Cashflow Volatility, Corporate Investments and Value of Nonfinancial Firms Listed in Kenya

Tabitha W. Njuguna, Cyrus Iraya, Winnie Nyamute, and Joy Kiiru

ABSTRACT

Cashflow volatility causes shortages in cash leading to a reduction in investment expenditure and adverse impact on firm value. There is a scarcity of research on cashflow volatility and its effects on corporate investment and firm value. Existing studies yield mixed results, with the bulk of them emanating from advanced economies that are culturally and economically distinct from developing economies. This study sought to examine the influence of corporate investments on the link between cashflow volatility and firm value. A census survey was carried out on 42 nonfinancial firms listed in Kenya from 2002 to 2019 and secondary data obtained from 36 firms listed for at least three continuous years. Random effects panel regression model robust for standard errors was applied to analyse the data. Results from a four-step mediation analysis provided evidence of a mediating effect of corporate investments on the relationship between cashflow volatility and firm value. The study points the need for government and regulators to draw policies that provide a favourable working environment for businesses and advises management to actively monitor their operating expenses and strengthen risk management structures to mitigate cashflow volatility which adversely impacts investments and firm value.

Keywords: Cashflow volatility, corporate investments, firm value, panel random effects model.

I. INTRODUCTION

A. Background

Cashflow volatility is the fluctuation of a firm's cashflows from operations over a given number of years. It is associated with reduced investments in capital expenditure, research and development expenditure, and advertising expenditure (Minton & Schrand, 1999). Cashflow volatility may also be described as the degree of spread of cashflows or the extent to which a company's operational cashflows are distributed (Elzy & Chusnah, 2020). Variability in operational cashflows stems from unpredictability in the corporate operating environment caused by changes in economic variables, political factors, government laws and regulations, or customer preferences. Internal firm variables such as operational efficiency and managerial actions can also contribute to cashflow volatility. Cashflow from operations is a critical indicator of a company's investment and financing policies. When a company has sufficient cashflows, it may finance its investments using internal funds rather than external debt or equity. Low levels of operational cashflows, on the other hand, may force a company to issue external equity or debt to fund investments. External financing is widely utilized to fund corporate investments, to retain liquidity within the company. When the cost of issuing finance is highly prohibitive, companies turn to retained earnings, which provides cost benefits over external equity. Thus, investment expenditure tends to be sensitive to cashflow fluctuations (Fazzari et al., 1987). Furthermore, management increases shareholder value by undertaking positive net present value investments, which leads to increased firm value, whereas potential investors bid up the value of firms that make profitable capital investments since it signals higher future returns. As a result, significant cashflow volatility has the potential to negatively impact company value by reducing corporate investment levels.

To estimate cashflow volatility, a variety of methods have been utilized. Minton and Schrand (1999) used the coefficient of variation, which was calculated as the volatility of cashflows from operations on quarterly data for six years preceding the sample period divided by the absolute mean value during that period, whereas Rountree, Weston, and Allayannis (2008) used the standard deviation of future quarterly operating cashflows observed after the sample period and Shipe (2015) used the standard deviation of cash holdings. Cashflow volatility is a better indicator of operating...
risk, since it uses cashflows from operations than earnings, which can be smoothed through discretionary accruals and are subject to potential manipulation and measurement error in order to influence firm value (Rountree et al., 2008; Mäkelä, 2012).

Corporate investment is an important firm characteristic that has an enormous influence on the way the firm is perceived by investors, lenders, shareholders, and managers. Corporate investment is defined as expenditure comprising of capital expenses, research and development (R&D) expenses, acquisitions and advertisement expenses (Minton & Schrand, 1999; Cohen, 2014; Panagiotidis & Printzis, 2021). Kallapur and Trombley (2001) defined investment opportunity as capital expenditure incurred to launch a new product or to enlarge the production of an existing product. They distinguished investment opportunity from growth, whereby growth is defined as the capability of a firm to become bigger in size whereas investment opportunity is an option to invest in profitable projects. Corporate investment is related to both firm value and cashflow volatility because as firms invest in positive valued projects, their market value increases and by undertaking profitable investments, firms generate more cash thereby minimising volatility of cashflows.

Corporate investments have been measured using various approaches. Minton and Schrand (1999) calculated investments as the amount of capital expenses, advertising expenses and R&D cost scaled by total assets. Similarly, Cohen (2014) and Richardson (2006) computed corporate investments as the total of capital expenditure, R&D expenditure and acquisitions minus depreciation and amortization and earnings from the disposal of fixed assets. On the contrary, Park and Jang (2013) estimated the value of corporate investments in the same way as Cohen (2014) and Richardson (2006) but added amortisation and depreciation expenses contending that they are investment necessary to maintain assets in place. They further highlighted that in some service industries, like restaurants, the role of R&D expenditure to generate cashflows is better played by advertisement expenditure thus, they factored it in when calculating investment expenditure. Kimaiyo (2017) estimated corporate investment as the sum of the changes in annual capital stock and depreciation whereas Panagiotidis and Printzis (2021) applied net value of fixed assets plus the year’s depreciation.

Firm value portrays managerial competency and signals an organisation’s growth potential in the long run. Managers aim to enhance a company’s value in order to optimise the stockholder’s value. Cashflow volatility and corporate investments have a direct influence on firm value; when volatility increases, the level of investments and value of the company declines since investors shun stocks with high risk (Goel & Thakor, 2003). Tobin Q, defined as the ratio of market to book value of a firm’s assets, is commonly used in literature to appraise firm value (Chi & Su, 2017; Rountree et al., 2008; Mäkelä, 2012, and Kodongo et al., 2014). Tobin Q is largely used since its comparable across companies without the requirement for standardisation or risk adjustment. Firm value may also be appraised using market value or stock returns (Gworo, 2019; Cai & Zhang, 2006). Although market value and stock returns reveal information about a firm’s prospects, they are characterised by high unpredictability and noise as they are influenced by forces outside of management’s control (Bacidore et al., 1997). Furthermore, stock values are vulnerable to managerial manipulations since they have privileged information over investors (Hax, 2003).

Listed companies experience considerable cashflow fluctuations as a result of market shocks. Investors price cashflow risk, especially during economic downturns. Due to the Covid 19 pandemic, listed corporations in Kenya had considerable volatility in 2020. The pandemic sever the public enterprises’ poor performance, resulting in a drop in the market capitalization of stock market indexes like the Nairobi Securities Exchange (NSE) 20 share index and the NSE All Share Index (NASI), as investors fled to safety. According to Sinagl (2020), during the Covid-19 pandemic, cashflow risk expected in industries caused an inverted equity term structure and a drop in market expectations on dividend yield, negatively influencing asset values. This suggests that cashflow risk is priced by investors, particularly in the context of big economic shocks. In 2016 to 2019, listed firms experienced both domestic and external shocks, such as interest rate capping as a result of changes to the Banking Act, uncertainty due to general elections and post-election violence, and droughts, which caused prices of counters linked to the agricultural sector to fall. On the international front, there was rising protectionism, which culminated in the Brexit referendum and the presidential elections in the United States of America (Financial Sector Regulators, 2020). These shocks resulted in cashflow volatility, which impacted company performance on the NSE. Despite the periodic differences, corporate investments rose steadily among Kenyan nonfinancial companies listed between 2000 to 2016 (Kimaiyo, 2017).

B. Problem Statement

Managers play a crucial role of creating value for shareholders by utilising the resources available in a company. Businesses need sufficient cash reserve and a suitable capital structure to accomplish this goal. Cashflow is crucial for generating shareholder value because it gives businesses the liquidity, they need to fulfil daily expenses, pay off debt, and distribute dividends to shareholders (Sawalqa, 2021). Investment in capital expenditure is dampened by cashflow uncertainty brought on by macroeconomic disturbances including variable currency rates, political unpredictability, regulatory changes, and poor weather because firms need to conserve cash during the uncertainty (Vengesai & Kwenda, 2018). Eleven NSE-listed firms issued profit warnings in 2016, rising to twelve in 2017, fifteen in 2018, and seventeen in 2019. The businesses noted a decline in sales during a protracted elecctioneering phase. The profit warnings caused negative investor sentiments, which in turn caused share prices to drop and stock market performance to deteriorate (Financial Sector Regulators, 2020).

Conflicting results have been found from an empirical analysis of literature regarding the effect of cashflow volatility on firm value. Sawalqa (2021), Gworo (2019), and Shipe (2015) observed a positive correlation whereas Rountree, Weston, and Allayannis (2008), Mäkelä (2012), and Altuntas et al. (2017) observed an inverse association. According to Rountree et al. (2008), information symmetry
causes organizations with low cashflow volatility to be valued more than those with significant volatility. Moreover, Minton, Schrand, and Walth (2002) contend that cashflow volatility has an adverse impact on future firm performance because of underinvestment problem, which occurs when risky debt-financed businesses avoid undertaking valuable investments because debt holders stand to gain more than shareholders (Myers, 1977). Chi and Su (2017), on the other hand, contend that cashflow volatility is directly related to firm value because, as businesses expand, they gradually invest in their growth opportunities, causing their book value to increase faster than their market value and, as a result, Tobin Q, as well as cashflow volatility, decline due to the diversified investments.

The contention over how uncertainty affects corporate investment has persisted in the field of finance. Some studies point out that greater uncertainty is linked to lower investment in discretionary spending, R&D spending, and investments among small businesses (Minton & Schrand, 1999; Beladi et al., 2021; Panagiopidis & Printzis, 2021) whereas other studies assert that greater uncertainty is linked to higher investments (Baum et al., 2010; Cohen, 2014 Kimaiyo, 2017). Baum et al. (2010) distinguished between firm-specific and market-specific uncertainty and concluded that firm-specific uncertainty encourages investments whereas market-specific uncertainty has a dampening impact on investment expenditure. Cohen (2014) argues that corporate investments boost firm value if the businesses have a significant amount of cash reserves. According to Chortareas et al. (2021), the relationship between uncertainty and investment is influenced by market dominance and industry competitiveness. According to Mogiliani and Miller (1958), making productive investments increases a company's value. The relationships between cashflow volatility, investments, and firm value have been evaluated independently in previous research. In the current research, corporate investment could explain the connection between cashflow volatility and firm value.

Cross-sectional regression models have been used in empirical studies to investigate the relationship between cashflow volatility and firm value (Minton et al., 2002; Rountree et al., 2008; Huang, 2009; Gworo, 2019). However, since this method does not account for unobserved heterogeneity, the results may be skewed if variables are misspecified. The current research tries to close this gap by analysing data with a panel regression model. Panel regression allows for the use of large data sets with mixed features of cross section and time series data, resulting in more degrees of freedom, efficiency, and flexibility, as well as reduced multicollinearity among predictor variables (Baltagi, 2005). Prior research has explored the interrelationships among cashflow volatility, corporate investments, and firm value, with inconsistent results. Furthermore, there is a scarcity of research on the link between cashflow volatility and firm value; the studies undertaken are in developed markets that are culturally and economically distinct from the local setting. As a result, the purpose of this study was to answer the research question: What effect does corporate investment have on the relationship between cashflow volatility and firm value among nonfinancial corporations listed in Kenya?

II. LITERATURE REVIEW

A. Theoretical Framework

This research is based on the free cashflow theory and the underinvestment theory. Free cashflow theory, proposed by Jensen in 1986, asserts that organizations with large amounts of free cashflow pursue suboptimal projects, exacerbating the agency conflict between management and shareholders and undermining company value. According to Jensen (1986), managers waste free cashflows, which are amounts greater than those necessary to fund positive net present value initiatives, by investing in projects with returns lower than the cost of capital. As a result, Jensen (1986) proposed debt creation to reduce the agency cost of free cashflow. The free cashflow theory also asserts that debt is a preferable alternative to dividends in terms of lowering resources available to managers, since they are bound by debt covenants, as opposed to dividends, where they still have discretion over the firm’s future cashflows and can decrease pay-outs at the expense of shareholders. According to Jensen (1986), when there is excessive free cashflow, managers pursue projects that favour their interests above the interests of shareholders, lowering shareholder returns and adversely impacting firm value. Empirical evidence on the free cashflow theory is consistent (Vogt, 1994; Richardson, 2006; Park & Jang, 2013). Thus, free cashflow theory is pertinent to the current study since it explains the link between cashflow volatility, corporate investments, and firm value.

Underinvestment theory emanates from agency relationships between shareholders and bondholders as well as existing versus prospective shareholders. The theory was proposed by Myers (1977), and it posits that risky debt stimulate management to reject positive net present value projects leading to low firm value since shareholders would not be willing to finance the profitable investments, thereby incurring cost that would benefit debt investors. Underinvestment theory was built on the concept of asset substitution as suggested by Jensen and Meckling (1976) who argued that lenders increase interest rates and impose restrictive bond covenants to curb the inappropriate behaviour of asset substitution by managers. However, the action by lenders results to underinvestment since shareholders reject the profitable investments due to the excessive cost of financing. Myers and Majluf (1984) further contend that firms may bypass valuable investments to avoid issuing external equity because of inflated cost of finance brought about by information asymmetry between existing and prospective shareholders. Underinvestment theory is significant to the present study as it describes the relationship between corporate investments and firm value.

B. Conceptual Framework

The conceptual model (Fig.1) below depicts the interrelationships among variables in the current study. Cashflow volatility is expected to be negatively correlated to firm value because high cashflow volatility suggests significant operating risks, which sends negative signals to investors, resulting in a fall in firm value. Secondly, significant cashflow volatility is expected to have a negative impact on corporate investments since firms choose cash preservation over capital expenditure amidst uncertainty, and consequently, firm value is expected to fall. Thus, corporate
investment is expected to mediate the link between cashflow volatility and firm value, with an inverse relationship predicted between cashflow volatility and corporate investments and a positive relationship predicted between corporate investment and firm value.

Asset tangibility, profitability, and growth opportunity were introduced as control variables in the study since they are believed to influence firm value. Asset tangibility is referred to as the proportion of fixed assets to total assets in a firm. High tangibility increases the earnings potential of a firm and provides collateral that firms can use to enhance their debt capacity and lower cost of debt (Chi & Sue, 2017; Kondongo et al., 2014). Thus, tangibility is projected to be positively associated with firm value. Profitability is a key driver of corporate value as it attracts potential investors and existing shareholders to buy its shares thus driving up firm value (Shahid, 2018; Rountree et al., 2008). Hence, profitability is positively associated with firm value. Profitability is estimated as the proportion of earnings before interest and tax to total assets. This ratio is useful in evaluating how efficient management has been in generating revenue and managing costs. Growth opportunity is anticipated to drive value because when firms invest in those opportunities, shareholders’ wealth increases. Growth opportunity is proxied as the proportion of market value of equity in relation total shareholder’s equity. This measure was adopted as it captures the investors perception of growth in a firm. It is anticipated that the higher the growth prospect of a firm, the higher the firm value.

H0: The mediating effect of corporate investments on the relationship between cashflow volatility and value of nonfinancial corporations listed at the NSE is not significant.

III. METHODOLOGY

A. Data

The target population comprised of 42 nonfinancial corporations listed on the Nairobi Securities Exchange, and a longitudinal descriptive research design was employed to examine the impact of cashflow volatility on corporate value. Financial firms, which include banks, insurance companies, and investment firms, were excluded because their capital structures differ from those of nonfinancial organizations and their capital composition is strictly regulated. This method is comparable to prior research that excluded nonfinancial companies (Flannery & Rangan, 2006; Elsas & Florysiak, 2011, Kodongo et al., 2014). A census survey, spanning from 2002 to 2019, was conducted due to the limited number of companies in the target population. This time frame was adequate to cover macroeconomic shocks that translate into cashflow volatility, such as government transitions, political upheaval, interest rate caps, and the Brexit referendum. Firms were expected to have at least three years of consecutive listing to produce enough data points to assess historical cashflow volatility. Six nonfinancial firms were omitted from the research owing to suspension, delisting, or insufficient data points. This produced an unbalanced panel data set of 36 nonfinancial companies studied over an 18-year period. Secondary data was acquired from corporate filings of NSE-listed nonfinancial corporations. The information was gathered from the Capital Market Authority’s financial filings and the Bloomberg database. The predictor variable cashflow volatility was operationalized as the standard deviation of historical operating cashflows, as defined by Minton and Schrand (1999). Following Rountree et al. (2008) and Kodongo et al. (2014), the dependent variable, firm value, was operationalized as market value of equity plus book value of debt divided by total assets. The mediating variable, corporate investments, was operationalized as the sum of capital expenditure, advertisement spending, R&D, depreciation, and amortization expenses scaled by total assets as used by Park and Jang (2013). Control variables employed are profitability, growth opportunity, and tangibility.

Fig. 1 Conceptual Framework.
B. Data Analysis

Prior to conducting inferential analysis, descriptive analysis was performed using mean, standard deviation, minimum, and maximum values to depict data distribution, identify outliers, and identify link between the variables. Pearson correlation analysis was used to determine the direction and strength of correlations, and diagnostic tests were run to assess normality, multicollinearity, stationarity, homoskedasticity, autocorrelation, and model specification. The hypothesized relationship was tested using panel regression analysis. Barron and Kenny (1986) four-step mediation model were applied to assess the mediating influence of corporate investment on the cashflow volatility (CFV) firm value relationship. According to Barron and Kenny (1986), for mediation to be demonstrated, there must be a relationship between the predictor and the response variable. The first step was to establish a link between CFV and firm value. Profitability, tangibility, and growth are all control variables in the model. The panel regression model was expressed in equation 1.

\[ FV_{iit} = \beta_0 + \beta_{1iit}CFV + Z_{iit} + \epsilon_{iit} \]  

(1)

The second step was to investigate the link between the predictor variable, cashflow volatility (CFV), and the mediating variable, corporate investments. According to Barron and Kenny (1986), mediation is established if the mediating variable has a significant relationship with the predictor variable. As a result, the panel regression model is denoted in equation 2.

\[ INV_{iit} = \beta_0 + \beta_{1iit}CFV + \epsilon_{iit} \]  

(2)

The third step was to establish a link between corporate investments and firm value. Barron and Kenny (1986) propose that for mediation to be demonstrated, the mediating variable, corporate investment, should have a significant effect on the response variable, firm value. As a result, the panel regression equation is specified in equation 3.

\[ FV_{iit} = \beta_0 + \beta_{1iit}INV + Z_{iit} + \epsilon_{iit} \]  

(3)

The fourth step entailed examining the influence of the predictor variable, CFV, and the mediator variable, corporate investments, on the response variable, firm value. According to Barron and Kenny (1986), for mediation to be demonstrated, the predictor variable, CFV, should have a lower statistical significance in step 4 of mediation analysis than in step 1. Alternatively, the coefficient of CFV should be bigger when it predicts firm value alone in step 1 than when it predicts along with the mediator variable, corporate investments in equation 4.

\[ FV_{iit} = \beta_0 + \beta_{1iit}CFV + \beta_{2iit}INV + Z_{iit} + \epsilon_{iit} \]  

(4)

where \( FV_i \) = Firm value for ith firm, in ith year; \( CFV = \) Cashflow volatility; \( INV = \) Corporate investments; \( \beta_0 = \) intercept; \( \beta_{1iit}, \beta_{2iit} = \) coefficients, \( Z_{iit} = \) control variables; \( \epsilon_{iit} = \) error term.

IV. FINDINGS AND DISCUSSIONS

To provide an overall picture of the data, the researcher estimated the mean, standard deviation, minimum and maximum values, and ran a descriptive analysis. Table I shows the summary statistics of the main research variables, cashflow volatility, corporate investments and firm value, as well as control variables, profitability, tangibility, and growth opportunity.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobin Q</td>
<td>580</td>
<td>1.325</td>
<td>1.384</td>
<td>0.091</td>
<td>12.656</td>
</tr>
<tr>
<td>Cashflow volatility</td>
<td>580</td>
<td>2.930</td>
<td>6.364</td>
<td>0.001</td>
<td>47.019</td>
</tr>
<tr>
<td>Corporate investments</td>
<td>580</td>
<td>0.099</td>
<td>0.085</td>
<td>0.000</td>
<td>0.487</td>
</tr>
<tr>
<td>Profitability</td>
<td>580</td>
<td>0.096</td>
<td>0.120</td>
<td>-0.386</td>
<td>0.473</td>
</tr>
<tr>
<td>Tangibility</td>
<td>580</td>
<td>0.575</td>
<td>0.212</td>
<td>0.048</td>
<td>0.960</td>
</tr>
<tr>
<td>Growth opportunity (MBVE)</td>
<td>580</td>
<td>2.808</td>
<td>7.016</td>
<td>-18.719</td>
<td>85.49</td>
</tr>
</tbody>
</table>

Tobin Q was employed as a proxy of firm value and was calculated as the ratio of market value of equity plus book value of debt divided by book value of total assets. When the Tobin Q ratio exceeds one, it indicates that investors are willing to pay more for the firm’s assets than the prevailing book value. According to the study findings, the average Tobin Q of nonfinancial firms was 1.325 times, with a maximum value of 12.66 times. This implies that, on average, investors are willing to pay significantly more for the nonfinancial firms’ assets than their book values. However, some companies had a Tobin Q ratio of less than one, indicating a negative market perception or asset undervaluation. The standard deviation of 1.384 times suggested that there was little variation in the market valuation of target company assets. Kodongo et al. (2014) observed that the NSE listed nonfinancial companies had a mean Tobin Q of 1.846 times, indicating that the firms were overvalued.

Cashflow volatility (CFV) was measured as the standard deviation of operational cashflows five years prior to the reporting period as the predictor variable. To be considered for the study, a company had to have operating cashflows of at least two years prior to the reporting period. CFV evaluates changes in operational cashflows, which indicate the firm’s level of operating risk or capacity to produce revenue to pay operating costs. According to the study findings, the NSE listed nonfinancial firms had a mean CFV of 2.93 times, indicating moderate volatility. The standard deviation on CFV of 6.36 times suggests that most of the variability in operational cashflows were centered around the mean. During some periods, however, certain companies had very high volatility, as demonstrated by a maximum value of 47.02 times, whereas others displayed insignificant volatility, as evidenced by a minimum value of 0.001 times. The high cashflow volatility can be attributed to the uncertainty observed during the study period, which was marked by shocks from post-election violence in Kenya and the global financial crisis that emerged from the United States of America and spread to other economies, resulting in the high cashflow volatility.

Corporate investments are calculated as the sum of capital expenditure, R&D spending, advertisement expenditure,
depreciation, and amortization divided by total assets. According to the study findings, corporate investments had a mean of 9.9 percent and a standard deviation of 8.5 percent throughout the study period, indicating a low level of capital investments and low variability with respect to assets among nonfinancial firms. Some organizations had zero investment allocation, whereas others had very high amounts, reaching a maximum of 48.7 percent. High corporate investments boost organizations' earning potential and provides earnings stability, which is critical for mitigating the effects of market swings that create cashflow volatility. The diverse range of corporate investments observed reflects the variability of capital-intensive versus noncapital-intensive companies analysed. Profitability is computed by dividing profits before interest and taxes by total assets. It demonstrates how much operational income was generated and how well operating costs were controlled. The mean value indicates that the target firms generated operational profits of 9.6 percent of their sales on average over the research period. This demonstrates poor performance among the companies since operational profit does not account for financing expenses and taxes, which are fixed and beyond management's control. The standard deviation of 12 percent, on the other hand, suggests substantial variance in profitability, as indicated by the large discrepancy between profit and loss-making companies.

Tangibility, which evaluates the proportion of fixed assets to total assets, is used to estimate a company's debt capacity. It also demonstrates the firm's capacity to reduce the cost of financial distress. It has a mean of 57.5 percent, suggesting that the target firms have more than 50 percent investment in fixed assets on average, indicating strong collateral for debt. The maximum of 96 percent and minimum of 0.5 percent indicates the target population's distinct company types, which are capital intensive firms (manufacturing, construction, and energy industries) and noncapital-intensive firms (commercial and services sector). The significant standard deviation of 21.2 percent further demonstrates the variance between company types. Growth opportunity is calculated by dividing the market value of equity by the book value of equity (shareholder's equity). It represents the firm's market perception based on its current performance and future earning capabilities. Growth opportunity had a mean of 2.81 times in the current analysis, indicating that on average, investors price shares of the target firms more than twice their book values. The standard deviation of 7.016 percent, minimum of 18.72, and a maximum of 85.49 times, indicates a substantial divergence in market perception of the stocks. Negative values indicate poor company performance or considerable undervaluation, whilst positive values indicate stock overvaluation.

Pearson correlation analysis revealed a negative association between cashflow volatility and firm value, whereas diagnostic tests revealed violations of several classical linear regression assumptions, including nonnormality, serial correlation, and heteroskedasticity in the error terms. To account for the violations, all variables in the research were transformed using natural logs and panel regression models robust to standard errors applied. Furthermore, the model specification tests revealed that the random effects model was best suited to evaluate the relationship between the research variables. The Stata results of the four-step mediation analysis employing random effects (RE) model robust for standard errors is shown in Tables 2.0 to 5.0. Natural log of Tobin Q (LnTobin Q) is the response variable, whereas cashflow volatility is the predictor variable (LnCFV). To control for other determinants of corporate value and improve model specification, the natural logs of profitability (LnProfit), tangibility (LnTang), and book value of equity (LnMBVE) were incorporated. The first step in the mediation study was to test whether the predictor variable, CFV, had a significant influence on the response variable, Tobin Q. Table II summarizes step one findings.

According to Barron and Kenny (1986), for mediation to be demonstrated, there must be a statistically significant relationship between the predictor and the response variable. Step one results indicates that the overall model is statistically significant at the 99 percent confidence level because the chi-square statistic’s p-value is less than 0.05. A 95 percent confidence level, the association between CFV and firm value is statistically significant.

The beta coefficient of LnCFV is -0.024, which implies that when volatility rises by one percent, LnTobinQ falls by 0.024 percent. As a result, the mediation analysis advances to step two. LnProfit has a coefficient of 0.060, which is statistically significant at a 95 percent confidence level. It implies that for every one percent increase in profitability, the firm's value rises by 0.060 percent. This finding is intuitive since investors prefer corporations with larger earnings as they expect higher returns. LnMBVE has a coefficient of 0.647 and is statistically significant at 99 percent confidence level. This implies that for every one percent increase in growth prospects, firm value rises by 0.647 percent. LnTang, a proxy for debt capacity, has a coefficient of -0.104 and is statistically significant at the 95 percent confidence level. This implies that when tangibility grows by one percent, the firm’s value decreases by 0.104 percent.

The second step in the mediation analysis was to determine whether the predictor variable, CFV, had a statistically significant influence on the mediator variable, corporate investments (LnINV). Table III summarizes the findings.

### TABLE II: STEP ONE: OUTPUT OF TESTING MEDIATING EFFECT OF CORPORATE INVESTMENT

<table>
<thead>
<tr>
<th>LnTobinQ</th>
<th>Coef.</th>
<th>Std Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Confidence Interval]</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnCFV</td>
<td>-0.024</td>
<td>0.012</td>
<td>-2.010</td>
<td>0.045</td>
<td>-0.047</td>
<td>-0.001</td>
</tr>
<tr>
<td>LnProfit</td>
<td>0.060</td>
<td>0.026</td>
<td>2.280</td>
<td>0.023</td>
<td>0.008</td>
<td>0.111</td>
</tr>
<tr>
<td>LnMBVE</td>
<td>0.647</td>
<td>0.048</td>
<td>13.500</td>
<td>0.000</td>
<td>0.553</td>
<td>0.740</td>
</tr>
<tr>
<td>LnTang</td>
<td>-0.104</td>
<td>0.052</td>
<td>-2.010</td>
<td>0.045</td>
<td>-0.205</td>
<td>-0.002</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.205</td>
<td>0.090</td>
<td>-2.280</td>
<td>0.023</td>
<td>-0.381</td>
<td>-0.028</td>
</tr>
</tbody>
</table>

Mean dependent var: -0.027  SD dependent var: 0.847
Overall r-squared: 0.855  Number of obs: 483.000
Chi-square: 233.672  Prob > chi2: 0.000
R-squared within: 0.803  R-squared between: 0.872

*** p<0.01, ** p<0.05.
Step two results demonstrate that the overall model is statistically significant at 95 percent confidence level, since the p-value of the chi-square statistic is less than 0.05, meaning that the model's beta coefficients are jointly significant. At 95 percent confidence, the p-value of the beta coefficients indicates an inverse and statistically significant relationship between CFV and the mediator variable, corporate investments. The beta coefficient of LnCFV (-0.098) indicates that when volatility rises by one percent corporate investments fall by 0.098 percent. This implies that when operating risk increases, corporations reduce their investments. The third step was to assess whether corporate investment, the mediator variable, had a significant relationship with the response variable, Tobin Q. Table V displays the results.

Step three results indicate that the overall model is statistically significant since the chi-square statistic has a p-value less than 0.05. The overall r-squared indicates that predictor and control variables explain 84.6 percent of variations in the response variable, firm value. LnINV’s beta coefficient (0.057) and p-value (0.004) indicate a direct and statistically significant relationship between corporate investments and firm value at 99 percent confidence level. The beta coefficient shows that as corporate investment increases by one percent, firm value increases by 0.057 percent. This finding suggests that corporate investment contributes significantly to corporate value. The control variables are all statistically significant; LnProfit and LnMBVE have a positive association with firm value, but LnTang has an inverse relationship. The fourth step in the mediation analysis was to determine the effect of controlling for corporate investment on the CFV and firm value relationship by using both the dependent variable, LnCFV, and the mediator variable, LnINV, as predictors of the dependent variable, Tobin Q. Table V summarizes the findings.

At 99 percent confidence level, the p-value of the chi-square statistic in Step 4 indicates that the overall model is statistically significant. Furthermore, the overall r-squared indicates that the predictor and control variables explain 85.2 percent of the variations in the response variable, firm value. The beta coefficient, LnCFV (-0.021), demonstrates that when volatility increases by one percent, firm value decreases by 0.021 percent. The p-value of the beta coefficient LnCFV, on the other hand, is statistically significant at 90 percent confidence level. At a 95 percent confidence level, the beta coefficient (0.050) and p-value (0.013) of LnINV indicates that corporate investments have a positive and statistically significant relationship with Tobin Q. All the control variables are statistically significant; LnProfit and LnMBVE have a positive relationship with firm value whereas LnTang has an inverse relationship. The beta coefficients of CFV and corporate investments decreased in value and statistical significance in step four, compared to results of step one and step three, respectively. Moreover, CFV is no longer statistically significant at 95 percent confidence level. Thus, based on Barron and Kenny (1986) approach, these findings suggest that corporate investment mediates the relationship between CFV and firm value. The resultant model representations, r-square and chi square statistics of the four steps are as follows:

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### Table III: Step Two: Output of Testing Mediating Effect of Corporate Investments

<table>
<thead>
<tr>
<th>LnCFV</th>
<th>Coef.</th>
<th>Std Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Confidence Interval]</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnCFV</td>
<td>-0.098</td>
<td>0.032</td>
<td>-3.040</td>
<td>0.002</td>
<td>-0.161 -0.035</td>
<td>***</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.696</td>
<td>0.119</td>
<td>-22.730</td>
<td>0.000</td>
<td>-2.929 -2.464</td>
<td>***</td>
</tr>
</tbody>
</table>

Mean dependent var | -2.664
Mean dependent var | 0.961

### Table IV: Step Three: Output of Testing Mediating Effect of Corporate Investments

<table>
<thead>
<tr>
<th>LnTobinQ</th>
<th>Coef.</th>
<th>Std Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Confidence Interval]</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnTobinQ</td>
<td>0.037</td>
<td>0.020</td>
<td>2.870</td>
<td>0.004</td>
<td>0.018 0.097</td>
<td>**</td>
</tr>
<tr>
<td>LnProfit</td>
<td>-0.055</td>
<td>0.024</td>
<td>2.320</td>
<td>0.021</td>
<td>0.008 0.104</td>
<td>**</td>
</tr>
<tr>
<td>LnMBVE</td>
<td>0.640</td>
<td>0.047</td>
<td>13.740</td>
<td>0.000</td>
<td>0.548 0.731</td>
<td>***</td>
</tr>
<tr>
<td>LnTang</td>
<td>-0.105</td>
<td>0.053</td>
<td>-2.000</td>
<td>0.046</td>
<td>-0.208 -0.002</td>
<td>**</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.062</td>
<td>0.114</td>
<td>-0.540</td>
<td>0.586</td>
<td>-0.286 0.162</td>
<td></td>
</tr>
</tbody>
</table>

Mean dependent var | -0.023
Mean dependent var | 0.845
Overall r-squared | 0.846
Overall r-squared | 0.847
Chi-square | 251.039
Chi-square | 487.000
Prob > chi2 | 0.000
Prob > chi2 | 0.002
R-squared within | 0.809
R-squared within | 0.853

*** p<0.01, ** p<0.05.

### Table V: Step Four: Output of Testing Mediating Effect of Corporate Investments

<table>
<thead>
<tr>
<th>LnTobinQ</th>
<th>Coef.</th>
<th>Std Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Confidence Interval]</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnCFV</td>
<td>-0.021</td>
<td>0.013</td>
<td>-1.680</td>
<td>0.093</td>
<td>-0.046 0.004</td>
<td>*</td>
</tr>
<tr>
<td>LnINV</td>
<td>0.050</td>
<td>0.020</td>
<td>2.490</td>
<td>0.013</td>
<td>0.011 0.090</td>
<td>**</td>
</tr>
<tr>
<td>LnProfit</td>
<td>0.059</td>
<td>0.023</td>
<td>2.510</td>
<td>0.012</td>
<td>0.013 0.104</td>
<td>**</td>
</tr>
<tr>
<td>LnMBVE</td>
<td>0.641</td>
<td>0.047</td>
<td>13.600</td>
<td>0.000</td>
<td>0.549 0.733</td>
<td>***</td>
</tr>
<tr>
<td>LnTang</td>
<td>-0.108</td>
<td>0.050</td>
<td>-2.160</td>
<td>0.031</td>
<td>-0.207 -0.010</td>
<td>**</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.075</td>
<td>0.114</td>
<td>-0.660</td>
<td>0.510</td>
<td>-0.299 0.148</td>
<td></td>
</tr>
</tbody>
</table>

Mean dependent var | -0.027
Mean dependent var | 0.847
Overall r-squared | 0.852
Overall r-squared | 0.848
Chi-square | 258.127
Chi-square | 483.000
Prob > chi2 | 0.000
Prob > chi2 | 0.002
R-squared within | 0.808
R-squared between | 0.861

*** p<0.01, ** p<0.05, * p<0.1.

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Step 1: Overall r-squared = 0.855, Chi-square = 233.672 at p-value = 0.000

\[
\text{LnTobinQ} = -0.205 - 0.024\text{LnCFV} + 0.060\text{LnProfit} + 0.647\text{LnMBVE} - 0.104\text{LnTang}
\]

Step 2: Overall r-squared = 0.094, Chi square = 9.272 at p-value of 0.002

\[
\text{LnINV} = -2.696 - 0.098\text{LnCFV}
\]

Step 3: Overall r-squared = 0.846, Chi square = 251.039 at p-value of 0.000

\[
\text{LnTobinQ} = -0.062 + 0.057\text{LnINV} + 0.055\text{LnProfit} + 0.640\text{LnMBVE} - 0.105\text{LnTang}
\]

Step 4: Overall r-squared = 0.852, Chi square = 258.127 at p-value of 0.000

\[
\text{LnTobinQ} = -0.075 - 0.021\text{LnCFV} + 0.050\text{LnINV} + 0.059\text{LnProfit} + 0.641\text{LnMBVE} - 0.108\text{LnTang}
\]

\[
\text{LnTobinQ} = \text{Natural Log of Tobin Q (Firm Value)}; \text{LnCFV} = \text{Natural Log of Cashflow Volatility}; \text{LnINV} = \text{Natural Log of Corporate Investments}; \text{LnProfit} = \text{Natural Log of Profits}; \text{LnMBVE} = \text{Natural Log of Market to Book Value of Equity}; \text{LnTang} = \text{Natural Log of Asset Tangibility}
\]

The above representations show that the four models are statistically significant as the p-values of their chi square distribution are all less than 0.05. For mediation to exist, the beta coefficients of the predictor variable, CFV should be statistically significant in step one and two and the mediator variable, LnINV should be statistically significant in step three and four and the coefficients of both variables should become smaller in value or statistically insignificant in the fourth step. Results presented in Tables II to V and the equations above provide evidence that LnCFV was statistically significant (p-value < 0.05) in step one and two but became insignificant in step four (p-value >0.05). The mediating variable, LnINV was statistically significant (p-value < 0.05) in step three and four, although the strength of significance declined in step 4 from 99% to 95% level of confidence. Furthermore, the beta coefficients of LnCFV and LnINV became smaller when both variables were introduced as predictor variables in step 4. This implies that the null hypothesis (H0) can be rejected implying that corporate investment mediates the relationship between cashflow volatility and firm value.

These results are aligned to Minton and Shrand (1999), Beladi et al. (2021) and Rashid et al. (2021) who observed an inverse relationship between CFV and investments and contrary to Kimaiyo (2017) and Cohen (2014) who observed a positive association between CFV and investments. Similarly, the results of a direct association between corporate investments and corporate value are in line with Mousa et al. (2021) and Kim et al. (2018). Studies in literature examine the interactions between CFV, corporate investments and firm value separately. The current study has added to literature investigating the mediating effect of corporate investments on the link between CFV and firm value and found a significant effect. The results of the current study may however be influenced by the low levels of capital expenditure among the nonfinancial firms during the period of observation. Overall, the mean capital expenditure to total assets was found to be 9.9% with the highest observation being of 48.7% and a lowest value being zero as shown in the summary statistics of Table I.

V. CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

A. Conclusions

The purpose of this research was to investigate the influence of corporate investments on the cashflow volatility to firm value link. The relationship was investigated using a random effects panel regression model robust for standard errors. Findings from the four-step mediation analysis demonstrated that corporate investments mediate the relationship between cashflow volatility and firm value. This indicates that corporate investments including capital expenditure, advertising, and R&D pay off by boosting firm value. Increased corporate investment signals to investors the company's endeavour to enhance future earnings, hence growing firm value. The results further showed that during times of uncertainty, corporations lower their expenditure on corporate investments, eroding company value. The findings add to the body of knowledge by lowering debate over the uncertainty to firm value linkage. Traditional asset valuation models view volatility as a risk that reduces company value, option pricing theory suggests that volatility increases equity value, and empirical research provides inconsistent findings on the effects of uncertainty on firm value. As a result, the outcomes of this study reveal that there is an inverse association between cashflow volatility and company value. Furthermore, the research results present corporate investments as a mediator in the cashflow volatility to firm value relationship, inferring that whereas corporate investments increase firm value, cashflow volatility may destabilize investment plans due to cash shortfalls, resulting into negative effects on firm value. Moreover, the findings of this study show that investors in emerging economies value low cashflow volatility as much as those in developed countries, despite differences in culture and economic performance.

Shocks from macroeconomic factors such as inflation, currency fluctuations, tax rates, and economic performance destabilize a firm's income and operating costs, resulting in volatile cashflows that affect the firm's ability to pay debts and undertake investments, thereby negatively impacting firm value. As a result, this study serves as a tool for enlightening regulators and the government about the impact of an unpredictable economic climate on company value. The findings are expected to awaken government and policy regulators to the ramifications of political instability, as well as serve as a point of reference for extracting policy briefs and creating a favourable working climate for enterprises. The study will be useful to corporate executives since it highlights the consequences of a firm’s policies on cashflow management and investments. Inefficiencies in managerial and operational procedures could result in a decline in
revenues, increased operating expenses, and a drop in firm value. Furthermore, insufficient risk management measures lead to volatile cashflows, which impacts a firm's ability to make new investments and fulfill its debt commitments. This study will also be valuable to shareholders since it provides an alternative approach for evaluating performance. Shareholders and prospective investors often focus on trends in return on equity or earnings per share to evaluate a firm's performance. These measures may be distorted since profits can be smoothed through earning management to influence reported returns. Cashflow volatility is a more accurate measure since it captures the real cashflow generated from operations, which is representative of a firm's ability to service debt and fund capital investments.

B. Limitations of the Study

Although several steps were taken to minimize the study's inherent limitations, there are two considerations that should be noted when employing this study. First, since the survey was conducted among nonfinancial companies listed in Kenya, the findings may not be generalized. Data was obtained from listed companies because of the ease of access to their financial data. These companies, however, account for a low proportion of total nonfinancial firms in the country. Furthermore, since listed companies are closely examined and regulated, their performance may not be reflective of unquoted firms. Secondly, the study relied only on secondary sources to obtain a large data set with cross-section and time series features, which allows for greater flexibility with data analysis techniques. Primary data, on the other hand, allows for extensive insights into managerial choices and business performance, as well as triangulate the findings.

C. Suggestions for Future Research

Cashflow volatility is an important indicator of company risk, and it may be driven by both external macroeconomic variables and internal company factors. Future research should investigate the drivers of cashflow volatility to provide a comprehensive assessment of cashflow variability and its impact on corporate value. Researchers should specifically evaluate the influence of macroeconomic factors such as economic growth, interest rates, currency rates, inflation rate, and taxes on cashflow volatility. Researchers should also consider using primary data to investigate the internal business factors which influence cashflow volatility, including operational efficiency, managerial skills, investment, and finance strategies.

REFERENCES


