results explain a CFV significant and inverse relationship with both BDR1 and BDR2 in all models, which implies that firms with a higher CFV use less debt. The coefficients are estimated using the book debt ratio (BDR1 and BDR2). Specifically, the coefficient associated with CFV is -0.0349, -0.0009, -0.0040, and -0.0022 using BDR1, -0.0064, -

[4] The impact of CFV on leverage-role of macroeconomic and institutional factors with (dependent variable -BDR2) given in appendix (see table A13-A16)

0.0017, -2.2196, and-1.2430 using BDR2. This result shows that as CFV increases, firms tend to choose low debts. This result is according to our expectations and is similar with the theoretical as well as empirical literature.

According to Merton (1974) as volatility increases, it increases the chances that firm will face financial distress, and as a result, which lowers the present value of debt-tax advantages. Hence, firms with high CFV use less levels of debt. Both theories (TOT) and (POT) explain a direct relationship among CFV and leverage. According to the POT which is proposed by Myers and Majluf (1984), they explained that when companies have volatile CF, investors are not able to predict accurately future earnings with publicly available information. Markets therefore expect a premium in order to provide the financing. Also, to decrease the likelihood that it will be unable to achieve successful investment when CF is low. Additionally, to decrease the need for new equity issuance, firms with CFV continue to use low leverage. Thus, the POT anticipates a CFV and leverage an inverse relationship. Additionally, the TOT explains that firms' leverage levels decrease due to an increase in CFV in order to balance the cost related to debt, such as financial distress and bankruptcy costs, and with the benefits associated with debt, like tax advantage of debt, and thus, firms maintain an optimal level of debt (Titman and Wessels, 1988). Hence, both TOT and POT anticipate an inverse relationship among CFV and leverage.

This result is also conclusive with the empirical literature. Parsons and Titman (2009) found a CFV inverse relationship with leverage, which implies that in the existence of bankruptcy cost, firms with high CFV are more likely to face bankruptcy for a given debt level. Therefore, they must decrease leverage. This result is similar with the (Baum et al., 2017; Bhaduri, 2002; Harris & Roark, 2019; Keefe & Yaghoubi, 2016; Lee et al., 2014; Memon et al., 2018; Nam et al., 2003; Sheikh & Wang, 2011; Wald, 1999).

The control variable, return on asset, is negative and significant with BDR1and BDR2 under the FE and two-way FE models. The negative coefficient of return on assets is in line with the POT, which explained that successful firms have more likelihood to substitute debt with internally generated funds. Hence, for holding the fixed investment level expected a negative relationship between leverage and profitability. Whereas, when there is imperfect information about firm quality, profitable firms use high leverage to signal their quality to the markets. (Myers, 1984). Additionally, profitable firms do not prefer to increase external equity to ignore the potential dilution of ownership. This result yields a conclusive result with the following empirical studies (Bauer, 2004; Booth et al., 2001; Chang et al., 2009; Delcoure, 2007; Gwatidzo & Ojah, 2009; Rajan & Zingales, 1995; Strebulaev, 2007; Wald, 1999). However, the variable return on asset is negative and insignificant with BDR1 under the one-step SYS-GMM and the one-step DIFF-GMM while there is a positive and insignificant relationship found with BDR2 under both the one-step SYS-GMM and one-step DIFF-GMM.

The variable firm size is positive and significant under the FE, two-way FE, and one-step SYS-GMM with both BDR1 and BDR2. However, firm size is negative and insignificant under the one-step DIFF-GMM with both BDR1 and BDR2. Overall, most of the models explain that firms' size has a significant and direct relationship with both BDR1 and BDR2, which indicates that large-size firms increase their leverage. As firms' size increases, they tend to use more leverage. This result supports the TOT, which contend that the cost of bankruptcy decreases with a firms' size. Hence, a negative association among size and the probability of bankruptcy is expected, by explaining the direct association among size and leverage. Additionally, Titman and Wessels (1988) stated that large-sized firms tend to be more diversified, which lowers the probability of default, and therefore, implies a positive firm size and leverage relationship. Moreover, Diamond (1989) suggests that large-sized firms are supposed to be used more debt at lower costs due to their good credibility in the debt market. Similarly, Rajan and Zingales (1995) state that larger-sized firms get benefit from the low cost associated with debt because the large-size firms are more transparent. This result is similar with the findings of following studies (Eriotis et al., 2007; Gwatidzo & Ojah, 2009; Huang & Song, 2006).

The liquidity coefficient is negative and significant with BDR1 under the FE and two-way FE models. However, the liquidity coefficient is insignificant under a one-step SYS-GMM with both BDR1 and BDR2 and found an insignificant effect under a one-step DIFF-GMM. Hence, most of the models' results report a liquidity inverse relationship with both BDR1 and BDR2. The result is in line with the POT which is proposed by Myers (1984), which states that firms prefer financing from internal sources than external financing. Highly liquid firms can generate liquid reserves from retained earnings and, as a result, firms used internal funds for financing the project rather than borrowing. Hence, liquidity has an inverse relationship with leverage. Moreover, regarding agency theory, Myers (1977) explains that the liquidity of the company's assets can be used to explain how easily they can be manipulated by stockholders at the expense of bondholders, implying that leverage and liquidity are inversely related to each other.

The tangibility coefficient is positive and significant with both BDR1 and BDR2 under the FE model. Under the two-way FE model, the tangibility coefficient is negative and insignificant with BDR1, but positive and significant with BDR2. The tangibility coefficient is positive and insignificant with BDR2 under a one-step SYS-GMM and one-step DIFF-GMM. Overall, most of the results explain the direct relationship between tangibility and leverage. This result is conclusive with the theoretical and empirical literature. Jensen and Meckling (1976) demonstrate that in their pioneer work on agency cost, ownership, and capital structure, agency cost of debt exists because the firm may switch to riskier investment after issuing debt, and shift wealth from creditors to shareholders to utilize the equity option-based nature. If a firm have enough tangible assets, it can be used such assets as collateral to lowers the risk of lenders such as reducing agency costs of debt. Hence, a large proportion of tangible assets is likely to be related to high leverage. Additionally, in the context of bankruptcy, the worth of tangible assets should be higher than intangible assets. Harris and Raviv (1990) and Williamson (1988) suggest that leverage should increase along with the value of liquidation. Both studies recommend that leverage is directly related to tangibility. Empirical research also supports the above-mentioned theoretical prediction such as Long and Maltiz (1985), Friend and Lang (1988), Marsh (1982), Rajan and Zingales (1995), Wald (1999), Antoniou et al., (2008), Fan et al., (2012), Keefe and Yaghoubi (2016), Ahsan and Wang (2016), Memon et al., (2018).

Next, table 17 report the results of FE, two-way FE, One-step SYS-GMM, and one-step DIFF-GMM for interactive analysis, which explains the impact of macro-economic factors in the CFV- leverage relationship.

Table 4.2.4: Cash Flow Volatility and Leverage: Role of Macroeconomic Factors

Dependent Variable BDR1								
	INF				GDPG			
Variables	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**
CFV	0.2467***	0.2177**	0.4228**	-0.1106	-0.0155***	0.3289***	-0.0273***	-0.0315***
	(0.000)	(0.013)	(0.014)	(0.419)	(0.000)	(0.000)	(0.001)	(0.006)
Mac	-0.0345***	-0.0222***	-0.0467***	0.0604	-0.0273	-0.1715***	-0.4803***	0.3800
	(0.004)	(0.002)	(0.001)	(0.244)	(0.792)	(0.002)	(0.000)	(0.331)
CFV*MAC	-0.0363***	-0.0298**	-0.0541**	-0.0264*	0.0094***	-0.3663***	0.0336***	0.0417**
	(0.000)	(0.010)	(0.013)	(0.062)	(0.002)	(0.000)	(0.007)	(0.024)
ROA	-0.1992**	-0.3851***	-0.2367*	0.1612	0.1544***	-0.3858***	-0.2147	-0.1272
	(0.038)	(0.002)	(0.084)	(0.791)	(0.000)	(0.002)	(0.479)	(0.860)
SIZE	0.6653***	0.2857***	0.3160**	-0.4137	0.5693***	0.2860***	0.4998	-0.7284
	(0.000)	(0.000)	(0.000)	(0.287)	(0.000)	(0.000)	(0.182)	(0.843)
LIQ	-0.9624***	-0.4628***	-0.4882**	0.1479	-0.1133***	-0.4628***	0.8800	0.1969
	(0.000)	(0.000)	(0.022)	(0.211)	(0.000)	(0.000)	(0.785)	(0.797)
TANG	0.3218**	-0.2725*	-0.2546	0.1923*	-	-0.2742*	-	-
	(0.043)	(0.091)	(0.466)	(0.061)		(0.090)		
Constant	1.7770**	3.0738***	1.7632*	-	3.3980***	3.0124***	1.7051	-
	(0.012)	(0.001)	(0.080)		(0.000	(0.001)	(0.428)	
BDR_{t-1}	-	0.6517***	0.7683***	0.8997***	-	0.6515***	0.9241***	0.8443***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	425.24***	774.38***	48.65***	13.00***	157.61***	44.203***	79.13***	22.84***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	47	46	-	-	47	36
AR (2) P value	-	-	0.246	0.178	-	-	0.180	0.169
Hansen J Test	-	-	0.794	0.798	-	-	0.676	0.670
No of firms	376	376	376	372	376	376	376	374
R2	0.8017	0.8017	-	-	0.7890	0.8022	-	-
Time Dummy	-	Yes	Yes	Yes	-	Yes	Yes	Yes
Obs	5850	5494	5544	5086	5850	5494	5544	5143

Continue…….

Dependent Variable BDR1								
	MS				INTEREST			
Variables	**FE**	**Two-Way FE**	**SYS GMM**	**DIFF GMM**	**FE**	**Two-Way FE**	**SYS GMM**	**DIFF GMM**
CFV	-0.0251***	-0.018***	-0.0227***	-0.0193***	0.2876***	-0.0260***	-0.0301***	-0.0256***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.005)	(0.000)	(0.000)	(0.000)
Mac	0.2330***	-0.6852**	0.2456***	0.3699***	0.0345	-3.3525***	-0.6372***	0.6554
	(0.000)	(0.027)	(0.000)	(0.007)	(0.697)	(0.000)	(0.000)	(0.318)
CFV*MAC	0.0101***	0.0079***	0.0094***	0.0089**	0.2268**	0.0232***	0.0297***	0.0256***
	(0.000)	(0.000)	(0.000)	(0.035)	(0.040)	(0.000)	(0.000)	(0.001)
ROA	0.1418***	0.0572***	-0.8495	1.6998	-0.2954**	0.0500***	0.6254	3.1052
	(0.000)	(0.000)	(0.179)	(0.594)	(0.016)	(0.002)	(0.530)	(0.512)
SIZE	5.6981***	2.6831***	0.6580*	-2.8621	5.1578***	3.0486***	0.4061	-8.2576
	(0.000)	(0.000)	(0.080)	(0.330)	(0.000)	(0.000)	(0.151)	(0.167)
LIQ	-1.0930***	-0.531***	-2.9510	6.9679	-0.8034***	-0.5104***	1.0776	19.3640
	(0.000)	(0.001)	(0.311)	(0.338)	(0.000)	(0.003)	(0.751)	(0.228)
Constant	3.0613***	6.9070**	6.3105	-	2.5689***	3.347***	3.1144	-
	(0.000)	(0.010)	(0.174)		(0.005)	(0.000)	(0.677)	
BDR_{t-1}	-	0.6515***	0.9153***	0.8361***	-	0.6192***	0.9529***	0.9003***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	183.87***	54.61***	99.64***	39.57***	-29.17***	99.75***	26.30***	25.67***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	47	42	-	-	43	32
AR (2) P value	-	-	0.237	0.187	-	-	0.563	0.397
Hansen -J Test	-	-	0.807	0.387	-	-	0.142	0.729
No of firms	376	376	376	374	374	375	375	370
R2	-	0.8110	-	-	-	-	-	-
Time Dummy	-	-	Yes	Yes	-	-	Yes	Yes
Obs	5143	5544	5544	5143	4901	4784	4784	4394

Notes: Same as table 16 except this table report the role of macroeconomic variables in the relationship between CFV and leverage. Dependent variable is BDR1.

In table 4.2.4, the coefficient associated with inflation is negative and significant in all models except the one-step DIFF-GMM. The negative sign indicates that inflation is negatively related to leverage. As inflation increases in an economy, firms tend to reduce the leverage level. This result supports the empirical studies such as Booth et al. (2001), Samuelson and Nordhaus (2010), Keefe and Yaghoubi (2016), and Memon et al. (2018), which explain that because contracts of debt are a mostly nominal type of contracts and inflation can affect the debt financing riskiness. According to economic theory, inflation increases the rate of interest. Inflation will also cause the domestic exchange rate to be high, resulting in high borrowing costs. Hence, firms decrease the leverage level.

Regarding GDP growth, the coefficient of GDPG is insignificant in the FE model, and the one-step DIFF-GMM model. However, the coefficient of GDPG is negative and significant under the two-way FE model and one-step SYS-GMM. The inverse relationship between GDP and leverage result is consistent with the following empirical studies such as Gajurel (2006), Demirgus-Kunt and Maksimovicy (2008), Bastos et al., (2009), Samuelson and Nordhaus (2010), Dincergok and Yalciner (2011), Camara (2012), Mursalim et al.,2017 among others, which explains that higher economic growth tends to decrease leverage because of improvement in the economy and therefore, GDP growth increases the company profitability. According to the POT, companies are more interested to choose retained earnings as an internal financing source relative to debt (Myers,1984).

Regarding the money supply, in the FE model, the coefficient of the money supply is positive and significant but negative and significant in the two-way FE model. However, they are positive and significant in both the one-step SYS-GMM and the one-step DIFF-GMM model. Mokhova & Zinecker (2014) explain that countries can employ MP to accelerate or halt the economy via interest rate. The banks will have plenty of cash to lend if the money supply is increased. As a result of increased competition among banks because of lower interest rate, this may speed up the economy by encouraging borrowing and spending. This is referred to expansionary MP. On the other hand, if the money supply is reduced, banks will have less money to lend and the interest rate will be higher. This will slow down the economy by reducing borrowing and expenditure to decrease the rate of inflation. This is referred to as contractionary MP. Bougheas et al. (2006) report that tight MP has a high impact on small and young firms than on large and old firms in the United Kingdom.

Dang and Nguyen (2021) stated that banks respond to monetary expansion by increasing financial leverage on the liability side and decreasing liquidity on the asset side. Further analysis suggests that larger banks' financial leverage is more sensitive to MP changes, but smaller banks strengthen the effectiveness of MP transmission to bank liquidity.

The coefficient of interest rate is positive but insignificant in both the FE and the one-step DIFF-GMM model. Whereas the interest rate coefficient is negative and significant in both two-way FE and one-step SYS-GMM. This result is consistent with empirical literature as when interest rates are low, it is easier for borrowers to repay loans, so they increased borrowing and spending, causing the economy to boost-up. When interest rates are high, firms and consumers spend less and borrow more, causing the economy to slow down (Mokhova & Zinecker 2014). The cost of debt financing is determined by the interest rate, and an increase in the interest rate will often result in a decrease in debt financing. According to Frank and Goyal (2009), using the TOT, stated that the tax-shield on debt decrease the tax burden. The tax-shield is therefore a significant cause for a firm's capital structure adjustment, which explains the direct association among tax and debt in their analysis. Dincergok and Yalciner (2011) display an inverse relationship for emerging economies. Jõeveer (2013) investigated the said relationships in transition economies and found an inverse relationship between interest rate and debt financing.

Additionally, to analyze the combined impact of CFV on leverage, given the role of macroeconomic factors, in the above equation partial derivative has been taken with respect to CFV.

$LEV_{it} = \beta_{11} + \beta_{12}LEV_{it-1} + \beta_{13}CFV_{it} + \beta_{14}INF_t + \beta_{15}(CFV_{it}{}^{*}INF_t) + \beta_{16}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{13} + \beta_{15}\,\mathrm{INF}_t \qquad (4.10)$$

where both coefficients in equation (4.10) have opposite signs in the one-step SYS-GMM, which explains that inflation weakens the CFV and leverage relationship. The FE, two-way FE, and one-step SYS-GMM results show that the inflation role is substitutional in explaining the CFV relationship with leverage. However, in a one-step DIFF-GMM model, the inflation role is complementary in explaining the CFV relationship with leverage.

Similarly, to analyze the interactive role of GDPG and CFV on leverage the partial derivate of above equation has been taken with regard to leverage

$LEV_{it} = \beta_{21} + \beta_{22}LEV_{it-1} + \beta_{23}CFV_{it} + \beta_{24}GDPG_t + \beta_{25}(CFV_{it}{}^{*}GDPG_t) + \beta_{26}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{23} + \beta_{25}\,GDPG_t \qquad (4.11)$$

In equation 4.11, both coefficients have opposite signs in all models such as FE, two-way FE, one-step SYS-GMM, and one-step DIFF-GMM explains that the role of GDP growth is substitutional in explaining the CFV relationship with leverage. The coefficient of the interaction term $CFV_{it}*GDPG_t$ is positive in all models except the one-step SYS-GMM. Most of the model results indicate that the role of GDPG strengthens the CFV relationship with leverage.

Further, a partial derivative has been taken of the above equation with respect to CFV, in order to analyze the effect of money supply in the relationship between CFV and leverage.

$$LEV_{it} = \beta_{31} + \beta_{32}LEV_{it-1} + \beta_{33}CFV_{it} + \beta_{34}MS_t + \beta_{35}(CFV_{it}{}^{*}MS_t) + \beta_{36}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{33} + \beta_{35}MS_{it} \quad (4.12)$$

In equation (4.12) both coefficients have opposite signs in all models $\beta_{33} < 0$ and the coefficient of $\beta_{35} > 0$, which indicates that the money supply strengthens the CFV and leverage relationship. The findings of all models also show that the role of money supply plays a substitutional role in explaining the CFV effect on leverage.

Likewise, the partial derivative has been taken to investigate the impact of interest rate on the relationship between CFV and leverage.

$$LEV_{it} = \beta_{41} + \beta_{42}LEV_{it-1} + \beta_{43}CFV_{it} + \beta_{44}INTEREST_t + \beta_{45}(CFV_{it}{}^{*}INTEREST_t) + \beta_{46}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{43} + \beta_{45}\, INTEREST_{it} \quad (4.13)$$

Both coefficients sign is opposite in all models except FE model which displays that interest rate strengthens the CFV relationship with leverage. However, the coefficient $\beta_{45} > 0$ in all models which implies that interest rate strengthens the CFV and leverage relationship. Overall, the findings of two-way FE, one-step SYS-GMM, and one-step DIFF-GMM show that the role of interest rate is substitutional in explaining the CFV relationship with leverage while FE results explain that the interest rate role is complementary in explaining the CFV relationship with leverage.

Next, to estimate the effects of CFV on leverage, this study assumes the macro-economic variables at different levels of percentiles. The results of each macro-economic variable at low, median, and high levels of percentiles are given below in table 4.2.5.

The results of FE, two-way FE, one-step SYS-GMM, and one-step DIFF-GMM in table 4.2.5 show that CFV significantly and inversely affects the leverage at all levels of inflation. However, the magnitude of the coefficient increases at the median and higher levels of inflation. Overall, results indicate that as the inflation rate is higher in the economy, cash flow volatile firms reduce the leverage level. This result is conclusive with Schall (1984), Gajurel (2006), and Joveer (2013), display that inflation has an inverse relationship with total leverage because of the after-tax real return of capital, despite the fact that cost of capital increases during the inflationary periods. Hence, to avoid this cost, cash flow volatile firms decrease the total debt in an inflationary environment.

Table 4.2.5: Conditional Impact of Cash Flow Volatility on Leverage at Varying Level of Macroeconomic Factors

	INF				GDPG			
Percentiles	**FE**	**Two way FE**	**One step System GMM**	**One Step DIFF GMM**	**FE**	**Two way FE**	**One step System GMM**	**One-Step DIFF GMM**
P(25)	-1.5467***	-1.2568***	-2.2486**	-1.4135*	0.0144*	-0.8321***	0.0791**	0.1005**
low	(0.000)	(0.009)	(0.013)	(0.058)	(0.062)	(0.000)	(0.013)	(0.032)
P(50)	-2.7765***	-2.2680***	-4.0805**	-2.3070*	0.0272**	-1.3326***	0.1249**	0.1575**
Median	(0.000)	(0.009)	(0.013)	(0.058)	(0.021)	(0.000)	(0.011)	(0.029)
P(75)	-4.7278***	-3.8724***	-6.9873**	-3.7247*	0.0379**	-1.7466***	0.1628**	0.2045**
High	(0.000)	(0.009)	(0.013)	(0.059)	(0.013)	(0.000)	(0.010)	(0.027)
	MS				**INTEREST**			
Percentiles	**FE**	**Two-way FE**	**One-step System GMM**	**One-Step DIFF GMM**	**FE**	**Two-way FE**	**One-step System GMM**	**One-Step DIFF GMM**
P(25)	0.0942***	0.0746***	0.0870***	0.0846**	2.2735**	0.1774***	0.2299***	0.1988***
lower	(0.000)	(0.000)	(0.000)	(0.047)	(0.027)	(0.000)	(0.000)	(0.001)
P(50)	0.1092***	0.0864***	0.1009***	0.0978**	2.9482**	0.2466***	0.3182***	0.2750***
Median	(0.000)	(0.000)	(0.000)	(0.045)	(0.030)	(0.000)	(0.000)	(0.001)
P(75)	0.1250***	0.0986***	0.1154***	0.1114**	3.3541**	0.2882***	0.3713***	0.3209***
High	(0.000)	(0.000)	(0.000)	(0.044)	(0.031)	(0.000)	(0.000)	(0.001)

Notes: ***,**,* are one, five and ten percent level of significance. P_{25}, P_{50}, P_{75} are the 25th ,50th and 75th percentiles. P- values are given in parenthesis.

The results of FE, one-step SYS-GMM, and one-step DIFF-GMM is given in table 4.2.5 show that CFV positively and significantly affects the leverage at all GDPG levels. The magnitude of coefficients also increases when the GDPG is at the median and higher levels. However, the results of the two-way FE show that at all levels of GDPG, CFV negatively affects the leverage. Overall, a majority of the results at all levels of GDPG show a CFV direct relationship with the leverage, which explains that when economic growth is higher in a country, the cash flow volatile firms increase the leverage level. This result is conclusive with Stulz (1990) and Frank and Goyal (2009) argued that a high level of CF increases the optimal face value of debt. Firms select a higher degree of financing when operating in higher economic growth period, related to high cash flow and low likelihood of insolvency. A growing economy produces more stable cash flows and lower distress costs, as well as increased growth opportunities and investment demands. The findings are consistent with the TOT (Chekanskiy,2009).

Further, the result of all models in table 4.2.5 report that the impact of CFV on leverage is significant and positive at levels of the money supply. The magnitude of coefficients also increases at the median and higher levels. This indicates that in the case of expansionary MP, cash flow volatile firms tend to increase the total debt (leverage). This result is conclusive with Mokhova & Zinecker (2014) who explain that countries adopt their MP to boost or hamper the economy via interest rate. Bank will have plenty of cash to lend if the money supply is increased. This may increase competition among banks which in turn lowers the interest rate and boost the economy by encouraging more borrowing and spending.

Additionally, regarding the interest rate in table 4.2.5, the results of all models report a CFV direct and significant relationship with leverage at all levels of interest rate. The magnitude of the coefficient increases at the median and higher levels. This result explains that when the interest rate is higher in the economy, cash flow volatile firms increase the leverage. This result is in line with the TOT, which was proposed by Frank and Goyal (2009), who stated that the tax benefit of interest reduces the tax burden. The main reason for a firm's capital structure adjustment is shown by the direct correlation between tax and debt in their analysis. Bokpin (2009) found a significant positive relationship between interest rate and leverage, empirical results have also been contradictory. Contrarily, higher interest rates during a contraction period become significant for firms when weighing the benefits of the tax shield against the cost of bankruptcy. As a result, firms should choose debt financing if the benefits outweigh the costs as predicted by the TOT. Zein (2016) also found a positive relationship with the interest rate, which may also be because the sampled firms are more stable and substantial, which reduces their risk of incurring bankruptcy costs. It is crucial to emphasize the importance of both firm and banks relationship and their overall risk exposure. Additionally, according to Joeveer (2013) states that firms in more transparent countries are more likely to make financing decisions based on the TOT as opposed to the POT.

The given below table 4.2.6 reports the results of FE, two-way FE, one-step SYS-GMM, and one-step DIFF-GMM for interactive analysis, which explains the impact of institutional factors in the CFV and leverage relationship. The coefficient associated with bank deposits is negative and significant in all models except the one-step DIFF-GMM. The negative sign of bank deposits is not in line with our expectations, but this may be because the firm belongs to developing countries where there is a small banking sector exists they used less leverage. Fan et al. (2012) found a direct relationship between bank deposits and leverage for developed economies because there is a large banking sector exists and hence firms tend to choose higher leverage. The coefficient of the interactive term CFV*BD is positive and significant in all models, indicating that if bank deposits is increases in a country, cash flow volatile firms lead to an increase the leverage.

Regarding political stability, the coefficient associated with political stability is positive and significant in both the FE and two-way FE model, positive but insignificant in the one-step SYS-GMM model, while negative and significant in the one-step DIFF-GMM model. The majority of the results of our model show that political stability is directly associated with the leverage level. This result yields conclusive findings with Arosa et al. (2014), Daouk et al. (2006), and Touil and Mamoghli (2020) who stated that the political instability related to the poor performance of contracts and the weak legal protection of the stockholders that leads to increase the information asymmetry and the transaction cost, which would decrease the usage of the debts. In the case of political stability, this would lead to a decrease in transaction cost and information asymmetry, which would increase the usage of debts/ leverage levels. Overall, political stability plays an indirect role in controlling the cost of bankruptcy and information asymmetries. The interactive term CFV*PS is negative and significant in all models, indicating that as political instability increases in a country, the relationship between CFV and leverage is negative. This may be because political environment is not stable in Pakistan and firms with volatile cash flow in an unstable political environment tend to reduce the use of debt.

The rule of law coefficient is negatively significant in all models except the one-step DIFF-GMM model. The rule of law coefficient is negative but insignificant in the one-step DIFF-GMM model. The negative sign indicates that the rule of law is inversely associated with the firms' leverage level. This may be because firms in a country where the quality of law enforcement is weak, the usage of debt may not be easier (Gungoraydinoglu & Öztekin, 2011).

In addition, La Porta et al. (1998) explained that weak credit protection encourages lenders to offer credit on less favorable terms, which implies lower debt ratios. Similarly, Clark et al. (2009) and Öztekin and Flannery (2012) recommend that weak creditors protection and less efficient contract enforcement would slow the speed of adjustment toward target debt ratios.

The coefficient of the interactive term CFV*RL is negative and significant in all models, indicating that for firms in a country with weak quality of law of enforcement, CFV shows an inverse relationship with leverage level. Firms in a country like Pakistan where the quality of law enforcement is weak, cash flow volatile firms decrease the leverage level.

Table 4.2.6: Cash Flow Volatility and Leverage: Role of Institutional Factors

	Dependent Variable BDR1							
	BD				PS			
Variables	**FE**	**Two-Way FE**	**SYS GMM**	**DIFF GMM**	**FE**	**Two-Way FE**	**SYS GMM**	**DIFF GMM**
CFV_10	-0.0230***	-0.0130***	-0.0309***	-0.0462*	-0.0249***	-0.0183***	-0.0190***	-0.0418***
	(0.000)	(0.000)	(0.000)	(0.055)	(0.000)	(0.000)	(0.000)	(0.001)
INST	-0.0495*	-0.0628**	-0.0323**	0.3575*	1.5717*	1.8177**	0.0088	-9.2474*
	(0.092)	(0.027)	(0.023)	(0.082)	(0.065)	(0.026)	(0.986)	(0.072)
CFV*INST	0.0042***	0.0026***	0.0081***	0.0138*	-0.0930**	-0.0856***	-0.0884***	-0.2436***
	(0.000)	(0.000)	(0.000)	(0.062)	(0.012)	(0.000)	(0.003)	(0.002)
ROA	0.1581***	0.0575***	0.3374	0.5354	0.1916***	0.0562***	-2.7002	4.0365
	(0.000)	(0.000)	(0.447)	(0.954)	(0.000)	(0.000)	(0.502)	(0.609)
SIZE	5.9748***	2.6843***	0.6720**	-8.7503*	6.1754***	2.6876***	0.6689*	-8.3830**
	(0.000)	(0.000)	(0.012)	(0.082)	(0.000)	(0.000)	(0.088)	(0.024)
LIQ	-113.04***	-53.193***	-3.5949	18.0438	-110.38***	-53.1855***	-0.0768	37.5854**
	(0.000)	(0.000)	(0.442)	(0.136)	(0.000)	(0.001)	(0.984)	(0.038)
TANG	-	-	-	-	-	-	-	-
Constant	34.6237	9.1784***	1.1417	-	33.3707***	9.6235***	23.1352	-
	(0.000)	(0.000)	(0.763)		(0.000)	(0.001)	(0.423)	
BDR_{t-1}	-	0.6514***	0.9092	0.9215	-	0.6514***	0.9027***	1.0547***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	2612.59	7308.08***	146.8***	15.72***	3428.36***	5166.19***	71.82***	6.87***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	61	36	-	-	40	30
AR (2) P value	-	-	0.164	0.139	-	-	0.186	0.133
Hansen J Test (P Value)	-	-	0.113	0.837	-	-	0.558	0.919
No of firms	376	376	376	374	376	376	376	374
R^2	-	-	-	-	0.1109	0.8108	-	-
Time Dummy	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes
Obs	5902	5544	5544	5143	5902	5544	5544	5143

Continue……

	RL				CORR				RQ			
Variables	**FE**	**Two Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One- Step DIFF GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**
CFV	-0.0243***	-0.0095***	-0.0246***	-0.0236***	-0.0209***	-0.0087***	-0.0159***	-0.0158***	-0.0188	-0.0013***	0.0297***	-0.0118***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.082)	(0.000)	(0.000)
INST	-8.2186***	-6.3069***	-6.5181**	-4.4565	2.5283***	3.4059***	1.8977	1.6983	-0.5635	-1.7822	-5.6845*	-1.3245
	(0.000)	(0.000)	(0.010)	(0.309)	(0.006)	(0.000)	(0.126)	(0.381)	(0.716)	(0.102)	(0.054)	(0.473)
CFV*INST	-0.0164***	-0.0067***	-0.0024***	-0.0023***	0.0224***	0.0089***	0.0247***	0.0307***	-0.0001***	0.0031***	0.0480***	-0.0011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
ROA	0.1521**	0.0306***	-2.6259	0.4975	0.1649***	0.0476***	-1.5998	-3.5287	0.1534***	0.0285***	-3.5152	-2.4381
	(0.043)	(0.000)	(0.439)	(0.924)	(0.000)	(0.000)	(0.624)	(0.318)	(0.000)	(0.006)	(0.109)	(0.377)
SIZE	5.7820***	2.2586***	0.6795*	0.4834	5.8313***	2.3929***	0.6166*	0.0463	5.6915***	2.1356***	0.6743*	0.1195
	(0.000)	(0.000)	(0.045)	(0.582)	(0.000)	(0.000)	(0.076)	(0.947)	(0.000)	(0.000)	(0.080)	(0.821)
LIQ	-1.1277***	-5.5542***	-2.1236	0.3305	-1.1229***	-5.4384***	-2.5131	2.3639	-1.1325***	-5.577***	-4.1443	1.0112
	(0.000)	(0.001)	(0.520)	(0.937)	(0.003)	(0.002)	(0.498)	(0.553)	(0.000)	(0.002)	(0.474)	(0.703)
Constant	2.6473**	5.0021*	1.5606*	-	2.2390**	-5.0340**	6.5829	-	3.3525**	9.7625***	2.6288	-
	(0.000)	(0.060)	(0.052)		(0.003)	(0.028)	(0.766)		(0.000)	(0.000)	(0.107)	
BDR_{t-1}	-	0.6507***	0.9188***	0.8534***	-	0.6522***	0.9119***	0.7848***	-	0.6540***	0.9033***	0.7426***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	2387.99***	1037.36***	272.09***	268.05	3390.08***	29031.60***	598.72***	74.26***	3236.81***	19336.14***	234.81***	468.63***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	22	14	-	-	22	14	-	-	22	21
AR (2) P value	-	-	0.195	0.481	-	-	0.293	0.496	-	-	0.418	0.355
Hansen J Test (P-Value)	-	-	0.921	0.698	-	-	0.294	0.103	-	-	0.310	0.256
No of firms	376	376	376	374	376	376	376	374	376	376	376	374
R^2	-	-	-	-	0.2272	0.8211	-	-	0.1093	0.8298	-	-
Time Dummy	-	No	No	No	-	No	No	No	-	No	No	No
Obs	5902	5544	5544	5143	5902	5544	5544	5143	5902	5544	5544	5143

Notes: Same as table 16 except this table report the role of institutional variables in the relationship between CFV and leverage. Dependent variable is BDR1.

The coefficient of corruption is positive and significant in the FE and two-way FE model, while the corruption coefficient is positive but insignificant in both the one-step SYS-GMM and the one-step DIFF-GMM model. Overall, the majority of the model results show that firms in a country where the public sector is more corrupt, debt is expected to be used relatively more than equity because it is easier to expropriate outside equity holders than debt holders (Fan et al., 2012). Furthermore, firms in developing countries where the public sector is more corrupt borrow more debt and are less dependent on financing through equity. The reason is that external investors get less protection and high expropriation to risk decreases the firm benefits to financing through equity issuance, hence, they increase financing through the issuance of debt (Turk, 2016).

The interactive term CFV*CORR is positive and significant in all models, indicating that if corruption is higher in a country, the relationship between CFV and leverage is positive. This is because firms in developing countries where corruption level is high, firms with volatile cash flow, borrow more debt relative to equity due to a higher risk of expropriation.

The coefficient associated with regulatory quality is negative but insignificant in all models except the one-step SYS-GMM. The coefficient of regulatory quality is negatively significant in the one-step SYS-GMM model, which indicates that firms in a country where regulatory quality is poor, borrow less debt to avoid bankruptcy costs and information asymmetries.

The interaction term CFV*RQ is negative and significant in the FE and one-step DIFF-GMM model. However, positive and significant in the one-step SYS-GMM and two-way FE model, and the magnitude of their coefficient is higher relative to other models.

This indicates that if the regulatory quality is strong in a country, cash flow volatile firms lead to an increase in leverage.

According to Joveer (2012) higher protection of contracts and legal stability, the stronger the regulatory quality and the less imperfect information leads to an increase in credit availability.

Additionally, to investigate the combined impact of CFV on leverage, considering the role of bank deposits, a partial derivative of the above equation has been taken concerning CFV.

$$LEV_{it} = \beta_{51} + \beta_{52}LEV_{it-1} + \beta_{53}CFV_{it} + \beta_{54}BD_t + \beta_{55}(CFV_{it}{}^{*}BD_t) + \beta_{56}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{53} + \beta_{55}BD_t \qquad (4.14)$$

Both coefficients have opposite signs $\beta_{53} < 0$, $\beta_{55} > 0$ in all models which implies that the bank deposits strengthen the CFV and leverage relationship. Additionally, all the model results indicate that the role of bank deposits plays a substitute role to explain the CFV relationship with leverage.

Likewise, the derivative of the below equation has been taken to investigate the impact of rule of law in the CFV and leverage relationship.

$$LEV_{it} = \beta_{61} + \beta_{62}LEV_{it-1} + \beta_{63}CFV_{it} + \beta_{64}PS_t + \beta_{65}(CFV_{it}{}^{*}PS_t) + \beta_{66}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{63} + \beta_{65}PS_{it} \qquad (4.15)$$

Where both $\beta_{63} <0$ and, $\beta_{65} < 0$ has similar signs in all models. The negative coefficient of β_{65} explains that with a partial increase in political instability in a country, the CFV shows an inverse relationship with leverage. Overall, the result indicates that political instability weakens the CFV relationship with leverage. Overall, all of the model results reveal that the role of political stability plays a complementary role in explaining the relationship between CFV and leverage.

Correspondingly, the derivative of the above equation has been taken for the CFV, and the rule of law is given as follows:

$LEV_{it} = \beta_{71} + \beta_{72}LEV_{it-1} + \beta_{73}CFV_{it} + \beta_{74}RL_t + \beta_{75}(CFV_{it}{}^{*}RL_t) + \beta_{76}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{73} + \beta_{75}RL_{it} \quad (4.16)$$

Where both $\beta_{73}<0$ and, $\beta_{75}< 0$ have similar signs. The negative coefficient of β_{75} explains that if the rule of law is not properly implemented in a country, the CFV reports an inverse relationship with leverage. Overall, the result indicates that poor rule of law implementation weakens the relationship between CFV and leverage. Overall, all of the model results reveal that the rule of law plays a complementary role in explaining the CFV relationship with leverage.

Additionally, to examine the impact of CFV and corruption on leverage, a partial derivative of the above equation has been taken concerning CFV.

$LEV_{it} = \beta_{81} + \beta_{82}LEV_{it-1} + \beta_{83}CFV_{it} + \beta_{84}CORR_t + \beta_{85}(CFV_{it}{}^{*}CORR_t) + \beta_{86}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \beta_{83} + \beta_{85}CORR_t \quad (4.17)$$

Where both $\beta_{83} < 0$ and $\beta_{85} > 0$ in all models, which implies that the impact of corruption makes the strong CFV and leverage relationship. Furthermore, the result implies that corruption plays a substitution role in explaining the CFV relationship with leverage.

To analyze the impact of regulatory quality in the CFV and leverage relationship, the partial derivative has been taken in the following way

$$LEV_{it} = \beta_{81} + \beta_{82}LEV_{it-1} + \beta_{83}CFV_{it} + \beta_{84}RQ_t + \beta_{85}(CFV_{it}{}^{*}RQ_t) + \beta_{86}{}'Z_{it} + \tau_i + \omega_t + \varepsilon_{it}$$

$$\frac{\partial LEV_{it}}{\partial CFV_{it}} = \quad \beta_{83} + \beta_{85}RQ_t \qquad (4.18)$$

Where both β_{83} and, β_{85} have different signs in all models. The interactive term β_{85} is positive in the two-way FE and one-step DIFF GMM model which implies that the impact of regulatory quality strengthens the CFV and leverage relationship. However, the interactive term is negative in FE and one-step DIFF GMM which explains that the impact of regulatory quality weakens CFV and leverage relationship. Additionally, both β_{83} and, β_{85} have similar signs in all models except the two-way FE. Most of the model results imply that regulatory quality plays a complementary role in explaining the CFV relationship with leverage.

The derivative of leverage with respect to CFV illustrates that the impact of CFV on leverage is conditional on different levels of institutional factors. This study uses the 25^{th}, 50^{th}, and 75^{th} percentiles of institutional variables for analysis. The results are given in Table 4.2.7.

Table 4.2.7 : Impact of Cash Flow Volatility on Leverage at given Institutional Levels

	BD				PS			
	FE	**Two-way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**	**FE**	**Two-way FE**	**One-Step SYS GMM**	**One-Step Diff GMM**
P_{25}	0.0937***	0.0606***	0.1965***	0.3421*	0.2157*	0.2037***	0.2098***	0.5886***
	(0.000)	(0.000)	(0.000)	(0.062)	(0.016)	(0.000)	(0.004)	(0.002)
P_{50}	0.1026***	0.0663***	0.2139***	0.3718*	0.1916*	0.1814***	0.1868***	0.5253***
	(0.000)	(0.000)	(0.000)	(0.062)	(0.016)	(0.000)	(0.004)	(0.002)
P_{75}	0.1111***	0.0716***	0.2305***	0.4002*	0.1207*	0.1160***	0.1194***	0.3396***
	(0.000)	(0.000)	(0.000)	(0.062)	(0.019)	(0.000)	(0.004)	(0.002)
	RQ				**CORR**			
	FE	**Two-way FE**	**One-step Sys GMM**	**One-Step Diff GMM**	**FE**	**Two-way FE**	**One-step Sys GMM**	**One-Step Diff GMM**
P_{25}	-0.0187***	-0.0013*	0.0293***	-0.0117***	0.0688***	0.0269***	0.0830***	0.1069***
	(0.000)	(0.074)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
P_{50}	-0.0187***	-0.0013*	0.0293***	-0.0117***	0.0688***	0.0269***	0.0830***	0.1069***
	(0.000)	(0.075)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
P_{75}	-0.0187***	-0.0013*	0.0294***	-0.0117***	0.0753***	0.0295***	0.0902***	0.1158***
	(0.000)	(0.075)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	RL				**Reference**			
	FE	**Two-way FE**	**One-step SYS GMM**	**One-Step Diff GMM**				
P_{25}	-0.0241***	-0.0094***	-0.0244***	-0.0234***	Table 19			
	(0.000)	(0.000)	(0.000)	(0.000)				
P_{50}	-0.0241	-0.0094***	-0.0244***	-0.0234***	Table 19			
	(0.000)	(0.000)	(0.000)	(0.000)				
P_{75}	-0.0241***	-0.0094***	-0.0244***	-0.0234***	Table 19			
	(0.000)	(0.000)	(0.000)	(0.000)				

Notes: ***, **, * are one, five and ten percent level of significance. $P_{25,}$ $P_{50,}$ P_{75} are the 25th ,50th and 75th percentiles. P values are given in parenthesis.

Table 4.2.7 present the impact of CFV on leverage at varying levels of institutional factors. The results show that the CFV impact on leverage is significant and positive in all models at varying levels of bank deposits. The magnitude of the coefficients increases with an increase in bank deposits, which concludes that at increasing levels of bank deposits in an economy, firms with volatile cash flow leads to increase the leverage to get tax shield advantages on debt.

Regarding varying levels of political stability, the impact of CFV on leverage is positive and significant in all models. However, the value of the coefficients in all the models decreases at varying levels of political stability. This is because in Pakistan the political environment is not stable, and therefore, political instability related to the poor performance of contracts and the weak legal protection of the stockholders leads to an increase the information asymmetry and transaction cost. As a result, firms with volatile cash flows decrease their leverage. This result is consistent with the findings of (Arosa et al., 2014; Daouk et al., 2006; Touil & Mamoghli, 2020).

Additionally, at given levels of regulatory quality, most of the model results report the negative and significant impact of CFV on leverage. It may be because firms in a country where regulatory quality is poor, firms with volatile cash flows decrease the leverage level to avoid bankruptcy costs and information asymmetries. This result yields a conclusive finding (Fan et al., 2012).

The CFV impact on leverage is positive and significant at given levels of corruption. In all models, the magnitude of the coefficients is increasing at varying levels of corruption, which concludes that for firms in a country where the public sector is more corrupt, debt is predicted to be relatively more than equity because it is easier to expropriate outside equity holders than debt holders. The less protection for external investors and higher risk of expropriation decrease the firm benefits to issue equity through financing, therefore, increase the leverage (Fan et al., 2012; Turk, 2016).

Regarding rule of law at varying levels, the impact of CFV on leverage is significant and negative in all of the models. This may be because firms in a country where the quality of law enforcement is weak, the usage of debt may not be easier. In addition, La Porta et al. (1998) explained that weak credit protection encourages lenders to offer credit on less favorable terms, which implies lower debt ratios. Similarly, Clark et al. (2009) and Öztekin and Flannery (2012) recommend that weak creditors protection and less efficient contract enforcement would slow the speed of adjustment toward target debt ratios.

4.3 Cash Flow Volatility and Investment Decision-Making: Role of Institutions

The descriptive stats of the investment, firms' specific determinants, and institutional factors are given in table 4.3.1 for the overall sample of 380 listed non-financial firms of Pakistan over the period of 1999-2018. We consider cash flow volatility, firms' size, operating cash flows, and Tobin Q as firm-specific determinants of investment decision-making. Institutional factors include corruption, rule of law, political stability, regulatory quality, institutional quality, and institutional ownership.

Table 4.3.1. Summary Statistics: Cash Flow Volatility and Investment Decision Making-Role of Institution

Variables	Obs	Min	Max	Mean	Std	P25	P50	P75
INV	6048	0.01513	144797.4	250.54	4127.029	31.8789	49.1551	66.4147
CFV	6095	0.000	207295.8	172.21	5093.28	0.03806	0.06714	0.01716
SIZE	6112	-4.3560	13.7810	7.4436	2.1162	6.3020	7.4212	8.6952
CF	6040	-165100	446947.8	165.951	7962.79	0.4280	6.4312	13.244
Tobin-Q	6430	-1723.33	54362.09	168.674	2949.38	0.8038	1.9798	5.3434
CORR	7600	3.5	4.5	4.1063	0.2533	4	4	4.2917
RL	7600	-0.9687	-0.6253	-0.8141	0.0865	-0.8856	-0.8177	-0.7580
PS	7600	-2.8100	-1.103	-2.0488	0.5968	-2.5881	-2.3285	-1.5659
RQ	7600	-0.9053	-0.4823	-0.6373	0.1034	-0.7073	-0.6306	-0.5742
IQ	6840	-105.88	126.70	2.9860	86.8619	-77.09	-29.29	116.25
Ownership	2261	0.05	0.9995	0.5696	0.2561	0.3977	0.6000	0.7666

Notes: This table report the summary stats of all variables in the model

In this analysis, we also normalize these firm-specific determinants to standardize the unit of measurement. This process reduced their percentiles values to the range between zero and a hundred. The percentile value explains the variable at lower (P25), medium (P50), and higher (P75) levels. The value of the standard deviation of all variables is minimum except institutional quality, which indicates that institutional quality is a highly volatile variable in our model. The other summary statistics summarized the mean, minimum value, maximum value, and percentiles at the 25th, 50th, and 75th levels.

Table 4.3.2. Correlation Matrix

Variables	CFV	SIZE	CF	Tobin-Q	CORR	RL	PS	RQ	IQ	OWNERSHIP
CFV	1									
SIZE	-0.0849	1								
CF	-0.011	0.231	1							
Tobin-Q	0.0331	-0.0965	-0.0396	1						
CORR	0.0993	-0.0844	0.0603	-0.0192	1					
RL	0.0083	0.0729	-0.0324	0.0197	-0.1807	1				
PS	0.1857	-0.0887	0.0477	-0.0212	0.8647	-0.113	1			
RQ	0.0053	-0.0184	-0.0165	-0.004	-0.1459	0.08	0.0666	1		
IQ	0.1481	-0.1143	0.0186	-0.0203	0.7498	-0.184	0.8654	0.011	1	
OWNERSHIP	-0.0347	0.0444	0.0086	-0.0307	-0.3403	0.034	-0.3421	-0.0246	-0.2925	1

Notes: This table reports the results of pairwise correlation among explanatory variables.

Table 4.3.2 reports the correlation among firms' investment, firm-specific determinants, and institutional factors. CFV is inversely related to size, cash flow, and ownership while the remaining variables are positively associated with the investment. Institutional variable corruption is inversely related to the rule of law, regulatory quality, size, Tobin-Q, and ownership but positively related to all remaining variables. Rule of law is directly associated with all variables except investment, cash flow, political stability, and institutional quality.

Political stability is inversely related to size, Tobin-Q, and ownership but positive relationship with all other variables. Regulatory quality is directly associated with all variables except size, cash flow, Tobin-Q, corruption, and regulatory quality. Similarly, institutional quality is positively associated with all variables except size, Tobin-Q, rule of law, and ownership. Institutional ownership is negatively related to all variables except size, cash flow, and rule of law.

After descriptive analysis, we estimate a regression analysis to investigate the CFV and firms' investment decision-making relationship by adding a few control variables to the model. The model is estimated through FE, two-way FE, one-step SYS-GMM, and one-step DIFF-GMM model. The FE model is decided based on Hausman test statistics[5], which indicates that FE is an appropriate estimation technique for our analysis. After basic analysis statistically insignificant control variables (leverage and liquidity) are sequentially excluded from the regression. We have selected variables that were economically and statistically significant.

Next, table 4.3.3 explains the results of the FE, one-step SYS-GMM, and one-step DIFF-GMM baseline model.

[5] Hausman test statistics (111.78) with P- value (0.000) decided that the FE Model is an appropriate technique.

Table 4.3.3. Cash Flow Volatility and Investment

Variables	FE	Two Step System GMM	Two Step DIFF GMM
CFV	-1.0625***	-0.0217***	-0.0060***
	(0.001)	(0.000)	(0.000)
SIZE	-0.0054***	-0.0012*	-0.0239
	(0.001)	(0.078)	(0.167)
CF	0.3829***	0.0225	-0.9017**
	(0.005)	(0.798)	(0.028)
Tobin-Q	0.1844***	0.0008*	0.0743
	(0.003)	(0.068)	(0.206)
Constant	-1.0328***	-6.6040	-
	(0.005)	(0.798)	
INV_{t-1}	2.7112***	1.2743***	3.6628***
	(0.002)	(0.000)	(0.000)
F-stat	3850.00***	5270.00***	3940.78***
	(0.000)	(0.000)	(0.000)
Instruments	-	21	15
AR (2) P value	-	0.316	
Hansen J Test (P-Value)	-	0.463	0.112
No of firms	334	334	333
R^2	0.7562	-	-
Time Dummy	-	-	-
Obs	4811	4811	4424

Notes: Dependent variable is INV_t calculated as the ratio of capital expenditure to total assets.

Table 4.3.3 reports the CFV effect on firms' investment decision-making. The result of all models reports that CFV has an inverse relationship with firms' investment decision-making. This result implies that as CFV increases it leads to a decrease in firms' investment level by one percent. Hence, we accept our hypothesis (H_1), CFV has an inverse relationship with firms' investment decision-making. This result is also in line with the theoretical and empirical literature. According to Minton and Schrand (1999) CFV affects the firm's investment policy by raising the demand for external financing and the cost of internal financing. According to risk management theories, businesses that create value should maintain steady cash flows (Froot et al., 1993). According to risk management theory, Shapiro and Titman (1986), Lessard and Lightstone (1990), and Tufano (1996) found that firms actively managed risk to get more advantage from decreasing the sensitivity of cash flows. Firms with high CFV face a higher cost of financing and decrease the NPV of their investment. Consequently, CF stability is useful for corporate investment.

In the context of cash holding and cash sensitivities, Opler et al. (1999) cash flow are directly related to cash holding and CFV increases the precautionary needs and cash holding. In this context, high cash holding means a decrease in the investment level. However, cash holding and investment decisions do not depend on each other.

This result is also in line with empirical studies such as, according to Booth and Cleary (2006), the NPV of an investment is uncertain because of the variation in firms' cash flows. Cash flows increase monotonically at a decreasing rate as investment value increases. The capacity of the company to make investments rises with increases in CF. In modeling the NPV function, according to Booth et al. (2001), the volatility of financial slack increases as CFV rises with a decline in future cash flows. Therefore, as financial slack rises, fewer funds will be available for investment, which will result in a decline in investment. The same results are consistent with other empirical studies stating that high volatility anticipate cash flow shortages and that firms will keep more cash to deal with them if they do so even if investment falls. As an alternative, firms in deficit might also borrow money from costly external financial markets, which would reduce investment (Cohen, 2014; Mulier et al., 2014; O'Connor Keefe & Tate, 2013; Vengesai & Kwenda, 2018).

Moreover, the results report that the control variable firm size is significant and negative in all models. This result is similar with the following studies such as Bokpin and Onumah (2009) and Ninh (2007) explain that firm's size is a key factor in determining investment decision-making at the firm level since large enterprises with insufficient human resources or managerial capacity are less likely to invest. Likewise, Pacheco (2017) suggests an inverse relationship between firms' size and investment by assuming that small firms grow more quickly than large firms and consequently require more investment. Furthermore, investment projects of smaller firms, which are often younger and have no operating history, are typically considered riskier, resulting in higher financing costs. These firms are also less diversified and have less collateral to guarantee the loan.

The variable cash flow is positively significant in the FE model but positive and insignificant in the two-step SYS-GMM. However, negative, and significant in the two-step DIFF-GMM model. The result is similar with the theoretical and empirical literature that supports the positive relationship between CFV and investment decision-making. CF is a significant determinant of firms' investment decisions. The presence of CF provides more growth opportunities for the firms. The first argument given by Jensen (1986) is based on the ACT of FCF. He claimed that because the manager spends free cash flows on less profitable projects, his personal interest is given more weight when making investment decisions.

The second argument given by Myers and Majluf (1984) is based on imperfect information. They provide an explanation for why the financing from outside sources costly in comparison to the source of internal financing because of the problem of imperfect information. Hence, sometimes firms leave projects if they have positive NPV. According to their explanation, the issue of asymmetric information causes the cost of external financing to be higher than the cost of internal financing. Fazzari et al., (1987) explained that financially constrained firms are more reliant on their CF when making their capital investment decision. The following empirical studies are in line with (Cleary, 1999; Fazzari et al., 1987; Hoshi et al., 1991; Hubbard et al., 1995; Kaplan & Zingales, 1997; Sun & Yamori, 2009; Vermeulen, 2000).

In this model, we have measured corporate growth opportunities by using Tobin-Q. Tobin-Q has a significant and positive impact on investment in all models except the two-step DIFF-GMM. Growth opportunities are insignificantly related to investment in the two-step DIFF-GMM model. The positive Tobin-Q coefficient indicates that high-growth firms have high investment ratios, implying higher investment levels when compared to low-growth firms (Vengesai & Kwenda, 2018). High-growth firms get benefit from easy access to capital markets and low borrowing costs as a result of their high credit rating (McConnell & Servaes, 1995). High-growth firms as opposed to low-growth firms, typically reduce information asymmetry and provide better opportunities for raising funds. Low-growth firms are considered to have fewer cash flows and funding availability. This result is also in line with the following previous studies (Amidu & Abor, 2006; Li et al., 2006; Odit & Chittoo, 2008; Ullah, 2017).

The positive and significant coefficient of the lagged investment help to explain how previous period investment directly influences current investment and how firms' investment levels encourage further investment in subsequent periods.

Next, in table 4.3.4 results of FE, two-step SYS-GMM, and two-step DIFF-GMM are reported which explain the impact of CFV on investment by considering the role of institutions.

Table 4.3.4: Impact of Cash Flow Volatility on Investment- Role of Institutions

	CORR			RL			PS		
Variables	FE	Two-Step SYS GMM	Two-Step DIFFGMM	FE	Two- Step SYS GMM	Two- Step DIFF GMM	FE	Two-Step SYS GMM	Two-Step DIFFGMM
CFV	-0.1165***	-0.0423***	-0.1275***	0.3164***	0.0405***	0.3592***	0.0681***	-0.0064***	0.0815***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INST	-0.0693***	-0.0111	-0.0050	-0.1507**	-0.0296**	-0.0141*	-0.0219*	-0.0078**	0.0117
	(0.008)	(0.164)	(0.601)	(0.015)	(0.024)	(0.073)	(0.088)	(0.049)	(0.620)
CFV*INST	2.4702***	0.4807	2.8156***	0.3756***	0.0715***	0.4204***	0.0419***	0.0081***	0.0469***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	-0.0063***	-0.0020	-0.0012	-0.0056***	-0.0006	-0.0009	-0.0062***	-0.0017	-0.0018
	(0.001)	(0.069)	(0.823)	(0.002)	(0.468)	(0.385)	(0.003)	(0.261)	(0.737)
CF	0.3903***	-0.0507***	0.0097	0.3894***	-0.0396**	0.0119	0.3896***	-0.0524***	-0.0650***
	(0.005)	(0.000)	(0.836)	(0.005)	(0.010)	(0.929)	(0.005)	(0.002)	(0.005)
Tobin-Q	0.1862***	0.0001	0.0157***	0.1858***	0.0002	0.0163*	0.1858***	0.0003	0.0188
	(0.005)	(0.799)	(0.000)	(0.003)	(0.634)	(0.051)	(0.003)	(0.578)	(0.170)
Constant	-1052.60***	137.17***	-	-1050.28***	106.92*	-	-1051.02***	141.49***	-
	(0.005)	(0.000)		(0.005)	(0.010)		(0.005)	(0.002)	
$INV_{(t-1)}$	-2.7640***	1.2703***	-3.7412***	-2.7684***	1.2715***	-3.7394***	-2.7644***	1.2708***	-3.7407***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)
$\delta2_u$	9.8323	-	-	9.8446	-	-	9.8334	-	-
$\delta2_v$	0.6102	-	-	0.6101	-	-	0.6102	-	-
rho	0.9961	-	-	0.9962	-	-	0.9961	-	-
F-stat	3100.00***	7000.00***	2370.00***	389.40***	115.00***	299.00***	285.00***	663.00***	332.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	29	21	-	36	28	-	29	21
AR (2) P value	-	0.316	0.306	-	0.316	0.307	-	0.316	0.304
Hansen J (P value)	-	0.316	0.622	-	0.884	0.465	-	0.316	0.733
No of Firms	334	334	333	334	334	333	334	334	333
R^2	0.7568	-	-	0.7572	-	-	0.7570	-	-
Time Dummy	-	-	-	-	-	-	-	-	-
Obs	4811	4811	4424	4811	4811	4424	4811	4811	4424

	RQ			IQ			IO		
Variables	**FE**	**Two-Step SYS GMM**	**Two-Step DIFFGMM**	**FE**	**Two Step SYSGMM**	**Two Step DIFFGMM**	**FE**	**Two Step SYS GMM**	**Two Step DIFFGMM**
CFV_10	0.1006***	0.0005***	0.1139***	-0.0118**	0.0545**	-0.0002***	-0.0062***	0.0568***	0.0096**
	(0.000)	(0.004)	(0.000)	(0.014)	(0.033)	(0.0(05)	(0.000)	(0.001)	(0.024)
INST	-0.1511*	-0.0190*	0.3131	0.1695**	-0.3205*	-0.0027	0.0010**	0.0016**	0.0026
	(0.089)	(0.075)	(0.458)	(0.037)	(0.054)	(0.986)	(0.035)	(0.040)	(0.355)
CFV*INST	0.2196***	0.0439***	0.236***	0.0839***	2.4827***	0.3767***	0.0142***	0.0762**	0.0547**
	(0.000)	(0.000)	(0.000)	(0.002)	(0.005)	(0.000)	(0.000)	(0.025)	(0.049)
SIZE	-0.0055***	-0.0022*	-0.0407	-	-0.0052	-0.0063	-0.00008	-0.0002**	-0.0011***
	(0.001)	(0.064)	(0.390)		(0.608)	(0.466)	(0.254)	(0.044)	(0.001)
CF	0.3895***	-0.0497***	-1.124	0.00005**	-0.0099	-0.0405	-	0.3734**	-0.0043*
	(0.005)	(0.000)	(0.427)	(0.013)	(0.476)	(0.781)		(0.010)	(0.099)
Tobin-Q	0.1864***	0.0001	0.1248	-	-0.0012	0.0406*	-	0.00008	-
	(0.003)	(0.765)	(0.381)		(0.571)	(0.074)		(0.272)	
Constant	-1050.78***	134.26***	-	0.3489	27.303	-	0.0219***	-10.0470**	-
	(0.005)	(0.000)		(0.169)	(0.476)		(0.000)	(0.011)	
$INV_{(t-1)}$	-2.7595***	1.2703***	-3.7137***	-1.8737	1.4217***	-3.7410***	0.4878***	0.6299***	0.5194***
	(0.002)	(0.000)	(0.000)	(0.201)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\delta 2_u$	9.8235	-	-	14.1156	-	-	0.0072	-	-
$\delta 2_v$	0.6107	-	-	0.6635	-	-	0.0059	-	-
rho	0.9962	-	-	0.9978	-	-	0.5991	-	-
F-stat	300.00***	648.00***	197.51***	487.69***	587.86***	216.07***	77.87***	564.29***	17.77***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	29	14	-	29	28	-	64	36
AR (2) P value	-	0.316	0.228	-	0.317	0.305	-	0.438	0.184
Hansen J (P value)	-	0.411	0.130	-	0.997	0.836	-	0.215	0.282
No of firms	334	334	333	380	334	333	207	195	206
R^2	0.7567	-	-	0.8997	-	-	0.8080	-	-
Time Dummy	-	-	-	-	-	-	-	-	-
Obs	4811	4811	4424	4967	4289	3908	1999	1882	1722

Notes: Same as table 4.3.3 except this table reports the role of institutional variables in the relationship between CFV and investment decision making. Dependent variable: INV

The results of table 4.3.4 show that the variable corruption is negative and significant in the FE model. However, corruption is also negative in the two-step SYS-GMM, and the DIFF-GMM models but insignificant. The negative sign of corruption is in line with Wheeler and Mody (1992) who stated that corruption declines the structure of the institutional atmosphere as it increases the operational cost, raises uncertainty, and thus, discourages investment. Sarkar and Hasan (2001) suggested that corruption changes the efficient allocation of investable resources by transferring resources from productive sectors to unproductive sectors, hence reducing the sectoral investment capacity for production. Therefore, investments are based on the entrepreneurs' ability to pay bribes rather than their rates of return. Additionally, bribes are also typically one of the main components of any act of corruption. They increases the production cost, which in turn raises output prices, decreases demand, and eventually lowers the additional output-capital ratio for the activity (Rose-Ackerman, 1996).

This result yields a conclusive finding with the following empirical studies such as (Ajisafe, 2016; Asiedu & Freeman, 2009; Emerson, 2006; Fisman & Svensson, 2007; O'Toole & Tarp, 2014). They claim that bribery payments work similarly to taxes on firms and that a one-percent point increase in the bribery rate results in a 3% decline in firms' growth. Capital investment becomes less effective when bribes are paid because the marginal return on investment per unit is lower due to the cost of informal bribes payments that distorts the optimal allocation of capital.

However, the interactive term is positive and significant in all models, explaining that the relationship between CFV and investment is positive in the presence of corruption in the economy.

Additionally, to analyze the conditional effect of CFV on investment, given the role of corruption, below equation this study takes the partial derivative with respect to CFV. The partial derivative leads to equation (4.19) below

$$INV_{it} = \rho_{11} + \rho_{12} INV_{it-1} + \rho_{13} CFV_{it} + \rho_{14} CORR_t + \rho_{15}(CFV_{it} * CORR_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{13} + \rho_{15}\, CORR_{it} \quad (4.19)$$

where both coefficients $\rho_{13} < 0, \rho_{15} > 0$ have opposite signs in all models, which indicates that the role corruption plays a substitution role in explaining the CFV relationship with investment. Further, results reveal that corruption strengthens the CFV and investment relationship.

The variable of rule of law is negative and significant in all models which indicates that if rules are not properly implemented in a country it makes the investment riskier which leads to a decrease in investment level. However, their interactive term is positive and significant in all models which explains that if the rule of law is properly implemented in a country, then firms with volatile cash flows lead to increase investment. The direct impact of the rule of laws on firms' investment level is in line with the following previous studies (Chen et al., 2021; Fung & Tsai, 2012; Gwartney et al., 2006; Shahid & Abbas, 2019) which implies that strong rule of laws and good quality governance leads to decrease the risk of uncertainty which provides confidence to investors to increase the level of investment.

To investigate the conditional effect of CFV on investment, given the role of rule of law, this study takes the partial derivative of the below equation with respect to CFV. The partial derivative leads to equation (4.19) below

$$INV_{it} = \rho_{21} + \rho_{22}INV_{it-1} + \rho_{23}CFV_{it} + \rho_{24}RL_t + \rho_{25}(CFV_{it} * RL_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{23} + \rho_{25}\, RL_{it} \tag{4.20}$$

where both coefficients $\rho_{23} > 0$, $\rho_{25} > 0$ has similar signs in all models, which indicates that rule of law role is complementary in explaining the CFV relationship with investment, and rule of law strengthens the CFV and investment relationship.

The variable political stability is negative and statistically significant in all models except the two-step DIFF-GMM model. The negative relationship may be because in Pakistan the political environment is not stable that increase the risk of investment, which in turn, discourages the investment level. However, the interactive term is positive and significant in all models, which implies that if the political environment is stable in a country, firms with volatile cash flow increase their investment level.

To examine the conditional effect of CFV and political stability on investment, the partial derivative of the above equation has been taken with respect to CFV

$$INV_{it} = \rho_{31} + \rho_{32}INV_{it-1} + \rho_{33}CFV_{it} + \rho_{34}PS_t + \rho_{35}(CFV_{it} * PS_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{33} + \rho_{35}\, PS_{it} \tag{4.21}$$

Both coefficients have similar signs in FE and two-step DIFF-GMM model. However, opposite signs in the two-step SYS-GMM model. The majority of results indicate that role of political stability plays a substitution role in explaining the CFV relationship with investment.

The variable regulatory quality is also negative and significant in all models except the two-step DIFF-GMM. The negative sign may be due to poor regulatory quality and weak institutional system in a country firms decrease the investment level. The interactive variable is significant and negative in the FE model while positive and significant in other models.

To analyze the conditional effect of CFV and regulatory quality on investment, the partial derivative of the above equation has been taken with respect to CFV

$$INV_{it} = \rho_{41} + \rho_{42}INV_{it-1} + \rho_{43}CFV_{it} + \rho_{44}RQ_t + \rho_{45}(CFV_{it} * RQ_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{43} + \rho_{45}\, RQ_{it} \qquad (4.22)$$

Both coefficients have similar signs in all models which implies that regulatory quality strengthens the CFV and investment relationship. Additionally, regulatory quality plays a substitution role in explaining the CFV and investment relationship.

The next variable institutional quality is negative and significant in the two-step SYS-GMM while positive and significant in the FE model. However, negative, and insignificant in the two-step DIFF-GMM. The majority of model results indicate the negative impact of institutional quality on investment this may be because investors are not willing to risk their capital, given the weak quality of institutions (Andrianova et al., 2012; Arestis & Demetriades, 1997).

The term CFV*IQ is positive and significant in all models implying that a firm with volatile cash flows increases investment, given the better institutional quality.

To capture the conditional effect of CFV and institutional quality on investment, the partial derivative of the above equation has been taken with respect to CFV

$$INV_{it} = \rho_{51} + \rho_{52}INV_{it-1} + \rho_{53}CFV_{it} + \rho_{54}IQ_t + \rho_{55}(CFV_{it} * IQ_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{53} + \rho_{55}\, IQ_{it} \qquad (4.23)$$

Both coefficients have opposite signs in the FE model. However, similar signs in the two-step SYS-GMM and two-step DIFF-GMM. $\rho_{55} > 0$, which implies that institutional quality strengthens the CFV and investment relationship. Additionally, Institutional quality plays a substitution role in explaining the CFV and investment relationship.

Further, the term institutional ownership is also positive and insignificant in all models except the two-step DIFF-GMM model. Institutional investors affect corporate investment decisions which ultimately affects the firm value. This result is in line with the following previous empirical studies (Del Guercio & Hawkins, 1999; Gompers & Metrick, 2001; McConnell & Muscarella, 1985; Shleifer & Vishny, 1986; Smith, 1996) found a positive relationship between institutional ownership, investment, and firm performance. The studies consider that institutional investors are diverse economic agents when they are implementing governance and influencing corporate decisions. Institutional investors include banks, insurance companies, hedge funds, investment advisors, and pension funds classified according to the differences in benefits and monitoring effectiveness, directly and significantly affected the investment performance of a corporation with (i) Chief Executive Officer (CEO's) incentives not effectively aligned with the value of a firm (ii) limited provision of internal governance support the stockholders right (iii) Weak governance system implemented by the company board of directors). The results recommend that institutional ownership works as a substitution for the other types of governance within the firm. Institutional investors play a significant role especially when the internal governance system is very weak. Higher institutional ownership has a significant role in improving the firm performance through institutional investors' monitoring effectiveness and influences over the capital investment decisions. Additionally, independent and informed institutional investors are the most effective monitors (Fung & Tsai, 2012).

The interactive term CFV*IO is also positive and significant in all models which indicates that the role of institutional ownership is important for corporate investment decisions and acts like an effective monitor which in turn encourages firms to increase investment with volatile cash flows.

To capture the conditional effect of CFV and institutional ownership on investment, the partial derivative of the above equation has been taken with respect to CFV

$$INV_{it} = \rho_{61} + \rho_{62} INV_{it-1} + \rho_{63} CFV_{it} + \rho_{64} IO_t + \rho_{65}(CFV_{it} * IO_t) + Z_{it}\delta' + \eta_i + \varphi_t + \varepsilon_{it}$$

$$\frac{\partial INV_{it}}{\partial CFV_{it}} = \rho_{63} + \rho_{65}\, IO_t \qquad (4.24)$$

Both coefficients have opposite signs in the FE model. However, similar signs in the two-step SYS-GMM and the two-step DIFF-GMM model. The $\rho_{65} > 0$ in all models which indicates that institutional ownership strengthens the CFV and investment relationship. The FE models show that institutional ownership plays a substitution role in explaining the CFV and investment relationship. However, the remaining models show that the role of institutional ownership is complementary in explaining the CFV and investment relationship.

The CFV impact on investment is conditional on different levels of institutional factors. This study uses the 25^{th}, 50^{th}, and 75^{th} percentiles of institutional variables for analysis. The results are given in below table 4.3.5.

Table 4.3.5: Conditional Effect of Cash Flow Volatility on Investment at Varying Levels of Institutional Factors

Variables	CORR			RL			PS		
Percentiles	**FE**	**Two-Step SYS GMM**	**Two-Step DIFF GMM**	**FE**	**Two-Step SYS GMM**	**Two Step DIFF GMM**	**FE**	**Two- Step SYS GMM**	**Two Step DIFF GMM**
P_{25} (Low)	9.7642***	1.8807***	11.1348***	-0.01627***	-6.2913***	-36.88***	-0.0403***	-0.0275***	-0.0397***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
P_{50} (Medium)	9.7642***	1.8807***	11.1348***	0.0092	-5.8059***	-34.0211***	-0.0294***	-0.0254***	-0.0278***
	(0.000)	(0.000)	(0.000)	(0.121)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
P_{75} (High)	10.4847***	2.0209***	11.9561***	0.0317***	-5.3792***	-31.5117***	-0.0161***	-0.0192***	0.0080***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	IQ			**IO**			**RQ**		
P_{25} (Low)	-0.0183***	-0.1368**	-0.0293***	-0.0005	0.0265***	-0.0121	-0.0547***	-0.0305***	-0.0532***
	(0.000)	(0.015)	(0.000)	(0.616)	(0.000)	(0.188)	(0.000)	(0.000)	(0.000)
P_{50} (Medium)	-0.0143***	-0.0181	-0.0113***	0.0023	0.0111**	-0.0232	-0.0379***	-0.0272***	-0.0351***
	(0.002)	(0.440)	(0.000)	(0.102)	(0.038)	(0.111)	(0.000)	(0.000)	(0.000)
P_{75} (High)	-0.0021	0.3432***	0.0436***	0.0047***	-0.0016	-0.0323*	-0.0255***	-0.0247***	-0.0218***
	(0.742)	(0.003)	(0.000)	(0.008)	(0.869)	(0.090)	(0.000)	(0.000)	(0.000)

Notes: ***, **,* are one, five, and ten percent levels of significance. P_{25}, P_{50}, P_{75} are the 25^{th}, 50^{th} and 75^{th} percentiles. P- values are given in parenthesis

Table 4.3.5 explains the impact of CFV on investment at varying levels of institutional factors. The result shows that the CFV impact on investment is significant and positive in all models at varying levels of corruption. The magnitude of the coefficients increases with an increase in corruption levels, which concludes that an increasing level of corruption in an economy, firm with volatile cash flow leads to an increase the investment.

This result has supported by the argument of Dixit et al. (1994) who stated that firm investment in the case uncertainty shows that if capital is partially irreversible, then higher uncertainty regarding future returns on investment raises the possibility of delaying an irreversible investment. Additionally, in many developing countries, firms also occasionally pay bribes to secure profitable government contracts, access to raw materials at state-subsidized prices, credit at below-market interest rates, limited access to foreign currency, or collude with tax collectors to decrease tax liabilities (Courtney et al., 2002; Eade & Hall, 1999).

The variable rule of law is negative and significant in all models and at varying percentile levels, but their magnitude is decreasing over percentiles. This result implies that if rules are implemented strictly in an economy, it encourages the firms to invest more even if firms' cash flows are volatile because this makes the investment less risky.

Further, the variable political stability is negative and significant in all models, but their magnitude is decreasing over percentiles and converges towards positive, which implies that in a politically stable environment, business risk decreases which motivates the firms to increase investment.

Similarly, the variable institutional quality is negative and significant at lower and median levels in all models whereas at a higher level the magnitude becomes positive under a two-step SYS-GMM and DIFF-GMM models while negative and insignificant in the FE model. Overall, findings reveal that the improvement in institutional quality in a country, with high CFV, firms also increase investment.

Next, the institutional ownership variable at a lower level is negative and significant in the FE model but positive and significant in the two-step SYS-GMM model. However, negative but insignificant in the two-step DIFF-GMM. At a higher level, the magnitude of a coefficient is positive and significant at a one percent level in the FE model while negative and significant in the two-step DIFF-GMM model. However, insignificant in the two-step DIFF-GMM model. This result indicates that institutional ownership is important for corporate investment decisions and acts as an effective monitor which in turn encourages the firms to increase investment even firms facing volatile cash flows.

The variable regulatory quality holds a negative and significant sign in all models, but the magnitude of the coefficients is decreasing over percentiles with a negative sign. This result implies that with the improvement of the regulatory quality system in a country, firms with volatile cash flows increase investment.

4.4 Cash Flow Volatility and Dividend Payout Policy: Role of Internal and External Factors

The descriptive stats of the CFV, dividend payout policy, firm specific internal, and external factors are given in table 26 for the overall sample of 380 listed non-financial firms of Pakistan over the period of 1999-2018.

Table 4.4.1. Summary Stats: CFV and Dividend Payout Policy-Role of Internal and External Factors

Variables	N	Mean	SD	MIN	MAX	P25	P50	P75
DPO	996	1.0022	6.8937	-113.599	129.839	0.2330	0.4183	0.6363
CFV	2553	172.47	5097.04	0.0000	207295	0.03816	0.06724	0.17173
LIQ	2566	197.515	1692.99	0.0000	87503.72	62.2582	99.159	144.31
GROWTH	2367	38.1203	2789.37	-21977.2	197699.2	-0.88061	0.62221	2.5957
Tobin-Q	2795	3.0882	0.0433	2.9027	3.7285	3.0748	3.0781	3.0865
FAT	2546	2.0135	0.0872	1.9888	5.1271	2.0073	2.0079	2.0091
OCF	2553	1.1796	6.9274	-102.91	174.554	0.0013	0.09100	0.5147
TR	2457	24.6578	719.18	-14972.73	39019.14	-0.3856	15.6968	32.269
INF	3040	7.5241	5.1468	0.4002	20.67	3.8712	6.4672	9.1500
GDP	3040	977.18	109.83	807.82	1197.91	878.13	990.36	1041.34
IQ	2888	0.4913	0.3466	0.0187	1.0000	0.1332	0.4488	0.9551
IO	1544	0.5729	0.2582	0.0000	0.9995	0.3982	0.6185	0.7698

Notes: This table report the summary stats of all variables included in the model.

In this analysis, we normalize these firm-specific determinants to standardize the unit of measurement. This process reduced their percentiles values to the range between zero and a hundred. For this analysis, CFV is estimated by taking five years window. This analysis of GDP per capita has been used to measure GDP growth and GDP deflator proxy has been used to measure inflation. The percentile value explains the variable at lower (P25), medium (P50), and higher (P75) levels. The value of institutional variables ranges between zero and one. The other summary statistics summarized the mean, minimum value, maximum value, standard deviation, and percentiles at the 25^{th}, 50^{th}, and 75^{th} levels. Overall, the result explains that GDP per capita is a highly volatile variable in this analysis.

Table 4.4.2. Correlation Matrix

Variables	CFV	LIQ	GROWTH	Tobin-Q	FAT	OCF	TR	GDP	IQ	IO
CFV	1									
LIQ	0.5343	1								
GROWTH	-0.048	-0.0741	1							
Tobin-Q	0.1604	0.052	0.0302	1						
FAT	0.4785	0.9284	-0.0585	0.0446	1					
OCF	0.0388	0.0012	0.0249	0.0057	-0.016	1				
TR	0.0135	0.0008	-0.0027	0.0261	0.0025	0.0134	1			
INF	0.1008	0.0322	0.0439	-0.0314	0.0158	-0.0054	-0.022	1		
GDP	-0.1055	-0.0216	-0.0035	0.0058	-0.0232	0.0256	0.0121	-0.6091		
IQ	-0.0127	-0.0646	0.2114	-0.0617	-0.0471	-0.05	0.0213	-0.0842	1	
IO	0.1509	0.1177	-0.0285	0.0845	0.097	0.0111	-0.0637	0.1926	-0.3338	1

Table 4.4.2 report the correlation among explanatory variables. Cash flow volatility shows a direct relationship to all variables except growth opportunities, GDP, and institutional quality. The internal factor operating cash flows is inversely related to dividend payout ratio, GDP, fixed asset turnover, and institutional quality while directly related to other variables. Tax rate is directly related to all variables except growth opportunities, inflation, and institutional ownership.

Inflation is inversely related to Tobin-q, operating cash flows, GDPC, tax rate, and institutional quality while positively related to all other variables. GDP is inversely related to all other variables except Tobin-q, operating cash flows, tax rate, and institutional ownership. Institutional quality is inversely related to all other variables except dividend payout ratio, growth opportunities, and tax rate. Institutional ownership is directly related to all variables except growth opportunities, tax rate, GDP, and institutional quality.

Next, we estimate a regression analysis to analyze the CFV and firms' dividend distribution policy by adding a few control variables to the model. The model is estimated through the FE method. The FE model is decided on the Hausman test statistics[6], which indicates that FE is an appropriate estimation technique for our analysis. Next, table 4.4.3 explains the results of the baseline model CFV and Dividend payout policy with some important control variables. As well as this table also reports the results of firm-level internal and external factors in the relation between CFV and dividend payment decision-making at a firm level.

[6] Hausman test statistics (11.99) with P- value (0.035) decided that the FE Model is an appropriate technique.

Table 4.4.3. Cash Flow Volatility and Dividend Payout Policy: Role of Internal and External Factors

Variables	(1)	(2)	(3)	(4)	(5)	(6)
CFV	0.0261***	0.0012	-0.0060	0.0750***	-0.0366	28.7780**
	(0.003)	(0.925)	(0.540)	(0.003)	(0.315)	(0.047)
CF	-	0.8373*	-	-	-	-
		(0.056)				
CFV*CF	-	0.0213**	-	-	-	-
		(0.029)				
TAX	-	-	0.0148***	-	-	-
			(0.000)			
CFV*TAX	-	-	0.0013**	-	-	-
			(0.015)			
INF	-	-	-	-0.2836**	-	-
				(0.029)		
CFV*INF	-	-	-	-0.3415***	-	-
				(0.003)		
GDP	-	-	-	-	0.1598*	-
					(0.096)	
CFV*GDP	-	-	-		0.0099*	-
					(0.095)	
IO	-	-	-	-	-	0.9428**
						(0.012)
CFV*IO	-	-	-	-	-	1.5566**
						(0.043)
LIQ	0.2137*	0.2147*	0.2184*	0.1927	-	0.2923
	(0.061)	(0.060)	(0.064)	(0.772)		(0.570)
Tobin-Q	5.9637**	5.8824**	6.0191**	2.0725**	1.3791**	5.1762
	(0.039)	(0.031)	(0.036)	(0.034)	(0.029)	(0.294)
FAT	4.0834	4.0672	4.0556	13.3069*	14.2622***	14.8561***
	(0.310)	(0.312)	(0.317)	(0.062)	(0.003)	(0.002)
GROWTH	0.8671	0.8450	1.0466	-0.1537	-	-0.5464*
	(0.401)	(0.414)	(0.369)	(0.683)		(0.062)
Constant	-27.3076*	-28.3550*	-28.1854*	31.2905**	-33.8932***	-46.5965***
	(0.096)	(0.073)	(0.079)	(0.014)	(0.001)	(0.003)
N	808	808	710	581	637	332
R-Square	0.048	0.049	0.053	0.408	0.407	0.370
Time Dummy	-	-	-	-	-	-
No of Firms	144	144	143	143	144	116

Notes: Dependent variable is DPO constructed as dividend per share/ earning per share. P-values are given in parentheses. The baseline model results are reported in first column.

Table 4.4.3 column (1) the variable CFV appears to be statistically significant and positive at a 1% level. This result implies that with a one percent increase in CFV, firms increase the dividend payment by 2.61%. Our results support the cost of agency Theory, Jensen and

According to Jensen and Meckling (1976), a rise in dividends decrease the free cash flow, which will result in agency costs. The possibility of agency cost increases with the size of the cash flow volatility. A higher dividend payout can be employed by a firm with higher cash flow uncertainty to offset the non-value maximizing investments. Thus, ACT anticipates that firms with high CFV will distribute a large percentage of their CF as dividends. Our result is consistent with the other studies that support the ACT explanation that can be found from the following studies (Amidu & Abor, 2006; Daniel et al., 2007; Dempsey & Laber, 1992; Deng et al., 2013; Jing, 2005; Rozeff, 1982; Wang et al., 1993)

The control variable liquidity is directly and significantly related to dividend, implying that as liquidity increases by one percent firms increase the dividend payment by 21.37 percent. This result is supported the signaling theory and suggests that the position of liquidity is an important firm-specific determinant of dividend payment decisions. The result implies that a good liquidity position of a firm increases the firm ability to pay a dividend (Ahmed & Javid, 2008; Amidu & Abor, 2006; Anil & Kapoor, 2008; Ho, 2003; Mehta, 2012; Tahir & Mushtaq, 2016).

In this analysis, we have used the variable Tobin-q as a proxy for investment opportunities that is positive and significant at the five percent level. The coefficient of Tobin-Q explains that as the Tobin-Q ratio increases by one unit the firms' dividend payment increases by 5.96 percent. This result is not according to our expectations but in line with the Aivazian et al. (2003) and Al-Malkawi (2007) explain investment opportunities and dividend payments direct relationship, indicating that companies with lower growth rates typically have lower investment expenditures, which result in a higher level of retained earnings. According to the agency theory, these companies should increase dividend payments to lower the agency costs between shareholders and managers. Otherwise, the managers might make unprofitable investments and spend too much money (Jensen, 1986). As a result, a dividend in this situation would serve as an incentive by diverting resources from the company and lowering the agency costs of free cash flows.

The other two control variables fixed asset turnover and growth opportunities are found to be insignificant in baseline and most of the interactive models.

Next, to capture the impact of firm-level internal factors in the relationship between CFV and firm dividend payment decisions we have taken the operating cash flows and corporate tax rate as important firm-specific determinants. Column (2) the variable operating cash flows is significant and positive at a five percent level which indicates that as cash flows increases by one percent firms increase the dividend payment by 2.13 percent. According to FCF hypothesis by Jensen (1986) assert that companies want to firstly use their cash resources in profitable projects, before distributing dividends from the leftovers. From the company perspectives, cash earned through operations is considered to be ideal source of funding for the company to use for dividend distribution because it significantly influences the level of payout from the three major sources of CF such as operating, investing, and financing.

The result also suggests that firms with stable cash flows are more able to pay a higher dividend to stockholders relative to firms with unstable cash flows because firms in a stable earning position are usually able to forecast approximately future earnings will be, and hence, they are more likely to pay a higher dividend to stockholders(Amidu & Abor, 2006; Anil & Kapoor, 2008).

The interactive term CFV*CF is also positive and significant at a five percent level which implies that as firms operating cash flow level increases, cash flow volatile firms offer high dividends on stocks.

Additionally, in order to analyze the role of operating cash flows in the relationship between CFV and dividend payment, this study takes the partial derivative of the below equation with respect to CFV. The partial derivative leads to equation (4.25) below

$$DPO_{it} = \delta_{11} + \delta_{12}DPO_{i,t-1} + \delta_{13}CFV_{i,t} + \delta_{14}CF_{it} + \delta_{15}(CFV_{it} * CF_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \quad (4.25)$$

$$\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{13} + \delta_{15}CF_{it}$$

where both coefficients $\delta_{13} > 0$, $\delta_{15} > 0$ has similar signs in our model, which indicates that the operating cash flow's role is complementary in explaining the CFV relationship with dividend payment. Further, results reveal that the operating cash flows strengthen the CFV relationship with dividend payments.

Column (3) the variable tax rate is also significant and positive at the one percent level which indicates that the tax rate is directly and significantly related to firms' dividend payment decision-making. This result is in line with the tax-adjusted theory, Masulis and Trueman (1988) model, Farrar and Selwyn (1967) concluded that as tax liability increases, the preference for a dividend payout also increases. Tax-adjusted models assume that investors want to assure a high level of expected return on the dividend payment stocks. According to Masulis and Trueman (1988) model expects that if investors have different tax liabilities, they won't have the same optimal firms' dividend policy. They conclude that the preference for dividend payment increases as the tax burden increases (decreases). Investors are assumed to maximize their after-tax income in the tax-adjusted model.

Investors are assumed to maximize their after-tax income in the tax-adjusted model. In a partial equilibrium framework, Farrar and Selwyn (1967) concluded that individual investors decided the level of personal and corporate leverage as well as whether to accept corporate distributions in the form of dividends or capital gain. Our result is also in line with the following empirical studies (Amidu & Abor, 2006; Gill et al., 2010).

The interactive term CFV*TAX is also positive and significant at the five percent level which explains that as the corporate tax rate increases firms with unstable cash flow also pay a higher dividend. This result is supported by the tax adjustment theory and Masulis and Trueman (1988) model predicts that as tax liability increases firms' preference to pay higher dividends also increases.

Moreover, to analyze the impact of corporate tax on the CFV and dividend payment relationship, this study takes the partial derivative of the below equation with respect to CFV. The partial derivative leads to equation (4.26) below

$$DPO_{it} = \delta_{21} + \delta_{22}DPO_{i,t-1} + \delta_{23}CFV_{i,t} + \delta_{24}TAX_{it} + \delta_{25}(CFV_{it} * TAX_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \quad (4.26)$$

$$\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{23} + \delta_{25}TAX_{it}$$

where both coefficients $\delta_{23} < 0$, $\delta_{25} > 0$ have opposite signs in our model, which indicates that corporate tax rate plays a substitution role in explaining the CFV relationship with dividend payment. Further, results reveal that corporate tax strengthens the CFV relationship with dividend payment.

The next variable of interest is inflation which is given in column (4) negative and significant at the five percent level which reports that inflation has a significant and inverse relationship with dividend payment. Our result is contradicting the Modigliani and Cohn

(1979) who found a positive relationship between inflation and dividend payment. Most of the researcher agrees that their results are puzzling and not sustainable in the long run. However, our results are consistent with the Jain and Rosett (2006) reexamine the puzzling result documented by Modigliani and Cohn (1979) and concluded that Modigliani and Cohn (1979) anomaly is a period-specific and positive relationship between inflation and dividend payment is not hold in the long run.

It is difficult for finance theory to account for this inverse relationship. It is sometimes argued that the corporate sector may not be able to pass on higher prices. Moreover, Feldstein (1981) pointed out that inflation increases the tax burden on firms. Since inflation distorts the price system and raises the transaction costs, this is also a problem of the macroeconomic component. As a result, a high inflation rate significantly affects economic growth (Barro, 1996; Faria & Carneiro, 2001). Of course, the stock market also suffers from this. Hence, inflation decreases stock returns. This result is consistent with other empirical studies stating that changes in macroeconomic indicators like inflation inversely affect dividend payment (Chen et al., 2005; Khan et al., 2018; Rashid & Rahman, 2008; Silalahi, 2021; Tarika & Seema, 2011).

The interactive term CFV*INF is also negative and significant at a one percent level which indicates that if the inflation rate is higher in a country cash flow volatile firms decrease the dividend payment to shareholders because higher inflation hurt the stock market and ultimately stock returns.

Additionally, to analyze the role of inflation in the relationship between CFV and dividend payment, this study takes the partial derivative of the below equation with respect to CFV. The partial derivative leads to equation (4.27) below

$$DPO_{it} = \delta_{31} + \delta_{32} DPO_{i,t-1} + \delta_{33} CFV_{i,t} + \delta_{34} INF_{it} + \delta_{35} (CFV_{it} * INF_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \qquad (4.27)$$

$$\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{33} + \delta_{35} INF_{it}$$

where both coefficients $\delta_{33} > 0$, $\delta_{35} < 0$ have opposite signs in our model, which indicates that inflation plays a substitution role in explaining the CFV relationship with dividend payment. Further, results reveal that role of inflation weakens the CFV relationship with dividend payment.

In column (5) the GDP per capita variable that has been used as a proxy for economic growth is positively significant which indicates that GDP growth has a direct relationship with dividend payment. The findings are consistent with the Romus et al. (2020), which displays that GDP growth directly affects consumer purchasing power, as a result, the demand for company products increases. The increase in demand for the product will increase the company's sales. High sales lead to an increase in the profitability of a company and high profitability will affect the firms' dividend payout policy. Therefore, an increase in GDP growth is directly related to dividend payout policy. The direct relationship between GDP growth and dividend payment can be seen from the following empirical studies (Amidu & Abor, 2006; Basse & Reddemann, 2011; Chen et al., 1986; Kaimba, 2010; Mohiuddin et al., 2008; Mundati, 2013; Nyamute, 1998).

The interactive term CFV*GDP is positive and significant at a one percent level which indicates that if economic growth is higher in a country firm makes a direct relationship between CFV and dividends. This is because a positive GDP per capita increases consumer purchasing power. As a result, it increases the demand for the company's product. This is a good indicator because the company revenue increases and firms receive stable cash flows. The dividend policy is determined by the company's performance. When company profitability increases it leads to pay a higher dividend to stockholders. After-tax profits are distributed partially as dividends to shareholders and others held in the company (retained earnings). The dividend payout is also higher if the company's profit is high. For shareholders to enjoy high dividends, management will work to maximize profits in order to increase the company's capacity to pay dividends. Large shareholders' profits make it possible for stockholders to receive substantial dividends.

Next, the conditional effect has been measured by taking the derivative of below equation w.r.t CFV.

$$DPO_{it} = \delta_{41} + \delta_{42}DPO_{i,t-1} + \delta_{43}CFV_{i,t} + \delta_{44}GDPG_{it} + \delta_{45}(CFV_{it} * GDPG_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \tag{4.28}$$

$$\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{43} + \delta_{45}GDPG_{it}$$

where both coefficients $\delta_{43} < 0, \delta_{45} > 0$ have opposite signs in our model, which indicates that GDPG plays a substitution role in explaining the CFV relationship with dividend payment. Further, results reveal that role of GDPG strengthens the CFV relationship with dividend payment.

In column (6), the variable institutional ownership is positive and significant at the five percent level which indicates that if firms mostly share held by the institution firms offer a higher dividend. This result also supports the agency and signaling theory and in line with the empirical literature recommends that institutions do not monitor directly the operations of a firm but push the opportunist's managers to allocate free cash flow available to the managers and they should not have any such type of project where they can utilize it for the purpose of value creation (Ahmed & Javid, 2008; Al-Kuwari, 2009; Khan, 2006; Kumar, 2006; Ullah et al., 2012).

The interactive term CFV*IO is also positive and significant at a one percent level which implies that if firms' large number of shares held by the institutions, they offer higher dividends with unstable cash flows, because firms with high institutional ownership find it less difficult to finance investment projects, and hence, can afford to pay out more dividends. Institutional investors are the large investors that have access to huge sums of money including banks, investment firms, insurance companies, and other financial institutions, among others. They have the option to invest money in different corporations. Next, the conditional effect of CFV and institutional ownership on dividend payment has been measured by taking the derivative of the below equation w.r.t CFV.

$$DPO_{it} = \delta_{51} + \delta_{52} DPO_{i,t-1} + \delta_{53} CFV_{i,t} + \delta_{54} IO_{it} + \delta_{55}(CFV_{it} * IO_{it}) + Z_{it}\sigma' + \mu_i + \pi_t + \varepsilon_{it} \quad (4.29)$$

$$\frac{\partial DPO_{it}}{\partial CFV_{it}} = \delta_{53} + \delta_{55} IO_{it}$$

where both coefficients $\delta_{53} > 0$, $\delta_{55} > 0$ has similar signs in our model, which indicates that institutional ownership plays a complementary role in explaining the CFV relationship with dividend payment. Further, results reveal that role of institutional ownership strengthens the CFV relationship with dividend payment

The impact of CFV on dividend payment is conditional on different levels of internal and external factors. This study uses the 25th, 50th, and 75th percentiles of the internal and external factors for analysis. The results are given in below table 4.4.4.

Table 4.4.4: Conditional Effect of Cash Flow Volatility on Dividend Payment at Varying Levels of Internal and External Factors

			FE			
Variables	**CF**	**TAX**	**INF**	**GDPG**	**IO**	**Reference**
P (25) Low	0.0313*** (0.001)	0.0283*** (0.007)	-1.2470*** (0.004)	0.0502*** (0.003)	29.3978** (0.044)	Table 28
P (50) Medium	0.0320*** (0.001)	0.0283*** (0.007)	-2.1337*** (0.003)	0.0613*** (0.008)	29.74076** (0.043)	Table 28
P (75) High	0.0345*** (0.001)	0.0284*** (0.007)	-3.0499*** (0.003)	0.0664** (0.011)	29.74076** (0.042)	Table 28

Notes: ***, **,* are one, five and ten percent level of significance. P_{25}, P_{50}, P_{75} are the 25th ,50th and 75th percentiles. P-values are given in parenthesis.

Table 4.4.4 explains the impact of CFV on dividend payout at varying levels of internal and external factors. The result shows that CFV impact on dividend payment is significant and positive at one percent at varying levels of operating cash flows. Overall, the result shows that when operating cash flows increase, firms with high CFV increase their dividend payments.

The variable tax rate is also positive and significant at varying levels of percentiles which indicates that as the tax rate increases, firms with volatile cash flows increase their dividend payments. The variable inflation rate is also negative and significant at varying levels of percentiles. The magnitude of the coefficient increases with a negative sign at each level of percentiles, which reveals that as the inflation rate increases, firms with volatile cash flows decrease their dividend payments.

The variable GDP growth is positive and significant at varying levels of percentiles. The magnitude of the coefficient is increasing over the percentiles. Overall, the result reported that when GDP growth increases in a country, firms with volatile cash flows lead to an increase the dividend payments.

Similarly, the institutional ownership variable is positive and significant at varying levels of percentiles which implies that the CFV impact on dividend payment is positive at each percentile level. This result explains that if firms most of the shares are held by the institutions, firms with volatile cash flows increase their dividend payments.

Overall, the results explain that both internal and external factors significantly affect the CFV and dividend payment relationship.

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

This chapter discusses the conclusion drawn from the findings of the study and policy recommendations based on the study findings. In this context, the first section presents the conclusion. The second section presents policy implications based on our analysis.

5.1 Conclusion

The CFV plays a crucial role in determining the financial indicators of a company/firm such as DMS, leverage, investment, and dividend payout policy decisions. In this context, this study explores the CFV relationship between DMS, leverage, investment, and dividend payout policy decisions using a sample of 380 listed non-financial firms of Pakistan covering the period from 1999 to 2018. The existing literature regarding the CFV and DMS relationship is mixed and limited for developing economies. This study addressed this relationship for the developing country, Pakistan, by applying econometric methods that explain the non-linearity (Ordered Probit regression), and alternative estimation methods (Dynamic panel estimation-GMM). Across all these approaches, CFV is an important determinant of a firms' DMS, leverage, investment, and dividend payout policy decision-making. The study findings explain a significant and inverse relationship between CFV and DMS, leverage, investment, and dividend payout policy decision-making.

Additionally, the study results indicate that firms financing decisions on DMS, leverage, investment, and dividend payout policy is also sensitive to macroeconomic and institutional factor. In the first objective of the study, we have also examined the role of macroeconomic and institutional factors (taken as moderators) in the relationship between CFV and DMS. We consider four macroeconomic variables as moderators (inflation, GDP growth, money supply, and interest rate) and institutional variables (bank deposits, political stability, corruption, rule of law, and regulatory quality). The findings reveal that role of macroeconomic and institutional factors is significant in determining the CFV relationship with DMS. The estimates of inflation, money supply, and interest rate in explaining the CFV relationship with DMS, hold a negative sign and are statistically significant in the majority of models and reveal that if inflation, money supply, and interest rate are higher in the economy, cash flow volatile firms choose STD maturity .

However, the estimates of GDP growth display a significant and positive sign in the majority of models indicating that the impact of GDP growth strengthens the CFV and DMS relationship. If GDP growth is higher in the economy, the impact of CFV on DMS is positive. Firms choose long-term debts in the presence of higher GDP growth in the economy. Similarly, the estimates of bank deposits, regulatory quality, and rule of law in explaining the CFV and DMS relationship hold a positive and significant coefficient in most of the models indicating that if the bank deposits rate is higher, a strong regulatory quality system and proper implementation of the rule of laws in an economy makes the CFV positive relationship with DMS. Firms with volatile cash flows choose long-term debts in the presence of higher bank deposits, a stronger regulatory quality system, and the existence of proper implementation of the rule of law in an economy.

However, corruption and political stability hold a negative sign and are statistically significant in majority models revealing that due to political instability and corruption, firms with volatile cash flows choose debt of short-term maturity structure.

Furthermore, the results endeavor that the macroeconomic variables' role is a substitution for describing the CFV and DMS relationship. Whereas, in the context of institutional variables such as political stability, rule of law, and regulatory quality play complementary role in explaining the CFV relationship with DMS2. Bank deposits and corruption play a substitutional role in this regard.

The second objective of the study also estimates the influence of macro-economic and institutional factors in explaining the CFV and leverage relationship. The findings explain that the impact of macroeconomic and institutional factors is significant in determining the CFV relationship with leverage. The estimate of inflation holds a negative sign in explaining the CFV relationship with leverage, revealing that if the inflation rate is higher in an economy, firms facing high volatility in cash flows decrease the leverage. However, the estimates of GDP growth, money supply, and interest rate hold a positive sign in explaining the CFV relationship with leverage. This result explains a CFV direct relationship with leverage if the economy experiences a higher rate of GDP growth, money supply, and interest rate. Further, study findings indicate that the role of macroeconomic factors plays a substitution role in explaining the CFV relationship with leverage.

Additionally, the estimates of institutional variables such as bank deposits, corruption, and regulatory quality hold a positive and statistically significant sign in explaining the CFV relationship with leverage, which indicates that if the rate of bank deposits and corruption is higher and the regulatory quality system is strong in an economy then firm with volatile cash flows increase the leverage. However, the sign of political stability and rule of law is negative, which implies that if in a country exist political instability and rules are not implemented properly then firms with volatile cash flows decrease their leverage. Overall, results endeavor that bank deposits and corruption play a substitution role in explaining the CFV relationship with leverage. However, political stability, rule of law, and regulatory quality play a complementary role in explaining the CFV relationship with leverage.

The third objective of the study also estimates the role of institutional factors in the relationship between CFV and firms' investment decision-making. We consider six institutional variables as moderators (corruption, rule of law, political stability, regulatory quality, institutional quality, and institutional ownership). The study findings indicate that all of these institutional variables hold a positive and significant sign in the majority models for explaining the CFV relationship with firms' investment decision-making. The result implies that if institutional performance is good in an economy, firms with volatile cash flows increase their investment. Overall, study findings indicate that all of the institutional variables except corruption play a complementary role in explaining the CFV relationship with firms' investment decision-making.

Additionally, companies can increase their cash flows for a business include offering discounts for early payments, leasing not buying, improving inventory, conducting consumer credit checks, and using high-interest savings accounts. Healthy cash flow is the result of operations that run efficiently and smoothly.

To gain control of cash flow, consider implementing new policies such as offering discounts to customers who pay early, forming a buying cooperative with other businesses, and using electronic payments for bill paying. They can also negotiate better terms with vendors, improve invoicing procedures, and experiment with increased pricing to increase the cash flow.

5.2 Policy Implications

Based on study findings, this research suggests some subsequent recommendations for the individual investors, lenders, financial managers, and policy makers: First, this study suggests that CFV is a key factor in determining the firms' financing decisions related to DMS, leverage, investment, and dividend payout policy. The study findings may provide support for financial managers in making the optimal decisions for firms' leverage, DMS, investment, and dividend payout decisions, for lenders in minimizing their risk of non-performing loans, and helpful for investors in investment decision-making. Moreover, the findings suggest that non-financial firms, banks, and other financial institutions may reduce their risk of non-performing loans by limiting their financing when experiencing high CFV to reduce the bankruptcy and financial distress costs.

Second, the study findings advocate that the influence of macro-economic and institutional variables is significant in determining the relationship between CFV and important corporate financing decisions related to leverage, DMS, investment, and dividend payout policy for non-financial firms in Pakistan. Due to the energy crisis, the law-and-order situation, political instability, higher rate of corruption, weak rule of law, and lack of effective governance, etc., the economic environment of Pakistan is uncertain. The government should take the necessary actions to stabilize the economy, ensure the growth of financial markets, and create effective government policies that will help in stabilizing the macroeconomic variables to ensure long-term economic growth.

Furthermore, national leaders and policymakers should develop an efficient way to improve institutional quality and thereby control corruption in the country as these are the crucial variables that affect corporate financing decisions.

Additionally, the study findings will also useful corporate managers in making the firms financing-decisions while taking into account the potential influence that these macroeconomic and institutional variables may have on their financing decisions as well as their effect on the performance of their company as a whole. The study findings will be very helpful to both individual and institutional investors in the capital market to make sound investment decisions while selecting the banks for their investment. It would be also helpful for security analysts in the portfolio and policy-making bodies for selecting banks in making effective and reasonable dividend distribution decisions, which in the long run would help them to achieve their goals of maximizing profit and fulfill the needs of employees and shareholders.

5.3 Future Direction and limitation of the study

This study findings open up some future directions for researchers in the field of economics. This study is limited to the overall sectors of listed non-financial firms in Pakistan. Due to data constraints, non-listed firms are missing, though non-listed firms may provide evocative insight into macro-economic and institutional factors and their impact on the firms' important financing decisions. The addition of moderators (macro-economic and institutional variables) to the relationship between CFV and firms' DMS, leverage, investment, and dividend payout policy is a novel area of research. A more rigorous analysis of the role of mediators may be done in explaining the relationship between CFV and firms' DMS, leverage, investment, and dividend payout policy decisions. This analysis can be done by taking the data of non-listed as well as non-financial and financial firms of Pakistan

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APPENDIX

Table A1: Summary of Debt Maturity Structure (DMS1) Categories

Categories	Description	Freq.	Percent	Cumulative
1	Firms holding zero debt	10	0.16	0.16
2	Firms holding only short-term debt	670	10.97	11.14
3	Firms holding short-term debt and long-term debt maturity (That is not as long as debentures & note payables)	5049	82.69	93.83
4	Firms holding long-term debt including debentures and note payables	377	6.17	100
	Total	6106	100	

Table A2: Predicted Values of Debt Maturities

Category	Description	Predicted at mean	predicted at mean+1SD	Difference	%Change
1	Firms holding zero debt	0.0014	0.0019	0.0005	35.71%
2	Firms holding only short-term debt	0.1088	0.1156	0.0068	6.25%
3	Firms holding long-term debt maturity that is not as long as debentures & note payables and may be choosing short-term debt.	0.8210	0.8264	0.0054	0.66%
4	Firms holding long-term debt including debentures and note payables and may be choosing short-term debt.	0.0688	0.0705	0.0017	2.47%

Notes: This table shows the predicted values of dependent variable DMS1 extracted from the ordered probit regression. The predicted values of the DMS variable can be seen as at mean and means plus one standard deviation of CFV. Other independent variables are set to their mean values. Overall, one standard deviation rise in CFV increases a firm's probability to use lower DMS categories. Overall, estimated results reveal that CFV has a significant negative influence on the debt maturity structure of firms.

Table A3: Pairwise Correlation among Volatility Measures

Pairwise correlation among Volatility measures		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	CFV_1_10	1.000							
(2)	CFV_1_5	0.170	1.000						
(3)	CFV_1_3	0.070	0.306	1.000					
(4)	CFV_1_7	0.102	0.584	0.065	1.000				
(5)	CFV_2_3	0.053	0.266	0.564	0.045	1.000			
(6)	CFV_2_5	0.042	0.192	0.482	0.036	0.670	1.000		
(7)	CFV_2_10	0.012	0.083	0.112	0.013	0.191	0.432	1.000	
(8)	CFV_2_7	0.013	0.187	0.490	0.030	0.662	0.825	0.621	1.000

Source: Author's Own Calculation

Note: CFV_1 measured by taking the standard deviation of earnings before interest and taxes (EBIT) scaled by firms' total assets. For robustness analysis, calculated another CFV_2 by taking the ratio of the standard deviation of the first difference in earnings before interest and taxes to the average of total assets followed by (Stohs & Mauer, 1996). we calculated these two measures CFV_1 and CFV_2 under different window sizes such as three, five, seven, and ten years. This table reports the results of pairwise correlation among volatility measure. Reference numbers in columns and rows refer to the variable associated with the pairwise correlation. The results of pairwise correlation among volatility measures show that all cash flow volatility measures are positively correlated. The cash flow volatility measures tend to be highly correlated if they have the same underlying measures of cash flows. The correlation among CFV_1_10 with the same and other volatility measures is relatively small.

Table A4: Robustness to Volatility Measures

Cash Flow Volatility Variables	DMS
CFV_1_10	-0.00651***
	(0.000)
CFV_1_7	-0.0020***
	(0.000)
CFV_1_5	-0.00242***
	(0.000)
CFV_1_3	-0.0012***
	(0.000)
CFV_2_3	-0.0063***
	(0.000)
CFV_2_5	-0.0071***
	(0.000)
CFV_2_7	-0.0050***
	(0.000)
CFV_2_10	-0.0032***
	(0.000)

Source: Author's own calculation

Note: This table reports the coefficients associated with eight cash flow variables under different rolling year windows by using an ordered probit regression model. The dependent variable DMS1 is defined as a debt maturity structure. The standard errors are shown in parentheses. The significance level is denoted by one percent ***, respectively. The results confirm that all the coefficients associated with eight different cash flow volatility measures are negative and statistically significant at a one percent level. Overall, our main results remain qualitatively unchanged due to different measures of volatility.

Table A5. Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure- Role of Macroeconomic Factors (Ordered Probit Model)

	INF				GDP GROWTH			
	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 1	Outcome 2	Outcome 3	Outcome 4
Variables	Dy /Dx	Dy /Dx	Dy /Dx	Dy /Dx	Dy /Dx	Dy /Dx	Dy /Dx	Dy /Dx
CFV	0.0076	0.0513***	-0.0143***	-0.0377***	0.0055***	0.0386***	-0.0011***	-0.0284***
	(0.335)	(0.000)	(0.000)	(0.000)	(0.366)	(0.000)	(0.004)	(0.000)
MAC	0.0047	0.3176***	-0.0886***	-0.2337***	0.0110	0.0078***	-0.0218**	-0.0574***
	(0.334)	(0.000)	(0.009)	(0.000)	(0.364)	(0.000)	(0.024)	(0.000)
CFV*MAC	0.0014	0.0958***	0.0267**	-0.0705***	0.0115	0.00813***	-0.0027**	-0.0598***
	(0.317)	(0.000)	(0.014)	(0.000)	(0.291)	(0.003)	(0.039)	(0.003)
ROA	0.0076	0.0509***	-0.0142*	-0.0375***	0.0077	0.0545***	-0.0151*	-0.0401***
	(0.359)	(0.007)	(0.062)	(0.005)	(0.359)	(0.003)	(0.050)	(0.002)
SIZE	-0.0253	-0.0170***	0.0048**	0.0125***	-0.0233	-0.0165***	0.0046*	0.0121***
	(0.389)	(0.000)	(0.046)	(0.000)	(0.396)	(0.000)	(0.052)	(0.000)
LIQ	0.0030	0.0198**	-0.0055*	-0.0146**	0.0283	0.0020**	-0.0056*	-0.0147**
	(0.341)	(0.026)	(0.071)	(0.027)	(0.337)	(0.016)	(0.056)	(0.017)
TANG	0.0055	0.0367***	-0.0010**	-0.0030***	0.0489	0.0035***	-0.00965**	-0.0254***
	(0.312)	(0.001)	(0.018)	(0.002)	(0.321)	(0.002)	(0.022)	(0.004)
TAX	-0.0012	-0.082***	0.0227*	0.0603***	-0.0012	-0.0086***	-0.00242*	0.0637***
	(0.363)	(0.008)	(0.064)	(0.006)	(0.365)	(0.007)	(0.058)	(0.006)
n	5414	5414	5414	5414	5414	5414	5414	5414
	MS				INTEREST			
CFV	-0.00019	-0.0015	0.0052	0.0100	0.0034	0.0012***	-0.0067***	-0.0056***
	(0.913)	(0.914)	(0.914)	(0.914)	(0.443)	(0.000)	(0.000)	(0.001)
MAC	0.0010	0.0084***	-0.0029***	-0.0056***	-0.0022	-0.7997***	0.4395***	0.3625
	(0.372)	(0.000)	(0.006)	(0.000)	(0.500)	(0.001)	(0.006)	(0.000)
CFV*MAC	0.0007	0.0058***	-0.0020**	-0.0038***	-0.00024	-0.0086**	0.0047*	0.0391**
	(0.291)	(0.000)	(0.010)	(0.000)	(0.356)	(0.035)	(0.052)	(0.037)
ROA	0.0056	0.0450**	-0.0153**	-0.0302***	0.0013	0.0472***	-0.0259**	-0.0214**
	(0.382)	(0.010)	(0.048)	(0.007)	(0.475)	(0.007)	(0.012)	(0.014)
SIZE	-0.0023	-0.0184***	0.0063**	0.0124***	-0.00842	-0.0301***	0.0165***	0.0136***
	(0.408)	(0.000)	(0.019)	(0.000)	(0.484)	(0.000)	(0.000)	(0.000)
LIQ	0.0024	0.0020**	-0.0067**	-0.0013**	0.0032	0.0012	-0.0063	-0.0052
	(0.361)	(0.020)	(0.048)	(0.022)	(0.512)	(0.184)	(0.194)	(0.195)
TANG	0.0041	0.0033***	-0.0011**	-0.0023***	-0.0021	-0.0767*	0.0421	0.0347**
	(0.344)	(0.003)	(0.014)	(0.004)	(0.506)	(0.066)	(0.112)	(0.040)
TAX	-0.0011	-0.0085***	0.0029**	0.0057***	-0.0019	-0.0071***	0.0039**	0.0032**
	(0.381)	(0.003)	(0.031)	(0.003)	(0.480)	(0.009)	(0.015)	(0.019)
n	5236	5236	5236	5236	4501	4501	4501	4501

Source: Author's own calculation in parentheses
Notes: P-values given in parenthesis, *** p<0.01, ** p<0.05, * p<0.10
N= no of observations.

Table A6: Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure - Role of Institutional Factors (Ordered Probit)

	BD				**RL**			
Variables	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**
CFV	0.0051	-0.0374***	0.0105**	0.0273***	0.00071	0.0047	-0.0013	-0.0035*
	(0.337)	(0.000)	(0.011)	(0.000)	(0.226)	(0.106)	(0.182)	(0.090)
MAC	0.0028	0.0201***	-0.0567***	-0.1474***	-0.0033	-0.2233***	0.0620**	0.1647***
	(0.376)	(0.000)	(0.001)	(0.000)	(0.331)	(0.000)	(0.015)	(0.000)
CFV*MAC	0.0026	0.0017***	-0.0047**	-0.0012***	-0.0006	-0.0041	0.0011	0.0030
	(0.336)	(0.000)	(0.010)	(0.000)	(0.548)	(0.291)	(0.286)	(0.310)
ROA	0.0831	0.0607***	-0.0171**	-0.0443***	0.0066	0.0442**	-0.0123*	-0.0326**
	(0.378)	(0.001)	(0.038)	(0.001)	(0.357)	(0.014)	(0.079)	(0.011)
SIZE	-0.0265	-0.0194***	0.0545**	0.0142***	-0.0022	-0.0151***	0.0042*	0.0111***
	(0.411)	(0.000)	(0.031)	(0.000)	(0.390)	(0.001)	(0.063)	(0.000)
LIQ	0.0027	0.0199**	-0.0561*	-0.0015**	0.0031	0.0021**	-0.0057*	-0.0015**
	(0.365)	(0.020)	(0.062)	(0.021)	(0.327)	(0.016)	(0.060)	(0.018)
TANG	0.0045	0.0033***	-0.0930**	-0.0241***	0.0055	0.0037***	-0.0010**	-0.0027***
	(0.343)	(0.003)	(0.023)	(0.005)	(0.306)	(0.001)	(0.021)	(0.002)
TAX	-0.0013	-0.0931***	0.0263*	0..0682***	-0.0011	-0.0079***	0.0022*	0.0058***
	(0.386)	(0.006)	(0.052)	(0.005)	(0.354)	(0.006)	(0.061)	(0.005)
n	5414	5414	5414	5414	5414	5414	5414	5414
	PS				**COR**			
CFV	0.0036	0.0025**	-0.0070**	-0.0018*	-0.0042	-0.0031***	0.0086**	0.0023***
	(0.331)	(0.040)	(0.043)	(0.055)	(0.287)	(0.000)	(0.031)	(0.000)
INST	-0.0037	-0.0251**	0.0072**	0.0183**	0.0012	0.0855***	-0.0239**	-0.0628***
	(0.361)	(0.017)	(0.017)	(0.032)	(0.370)	(0.000)	(0.020)	(0.000)
CFV*INST	-0.0007	-0.0048***	0.0014**	0.0035***	0.0012	0.0087***	-0.0024**	-0.0064***
	(0.363)	(0.001)	(0.035)	(0.001)	(0.292)	(0.000)	(0.023)	(0.000)
ROA	0.0088	0.0594***	-0.0170**	-0.0433***	0.0068	0.0498***	-0.0139*	-0.0366***
	(0.360)	(0.002)	(0.035)	(0.001)	(0.376)	(0.006)	(0.057)	(0.004)
SIZE	-0.0034	-0.0226***	0.0064**	0.0165***	-0.0018	-0.0133***	0.0037*	0.0098***
	(0.379)	(0.000)	(0.011)	(0.000)	(0.421)	(0.005)	(0.078)	(0.002)
LIQ	0.0026	0.0017*	-0.0049	-0.0013**	0.0029	0.0022**	-0.0061*	-0.0016**
	(0.365)	(0.050)	(0.102)	(0.048)	(0.348)	(0.011)	(0.050)	(0.012)
TANG	0.0049	0.0033***	-0.0095**	-0.0024***	0.0045	0.0033***	-0.0092**	-0.0024***
	(0.323)	(0.002)	(0.020)	(0.003)	(0.336)	(0.005)	(0.029)	(0.008)

TAX	-0.0014	-0.0093***	0.0026**	0.0068***	-0.0011	-0.0080***	0.0022*	0.0058***
	(0.366)	(0.005)	(0.044)	(0.004)	(0.380)	(0.008)	(0.061)	(0.006)
N	5414	5414	5414	5414	5414	5414	5414	5414

Continue…….								
		RQ						
CFV	0.0008	0.0056	-0.0016	-0.0041	-	-	-	-
	(0.879)	(0.841)	(0.839)	(0.842)				
INST	-0.0039	-0.0274	0.0077	0.0201	-	-	-	-
	(0.570)	(0.404)	(0.419)	(0.407)				
CFV*INST	-0.0014	-0.0097	0.0027*	0.0071***	-	-	-	-
	(0.235)	(0.014)	(0.075)	(0.008)				
ROA	0.0081	0.0566***	-0.0158**	-0.0415***	-	-	-	-
	(0.362)	(0.003)	(0.047)	(0.002)				
SIZE	-0.0024	-0.0165***	0.0046*	0.0121***	-	-	-	-
	(0.399)	(0.001)	(0.051)	(0.000)				
LIQ	0.0028	0.0019**	-0.0054*	-0.0143**	-	-	-	-
	(0.347)	(0.026)	(0.069)	(0.027)				
TANG	0.0048	0.0034***	-0.0094**	-0.0246***	-	-	-	-
	(0.322)	(0.003)	(0.023)	(0.005)				
TAX	-0.0013	-0.0088***	0.0025*	0.0065***	-	-	-	-
	(0.368)	(0.006)	(0.057)	(0.005)				
n	5414	5414	5414	5414	-	-	-	-

Source: Author's own calculation in parentheses
Notes: P-values given in parenthesis, *** p<0.01, ** p<0.05, * p<0.10
N= no of observations.

Table A7: Cash Flow Volatility and Debt Maturity Structure

Ordered Logit Model			
	General Models		Specific Model
Variables	**(1)**	**(2)**	**(3)**
CFV	-0.0015***	-0.0013***	-0.0013***
	(0.001)	(0.000)	(0.000)
LEV	0.0914	-	-
	(0.504)		
ROA	-0.0092***	-0.0087***	-0.0084***
	(0.002)	(0.002)	(0.002)
SIZE	0.3831***	0.2808***	0.2765***
	(0.000)	(0.000)	(0.000)
LIQ	-0.0003*	-0.0003	-
	(0.096)	(0.101)	
TANG	-0.0616**	-0.0556***	-0.0553***
	(0.012)	(0.006)	(0.006)
GROW	-0.0002	-	-
	(0.372)		
TAX	0.0159***	0.0142***	0.0140***
	(0.001)	(0.002)	(0.002)
$\delta^2{}_u$	4.4754	3.9582	4.013287
Log-likelihood	-2052.03	-2376.55	-2381.121
χ^2	154.49	119.50***	124.15***
	(0.000)	(0.000)	(0.000)
No of Firms	372	372	372
Observations	5067	5414	5418

Notes: Source: Authors own calculation
P-values given in parentheses, *** p<0.01, ** p<0.05, * p<0.10
$\delta^2{}_u$ = Variance of error term. Dependent variable is DMS1 based on categories. We have used a general to specific approach as suggested by Hendry (1995). By following this approach, we dropped the insignificant variables (LEV, GROW, and LIQ) sequentially to get the final model parsimony. Column (2) shows the result of final selected model. Cash flow volatility (CFV) is the independent variable of this study. Control variables include return on assets (ROA), firm size (SIZE), tangibility (TANG), and tax rate (TAX). Both models are estimated using an ordered logit regression technique.

Table A8: Cash Flow Volatility and Debt Maturity Structure - Role of Macroeconomic Factors

	Ordered Logit Model			
Variables	**(1)** **INF**	**(2)** **GDPG**	**(3)** **MS**	**(4)** **INTEREST**
CFV	-0.0011***	-0.0006***	0.0016***	-0.0046***
	(0.000)	(0.000)	(0.001)	(0.000)
Mac	-0.0461***	-0.1337***	-0.0744***	0.0972***
	(0.000)	(0.000)	(0.000)	(0.002)
Mac*CFV	-0.0001***	-0.0002***	-0.0001***	0.0002***
	(0.000)	(0.001)	(0.000)	(0.0014)
ROA	-0.0079***	-0.0085***	-0.0010***	-0.0107***
	(0.004)	(0.002)	(0.001)	(0.002)
SIZE	0.2829***	0.2779***	0.4626***	0.7688***
	(0.000)	(0.000)	(0.000)	(0.000)
TANG	-0.0606***	-0.0563***	-0.0554***	1.9027**
	(0.003)	(0.006)	(0.007)	(0.011)
TAX	0.0133***	0.0141***	0.0172***	0.0162***
	(0.002)	(0.002)	(0.003)	(0.003)
$\chi 2$	351.92***	369.05***	338.36***	110.16***
	(0.000)	(0.000)	(0.000)	(0.000)
Log Likelihood	-2367.70	-2367.74	-2331.67	5.8837**
δ^2_u	4.0689**	4.0723**	4.1382**	-1452.99**
Obs.	5418	5418	5418	4504
No. of Firms	372	372	372	369

Notes: Dependent variable is DMS1. ***, **, * are one, five & ten percent significance levels. P-values given in parentheses. δ^2_u is the variance of error term. Row wise MAC abbreviation used for macro variables. Column one shows the results of baseline model, impact of CFV on DMS. Column (2) report the results of role of inflation in the relationship between CFV and DMS. Column (3) shows the GDP growth role in the relationship between CFV and DMS. Column (4) indicates the money supply role in the relationship between CFV and DMS. Column (5) findings indicate the role of interest rate in the relationship between CFV and DMS.

Table A9: Cash Flow Volatility and Debt Maturity Structure - Role of Institutions

	Ordered Logit Model				
Variables	**(1)** **BD**	**(2)** **CORR**	**(3)** **RL**	**(4)** **PS**	**(5)** **RQ**
CFV	0.0062***	0.0055***	0.0021	-0.0007***	0.0081
	(0.000)	(0.001)	(0.961)	(0.000)	(0.856)
INST	-0.0275***	-1.5295***	3.6893***	0.3521*	0.3501
	(0.000)	(0.000)	(0.000)	(0.088)	(0.522)
CFV*INST	-0.0003***	-0.0016***	0.0018***	0.0006***	0.0019**
	(0.000)	(0.000)	(0.005)	(0.006)	(0.008)
ROA	-0.0093***	-0.0078***	-0.0072***	-0.0091***	-0.0086***
	(0.001)	(0.004)	(0.009)	(0.001)	(0.002)
SIZE	0.3190***	0.2130***	0.2511***	0.3640***	0.2775***
	(0.000)	(0.009)	(0.002)	(0.000)	(0.000)
TANG	-0.0545***	-0.0555***	-0.0624***	-0.0549***	-0.0546***
	(0.007)	(0.008)	(0.003)	(0.005)	(0.007)
TAX	0.015***	0.0129***	0.0131***	0.0148***	0.0141***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
$\chi 2$	187.22***	178.49***	158.62***	188.45***	109.89***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log Likelihood	-2367.25	-2345.58	-2354.57	-2373.08	-2380.39
δ^2_u	4.0369	4.2334	4.1303	4.0000	4.0135
Obs.	5418	5418	5418	5418	5418
No. of Firms	372	372	372	372	372

Notes: P-values given in brackets, ***, **, * significance at one, five and ten percent significance level. δ^2_u = Variance of error term. INST= Institutional Variable.
Dependent variable is DMS_1.
Row wise INST abbreviation we have used for each Institutional variable. Column (1) shows the results of baseline model, impact of CFV on DMS.
Column (2) report the findings of bank deposits role in the relationship of CFV and DMS_1. Column (3) explains the corruption role in the relationship of CFV and DMS_1. Column (4) indicates the role of rule of law role in the relationship of CFV and DMS_1. Column (5) findings indicate the role of political stability in the relationship of CFV and DMS_1. Column (6) report the results of regulatory quality in the relationship of CFV and DMS_1.

Table A10: Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure (Ordered logit Model)

Dependent Variable Debt Maturity Structure				
	Outcome 1	**Outcome 2**	**Outcome 3**	**Outcome 4**
Variables	**Dy /Dx**	**Dy /Dx**	**Dy /Dx**	**Dy /Dx**
CFV	0.0125	0.0080***	-0.0025***	-0.0057***
	(0.311)	(0.000)	(0.003)	(0.000)
ROA	0.0798	0.0051***	-0.0052**	-0.0036***
	(0.348)	(0.004)	(0.049)	(0.003)
SIZE	-0.0026	-0.0167***	0.0052*	0.0118***
	(0.394)	(0.001)	(0.064)	(0.000)
TANG	0.0052	0.0033***	-0.0010**	-0.0024**
	(0.321)	(0.006)	(0.024)	(0.010)
TAX	-0.0013	-0.0084***	0.0026**	0.0060***
	(0.354)	(0.003)	(0.047)	(0.000)
n	5418	5418	5418	5418

Source: Author's Own Calculation
Notes: P-values in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.10$.
This table report the results of base model marginal effect results. Where CFV is the cash flow volatility under ten year window size, control variables are ROA = return of assets, SIZE= firm size, LIQ= liquidity, TANG= Tangibility, TAX= Tax rate, n=no of observation.Outcome1 is the first debt maturity structure category such as firm is not using any type of debt, Outcome 2= second debt maturity category defined as firms using only short term debt, Outcome 3= Firms holding long term debt maturity that is not as long as debentures & note payables, Outcome 4= Firms holding long term debt including debentures and note payables.

Table A11: Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure: Role of Macroeconomic Factors (Ordered logit Model)

	INF				**GDPG**			
Variables	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**
CFV	0.0043	0.0067***	-0.0021***	-0.0047***	0.0052	0.0034***	-0.0011***	-0.0024***
	(0.337)	(0.000)	(0.002)	(0.000)	(0.398)	(0.000)	(0.002)	(0.000)
MAC	0.0118	0.0027***	-0.0084**	-0.0019***	0.0001	0.0080***	-0.0025**	-0.0056***
	(0.343)	(0.000)	(0.010)	(0.001)	(0.367)	(0.000)	(0.021)	(0.000)
CFV*MAC	0.0105	0.0075***	-0.0231**	-0.0053***	0.0014	0.0094***	-0.0294**	-0.0064***
	(0.323)	(0.000)	(0.010)	(0.000)	(0.254)	(0.002)	(0.032)	(0.002)
ROA	0.0743	0.0047***	-0.0015*	-0.0034***	0.0772	0.0051***	-0.0016**	-0.0036***
	(0.349)	(0.007)	(0.063)	(0.005)	(0.352)	(0.003)	(0.047)	(0.002)
SIZE	-0.0027	-0.0168***	0.0052**	0.0119***	-0.0003	-0.0167***	0.0052*	0.0117***
	(0.390)	(0.001)	(0.064)	(0.000)	(0.400)	(0.001)	(0.064)	(0.000)
TANG	0.0060	0.0036***	-0.0011**	-0.0026***	0.0051	0.0034***	-0.0011	-0.0024**
	(0.315)	(0.003)	(0.018)	(0.005)	(0.330)	(0.006)	(0.024)	(0.010)
TAX	-0.0013	-0.0008***	0.0024*	0.0006***	-0.0013	-0.0085***	0.0026**	0.0060***
	(0.353)	(0.004)	(0.054)	(0.003)	(0.359)	(0.004)	(0.047)	(0.003)
n	5418	5418	5418	5418	5418	5418	5418	5418
	MS				**INTEREST**			
CFV	-0.0012	-0.0001***	0.0028*	0.0064***	0.0041	0.0021***	-0.0013***	-0.0086***
	(0.358)	(0.004)	(0.057)	(0.002)	(0.468)	(0.000)	(0.001)	(0.002)
MAC	0.0059	0.0043***	-0.0013***	-0.0030***	-.0.0086	-0.0044***	0.0026**	0.0018***
	(0.374)	(0.000)	(0.003)	(0.000)	(0.548)	(0.002)	(0.010)	(0.003)
CFV*MAC	0.0063	0.0046***	-0.0014**	-0.0324***	-0.0022	-0.0011**	0.0065**	0.0045**
	(0.358)	(0.000)	(0.019)	(0.000)	(0.176)	(0.019)	(0.032)	(0.025)
ROA	0.0079	0.0058***	-0.0018**	-0.0004***	0.0942	0.0048***	-0.0028**	-0.0020***
	(0.379)	(0.002)	(0.041)	(0.001)	(0.521)	(0.004)	(0.010)	(0.008)
SIZE	-0.0037	-0.0267***	0.0081**	0.0189***	-0.0068	-0.0347***	0.0205***	0.0143***
	(0.403)	(0.000)	(0.019)	(0.000)	(0.535)	(0.000)	(0.000)	(0.000)
TANG	0.0044	0.0032***	-0.0097**	-0.0023**	-0.0017	-0.0859***	0.0507**	0.0353***
	(0.361)	(0.006)	(0.030)	(0.010)	(0.543)	(0.008)	(0.027)	(0.004)
TAX	-0.0014	-0.0099***	0.0030**	0.0070***	-0.0143	-0.0073***	0.0043**	0.0031**
	(0.388)	(0.004)	(0.047)	(0.004)	(0.527)	(0.005)	(0.011)	(0.011)
n	5418	5418	5418	5418	5418	5418	5418	5418

Notes:
Source: Author's own calculation in parentheses
Notes: P-values given in parenthesis, *** p<0.01, ** p<0.05, * p<0.10
N= no of observations.

Table A12: Estimates of Marginal Effects: Cash Flow Volatility and Debt Maturity Structure- Role of Institutional Factors (Ordered logit Model)

	BD				CORR			
Variables	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**	**Outcome 1 Dy /Dx**	**Outcome 2 Dy /Dx**	**Outcome 3 Dy /Dx**	**Outcome 4 Dy /Dx**
CFV	-0.0053	-0.0037***	0.0012**	0.0003***	-0.0048	-0.0033***	0.0010**	0.0023***
	(0.328)	(0.000)	(0.012)	(0.000)	(0.249)	(0.003)	(0.045)	(0.002)
MAC	0.0002	0.0016***	-0.0051***	-0.0011***	0.0013	0.0906***	-0.0280**	-0.0639***
	(0.381)	(0.000)	(0.001)	(0.000)	(0.376)	(0.000)	(0.018)	(0.000)
CFV*MAC	0.0241	0.0168***	-0.0052**	-0.0012***	0.0134	0.0092***	-0.0029**	-0.0065***
	(0.327)	(0.000)	(0.010)	(0.000)	(0.258)	(0.001)	(0.033)	(0.001)
ROA	0.0795	0.0057***	-0.0017**	-0.0039***	0.0067	0.0046***	-0.0014*	-0.0033***
	(0.377)	(0.002)	(0.038)	(0.001)	(0.372)	(0.006)	(0.054)	(0.004)
SIZE	-0.0028	-0.0191***	0.0059**	0.0134***	-0.0018	-0.0126	0.0039	0.0089***
	(0.417)	(0.000)	(0.044)	(0.000)	(0.431)	(0.014)	(0.108)	(0.005)
TANG	0.0047	0.0033***	-0.0010**	-0.0023**	0.0048	0.0033***	-0.0010**	-0.0023**
	(0.352)	(0.007)	(0.027)	(0.011)	(0.346)	(0.008)	(0.028)	(0.013)
TAX	-0.0013	-0.0090***	0.0028**	0.0063***	-0.0011	-0.0076***	0.0024*	0.0054***
	(0.385)	(0.003)	(0.044)	(0.002)	(0.3770	(0.004)	(0.048)	(0.003)
n	5418	5418	5418	5418	5418	5418	5418	
	RL				PS			
CFV	-0.0019	-0.0012	0.0038	0.0088	0.0067	0.0004***	-0.0014***	-0.0031***
	(0.963)	(0.961)	(0.961)	(0.961)	(0.320)	(0.000)	(0.004)	(0.002)
MAC	-0.0034	-0.2182***	0.0673**	0.1543***	-0.0032	-0.0210*	0.0064**	0.0149
	(0.334)	(0.000)	(0.014)	(0.000)	(0.384)	(0.071)	(0.046)	(0.106)
CFV*MAC	-0.0017	-0.0001***	0.0034**	0.0077**	0.0057	-0.0038***	0.0012*	0.0027***
	(0.383)	(0.005)	(0.025)	(0.010)	(0.383)	(0.008)	(0.062)	(0.006)
ROA	0.0067	0.0004**	-0.0013*	-0.0030***	0.0081	0.0054***	-0.0017**	-0.0038***
	(0.349)	(0.012)	(0.072)	(0.009)	(0.359)	(0.002)	(0.042)	(0.002)
SIZE	-0.0023	-0.0149***	0.0046*	0.0105***	-0.0033	-0.0217***	0.0067**	0.0154***
	(0.394)	(0.004)	(0.081)	(0.001)	(0.385)	(0.000)	(0.019)	(0.000)
TANG	0.0058	0.0037***	-0.0011**	-0.0026***	0.0050	0.0033***	-0.0010**	-0.0023***
	(0.312)	(0.002)	(0.020)	(0.005)	(0.334)	(0.005)	(0.026)	(0.008)
TAX	-0.0012	-0.0077***	0.0024*	0.0005***	-0.0013	-0.0088***	0.0027**	0.0063***
	(0.347)	(0.003)	(0.048)	(0.002)	(0.366)	(0.003)	(0.044)	(0.002)
n	5418	5418	5418	5418	5418	5418	5418	5418

Continue……								
		RQ						
CFV	-0.0081	-0.0053	0.0165	0.0038	-	-	-	-
	(0.831)	(0.857)	(0.859)	(0.856)				
MAC	-0.0032	-0.0211	0.0066	0.0149	-	-	-	-
	(0.625)	(0.521)	(0.527)	(0.524)				
CFV*MAC	-0.0175	-0.0012**	0.0036*	0.0081***	-	-	-	-
	(0.215)	(0.015)	(0.071)	(0.009)				
ROA	0.0079	0.0052***	-0.0016**	-0.0037***	-	-	-	-
	(0.360)	(0.003)	(0.045)	(0.002)				
SIZE	-0.0025	-0.0167***	0.0052*	0.0118***	-	-	-	-
	(0.406)	(0.001)	(0.064)	(0.000)				
TANG	0.0005	0.0033***	-0.0010**	-0.0023**	-	-	-	-
	(0.333)	(0.007)	(0.026)	(0.012)				
TAX	-0.0013	-0.0085***	0.0003**	0.0006***	-	-	-	-
	(0.366)	(0.003)	(0.046)	(0.002)				
n	5418	5418	5418	5418	-	-	-	-

Notes:
Source: Author’s own calculation in parentheses
Notes: P-values given in parenthesis, *** p<0.01, ** p<0.05, * p<0.10
N= no of observations.

Table A13: Cash Flow Volatility and Leverage- Role of Macroeconomic Factors

	Dependent variable= BDR2= Total liabilities/ Total liabilities+ common shareholder equity							
	INF				GDPG			
	FE	Two-Way FE	SYS GMM	DIFF GMM	FE	Two-Way FE	SYS GMM	DIFF GMM
CFV	0.2467***	0.2177**	0.4228**	-0.1106	-0.0155***	0.3289***	-0.0273***	-0.0315***
	(0.000)	(0.013)	(0.014)	(0.419)	(0.000)	(0.000)	(0.001)	(0.006)
Mac	-0.0345***	-0.0222***	-0.0467***	0.0604	-0.0273	-1.7151***	0.4803***	0.3800
	(0.004)	(0.002)	(0.001)	(0.244)	(0.792)	(0.002)	(0.000)	(0.331)
CFV*MAC	-0.0363***	-0.0298**	-0.0541**	-0.0264*	0.0094***	-0.3663***	0.0336***	0.0417**
	(0.000)	(0.010)	(0.013)	(0.062)	(0.002)	(0.000)	(0.007)	(0.024)
ROA	-19.916**	-38.511***	-23.6727*	16.122	0.1544***	-38.5849***	-2.1475	-1.2723
	(0.038)	(0.002)	(0.084)	(0.791)	(0.000)	(0.002)	(0.479)	(0.860)
SIZE	6.653***	2.8573***	3.1599**	-4.137	5.6934***	2.8597***	0.4998	-0.7284
	(0.000)	(0.000)	(0.000)	(0.287)	(0.000)	(0.000)	(0.182)	(0.843)
LIQ	-96.236***	-46.284***	-48.82**	14.791	-113.34***	-46.2816***	0.8800	1.9692
	(0.000)	(0.000)	(0.022)	(0.211)	(0.000)	(0.000)	(0.785)	(0.797)
TANG	32.176**	-27.253*	-25.46	192.28*	-	-27.4248*	-	-
	(0.043)	(0.091)	(0.466)	(0.061)		(0.090)		
Constant	177.69**	307.38***	176.32*	-	33.9796***	301.24***	17.0507	-
	(0.012)	(0.001)	(0.080)		(0.000)	(0.001)	(0.428)	
BDR_{t-1}	-	0.6517***	0.7683***	0.8997***	-	0.6515***	0.9241***	0.8443***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	425.57***	774.38***	48.65***	13.00***	1576.11***	44203.00***	79.13***	22.84***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments		-	47	46	-	-	47	36
AR (2) P value	-	-	0.246	0.178	-	-	0.180	0.169
Hansen J (P-Value)	-	-	0.794	0.798	-	-	0.676	0.670
No of firms	376	376	376	372	376	376	376	374
R2	0.8017	0.8017	-	-	0.1092	0.8022	-	-
Time Dummy	-	Yes	Yes	Yes	-	Yes	Yes	Yes
obs	5850	5494	5544	5086	5850	5494	5544	5143

Continue….								
	MS				**INTEREST**			
	FE	**Two-Way FE**	**SYS GMM**	**DIFF GMM**	**FE**	**Two-Way FE**	**SYS GMM**	**DIFF GMM**
CFV	-0.0251***	-0.0184***	-0.0227***	-0.0193***	0.2876***	-0.0260***	-0.0301***	-0.0256***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.005)	(0.000)	(0.000)	(0.000)
Mac	0.2330***	-6.8526**	0.2456***	0.3699***	0.0345	-3.3525***	-0.6372***	0.6554
	(0.000)	(0.027)	(0.000)	(0.007)	(0.697)	(0.000)	(0.000)	(0.318)
CFV*MAC	0.0101***	0.0079***	0.0094***	0.0089**	0.2268**	0.0232***	0.0297***	0.0256***
	(0.000)	(0.000)	(0.000)	(0.035)	(0.040)	(0.000)	(0.000)	(0.001)
ROA	0.1418***	0.0572***	-8.4952	1.6998	-29.5461**	0.0500***	0.6254	3.1052
	(0.000)	(0.000)	(0.179)	(0.594)	(0.016)	(0.002)	(0.530)	(0.512)
SIZE	5.6981***	2.6831***	0.6580*	-2.8621	5.1578***	3.0486***	0.4061	-8.2576
	(0.000)	(0.000)	(0.080)	(0.330)	(0.000)	(0.000)	(0.151)	(0.167)
LIQ	-109.2977***	-53.194***	-2.9510	6.9679	-80.336***	-51.0407***	1.0776	19.3640
	(0.000)	(0.001)	(0.311)	(0.338)	(0.000)	(0.003)	(0.751)	(0.228)
TANG	-	-	-	-	-9.9338	-	-	-
					(0.778)			
Constant	30.6126***	69.070**	63.105	-	256.89***	33.474***	3.1144	-
	(0.000)	(0.010)	(0.174)		(0.005)	(0.000)	(0.677)	
BDR_{t-1}	-	0.6515***	0.9153***	0.8361***	-	0.6192***	0.9529***	0.9003***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
F-stat	1838.70***	5461.07***	99.64***	39.57***	29.17***	9975.94***	2630.00***	25.67***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	47	42	-	-	43	32
AR(2) P-value	-	-	0.237	0.187	-	-	0.563	0.397
Hansen J (P-value)	-	-	0.807	0.387	-	-	0.142	0.729
No of firms	376	376	376	374	374	375	375	370
R2	-	0.8110	-	-	-	-	-	-
Time Dummies	-	-	Yes	Yes	-	-	Yes	Yes
Obs	5720	5544	5544	5143	4901	4784	4784	4394

Table A14: Conditional Impact of Cash Flow Volatility on Leverage at Varying Level of Institutional Factors

	INF				GDPG				
Percentiles	FE	Two-Way FE	SYS GMM	DIFF GMM	FE	Two-Way FE	SYS GMM	DIFF GMM	Reference
P(25)-low	-1.5467***	-1.2568***	-2.2486**	-1.4135*	0.0144*	-0.8321***	0.0791**	0.1005**	Table A13
	(0.000)	(0.009)	(0.013)	(0.058)	(0.062)	(0.000)	(0.013)	(0.032)	
P(50)-Median	-2.7765***	-2.2680***	-4.0805**	-2.3070*	0.0272**	-1.3326***	0.1249**	0.1575**	Table A13
	(0.000)	(0.009)	(0.013)	(0.058)	(0.021)	(0.000)	(0.011)	(0.029)	
P(75)-High	-4.7278***	-3.8724***	-6.9873**	-3.7247*	0.0379**	-1.7466***	0.1628**	0.2045**	Table A13
	(0.000)	(0.009)	(0.013)	(0.059)	(0.013)	(0.000)	(0.010)	(0.027)	
	MS				INTEREST				
P(25)-low	0.0942***	0.0746***	0.0870***	0.0846**	2.2735**	0.1774***	0.2299***	0.1988***	Table A13
	(0.000)	(0.000)	(0.000)	(0.047)	(0.027)	(0.000)	(0.000)	(0.001)	
P(50)-Median	0.1092***	0.0864***	0.1009***	0.0978**	2.9482**	0.2466***	0.3182***	0.2750***	Table A13
	(0.000)	(0.000)	(0.000)	(0.045)	(0.030)	(0.000)	(0.000)	(0.001)	
P(75)-High	0.1250***	0.0986***	0.1154***	0.1114**	3.3541**	0.2882***	0.3713***	0.3209***	Table A13
	(0.000)	(0.000)	(0.000)	(0.044)	(0.031)	(0.000)	(0.000)	(0.001)	

Notes: ***, **, * are one, five and ten percent level of significance. P_{25}, P_{50}, P_{75} are the 25th ,50th and 75th percentiles. P- values are given in parenthesis.

Table A15: Cash Flow Volatility and Leverage: Role of Institutional Factors

BDR2= Total Long-Term Liabilities/ Total Long-Term Liabilities+ Common Shareholder Equity								
	BD				PS			
	FE	Two-Way FE	One-Step SYS GMM	One-Step DIFF GMM	FE	Two-Way FE	One-Step SYS GMM	One-Step DIFF GMM
CFV	-0.0092***	0.0021	-0.0079	-0.3152	0.0065***	0.0016	0.0335	-0.4813
	(0.001)	(0.472)	(0.784)	(0.631)	(0.000)	(0.343)	(0.537)	(0.636)
Mac	-0.3234***	-0.1247**	-0.1009*	-0.6541**	-2.0586*	4.3282***	1.5015	19.0206**
	(0.003)	(0.013)	(0.084)	(0.023)	(0.069)	(0.003)	(0.203)	(0.023)
CFV*MAC	2.1028***	0.0826	0.3824*	0.4962	-3.1110***	0.7450	-9.7676***	-5.4878
	(0.000)	(0.554)	(0.087)	(0.516)	(0.000)	(0.378)	(0.007)	(0.530)
ROA	-0.0499***	0.0017***	0.0076	0.0010	-1.2816***	-0.3582*	-0.0018	4.0365
	(0.000)	(0.004)	(0.890)	(0.730)	(0.000)	(0.074)	(0.187)	(0.609)
SIZE	8.9814***	4.1959***	1.7713**	1.3597*	8.8398***	4.9903***	3.7511***	13.964*
	(0.000)	(0.000)	(0.027)	(0.064)	(0.000)	(0.000)	(0.001)	(0.061)
LIQ	-	-	2.0126	-9.6356	-	-	-8.7287	-0.1012
			(0.654)	(0.123)			(0.481)	(0.161)
TANG	-	-	-	-	2.4288***	1.5036***	-	-
					(0.000)	(0.000)		
Constant	25.6593**	-6.6046*	4.6644	-	9.2276***	2.5195*	-1.6938	-
	(0.000)	(0.090)	(0.192)		(0.000)	(0.091)	(0.682)	
BDR_{t-1}	-	0.5928***	0.7364***	0.4928***	-	0.5751***	0.6387***	0.4891***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.002)
F-stat	29.51***	119.36***	32.16***	10.91***	30.72***	86.24***	19.44***	8.07***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instruments	-	-	54	42	-	-	40	42
AR (2) (P value)	-	-	0.673	0.921	-	-	0.769	0.910
Hansen J (P-Value)	-	-	0.260	0.425	-	-	0.474	0.258
No of firms	372	371	370	366	370	369	370	366
R^2	0.0927	0.6859	-	-	0.1248	0.6727	-	-
Time Dummy	-	Yes	Yes	Yes	-	Yes	Yes	Yes
Obs	4828	4809	4800	4350	5229	4785	4800	4350

Continue…….

	RL				CORR			
	FE	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**
CFV_10	-0.0012 (0.483)	0.0067*** (0.007)	-0.0420*** (0.006)	-0.1619 (0.415)	0.0062** (0.043)	0.0021** (0.048)	0.1253*** (0.001)	-0.5582** (0.022)
Mac	-2.9257 (0.406)	-8.1589*** (0.002)	-1.6456*** (0.001)	-2.1432*** (0.000)	-2.5856* (0.098)	-0.1164 (0.935)	-2.6137 (0.180)	2.1437 (0.436)
CFV*MAC	-0.0098*** (0.000)	0.0040 (0.138)	-0.0459*** (0.000)	0.0101*** (0.000)	0.0597 (0.499)	0.0515 (0.546)	0.0015* (0.054)	-0.0082*** (0.006)
ROA	-1.2837*** (0.000)	-0.4036** (0.042)	-0.0004 (0.733)	0.0014 (0.394)	-1.3029*** (0.000)	0.1409*** (0.000)	-0.0020* (0.078)	0.0537** (0.023)
SIZE	9.6767*** (0.000)	4.3741*** (0.000)	5.1155*** (0.000)	2.8897 (0.040)	9.4531*** (0.000)	3.5889*** (0.000)	2.8975*** (0.000)	-1.6882 (0.216)
LIQ	-	5.3730 (0.678)	5.2402 (0.657)	-3.0014* (0.086)	4.4858 (0.811)	-	-	-
TANG	2.4290 (0.000)	1.4877*** (0.000)	-	-	2.4498*** (0.000)	-	-	-
Constant	9.2003 (0.000)	2.7686* (0.061)	-3.7846*** (0.000)		9.4871*** (0.000)	-5.4689** (0.0472)	5.1547 (0.601)	-
BDR_{t-1}	-	0.5734*** (0.000)	0.7287*** (0.000)	0.5474*** (0.000)	-	0.5883*** (0.000)	0.7193*** (0.000)	-1.6882** (0.021)
F-stat	27.46 (0.000)	250.34*** (0.000)	129.58*** (0.000)	17.41*** (0.000)	59.24*** (0.000)	704.92*** (0.000)	127.49*** (0.000)	15.41*** (0.000)
Instruments	-	-	29	14	-	-	19	12
AR (2)-P value	-	-	0.593	0.286	-	-	0.607	0.775
Hansen J	-	-	0.695	0.195	-	-	0.205	0.325
No of firms	370	369	370	366	370	371	371	367
R^2	0.1617	0.6791	-	-	-	0.6907	-	-
Time Dummy	-	No	No	No	No	No	No	No
Obs	5229	4780	4800	4350	-	4809	4809	4358

Continue…….								
		RQ						
	FE	Two-Way FE	One-Step SYS GMM	One-Step DIFF GMM				
CFV	0.3106* (0.065)	0.5377** (0.021)	-4.1245** (0.046)	-3.8880* (0.071)	-	-	-	-
Mac	-5.4204* (0.078)	-6.4965*** (0.004)	-2.4156 (0.792)	2.4378 (0.206)	-	-	-	-
CFV*MAC	-0.0093* (0.051)	0.0055 (0.290)	0.0171* (0.066)	0.0088 (0.166)	-	-	-	-
ROA	-1.2741*** (0.000)	-0.3356* (0.093)	1.1688 (0.514)	-5.2289 (0.185)	-	-	-	-
SIZE	9.6450*** (0.000)	4.2470*** (0.000)	-0.0232 (0.980)	-6.1291* (0.066)	-	-	-	-
LIQ	-	6.4280 (0.626)	-1.4967 (0.803)	-8.7764 (0.375)	-	-	-	-
TANG	2.4193*** (0.000)	1.5573*** (0.000)	0.7078 (0.609)	-2.8664 (0.387)	-	-	-	-
Constant	9.1215*** (0.000)	2.2991** (0.0122)	-8.8555 (0.520)	-	-	-	-	-
BDR_{t-1}	-	0.5720*** (0.000)	0.7914*** (0.000)	0.8165*** (0.000)	-	-	-	-
F-stat	29.02*** (0.000)	262.74*** (0.000)	35.00*** (0.000)	9.92*** (0.000)	-	-	-	-
Instruments	-	-	25	16	-	-	-	-
AR (2) P value	-	-	0.767	-	-	-	-	-
Hansen J Test (P Value)	-	-	0.290	0.374	-	-	-	-
No of firms	370	369	369	364	-	-	-	-
R^2	0.1225	0.6815	-	-	-	-	-	-
Time Dummy	-	No	No	No	-	-	-	-
Obs	5229	4780	4780	4327	-	-	-	-

Table A16: Conditional Impact of Cash Flow Volatility on Leverage at Varying Level of Institutional Factors

	BD				PS			
	FE	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**
P_{25} (Low)	0.0144***	2.3274	10.7566*	15.896	8.0580***	-1.9265	25.313***	13.7217
	(0.000)	(0.553)	(0.086)	(0.468)	(0.000)	(0.378)	(0.007)	(0.541)
P_{50} (Median)	0.0167***	2.5054	11.581*	17.1458	7.2502***	-1.7331	22.777***	12.2968
	(0.000)	(0.553)	(0.086)	(0.467)	(0.000)	(0.378)	(0.007)	(0.542)
P_{75} (High)	0.0190***	2.6754	12.368*	18.3392	4.8778***	-1.1650	15.328***	8.1118
	(0.000)	(0.553)	(0.086)	(0.467	(0.000)	(0.379)	(0.007)	(0.549)

	RL				CORR			
	FE	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**	**FE**	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**
P_{25} (Low)	0.0075***	0.0032*	-0.0013	-0.1708	0.0086***	0.0041**	0.1313***	-5.6154**
	(0.000)	(0.067)	(0.824)	(0.389)	(0.000)	(0.028)	(0.001)	(0.022)
P_{50} (Median)	0.0068***	0.0034**	-0.0045	-0.1702	0.0086***	0.0041**	0.1313***	-5.6154**
	(0.000)	(0.041)	(0.504)	(0.391)	(0.000)	(0.028)	(0.001)	(0.022)
P_{75} (High)	0.0063***	0.0037**	-0.0072	-0.1696	0.0087***	0.0043**	0.1317***	-5.6178**
	(0.000)	(0.027)	(0.321)	(0.393)	(0.000)	(0.034)	(0.001)	(0.022)

	RQ				
	FE	**Two-Way FE**	**One-Step SYS GMM**	**One-Step DIFF GMM**	**Reference**
P_{25} (Low)	0.3171*	0.5338**	-4.1365**	-3.8941*	Table A15
	(0.054)	(0.020)	(0.045)	(0.070)	
P_{50} (Median)	0.3164*	0.5342**	-4.1353**	-3.8935*	Table A15
	(0.055)	(0.020)	(0.045)	(0.070)	
P_{75} (High)	0.3159*	0.5345**	-4.1343**	-3.8930*	Table A15
	(0.056)	(0.020)	(0.045)	(0.070)	

Notes: ***, **,* are one, five and ten percent level of significance. P_{25}, P_{50} , P_{75} are the 25^{th} ,50^{th} and 75^{th} percentiles. P- values are given in parenthesis.

Table A17: List of Firms

Textile sector				
S.#	SID	PID	Abbreviation	Firm name
Textile: Spinning, Weaving, Finishing of Textile				
1	1	1	ATM	Adil Textile Mills Ltd
2	1	2	AHT	Ahmed Hassan Textile Mills Ltd.
3	1	3	ATF	Allawasaya Textile & Finishing Mills Ltd.
4	1	4	AQM	Al-Qadir Textile Mills Ltd.
5	1	5	ATM	Annoor Textile Mills Ltd.
6	1	6	APTM	Apollo Textile Mills Ltd.
7	1	7	ARDM	Artistic Denim Mills Ltd.
8	1	9	AFTM	Ashfaq Textile Mills Ltd.
9	1	10	ASM	Asim Textile Mills Ltd.
10	1	11	AYTM	Ayesha Textile Mills Ltd.
11	1	12	AZTM	Azam Textile Mills Ltd.
12	1	13	ANL	Azgard Nine Ltd.
13	1	14	AQM	Al-Qaim Textile Mills Ltd.
14	1	15	AZT	Al-Azhar Textile Mills Ltd.
15	1	16	BCM	Babri Cotton Mills Ltd.
16	1	18	BTM	Bhanero Textile Mills Ltd.
17	1	19	BFL	Bilal Fibres Ltd.
18	1	20	BTL	Blessed Textiles Ltd.
19	1	21	BRTL	Brothers Textile Mills Ltd.
20	1	22	BGSML	Baig Spinning Mills Ltd.
21	1	23	CHKM	Chakwal Spinning Mills Ltd.
22	1	24	CTML	Crescent Textile Mills Ltd.
23	1	26	CHTM	Chaudhry Textile Mills Ltd.
24	1	27	CLTM	Colony Textile Mills Ltd.
25	1	28	CSTM	(Colony) Sarhad Textile Mills Ltd.
26	1	29	CTTM	(Colony) Thal Textile Mills Ltd.
27	1	30	DMTM	D.M. Textile Mills Ltd.

28	1	31	DSIL	D.S. Industries Ltd.
29	1	32	DEST	Dar Es Salaam Textile Mills Ltd.
30	1	33	DTL	Data Textiles Ltd.
31	1	34	DLP	Dawood Lawrencepur Ltd.
32	1	35	DFSM	Dewan Farooque Spinning Mills Ltd.
33	1	36	DWKT	Dewan Khalid Textile Mills Ltd.
34	1	37	DWTM	Dewan Mushtaq Textile Mills Ltd.
35	1	38	DTML	Dewan Textile Mills Ltd.
36	1	39	DIML	Din Textile Mills Ltd.
37	1	40	ELCM	Elahi Cotton Mills Ltd.
38	1	41	ELSM	Ellcot Spinning Mills Ltd.
39	1	42	FSML	Faisal Spinning Mills Ltd.
40	1	44	FTML	Fateh Textile Mills Ltd.
41	1	45	FEL	Fatima Enterprises Ltd.
42	1	46	FCML	Fazal Cloth Mills Ltd.
43	1	47	FTML	Fazal Textile Mills Ltd.
44	1	48	GTML	Gadoon Textile Mills Ltd.
45	1	49	GFIL	Ghazi Fabrics International Ltd.
46	1	50	GLTM	Glamour Textile Mills Ltd.
47	1	51	GLBT	Globe Textile Mills Ltd.
48	1	52	GBTM	Globe Textile Mills (OE) Ltd.
49	1	54	GSML	Gulistan Spinning Mills Ltd.
50	1	55	GTML	Gulistan Textile Mills Ltd.
51	1	56	GUSP	Gulshan Spinning Mills Ltd.
52	1	57	HFTM	Hafiz Textile Mills Ltd.)
53	1	58	HMIM	Haji Mohammad Ismail Mills Ltd.
54	1	59	HJTM	Hajra Textile Mills Ltd.
55	1	60	HLEL	Hala Enterprises Ltd.
56	1	61	HMTM	Hamid Textile Mills Ltd.
57	1	62	HITM	Hira Textile Mills Ltd.
58	1	63	HUSI	Husein Industries Ltd.
59	1	65	ICCT	ICC Textiles Ltd.
60	1	66	IDSPM	Ideal Spinning Mills Ltd.

61	1	67	IDTM	Idrees Textile Mills Ltd.
62	1	70	ISTM	Ishaq Textile Mills Ltd.
63	1	71	IQTM	Ishtiaq Textile Mills Ltd.
64	1	72	ILTM	Island Textile Mills Ltd.
65	1	73	JATM	J.A. Textile Mills Ltd.
66	1	74	JKSM	J.K. Spinning Mills Ltd.
67	1	75	JDMT	Janana De Malucho Textile Mills Ltd.
68	1	76	JSWM	Jubilee Spinning & Weaving Mills Ltd.
69	1	77	KCM	Karim Cotton Mills Ltd.
70	1	78	KSTM	Khalid Siraj Textile Mills Ltd.
71	1	79	KSML	Khurshid Spinning Mills Ltd.
72	1	80	KYTM	Khyber Textile Mills Ltd.
73	1	81	KHTM	Kohat Textile Mills Ltd.
74	1	82	KHIL	Kohinoor Industries Ltd.
75	1	83	KHM	Kohinoor Mills Ltd.
76	1	84	KHSML	Kohinoor Spinning Mills Ltd.
77	1	85	KTM	Kohinoor Textile Mills Ltd.
78	1	86	LSI	Landmark Spinning Industries Ltd.
79	1	88	LIT	Libaas Textile Ltd.
80	1	89	MTM	Mahmood Textile Mills Ltd.
81	1	90	MQTM	Maqbool Textile Mills Ltd.
82	1	91	MSTM	Masood Textile Mills Ltd.
83	1	92	MDST	Mehr Dastagir Textile Mills Ltd.
84	1	93	MTI	Mian Textile Industries Ltd.
85	1	94	MOFT	Mohammad Farooq Textile Mills Ltd.
86	1	96	MBKT	Mubarak Textile Mills Ltd.
87	1	97	MKTM	Mukhtar Textile Mills Ltd.
88	1	98	NPSM	N.P. Spinning Mills Ltd.
89	1	99	NDTM	Nadeem Textile Mills Ltd.
90	1	100	NGCM	Nagina Cotton Mills Ltd.
91	1	101	NKBI	Nakshbandi Industries Ltd.
92	1	102	NIL	Nina Industries Ltd.
93	1	103	NCML	Nazir Cotton Mills Ltd.

94	1	104	NCL	Nishat (Chunian) Ltd.
95	1	105	NML	Nishat Mills Ltd.
96	1	107	OSWM	Olympia Spinning & Weaving Mills Ltd.
97	1	109	PSML	Paramount Spinning Mills Ltd.
98	1	110	PTML	Premium Textile Mills Ltd.
99	1	111	PWML	Prosperity Weaving Mills Ltd.
100	1	112	QTML	Quetta Textile Mills Ltd.
101	1	113	RVT	Ravi Textile Mills Ltd.
102	1	114	RDT	Redco Textiles Ltd.
103	1	115	RCSM	Reliance Cotton Spinning Mills Ltd.
104	1	116	RTM	Ruby Textile Mills Ltd.
105	1	118	STL	Safa Textiles Ltd.
106	1	119	STM	Saif Textile Mills Ltd.
107	1	120	SJTM	Sajjad Textile Mills Ltd.
108	1	121	SDIL	Saleem Denim Industries Ltd.
109	1	122	SLTM	Salfi Textile Mills Ltd.
110	1	123	SALL	Sally Textile Mills Ltd.
111	1	124	SNEL	Salman Noman Enterprises Ltd.
112	1	125	SMT	Samin Textiles Ltd.
113	1	126	SIL	Sana Industries Ltd.
114	1	127	SPF	Sapphire Fibres Ltd.
115	1	128	SPTM	Sapphire Textile Mills Ltd.
116	1	129	SGSM	Sargodha Spinning Mills Ltd.
117	1	130	STSM	Saritow Spinning Mills Ltd.
118	1	131	SFL	Service Fabrics Ltd.
119	1	132	SITL	Service Industries Textiles Ltd.
120	1	133	STM	Shadab Textile Mills Ltd.
121	1	134	SCM	Shadman Cotton Mills Ltd.
122	1	135	SHCM	Shaheen Cotton Mills Ltd.
123	1	136	STL	Shahtaj Textile Ltd.
124	1	137	STM	Shahzad Textile Mills Ltd.
125	1	138	SHTM	Shams Textile Mills Ltd.
126	1	140	SNTM	Sunrays Textile Mills Ltd.

127	1	141	SUJ	Suraj Cotton Mills Ltd.
128	1	142	TSM	Taha Spinning Mills Ltd.
129	1	143	TWL	Towellers Ltd.
130	1	145	CSML	the Crescent Textile Mills Ltd.
131	1	147	TTM	Tata Textile Mills Ltd.
132	1	148	UTM	Usman Textile Mills Ltd.
133	1	149	YWM	Yousaf Weaving Mills Ltd.
134	1	150	ZHTM	Zahidjee Textile Mills Ltd.
135	1	151	ZPTL	Zephyr Textiles Ltd.
136	1	152	ZCML	Zahur Cotton Mills Ltd.
137	1	155	AMTX	Amtex Ltd.
Taxtile: Made up Textile articles				
138	1	8	AJAL	Aruj Industries (Formerly Aruj Garment Accessories Ltd.)
139	1	43	FSWL	Fateh Sports Wear Ltd.
140	1	53	GATM	Gul Ahmed Textile Mills Ltd.
141	1	68	IDMC	Indus Dyeing & Manufacturing Co. Ltd.
142	1	69	IKL	International Knitwear Ltd.
143	1	95	MPL	Moonlite (Pak) Ltd.
Textile: Other Textiles n.e.s.				
144	1	17	BWM	Bannu Woollen Mills Ltd.
145	1	25	CJP	Crescent Jute Products Ltd.
146	1	64	IFL	Ibrahim Fibres Ltd.
147	1	87	LJM	Associated Services (Formerly Latif Jute Mills Ltd).
148	1	106	NSM	Noor Silk Mills Ltd.
149	1	108	PSL	Pakistan Synthetics Ltd.
150	1	117	RPL	Rupali Polyester Ltd.
151	1	139	SJML	Suhail Jute Mills Ltd.
152	1	144	TSPL	Tri-Star Polyester Ltd.
153	1	146	NSRM	The National Silk & Rayon Mills Ltd.
154	1	153	ASM	Al-Abid Silk Mills Ltd.
155	1	154	SGF	S.G. Fibres Ltd.
Chemical Products & Pharmaceuticals				
156	2	1	ABP	Abbott Laboratories (Pakistan) Ltd.

157	2	2	BAP	Bawany Air Products Ltd.
158	2	3	BPP	Berger Paints Pakistan Ltd.
159	2	4	BIL	Biafo Industries Ltd.
160	2	5	BXP	Buxly Paints Ltd.
161	2	6	CPL	Clariant Pakistan Ltd
162	2	7	CGP	Colgate-Palmolive (Pakistan) Ltd.
163	2	8	DAL	Data Agro Ltd.
164	2	9	DHC	Dawood Hercules Corporation Ltd
165	2	10	DOL	Descon Oxychem Ltd.
166	2	11	DPL	Dynea Pakistan Ltd.
167	2	12	ECL	Engro Chemical Pakistan Ltd.
168	2	13	EPCL	Engro Polymer & Chemicals Ltd.
169	2	14	FBQ	Fauji Fertilizer Bin Qasim Ltd.
170	2	15	FCL	Fauji Fertilizer Co. Ltd.
171	2	16	FLB	Ferozsons Laboratories Ltd.
172	2	17	GML	Glaxo Smith Kline Pakistan Limited
173	2	18	HLL	Highnoon Laboratories Ltd.
174	2	19	ICI	ICI Pakistan Ltd.
175	2	20	ITC	Ittehad Chemicals Ltd.
176	2	21	LPG	Leiner Pak Gelatine Ltd.
177	2	22	LCP	Lotte Chemical Pakistan Ltd.
178	2	23	NIC	Nimir Industrial Chemicals Ltd.
179	2	24	OPL	Otsuka Pakistan Ltd.
180	2	25	PGC	Pakistan Gum & Chemicals Ltd.
181	2	26	PVC	Pakistan PVC Ltd.
182	2	27	SAP	Sanofi-aventis Pakistan Ltd.
183	2	28	SCI	Sardar Chemical Industries Ltd.
184	2	29	SHC	Shaffi Chemical Industries Ltd.
185	2	30	STC	Sitara Chemical Industries Ltd.
186	2	31	SPL	Searle Pakistan Ltd.
187	2	32	STPL	Sitara Peroxide Ltd.
188	2	33	WNC	Wah Nobel Chemicals Ltd.
189	2	34	WPL	Wyeth Pakistan Ltd.

190	2	35	ZIL	Zulfiqar industries limited
191	2	36	AGR	Agritech Ltd.
192	2	37	FFCL	Fatima Fertilizer Co. Ltd.
193	2	38	GGL	Ghani Gases Ltd.
194	2	39	DSF	Dewan Salman Fibre Ltd.
195	2	40	GRTL	Gatron (Industries) Ltd.
196	2	41	UDP	United Distributors Pakistan Ltd.
Motor Vehicles, Trailers & Autoparts				
197	3	1	AGT	Al-Ghazi Tractors Ltd.
198	3	2	AIL	Agriauto Industries Ltd.
199	3	3	AEL	Atlas Engineering Ltd.
200	3	4	ATH	Atlas Honda Ltd.
201	3	5	ATB	Atlas Battery Ltd.
202	3	6	ABC	Automotive Battery Co. Ltd.
203	3	7	BWL	Baluchistan Wheels Ltd.
204	3	8	BAL	Bela Automotives Ltd.
205	3	9	BCL	Bolan Castings Ltd.
206	3	10	DAE	Dewan Automotive Engineering Ltd.
207	3	11	DFM	Dewan Farooque Motors Ltd.
208	3	12	EPL	Exide Pakistan Ltd.
209	3	13	GTR	General Tyre & Rubber Co.
210	3	14	GIL	Ghandhara Industries Ltd.
211	3	15	GNL	Ghandhara Nissan Ltd.
212	3	16	GAI	Ghani Automobiles Industries Ltd.
213	3	17	HML	Hinopak Motors Ltd.
214	3	18	HAC	Honda Atlas Cars (Pakistan) Ltd.
215	3	19	IMC	Indus Motor Co. Ltd.
216	3	20	MTL	Millat Tractors Ltd.
217	3	21	PSC	Pak Suzuki Motor Co. Ltd.
218	3	22	SEW	Sazgar Engineering Works Ltd.
219	3	23	TEI	Transmission Engineering Industries Ltd.

Manufacturing n.e.s.				
220	4	1	ALKG	Al-Khair Gadoon Ltd.
221	4	2	BATA	Bata Pakistan Ltd.
222	4	3	ECO	Eco Pack Ltd.
223	4	4	LUP	Leather Up Ltd.
224	4	5	MACPAC	MACPAC Films Ltd.
225	4	6	MMPI	Mandviwala Mauser Plastic Industries Ltd.
226	4	7	PLC	Pak Leather Crafts Ltd.
227	4	8	SIL	Service Industries Ltd.
228	4	9	TRIP	Tri-Pack Films Ltd.
229	4	10	EMCO	Emco Industries Ltd.
230	4	11	GIL	Goodluck Industries Ltd.
231	4	12	KTC	Khyber Tobacco Co. Ltd.
232	4	13	IIL	International Industries Ltd.
233	4	14	JHPL	Johnson & Philips (Pakistan) Ltd.
234	4	15	KPC	KSB Pumps Co. Ltd.
235	4	16	MTSC	Metropolitan Steel Corporation Ltd.
236	4	17	ISL	International Steel Ltd.
237	4	18	ASM	Aisha Steel Mills Ltd .
238	4	19	DIL	Diamond Industries Ltd.
239	4	20	FIL	Fateh Industries Ltd.
240	4	21	GPL	Gillette Pakistan Ltd.
241	4	22	TCL	Treet Corporation Ltd.
242	4	23	SMC	Syed Match Co. Ltd.
243	4	24	TIC	The Thal Industries Corporation Ltd.
244	4	25	PEC	Pakistan Engineering Company Ltd.
245	4	26	QSW	Quality Steel Works Ltd.
246	4	27	SCL	Shield Corporation Ltd.
247	4	28	CSAP	Crescent Steel & Allied Products Ltd.
248	4	29	DEL	Dadex Eternit Ltd.
249	4	30	HSPI	Huffaz Seamless Pipe Industries Ltd.
250	4	31	PML	Philip Morris (Pakistan) Ltd. (Formerly Lakson Tobacco Company Ltd)

Electrical Machinery & Apparatus				
251	5	1	PEL	Pak Elektron Ltd.
252	5	2	PCL	Pakistan Cables Ltd.
253	5	3	SEC	Siemens (Pakistan) Engineering Co. Ltd.
254	5	4	CEGC	The Climax Engineering Co. Ltd.
255	5	5	WSP	Waves Singer Pakistan Ltd.
Food -Other Product				
256	6	1	CPL	Clover Pakistan Ltd
257	6	2	IIL	Ismail Industries Ltd.
258	6	3	MFL	Mitchell's Fruit Farms Ltd.
259	6	4	MIL	Morafco Industries Ltd.
260	6	5	MBC	Murree Brewery Co. Ltd.
261	6	6	NFL	National Foods Ltd.
262	6	7	NPL	Nestle Pakistan Ltd.
263	6	8	POM	Punjab Oil Mills Ltd.
264	6	9	QFI	Quice Food Industries Ltd.
265	6	10	RMP	Rafhan Maize Products Co. Ltd.
266	6	11	SSO	S.S. Oil Mills Ltd.
267	6	13	SIL	Shezan International Ltd.
268	6	14	UPF	Unilever Pakistan Foods Ltd.
269	6	43	WAIL	Wazir Ali Industries Ltd.
Food: Sugar				
270	6	12	SKF	Shakarganj Food Ltd.
271	6	15	ASGM	Abdullah Shah Ghazi Sugar Mills Ltd (Al-Asif Sugar Mills Ltd.)
272	6	16	ASM	Adam Sugar Mills Ltd.
273	6	17	ABS	Al-Abbas Sugar Mills Ltd.
274	6	18	ANS	Al-Noor Sugar Mills Ltd.
275	6	19	ASM	Ansari Sugar Mills Ltd.
276	6	20	BFS	Baba Farid Sugar Mills Ltd.
277	6	21	CSM	Chashma Sugar Mills Ltd.
278	6	22	DSM	Dewan Sugar Mills Ltd.

279	6	23	FSM	Faran Sugar Mills Ltd.
280	6	24	HSM	Habib Sugar Mills Ltd.
281	6	25	HWSM	Haseeb Waqas Sugar Mills Ltd.
282	6	26	HSML	Husein Sugar Mills Ltd.
283	6	27	JSML	JDW Sugar Mills Ltd.
284	6	28	KSM	Khairpur Sugar Mills Ltd.
285	6	29	MSM	Mehran Sugar Mills Ltd.
286	6	30	MSML	Mirpurkhas Sugar Mills Ltd.
287	6	31	MRSM	Mirza Sugar Mills Ltd.
288	6	32	NSM	Noon Sugar Mills Ltd.
289	6	33	PSML	Pangrio Sugar Mills Ltd.
290	6	34	SGM	Sakrand Sugar Mills Ltd.
291	6	35	SSM	Sanghar Sugar Mills Ltd.
292	6	36	SHSM	Shahmurad Sugar Mills Ltd.
293	6	37	SSML	Shahtaj Sugar Mills Ltd.
294	6	38	SASM	Sindh Abadgar'S Sugar Mills Ltd.
295	6	39	TSM	Tandlianwala Sugar Mills Ltd.
296	6	40	FSMD	The Frontier Sugar Mills & Distillery Ltd.
297	6	41	PSMD	The Premier Sugar Mills & Distillery Co. Ltd.
298	6	42	ADM	Habib - ADM Ltd. (Habib Arkady LTD.)
Other Non-Metallic Mineral Products: Cement				
299	7	1	PCE	Power Cement
300	7	2	ATC	Attock Cement Pakistan Ltd.
301	7	3	BCL	Bestway Cement Ltd.
302	7	4	CCCL	Cherat Cement Co. Ltd.
303	7	5	DGKC	D.G. Khan Cement Co. Ltd.
304	7	6	DCIL	Dadabhoy Cement Industries Ltd.
305	7	7	DCCL	Dandot Cement Co. Ltd.
306	7	8	DWCL	Dewan Cement Ltd.
307	7	9	FCL	Fauji Cement Co. Ltd.
308	7	10	FEC	Fecto Cement Ltd.
309	7	11	FCC	Flying Cement Co. Ltd.
310	7	12	GCL	Gharibwal Cement Ltd.

311	7	13	KCC	Kohat Cement Co. Ltd.
312	7	14	LPC	Lafarge Pak. Cement Ltd.
313	7	15	LCL	Lucky Cement Ltd.
314	7	16	MLC	Maple Leaf Cement Factory Ltd.
315	7	17	MUCL	Mustehkam Cement Ltd.
316	7	18	PCL	Pioneer Cement Ltd.
317	7	19	ZPCF	Zeal Pak Cement Factory Ltd.
Other Non-Metallic Mineral Products: MINERALS				
318	8	1	KCL	Karam Ceramics Ltd.
319	8	2	FCL	Frontier Ceramics Ltd.
320	8	3	BGL	Balochistan Glass Ltd.
321	8	4	GGL	Ghani Glass Ltd.
322	8	5	STC	Shabbir Tiles and Ceramics Ltd.
323	8	6	TGI	Tariq Glass Industries Ltd.
Fuel and Energy				
324	9	1	AEL	Altern Energy Ltd.
325	9	2	JPG	Japan Power Generation Ltd.
326	9	3	KESC	K-Electric (formerly KESC)
327	9	4	KEL	Kohinoor Energy Ltd.
328	9	5	KPC	Kohinoor Power Co. Ltd.
329	9	6	KAPC	Kot Addu Power Co. Ltd.
330	9	7	MPCL	Mari Petroleum Co. Ltd. (Formerly Mari Gas Co. Ltd.)
331	9	8	OGDC	Oil & Gas Development Co. Ltd.
332	9	9	SGP	S.G. Power Ltd.
333	9	10	SEL	Sitara Energy Ltd.
334	9	11	SEPC	Southern Electric Power Co. Ltd.
335	9	12	HBC	The Hub Power Co. Ltd.
336	9	13	NPL	Nishat Power Ltd.
337	9	14	NCP	Nishat Chunian Power Ltd.
338	9	15	SNGP	Sui Northern Gas Pipelines Ltd.
339	9	16	SSGC	Sui Southern Gas Co. Ltd.
Other Services Activities				
340	10	1	JCL	Javedan Corporation Ltd.

341	10	2	DCT	Dadabhoy Construction Tech. Ltd.
342	10	3	GPL	Gammon Pakistan Ltd.
343	10	4	HCO	Haydari Construction Co. Ltd.
344	10	5	PHD	Pakistan Hotels Developers Ltd.
345	10	6	PSL	Pakistan Services Ltd.
346	10	7	IBL	IBL HealthCare Ltd.
347	10	8	PACE	Pace (Pakistan) Ltd.
348	10	9	UBL	United Brands Ltd.
349	10	10	SIH	Shifa International Hospitals Ltd.
Information, Comm. & Transport				
350	11	1	PITL	Pakistan Int. Container Terminal Ltd.
351	11	2	PIAC	Pakistan International Airlines Corporation Ltd.
352	11	3	PNSC	Pakistan National Shipping Corporation.
353	11	4	HNL	Hum Network Ltd.
354	11	5	MTL	Media Times Ltd.
355	11	6	NTL	Netsol Technologies Ltd.
356	11	7	PDL	Pak Datacom Ltd.
357	11	8	PTC	Pakistan Telecommunication Co. Ltd.
358	11	9	TEL	Telecard Ltd.
359	11	10	WTL	Worldcall Telecom Ltd.
360	11	11	TRG	TRG Pakistan Ltd.
Coal and Refined Petroleum products				
361	12	1	APL	Attock Petroleum Ltd.
362	12	2	AFL	Attock Refinery Ltd.
363	12	3	BPL	Byco Petroleum (Formerly Bosicor Pakistan Ltd.)
364	12	4	NFL	National Refinery Ltd.
365	12	5	POL	Pakistan Oilfields Ltd.
366	12	6	PPL	Pakistan Petroleum Ltd.
367	12	7	PRL	Pakistan Refinery Ltd.
368	12	8	PSO	Pakistan State Oil Co. Ltd.
369	12	9	SPL	Shell Pakistan Ltd.
Paper, Paperboard and Products				
370	13	1	BPB	Baluchistan Particle Board Ltd.

371	13	2	CBM	Century Paper & Board Mills Ltd.
372	13	3	CPL	Cherat Packaging Ltd.
373	13	4	DSL	Dadabhoy Sack Ltd.
374	13	5	MPL	Merit Packaging Ltd.
375	13	6	PGL	Packages Ltd.
376	13	7	PPL	Pakistan Paper Products Ltd.
377	13	8	SPL	Security Papers Ltd.
378	13	9	AIL	Abson Industries Ltd.
				Miscellaneous
379	14	1	MLC	Macdonald Layton & Company Ltd. (MLC)
380	14	2	HCL	Hashimi Can Co. Ltd.