Accrual Management in the Pakistani Non-Financial Firms: Explaining the Role of Idiosyncratic Risk and Macroeconomic Uncertainty

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Abstract

The growing global uncertainty has pushed firms to re-assess their financial strengths, and re-examine their earning management strategies and methods. It is now common knowledge that firms face unexpected variations in several different, firm-specific, and macroeconomic factors at a time. Therefore, this research sets out to examine the role of both idiosyncratic (firm-specific) risk and macroeconomic uncertainty in earnings (discretionary accrual) management, of 400 non-financial listed firms, over the time period spanning from the year 2000-2016. In this regard, this study offers robust empirical evidence that is based on the importance of both idiosyncratic and macroeconomic uncertainties, by considering various indicators of each type of uncertainty that is taken into account. The empirical findings state that there is a negative impact of both types of uncertainties on discretionary accruals. Notably, the findings reveal that compared to the impact of idiosyncratic risk, the uncertainty associated with macroeconomic factors tends to have greater impacts on accrual management of the Pakistani firms. These findings about the earning management effects of uncertainty are useful for different stakeholders including policymakers, customers, suppliers, investors and firm managers in order to formulate appropriate strategies and device relevant policies.

Keywords: Firms-specific risk, macroeconomic risk, accrual management, cash flow volatility, sales volatility, and return on assets.

JEL Classification: D81, G10, G11, G14, G32.

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1. Introduction

Various types of uncertainties such as firm-specific uncertainty, political uncertainty, economic policy uncertainty and the uncertainty regarding macroeconomic indicators have several serious implications for financial and economic decisions of corporate firms. Both empirical and theoretical studies in the past have documented significant evidence regarding the uncertainty effects on different operations and numerous economic and financial decisions of corporate firms across the globe. For example, Baum, Caglayan, and Talavera (2010), Rashid (2011), Kang, Lee, and Ratti (2014), Shima (2016), Rashid and Saeed (2017), Ahmadi, Manera and Sadeghzadeh (2019), Khan, Qin, and Jebran (2020), and Rashid, Nasimi, and Nasimi (2021), among several others, have propagated that the uncertainty about different firm-specific variables and macroeconomic indicators have a significant influence on firms' investment policies and decisions. Similarly, Rashid (2014), Caglayan and Rashid (2014), Rashid (2016, 2017), Baum, Caglayan, and Rashid (2017), Chow, Muhammad, Bany-Ariffin, and Cheng (2018), Datta, Doan, and Iskandar-Datta (2019), Khan, Qin, and Jebran (2020), and Im, Kang, and Shon (2020) have also examine the link of the capital structure decisions of corporate firms with the level of uncertainty faced by firms. Some other empirical studies including Esposito (2017), Gervais (2018), and Rashid, Hassan, and Karamat (2020) found that the factor of uncertainty is one of significant determinants of firms' exporting decisions and exporting performance. Past studies have also examined and documented the significant effects of different types of uncertainty on firms' cash holding decisions (Akram, Rashid, & Anjum, 2019; Chakraborty, Baum, & Liu, 2016; Phan, Nguyen, Nguyen, & Hegde, 2019).

Another group of researchers has looked into the role of uncertainty in firms' earnings management activities and techniques. For instance, Chang, Wang, Chiu, and Huang (2015) doing an empirical investigation found that firm-level risk tends to have favorable effects on accrual-based earnings management (AEM) and real earnings management (REM). This implies that firms are more expected to involve in different earnings management activities, and consequently, manipulate overall economic and financial performance when they face firm-level uncertainty in their operations. Furthermore, Stein and Wang (2016) found significant, negative relationships between discretionary accruals and unanticipated changes in economic policies and unpredicted fluctuations in financial markets. Similarly, Datta, Datta, and Singh (2017) provided significant evidence of the positive link between idiosyncratic risk and accruals management, suggesting that companies are more

prone to apply accruals management strategies when they become uncertain about their earnings and future cash flows. The authors also showed that the positive and significant impacts of firm-specific risk on earnings management practices are robust to different proxies of risk used in the empirical analysis.

Some researchers have successfully related political instability to earning management decisions of firms. For example Yung and Root (2019) found that the uncertainty associated with political system has significant and positive impacts on earnings management strategies of firms. Like corporate non-financial firms, the opacity of bank earnings is also significantly related to uncertainty. Specifically speaking, Jin, Kanagaretnam, Liu, and Lobo (2019) argued that since the variations in earnings and cash flows of banks increase with the variations in economic conditions, managers have access to more incentives and opportunities for earnings management, particularly in periods of increased uncertainty. In this regard, using a large dataset of the USA banks, they concluded that bank managers are more prone to control and manage their earnings during episodes of higher economic policy uncertainty. However, they also highlighted that the effects of uncertainty on different types of distortions in financial reporting are weaker for banks with larger capital ratios. Following the same context, Haque, Fatima, Abid, and Qamar (2019) investigated the impacts of firm-level uncertainty on earnings manipulation and reported that in periods when the uncertainty is relatively higher, firm managers perform more earnings management. They, however, showed that accounting for conservatism reduced the impact of uncertainty on earnings management significantly.

Although a considerable amount of existing literature has confirmed the substantial role of uncertainty in the manipulation of earnings, yet the literature suffers from some drawbacks. For instance, previous studies have largely scrutinized the effect of either firm-level or macroeconomic uncertainty on earnings management, separately. Therefore, we know title how different types of uncertainties are at play when they are considered jointly in analyzing firms' earning management decisions. However, there is dearth of empirical evidence pertaining to the effects that uncertainty puts forth, particularly when both types of uncertainties are included in the specification. Since both the types of uncertainties have significant managerial implications, and firms face them simultaneously while making critical decisions, it would be worthwhile to examine their joint effect on the earnings manipulation. In this regard, we are able to ascertain whether and which type of

uncertainty induces firm managers to be engaged in earnings management activities by empirically assessing the impacts of both idiosyncratic and macroeconomic uncertainties on earnings management.

Furthermore, earlier research has primarily used a single proxy/measure of uncertainty for gauging firm-specific and macroeconomic uncertainty to assess the effects of risks while evaluating the uncertainty-earnings management relationship. However, in principle, firms face unexpected variations in several different firm-specific factors and macroeconomic variables at the same time. Therefore, to present more robust and unbiased evidence on whether and how uncertainty influences different strategies for earnings management, it would be useful to construct a composite uncertainty index based on multiple/different indicators for measuring firm-level and macroeconomic uncertainty associated with different indicators.

Given the paucity of empirical evidence and gaps in the research, this paper adds to the literature on the uncertainty-earnings management association on several grounds. This contribution is primarily accomplished by looking into the importance of firm-specific uncertainty as well as macroeconomic uncertainty in firms' decisions to involve in earnings manipulation. The empirical analysis of the paper is based on a relatively large sample of non-financial listed firms in Pakistan's equity market. The paper also expands the literature by studying the effects of firm-level composite uncertainty index (FU Index) and macroeconomic uncertainty index (MU Index) constructed based on variations in multiple indicators on earnings management practices. These composite indices are constructed by using several different indicators, through Principal Components Analysis (PCA). Empirical evidence concerning the role of uncertainty in earning management practices, based on the PCA-based firm-level and macroeconomic uncertainty index, can contribute to a better understanding of the managerial implications of the variables that influence uncertainty. Based on the existing empirical literature and given theoretical explanations, we hypothesize that both types of uncertainties are positively, significantly related to earnings management activities of firms. Said differently, we assume that firms are expected to engage more in earning management practices during episodes of increased uncertainty. We also postulate that compared to the effects of firm-level uncertainty, the effects of macroeconomic uncertainty on earnings manipulation are higher and more profound. We predict this because firms find additional incentives and opportunities to manipulate their earnings, particularly when macroeconomic conditions are more volatile and uncertain.

How does firm-specific risk affect firms' earning management decisions? What are the motives behind doing accrual management? Are the effects of uncertainty on earnings management long lasting? Do different types of uncertainties induce firm managers to engage in different types of earnings smoothing practices? Earning management theories provide different answers to these questions. According to the Big Bath Theory, managerial income is the key factor in the management of accounting statements (Levitt 1998; Watts & Zimmerman, 1990). In more specific terms, this theory states that in periods of increased uncertainty, firms manipulate their earnings in such a way that their position seems to be even worse than it actually is. Perhaps firms do so in order to inflate their earnings in the coming years. Given this description, we can infer a significant negative association between uncertainty and firms' involvement in earnings management activities. Contrastingly, the agency theory proposed by Jensen and Meckling (1976) asserts that there is a positive association between firm-specific risk and accrual-based earning management. In the same context, as explained by Myers (1977), increased business risk also tends to increase the cost of capital and worsen the asymmetric information problem. This higher cost and inflated problem of asymmetric information, in turn, motivate and induce corporate firms to indulge in additional earnings management, so as to reduce risk premiums and the costs of capital.

Given the above theoretical underpinnings, whether uncertainty affects firms' earnings management practices positively or negatively significantly depends on whether idiosyncratic and macroeconomic volatilities/uncertainties improve or worsen the information environment. It also depends on whether the uncertainty increases or decreases the cost of capital, by affecting risk premiums. If different kinds of uncertainties increase firms' earnings volatility, exacerbate asymmetric information problems, and cause investors to demand higher risk premiums, then firms manage to find more incentives to manipulate their earnings. This is done, so as to reduce the adverse impacts of increased volatilities on the stock returns and financing costs. Several scholars such as Watts and Zimmerman (1986) and Subramanyam (1996) have argued that the smoothed earnings of firms provide better information to outside investors, and thus, reduce the risk premium and costs of capital. Therefore, firms find earnings management to be more beneficial in periods when they face higher levels of uncertainties in their operations. In contrast, the effect of uncertainties on earnings management would be negative, if uncertainty improves firm-level information environment. Because of the uncertainty in the environment, enhanced earnings

information diminishes firms' incentives and opportunities to participate more actively in earnings management.

Similar to the theoretical explanations, empirical investigations have also provided inconclusive evidence concerning the effects of volatilities/uncertainties on earnings management of firms. Firms generally involve in earnings management exercises for a variety of different reasons (Healy & Wahlen, 1999). In addition, AEM is recognized to be an effective and useful way to smooth out earnings (Burgstahler & Dichev, 1997). Similarly, Holthausen, Larcker, and Sloan (1995) proposed that firms' managements employ retained earnings to transform income over time. Companies usually utilize AEM to increase the value of stocks and their income, and also to obtain capital at lower costs (Collins & Hribar, 2000). In the same context, in their study, Beneish and Vargus (2002) demonstrated that high earnings are accompanied through stock trades. On the other hand, another study by Bergstresser and Philippon (2006) examined the earnings of firms, whose chief executive officers' (CEOs) rewards were linked to the worth of the stocks and options. Conversely, Dichev, Graham, Harvey, and Rajgopal (2013) also demonstrated that the companies' directors get access to incentives by engaging themselves in earnings management, avoiding specified losses, reducing earnings, and influencing the earnings predictors. Additionally, it is also evident that different types of organizations are highly motivated to earn more when they face deviations in their businesses and incomes (Bakke & Whited, 2010; Hutton, Marcus, & Tehranian, 2009).

Reviewing the specific empirical and theoretical literature for the purpose of dwelling deeper into this discipline, it was observed that some studies seem to have established that firm-specific uncertainty is significantly related to firms' earnings management practices (Ali, Hwang, & Trombley, 2003; Bartram, Brown, & Stulz, 2009; Kelly, 2014; Chang, Wang, Chiu, & Huang, 2015; Stein & Wang, 2016; Datta, Datta, & Singh, 2017; Yung & Root, 2019; Jin, Kanagaretnam, Liu, & Lobo, 2019; Haque, Fatima, Abid, & Qamar, 2019). Yet, various other studies have explained that firm-level uncertainty also affects the decision of managerial earnings, examples of which might include, cash flows, stock prices, research and development (R&D) expenditure (Gulen & Ion, 2016; Julio & Yook, 2012; Stein & Stone, 2014) and firms' costs and risk premium (Pastor & Veronesi, 2012). In particular, Arif, Marshall, and Yohn (2016) and Gulen and Ion (2016) showed that firms that are under the influence of higher idiosyncratic uncertainty might also indulge in more earnings management.

At other instances, according to Bartov, Gul, and Tsui (2000) and Kothari, Leone, and Wasley (2005), firms' value rises with their return on assets. The link between uncertainty/volatility and AEM is expected to be positive and statistically significant, if the lower level of firm-specific uncertainty is accompanied with any other information regarding firm-specific factors (Hutton, Marcus, & Tehranian, 2009). However, according to Roll's (1988) findings, there are positive relationships between firm-specific risk and accrual-based firms' earnings management. In addition to this evidence, Badertscher, Collins, and Lys (2012) also depicted that uncertainty plays a crucial role in deciding whether firms should, in fact, manage their earnings or not. In this regard, Hackbarth, Miao, and Morellec (2006) recommended that the acquiring consequences for companies are pro-cyclical. In contrast, the findings of Cassar and Holmes (2003), Wald (1999), and Flath and Knoeber (1980) demonstrated that firm-specific risk has statistically insignificant impacts on firms' earning management decisions.

The extant literature has also examined the role of macroeconomic uncertainty on firms' accrual-based earning management practices (Baker & Bloom, 2013), business cycles (Bianchi, Ilut, & Schneider 2017; Bidder & Smith, 2012; Christiano, Motto, & Rostagno, 2014; Bloom, Floetotto, Jaimovich, Saporta-Eksten, & Terry 2018), and financial development (Bachmann & Bayer, 2014). Particularly, the noteworthy is that Bhamra, Kuehn, and Strebulaev (2010), Chen (2010), Korteweg (2010), Levy and Hennessy (2007) documented the evidence, indicating that corporate firms have a tendency to understate their earnings, especially in periods when macroeconomic conditions are adverse and volatile. Specifically, the studies of Bhamra, Kuehn, and Strebulaev (2010) and Chen (2010) showed that unanticipated changes in macroeconomic circumstances significantly diminish various tax benefits of debt by rising discount rates and worsening projected potential future cash flows.

In spite of having a wide-ranging literature on the impacts of uncertainty/risk and firm earning management for developed countries, little consideration has been given to emerging and developing economies like Pakistan. Therefore, this study has multifold contribution in the existing empirical literature on the effects of earning management practices of firms of various uncertainties concerning macroeconomic factors and firm-specific variables.

Firstly, we have examined the simultaneous impact of two types of uncertainties, namely macroeconomic uncertainty and idiosyncratic

uncertainty (aka. firm-specific uncertainty/risk), on the earning management practices of 400 non-financial firms in Pakistan, over the period from 2000 to 2016. In doing so, we have not restricted ourselves to only one measure of uncertainty in either case. We have, in fact, utilized several different measures of both categories of uncertainties while examining the impacts of uncertainty on the earnings management practices of businesses. We do so to present the robust evidence on the uncertainty-earnings management association. In particular, we have used the volatility factors that pertain to firms' total sales, returns on assets, cash flows, and the market daily returns, as valid and relevant measures of idiosyncratic uncertainty. Likewise, the unconditional volatilities/variations associated with "industrial productions, consumer prices, interest rates, and real exchange rates are used as measures of macroeconomic uncertainty. This exercise helped us in identifying what type of macroeconomic uncertainty as well as firm-specific uncertainty is more relevant in earning management activities of the selected firms in the case of Pakistan, an emerging economy.

Secondly, in addition to the individual impact of each measure of uncertainty associated with different macroeconomic indicators and firm-specific factors, we also computed a consolidated index of uncertainty. Specifically, we constructed a composite index of macroeconomic uncertainty based on several different proxies of macroeconomic uncertainty by applying the PCA. In same fashion, we constructed the composite index of firm-level uncertainty by considering different proxies of firm-specific uncertainty. We assume that the constructed captures the different dimensions of uncertainty. This step was undertaken to gauge the overall impact of each kind of uncertainty on earnings management. We do so because we assume that, in practice, firms face several different types of both sorts of uncertainty at a time while making financial and economic decisions.

Third, our research is unique in the way that it examines the impact of both kinds of uncertainty on the earnings management of non-financial enterprises in Pakistan. We consider the case of Pakistan as firms operating here are likely to face higher firm-specific uncertainty and macroeconomic conditions of Pakistan are more volatile due to political and social instability and uncertainty associated with macroeconomic policies. Thus, the sample of Pakistani firms seems very relevant and provides us a good opportunity to study the effects of uncertainty. Finally, to the best of our knowledge, no such empirical investigation has yet been carried out, specifically for Pakistan. As a result, our research

has contributed to a better understanding of whether and which types of uncertainty are more relevant to the earnings management of Pakistani non-financial firms.

The remainder of the paper is prepared in the following manner. The available literature on the uncertainty-earnings management relationship is discussed in Section 2. The methodology, estimation technique, and data used in the empirical study are all described in Section 3. The empirical findings are discussed in Section 4, and the conclusions along with policy recommendations are offered in Section 5.

2.   Literature Review

There is innumerable literature which examines the impact of various microeconomic and macroeconomic factors, on the firms' earnings management. However, these studies have reported mixed findings in this regard. In this context, Ado, Rashid, Mustapha and Ademola (2020) explained the impacts of several financial factors on the accrual management and profitability of Nigerian firms. The study reported that there tends to be a positive impact of earnings management on firms' profitability. These results thus concluded that companies which are involved in the financial determinants of earnings management will experience a higher increase in their profitability. In similar terms, Li, Tang, and Wang (2020) also scrutinized the impact of macroeconomic uncertainty on earning management and investment opportunities. The findings reported that firms that do more manipulation their earnings have more investment opportunities, and vice versa. However, macroeconomic uncertainty tends to weaken the influence of earning management activities on available investment opportunities. The significant determinants of earnings management in developing countries, as well as the implications for financial statement integrity, were also discussed by Priharta and Rahayu (2019). The study confirmed that good governance at corporate level, and high quality audit services has a vital role to play in decreasing companies' involvement in practices to manage earnings. This finding is more profound particularly in developing countries. Earnings management methods are expected to have significant impacts on firms' financial statements' integrity, so audit services help organizations increase the quality and value of their financial statements.

Yung and Root (2019) also studied how policy uncertainty affects earnings management activities of firms by utilizing global level data.

The study concluded that during episodes of amplified uncertainty associated with economic policies, businesses increased their earnings management, and vice versa. However, it was also observed that earnings management adversely affected firm value, by reducing the quality of financial reporting. They also concluded that the national culture and other macroeconomic factors of a country do not affect the earnings management of firms. At another instance, Haque, Fatima, Abid, and Qamar (2019) inspected the role of different accounting principles, namely accounting conservatism, in the context of firm-specific uncertainty-earning management relationships. Their findings indicated that uncertainty, assessed by a dichotomous variable, leads to the manipulation of earnings management. However, accounting conservatism tends to restrict the extent of earning management, especially during the times of uncertainty. This is because it helps in reducing the opportunities of earnings management, by identifying the losses, reducing the prospects of opportunistic behavior of financial reporting, and plummeting the issues such as adverse selections and moral hazard problems.

Chen and Gong (2019) referred to the significance of comparability when analyzing firms' performance, and its impact on accrual management. Their study concluded that the comparability principle improves the financial reporting quality, and accordingly allows firms to calculate accruals in a more truthful manner. Moreover, the study also reported that with the increase in comparability, the discretionary accrual tend to decline as well. Hung, Do Hoai Linh, Hoa, and Ha (2018) also examined the determinants of accrual and real earnings, and explained the significant and positive impact of consolidated financial statements, financial performance and financial leverage, on accrual earnings management.

Moving on, the extant literature revealed that Jackson, Rountree, and Sivaramakrishnan (2017) established the link between the earnings co-movement, and the earnings management. Based on the accounting theory, the study reported that when firms' earnings co-move with the market, the chances of earnings manipulation tend to be lesser. Debnath (2017) also examined the influence of firms' growth and performance status on firms' management of earnings. The study reported that firm growth has positive and significant effects on discretionary accruals. Nevertheless, the performance of firms is adversely related to discretionary accruals. Datta, Datta, and Singh (2017) also found that firm-specific uncertainty has favorable correlations with firms' earnings

management. Further, a significant positive relation amongst organizations' residuals and income has been observed based on the findings of the study. Similarly, Farhadvand and Jalilian (2017) reported positive relationships between risk and firm earnings management.

Furthermore, a study of Sellami (2016) analyzed the AEM and REM of French registered firms, over a time period of 1999 to 2011. The findings of the study confirmed that companies manage income and use REM to smoothen out their incomes. Rezaei and Neghabi (2016) also suggested that there are significant positive impacts of firm size on the firms' involvement in managing their profits and earnings. They also reported positive influences of the profitability index and the sales growth of firms on earnings management of selected companies.

Moreover, Stein and Wang (2016) explained that during uncertain times, firms appear to opportunistically manage their earnings. This finding implies that when uncertainty is above the expected level, firms' managers tend to do more earnings management. They further stated that this negative link is similar to the negative association between the factor of uncertainty and firms' investment in working capital, as based on market information. In this regard, thus, firms strategically manage their earnings.

Chang, Wang, Chiu, and Huang (2015) scrutinized the relationship between earning management strategies and firm-specific risk indicators for the period from 2000 to 2010. They, therefore, concluded that firm-specific risk has a positive link with firms' earning management. Moreover, Chen and Wang (2015) also empirically explained the link between risk and firms' stock returns. Based on a threshold regression analysis, they found a positive link between stock returns and firm-specific risk, especially when investors were less motivated to diversify. Also, a negative relationship was observed when investors have a strong incentive to diversify. They concluded that investors' incentive for diversification changes with time.

Patel and Cooper (2014) also explained that companies with high firm-specific risks provide greater incentives to their respective management, and other administrators, so as to manipulate earnings. Furthermore, Kitagawa and Okuda (2014) found that the organizations' forecast error was less positively linked with firm-specific uncertainty, in which information flows tend to be comparatively better. At another instance, Stein and Stone (2014) also examined whether uncertainty

affects firms' investment decisions. They concluded that uncertainty damages capital investment, hiring and advertising. However, on the other hand, it also encourages R&D investment. In the same context, Strobl (2013) also looked into how earnings management affects a company's cost of capital. This was undertaken by employing the agency model, and highlighting that firms adjust earnings based on the business cycle trends. In periods of boom, earnings are reported higher, primarily in order to take the advantage of good economic health, while the reverse holds true for any downturns experienced in the economy. Likewise, Fan and Yu (2013) explained that firm-specific risk has a lesser influence on abnormal returns for industrialized economies, as compared to the developing economies.

Dwelling deeper into the literature, Sarwar and Muradoglu (2013) examined the effects of the risk factors that are experiences at a firm-level and income level. They explained that risk factors at the portfolio level do not completely eliminate the momentum returns, regardless of the micro or macro level variables that come into play. Moreover, Tariverdi, Keighobadi, and Tavasol (2013) also observed that firms' ownership structure, growth, and size appear to have positive and significant relationships with firms' earnings management activities. Moving on in the same stride, Dadbeh and Mogharebi (2013) also studied the consequence of asymmetry information problem on income, and highlighted that asymmetric information tends to have positive effects on the earnings management. At another instance, Rani, Hussain, and Chand (2013) analyzed the managerial motivations for earnings management. They identified that earnings management is a universal phenomenon, and companies generally manage their earnings to have easy accessibility to incentives such as lower financing costs, increased compensation, encouragement to fulfil target opportunities, and lower monitoring expenses. Furthermore, Dichev, Graham, Harvey, and Rajgopal (2013) also revealed that directors have incentives to take the appropriate measures in earning management decisions to circumvent any potential and expected reporting issues/errors.

Similarly, He, Li, Wei, and Yu (2012) also conducted a research on firms' uncertainty and income incentives in the United States. They found that profitability uncertainty and moral risk are factors that are interrelated with each other. In this regard, Chen and Sougiannis (2012) also explained that stock return volatility is dynamically connected with the managerial decision of firms, specifically in terms of accruals.

Markarian and Albornoz (2010) empirically tested the impact of income smoothing on the firms' factor of uncertainty. They showed that firm-specific volatility has significant and negative impacts on income smoothing. Through their findings, they interpreted that the procedures of income smoothing are effective, in order to decrease the uncertainty of the stock price. Rajgopal and Venkatachalam (2011) empirically examined the influence of return-volatility, on firm-specific variables. They showed that the earning quality is associated with greater idiosyncratic returns' volatility. Also, Gray, Koh, and Tong (2009) found a significant influence of firm-specific risk and accruals, on capital budgeting. They confirmed that there are strong associations between capital costs and accruals. Furthermore, they propagated the idea that equity and debt financing costs are inextricably tied to the quality of accruals resulting from economic fundamentals.

Conversely, Kothari (2000) asserted that surprising financial announcements could contribute towards the reduction of information asymmetries amongst financial analysts and outsiders. In the same context, Ghosal and Loungani (2000) demonstrated that the correlation between earnings and uncertainty is highly significant and negative.

The above-mentioned review of the extant literature indicates that despite numerous studies on the discipline of earning management, no conclusive relationship between uncertainty and earnings management can be formulated. Moreover, most studies conducted in the past have focused mainly on firm-specific uncertainty, while the macroeconomic volatilities affecting earnings management practices are not given due consideration. Furthermore, the existing studies have mainly been gauged on the basis of firm-level uncertainty that typically revolves around single firm-specific variables. Moreover, these studies do not take into account the volatilities of the diverse firm variables, in a composite framework. Therefore, it is pertinent to study the impacts of uncertainty associated with different macroeconomic indicators and with different firm-specific factors in determining firms' involvement in manipulating their earnings. Other than that, it would be also important to construct the index of both types of uncertainties, based on the volatilities associated with the different firm-specific and macroeconomic indicators, while examining the uncertainty-earnings management relationship.

3. Analytical Framework

3.1. Estimation Process

The estimation process of this paper is based on the following steps. We estimated the following model, based on the Absolute Discretionary Accruals (ADA):

$$ADA_{it} = \alpha + IV_{it}\beta + MV_t\gamma + VCV_{it}\lambda + f_i + f_t + \varepsilon_{it} \tag{1}$$

Where i shows the firms (400 non-financial firms), and t denotes the time period (t = 2000-2016). IV_{it} is the matrix of idiosyncratic uncertainty, which contains sales volatility (SV), return on asset volatility (ROAV), and cash flow volatility (CFV). Furthermore, MV_t is a matrix of macroeconomic uncertainty including the industrial production index volatility (IPIV), consumer price index volatility (CPIV), interest rate volatility (INTV), and real exchange rate volatility (REXV). VCV_{it} represents the matrix of firm-specific control variables, including firm leverage (LEV), asset growth (AG), firm size, and the firm age. f_i and f_t capture the effects of firm-fixed effect, and the year-fixed effect, respectively. Whereas, ε_{it} denotes the disturbance term.

Next, in order to compute the ADA, following the teachings of Kothari, Leone, and Wasley (2005), we first estimated the total accruals (TA) as follows.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \left(\frac{\Delta REV_{it}}{A_{it-1}} + \frac{\Delta AR_{it}}{A_{it-1}}\right) + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \alpha_4 ROA_{it-1} + \epsilon_{it} \tag{2}$$

Where i shows the number of firms, and t denotes the time period. TA_{it} is the total accrual, which is computed by the distinction of net income, and cash flows. Then, ΔREV_{it} determines the variation in sales, ΔAR_{it} determines the deviation in receivables, PPE_{it} refers to the aggregate property, plant, and equipment, and ROA represents return on assets. We also utilized ROA_{it-1} as an additional variable, so as to normalize the effect of any possible execution on an organization's income. This procedure depends on the presumption that the organizations in an enterprise, at a definite point in time, tend to show identical features and traits.

Notably, all the above-mentioned coefficients have been computed by normalizing through the one period lagged assets (A_{t-1}). Moreover, the ROA_{it-1} in equation (2) is calculated as the Net Income $_{(it-1)}/A_{(it-1)}$. We have also utilized the assessed coefficients i.e., $\hat{\alpha}_1, \hat{\alpha}_2, \hat{\alpha}_3,$ and

$\hat{\alpha}_4$, so as to make estimations regarding the discretionary accrual (DA) as follows:

$$\widehat{DA_{it}} \equiv \epsilon_{it} = \frac{TA_{it}}{A_{it-1}} - \left(\hat{\alpha}_1 \frac{1}{A_{it-1}} + \hat{\alpha}_2 \left(\frac{\Delta REV_{it}}{A_{it-1}} + \frac{\Delta AR_{it}}{A_{it-1}} \right) + \hat{\alpha}_3 \frac{PPE_{it}}{A_{it-1}} + \hat{\alpha}_4 ROA_{it-1} \right) \tag{3}$$

The values of DA are usually taken to specify the firms' accrual-based earnings management. This specific feature is used as a dependent variable (Model 1), to estimate the effect of idiosyncratic and macroeconomic uncertainty.

3.2. Measuring Uncertainty

3.2.1. Idiosyncratic Risk

There are various methods available to compute the factor of uncertainty that concerns any firm-specific variables. For instance, Huizinga (1993) utilized the conditional differences, which are attained from the GARCH method. Moreover, Carhart (1997) used the four-factor model, for calculating the coefficients pertaining to the firm-specific risk, by using the firms' residuals. At another instance, Ghosal and Loungani (2000) also computed uncertainty through the standard deviation method. Furthermore, Bo and Lensin (2005) estimated the volatility of stock price, as well as the number of personnel, in order to examine the uncertainties. Baum, Stephan, and Talavera (2009) obtained the risk factors of firm-specific variables, by measuring the standard deviation of firms' stock returns. More recently, Datta, Datta, and Singh (2017) among others, have also used the standard deviation method, in order to compute the idiosyncratic risk. By following the literature, we have also used the standard deviation method to compute the idiosyncratic volatility of the underlying firm-specific variables.

3.2.2. Macroeconomic Uncertainty

Similar to the firm-level uncertainty, macroeconomic uncertainty is also computed by using several different methodologies that have been presented in the extant literature. For instance, Driver, Temple, and Urga (2005), and Baum, Stephan, and Talavera (2009) amongst others, utilized the standard deviation method, in order to calculate macroeconomic uncertainty. Baum, Caglayan, and Talavera (2010) also calculated uncertainty in macroeconomic factors by estimating the GARCH model,

and by using the index of leading macroeconomic indicators. Other than that, Driver, Temple, and Urga (2005), and Khan, Qin, and Jebran (2020) also used the GARCH model to generate the factor of volatility for macroeconomic variables. Therefore, following the lead of the existing literature, we estimated macroeconomic uncertainty by employing the ARCH/GARCH method. We also computed the conditional variance by referring to the quarterly data on the underlying macroeconomic variables. In this regard, the mean equation of the GARCH model, with ARMA (1 1), is presented as follows.

$$Y_t = \rho + \alpha Y_{t-1} + \beta \varepsilon_{t-1} + \varepsilon_t \tag{4}$$

Where Y is the underlying macroeconomic variable, namely CPI, IPI, INT, and REX, while ρ and α are the parameters that were to be estimated. Moreover, Y_{t-1} defines the one period lagged variable, while ε denotes the error term. Thus, the variance equation is also expressed as follows.

$$\vartheta_t^2 = \tau_1 + \tau_2 \varepsilon_{t-1}^2 + \tau_3 \vartheta_{t-1}^2 \tag{5}$$

Where ε_{t-1}^2 represents the lagged value of the square disturbance term.

The data for a sample of 400 non-financial Pakistani firms listed at the "Pakistan Stock Exchange" was obtained from the "Balance Sheet Analysis of Non-Financial Companies", published by the "State Bank of Pakistan" over the time period from the year 2000 to 2016. The data based on the macroeconomic variables has been taken from the International Financial Statistics (IFS) database, by the International Monetary Fund (IMF).

The GMM estimation technique is used to evaluate the effects of two different uncertainties, namely the idiosyncratic and macroeconomic uncertainties, on earning management. In order to handle the issue of endogeneity, the robust two-step system GMM method has been utilized, as originally designed by Arellano and Bover (1995).

4.   Results and Discussion

4.1. Descriptive Statistics

The summary statistics are given in Table 1. It summarizes a given set of data, through several measures, i.e. the mean, standard deviations (SD), highest and the lowest values of the selected macroeconomic, and firm-specific variables. The table identified that among the idiosyncratic

factors, return on assets was highly volatile, on average. While among the macroeconomic factors, the interest rate appeared as highly volatile.

Table 1. Summary Statistics

Variables	Obs	Mean	SD	Min	Max
ADA	2732	0.004	1.067	8.87e-07	55.78
CFV	6177	0.149	1.844	0	102.15
SV	6137	0.394	0.396	0	6.235
ROAV	6188	15.927	182.33	0	9721.41
CPIV	6437	0.028	0.018	0.009	0.147
INTV	6437	0.186	0.071	0.082	0.415
IPIV	6437	0.001	0.003	0.000	0.022
REXV	6436	0.000	0.000	0.000	0.001
FS	5734	14.436	1.745	2.564	20.19
LEV	4839	0.283	0.380	0	1
AG	5213	0.095	0.250	-1.841	6.93
AGE	5752	31.856	17.802	0	155

Notes: Table 1 presents the summary statistics of uncertainty measures used in the study. The examination included 400 non-financial firms registered at PSX, while the sample period considered was from 2000 to 2016. Firm-Specific uncertainty has been measured by firm uncertainty, such as volatility of cash flow (CFV), sales volatility (SV), and return on asset volatility (ROAV). However, the factors of macroeconomic uncertainty depend upon the contingent variances of IPI, CPI, INT and REX, that were estimated by using the ARCH/GARCH model. Likewise, firm size (FS), leverage (LEV), Asset growth (AG), and Age (AGE) have also been used as control variables.

4.2. Discussion of Results

The empirical estimates have been presented in Panel A of Table 2, whereas, Panel B reports the diagnostic tests. Model 1 presents the baseline model, which did not incorporate the impact that had been influenced by any kind of uncertainty. This specification has been estimated to compare our findings with the earlier studies that happened to have only analyzed the determinants of ADA. Moving on, Model 2 only measured the impact of firm-specific uncertainty, while Model 3 has been estimated to examine the impact of macroeconomic uncertainty only. Model 4 presented the empirical estimates, by including both the macroeconomic and idiosyncratic uncertainties. The results of the diagnostic tests provided evidence of the validity of instruments that we have used in the respective estimations. Therefore, the estimated residuals appeared free from the second order correlations.

Table 2: Effect of Firm-Specific and Macroeconomic Uncertainty on Earnings Management

	Model 1 Without Uncertainty	Model 2 Firm-Specific Uncertainty	Model 3 Macroeconomic Uncertainty	Model 4 Firm-Specific and Macroeconomic Uncertainty
Panel A: Empirical Estimates				
Dependent Variable: Absolute Discretionary Accruals (ADA)				
Variables	**Coeff.** **(p-value)**	**Coeff.** **(p-value)**	**Coeff.** **(p-value)**	**Coeff.** **(p-value)**
L.ADA	-0.001*** (0.000)	0.004*** (0.001)	0.006*** (0.001)	0.006*** (0.002)
CFV		0.049*** (0.004)		0.046*** (0.006)
SV		-0.007*** (0.002)		-0.010*** (0.002)
ROAV		-0.000*** (0.000)		-0.000*** (0.000)
CPIV			0.021*** (0.001)	0.018*** (0.001)
INTV			-0.024*** (0.0006)	-0.024*** (0.000)
IPIV			7.970*** (1.632)	5.821*** (0.928)
REXV			-10.940*** (0.264)	-10.640*** (0.323)
FS	-0.002*** (0.000)	-0.003*** (0.000)	-0.005*** (0.0006)	-0.004*** (0.000)
LEV	0.001*** (0.000)	-.0003*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
AG	0.049*** (0.000)	0.095*** (0.000)	0.102*** (0.0002)	0.104*** (0.000)
AGE	-0.000*** (0.000)	0.0001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Constant	0.071*** (0.000)	0.066*** (0.001)	0.105*** (0.002)	0.087*** (0.002)
Panel B: Diagnostic Tests				
Hansen test	328.45	193.11	157.78	143.90
p-value	1.000	0.643	0.988	0.998
AR (2)	-0.260	0.910	1.330	1.350
p-value	0.797	0.365	0.185	0.178
Firm-year obs.	2231	2231	2231	2231
No. of firms	362	362	362	362
Instruments	210	210	210	210

Note: *** shows the level of significance at the 1%. Values in parenthesis are p-values.

The estimation results of Model 1 show statistically significant impacts of firm-specific variables on ADA, and these findings are in accordance with the existing literature based on this discipline. Specifically considering, the estimated value of the coefficient suggests that large firms are less engaged in earnings management. This finding is consistent with the observation that large firms tend to face fewer problems of information asymmetries, and they may also be able to get the required funds easily from external resources, that too at lower costs. Furthermore, large firms also generally emphasize on the quality of financial reporting, and apply less accounting tactics to give signal to outside investors. The coefficient of leverage also shows that firms increase their earnings smoothing with the aid of financial leverage. This result can also be justified, as firms with higher debt in their capital structure, are generally prone to bankruptcy. Therefore, as a consequence, they may manipulate their earnings, in order to provide better signals about their financial performance to their creditors. The results also suggest that growing firms are also expected to be more involved in earnings manipulation. Moreover, high-growth firms may invest in risky projects and thus, have more volatile earnings, which provides more incentives to firm managers to smoothen their earnings.

The estimation results of Model 2, as given in Table 2, show a negative and significant impact of firm-specific volatility, namely sales and ROA volatility, on the discretionary accrual management of firms. This finding suggests that firms tend to engage in less earnings management, particularly in periods when they face higher firm-level uncertainty. This finding supports the notion that idiosyncratic volatility improves a firm's information environment and thus, the firm does not need to manipulate its earnings, in order to reduce the risk premiums and the costs of capital. This negative effect of firm-level volatility, on earnings manipulation, also confirms the first hypothesis of this study. The results also provide evidence that firms with more volatile cash flows, indulge in more earnings management. Firms do so as cash flow is one of the important indicators for creditors as well as outside investors to gauge the financial soundness and liquidity position of the firm. Thus, during periods of higher variations in internally generated cash flows, firms find it more beneficial to smoothen out their earnings. This is primarily done to provide better signals, and consequently reduce the adverse effects of uncertain cash flow streams on firms' share prices, and the costs of financing.

Next, to test the effects of macroeconomic uncertainty on earnings manipulation, we have estimated Model 3, and the results are given in Table 2. From the estimates, we observed that the estimated coefficients, such as firm-level uncertainty, macroeconomic uncertainty also plays a critical role to play in firms' earnings management practices. Although all the estimated coefficients are statistically significant, the sign of the coefficient depends on the underlying indicator of macroeconomic variability. Specifically, the estimates advocate that the impact of both consumer price index volatility, and the industrial production index volatility are positive. Whereas, both the interest rate volatility and exchange rate volatility are inversely linked to the earnings management. These findings recommend that when real economic activities and consumer prices become more volatile, then the firms are inclined to engage themselves more in management of earnings. However, when the volatility in the financial markets (interest rates and exchange rates) increases, firms indulge in fewer earnings manipulation.

These findings have several important managerial implications. Specifically, these results suggest that firms may find more incentives and opportunities to manipulate their earnings, particularly when macroeconomic activities are more variable. Yet, firms may not do so in periods when the financial market conditions are more uncertain and volatile. This is primarily because the investors may care less about the financial reporting of firms, while determining the relevant risk premiums. The positive impacts put forth by the unexpected variations in prices, and industrial production, are consistent with the view that in bad economic conditions, firms tend to manipulate their financial statements. This is undertaken in order to smoothen out their earnings, so as to mitigate the adverse effects on stock prices, and the costs of financing. The positive effects of macroeconomic uncertainty supports our hypothesis, and also with the results of several past studies that have examined the impact of economic policy on firms' earnings management.

To examine the effect of both types of uncertainty on the earnings management simultaneously, we estimated another specification, where we considered both the uncertainties (Model 4). The results presented in Table 2 furnishes substantial evidence of the significant role of both types of uncertainties, in the earnings management of corporate firms. The results of this specification affirmed our earlier findings, for both firm-specific and macroeconomic uncertainty, on the earnings (discretionary accruals) management. In specific terms, the estimated value of the coefficients indicate that the CFV, CPIV, IPV have positive effects.

Whereas, the SV, ROAV, IRV, and ERV have negative effects on the earnings management. Consistent with this expectation, the effects of macroeconomic uncertainty tend to be more significant on earnings management, than those on firm-level uncertainty. This piece of evidence suggests that the uncertainty in macroeconomic environment induces the firm managers to engage in more earnings manipulations, so as to improve investors' perceptions about the fluctuations in earnings. The estimated coefficients of all other independent variables carry the expected signs, and appear significant in Model 4, which affirms our earlier fathomed outcomes of these variables.

4.3. Robustness Checks

In the above analysis, we have shown the separate/individual impact of various types of idiosyncratic and macroeconomic uncertainty, on firms' earnings management. In this regard, the empirical findings state both the positive and negative impact of both types of uncertainties, on ADA. For testing the overall impact of each type of uncertainty, we also constructed an index of idiosyncratic, as well as macroeconomic uncertainties, by employing the Principal Component Analysis (PCA) technique. The results for this are displayed in Table 3. Model 1 demonstrates the effect of only firm-specific uncertainty index (FU index), while Model 2 evaluates the effect of the macroeconomic uncertainty index (MU index) only. In Model 3, we incorporated the impact of both types of uncertainties. We presented this set of results, so as to examine the effect of both types of uncertainties. This task was undertaken by considering the uncertainty associated with different indicators, of both the underlying types of volatilities in a composite framework. We did so because we assumed that firms face all types of uncertainties that are associated with different indictors at a time. And these uncertainties influence their operations, as well as their economic and financial decisions.

Table 3: Effect of Idiosyncratic and Macroeconomic Uncertainty Index on Earnings Management

	Model 1 FU Index	Model 2 MU Index	Model 3 FU Index and MU Index
Panel A: Empirical Estimates			
Dependent Variable: Absolut Discretionary Accruals (ADA)			
Variables	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)
L.ADA	0.006***	0.006***	0.006***
	(0.000)	(0.000)	(0.000)
FU Index	-0.0004***		-0.0004***
	(0.000)		(0.000)
MU Index		-0.156***	-0.156***
		(0.000)	(0.000)
FS	-0.004***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)
LEV	-0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
AG	0.093***	0.095***	0.095***
	(0.000)	(0.000)	(0.000)
AGE	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Constant	0.082***	0.094***	0.094***
	(0.000)	(0.000)	(0.000)
Panel B: Diagnostic Test			
Hansen test	174.77	167.87	173.47
p-value	0.925	0.966	0.928
AR (2)	0.860	1.080	1.080
p-value	0.388	0.281	0.281
Firm-year obs.	2231	2231	2231
No. of firms	362	362	362
Instruments	210	210	210

Note: *** shows the level of significance at the 1%. Values in parenthesis are p-values.

The empirical results suggest that the index of firm-level uncertainty is significantly and negatively associated to earnings management. Similarly, the results also indicate that the composite index of macroeconomic uncertainty is also negatively and significantly affecting the earnings manipulation. These findings reveal that both types of uncertainties have a significant negative influence on earnings management, especially when they are considered in a joint framework. The adverse effects of both types of uncertainties are consistent with the notion that in periods where either type of uncertainties are heightened, the firm managers engage themselves in more earnings management.

This is undertaken as an attempt to smooth out their earnings, so as to improve investors' perception about the stability in earnings.

5. Conclusion and Recommendations

This research adds to the earning management literature by explaining the influence of idiosyncratic and macroeconomic uncertainty on earnings (discretionary accruals) management for a large sample of 400, non-financial firms. The study covers a time period that spans from the year 2000-2016. The two-step system GMM estimator has been applied to estimate the dynamic model, and also to cater the problem of endogeneity. Moreover, we have also used several different measures of both types of uncertainties, and constructed the PCA-based composite uncertainty indices in order to present robust evidence on the uncertainty-earnings relationship. In this regard, the study presents robust empirical evidence that emphasizes on the importance of both idiosyncratic and macroeconomic uncertainties, as key determinants of earnings manipulation. Specifically, we also found that both types of uncertainties have negative, significant effects on the discretionary accruals, particularly when these uncertainties were considered in a campsite framework.

However, the results revealed that the uncertainties associated with different firm-level and macroeconomic indicators tend to have significantly different impacts, in terms of both the signs and size, on the earnings management. For instance, it was observed that the CFV has a positive, whereas, the other two firm-level volatilities, namely SV and ROAV tend to have negative effects on the earnings manipulation. Similarly, the volatility associated with consumer prices and industrial production has a positive impact, whereas, the IRV and the ERV, both leave negative effects on the earnings management. The results also showed that as compared to firm-level uncertainty, the uncertainty in macroeconomic conditions tends to have a greater impact on the accrual management of Pakistani firms, particularly during the examined period. These empirical underpinnings are useful for firm managers, investors, and government authorities.

In specific terms, our findings suggest that corporate firms are highly encouraged to indulge in earnings management, especially when they face higher firm-level uncertainty and/or higher macroeconomic uncertainty. These assessments also indicate that during uncertain periods of time, firms are expected to involve in more earnings

management. This is primarily to avoid the negative consequences of the CFV, CPV, and IPV on stock prices and the costs of financing. However, firms find less incentives and motivations to involve in earnings management, when they have more volatile sales and when the ROA are more uncertain. In the same context, similar managerial implications can be derived for the negative effects of both the factors pertaining to the interest rate volatility and exchange rate volatility.

In a country like Pakistan, it is commonly believed that the financial sector is weak, economic policies are not effective in achieving macroeconomic goals, and the industrial sector is vulnerable. Thus, the empirical findings suggest that organizations should fundamentally consider the relationship that exists between the risk factors and discretionary accruals, especially when defining the earning policies and guidelines. Furthermore, firms should outline the relevant strategies and procedures that help in improving the firms' sales, and their income. The findings of this paper would be useful in the comprehension of investors. Specifically considering, it would address how the management plays with their capital, and if they have the capacity to consider the accurate organization's income. This study would also open a window for financial investors to identify the true market value of a firm. This paper proposes that further research may include more variables, and also stretch the study period, so as to achieve more interesting results. It would also be interesting to explore the channels through which uncertainty affects the earnings management.

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