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Financing Constraints, Earning Quality and Investment Efficiency: Evidence from Africa

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Keywords: Financial constraints, earning quality, investment efficiency, overinvestment, and underinvestment.

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FINANCINGCONSTRAINTSEARNINGQUALITYANDINVESTMENTEFFICIENCYEVIDENCEFROMAFRICA

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Financing Constraints, Earning Quality and Investment Efficiency: Evidence from Africa

Abdurahman Aliyi Ibrahim [α], Man Wang [σ], Mussie Tesfaye [ρ] & Lili Sugeng Wiyantoro [ω]

Abstract- This study investigates the effect of financing constraints on investment efficiency in developing countries and how this relationship is conditional to the earning quality. We use the non-financial firms from 15 Africa countries from 2009 to 2018. We employed panel data analysis and classified the sample into a financially constrained and unconstrained firm to analyze this relationship. The results show that financing constraints affect investment efficiency; this effect is more pronounced in constrained firms than unconstrained firms. We evidenced that investment efficiency is more sensitive to cash flows for the financially constrained firm than the unconstrained firms. Our findings also posit that constrained firms are more likely to overinvest than unconstrained firms because of their internal cash flows. In contrast, unconstrained firms are more likely to under invest than constrained firms. Further, the results reveal that earning quality has a reducing effect on the relationship between financing constraints and investment efficiency—the firm with high earning quality can avoid financing constraints to finance their projects by avoiding overinvestment and underinvestment of both constrained and unconstrained firms. The result is robust to the alternative estimation techniques and different proxies. The findings suggest that financing constraints determine investment efficiency and signal that earning quality can avoid financing constraints and improve investment efficiency as a corporate governance tool. Hence, the financial policymakers and financial reporting regulators should give due attention to uphold the firm's reporting quality; thereby, firms can secure finance for their investment projects. We contribute to the corporate finance and corporate governance literature in three ways. First, it evidenced that firm investment efficiency level determined by its access to finance. Second, the study contributes to the literature by exposing that earning quality's governance role determines the effect of financing constraint on investment efficiency. Third, since the first to study a data set from Africa, we believe it has a valuable contribution to the literature by showing that financing constraints on the firm's investment efficiency and the conditional effect of the firm's earnings quality.

Keywords: Financial constraints, earning quality, investment efficiency, overinvestment, and underinvestment.

I. Introduction

The importance of investment has two folds; first, at the macroeconomic level, investment is a crucial factor in the growth of the economy, its fluctuations drive much of the business cycle in the marketplace, and the aggregate business investment is a component of real GDP (Rudiger et al., 2011). Second, at the microeconomic-level, the investment decision facilitates allocating the firm resources to the available projects efficiently. These implied that investment decision is a crucial factor in allocating the firm's resources in growth opportunities.

In accounting and corporate governance research, efficient investment decisions have received scholars' attention since the inception of modern corporate finance (Modigliani and Miller, 1958). Many theoretical and empirical research carried out and continued investigating the allocation of resources in business firms. Under the theory of investment, Modigliani and Miller (1958) argue that firms are expected to invest in projects that create positive net present value. They postulated that capital projects with positive net present value (hereafter NPV) funded projects with negative NPV rejected.

The neoclassical investment theory model also assumes capital investment decisions determined by marginal q ratios (Abel, 1983, Hayashi, 1982, Yoshikawa, 1980). Yoshikawa (1980) noted that the neoclassical theory of corporate investment based on the assumption that the management seeks to maximize the present net worth of the company, the market value of the outstanding common shares, and an investment project should be undertaken if and only if it increased the value of the shares. Ferracuti and Stubben (2019) also noted, in the frictionless world (Modigliani and Miller, 1958), a firm investment decision is influenced only by the profitability of its investment opportunities.

However, in the contemporary-world variety of factors prevent this outcome, and many researchers linked different variables to firm investment efficiency (Stein, 2003, Hubbard, 1998). Such as; financing constraints (Hirth and Viswanatha, 2011, Cleary *et al*., 2007, Alti, 2003, Cleary, 1999, Fazzari *et al*., 1988, Whited and Wu, 2006, Guariglia, 2008), board characteristics (Agyei-Mensah, 2021a), and board diversity (Ullah *et al*., 2020), information friction (Stein, 2003), firm's earning quality or financial reporting quality (Chen *et al*., 2011, Li and Wang, 2010, Biddle *et al*., 2009, Verdi, 2006, Graham *et al*., 2005, Bushman and Smith, 2001), corporate disclosure (Östberg, 2006, Kanodia and Lee, 1998), and gender diversity (Ullah *et al*., 2020).

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Researchers have shown that financing constraints are the essential factors that impair the efficiency of investment. Mainly, but perhaps the most pervasive and essential factors influencing corporate investment decisions' efficiency arise from informational asymmetries and agency problems (Stein, 2003), resulting in financing constraints. Because of information asymmetry, the firm faces a lack of finance to the available investment projects, which results in two investment inefficiency scenarios, namely overinvestment and underinvestment. We also argue that financing constraints affect firm investment efficiency.

On the other hand, earning quality (along with financial reporting quality attributes) as a corporate governance mechanism mitigates the information asymmetries and resolve agency problem (Muttakin *et al*., 2020, Mansali *et al*., 2019, Cherkasova and Rasadi, 2017, Lin *et al*., 2016, Wang *et al*., 2015, Li, 2011, Chen *et al*., 2011, Biddle et al., 2009, Verdi, 2006, Biddle and Hilary, 2006, Nasr and Ntim, 2018, Ebaid, 2013, Asghar *et al*., 2020). Firms with high earning quality could mitigate financing constraints and increase their external finance access to fund their investment opportunities. In this case, we argue that earning quality could act as a moderating variable in the relation between firms financing constraints and investment efficiency.

Despite several studies investigating the relationship between financial constraint and investment decision, there are limited studies conducted on African firms. We rarely see studies investigating how the firm's earning quality can mitigate financing constraints on investment efficiency, especially for the African data set. Thus, this study analyzes the relation between firm financing constraints and investment efficiency among African firms. We also investigate the influence of financial constraints on the two inefficient investment scenarios: overinvestment and underinvestment. In further, we examine how the earning quality of the firm determines this relationship. We investigate the earning quality as a moderating variable on the relationship between financing constraints and investment efficiency.

Using samples of non-financial firms from 15 African countries, we evidenced that financing constraints affect investment efficiency in both overinvestment and underinvestment scenarios, and investment efficiency is strongly sensitive to internal cash flow. The findings also indicate that investment efficiency is sensitive to cash flow when the firms are externally constrained, and they use internal cash flow to make their investment. The result is more pronounced in financially constrained firms than unconstrained firms. The evidence showed that financially constrained firms showed highly inefficient investment while the unconstrained firms are more efficient. In further, the results reveal that the relationship between financing constraints conditional to the earning quality. A firm with high earning quality can reduce financing constraints and manage in getting finance for their investment opportunities, whereas firms with low earning quality could not.

Moreover, the sensitivity of investment efficiency is conditional to the earning quality. The firm with high earning quality less sensitive to internal cash flow because they would get external finance than firms with low earning quality. These results hold for the two inefficient investment scenarios, overinvestment and underinvestment.

We contribute to the literature in four ways; first, this study links corporate finance and corporate governance theories by showing how corporate governance tools, namely corporate financial disclosure (earning quality), could play a role in easing financing constraint effects on firm investment decisions. Second, we contributed to the literature by showing how financial constraints and accounting quality impact the two investment inefficiency scenarios, overinvestment, and underinvestment using the Africa data set where prior studies were overlooked to investigate. Third, the study gives a signal showing that earning quality, as a corporate governance tool, can avoid financing constraints and improve investment efficiency. We believe this crucial addition to the literature shows evidence from the developing world where prior studies concluded that the value relevance of financial reporting quality is non-existent. Fourth, since the first to study a data set from Africa, we believe it has a valuable contribution to the literature by showing that the effect of financing constraints is conditional to the firm's earning quality. We contribute to the literature by evidencing that earning quality could mitigate overinvestment and underinvestment using data set from developing countries. We break this conclusion by showing that accounting information has excellent relevance in firm economic (investment) decisions in developing countries as it does for advanced nations. The result is robust to the alternative measurement of investment efficiency using Chen et al. (2011) and Chen and Lin (2013).

The paper's remaining part is organized as follows; Section 2 discusses literature review and hypotheses development. Section 3 describes the research methodology. Then, section 4 presents the results and discussion. Finally, section 5 is conclusions.

II. Review of Literature and Hypothesis Development

a) *Financing constraints and investment efficiency*

Prior studies explored that financing constraints affect firm investment behavior (Schauer *et al*., 2019, Cleary, 1999, Whited, 1992, Fazzari *et al*., 1988). In their pioneered work, Fazzari *et al*. (1988) point out that the

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firm's financial status determines the investment. They found firms with limited external finance use internal cash flows to finance their investment projects.

Modigliani and Miller (1958) assumed that investment only depends on its profitability in the frictionless world. Their model assumes that external and internal finance entirely substitute. When firms face difficulty in raising external finance, they use internal funds to finance their investment project. However, Fazzari *et al*. (1988) showed that internal and external capital is not entirely substituted. In their view, investment depends on internal finance availability, access to external finance, or credit markets' functioning. They measure a firm's financial constraints based on the dividend payout, age, size, and credit as eternal financial constraints proxies. Guariglia (2008) also points out that firm age, size, and dividend payout are proxies for the degree of external financial constraints faced by the firms.

The effects of financial status on investment vary with the accessibility to external finance and internal funds available for investment opportunities. For instance, (Guariglia, 2008, Cleary *et al*., 2007, Lu, 2017) showed that firms' investment responds differently to internal and external financing constraints. Guariglia (2008) studied the extent to which the sensitivity of investment to cash flow using the panel data of UK firms over the period 1993–2003 and found that the response of investment to internal funds is different from that of external finance.

Bond *et al*. (2003) empirically investigated the effect of financial factors on investment in four European countries. They found that financial constraints on investment are severe in the more market-oriented company. They concluded that internal finance availability appears to have been a more significant constraint on company investment in the more market-oriented country. Mulier *et al*. (2016) noted that a firm is financially constrained if its internal fund's generation limits its investment because it cannot obtain sufficient external funds. These imply that when firms unable to raise external capital because of associated costs, they look internally to finance their investment and uses internal cash flows. Since the internal fund might not be good enough to fund the investment opportunities, they forego the available investment projects.

On the other hand, agency theory argues that firms with ample funds could deviate from their optimal investment efficiency level due to information asymmetry by overinvesting in unprofitable projects (Myers, 1977). As a result, firms face underinvestment or overinvestment in their investment decision. Hovakimian and Hovakimian (2009) have also shown that the limited accessibility of external funds intensifies the sensitivity of investment to the cash flow. So, based on the above analysis, we propose the following hypotheses;

H1: The relationship between cash flow and investment efficiency level is positive for the total sample and the constrained and unconstrained firm.

Since we also need to investigate that the effect of financing constraints the two suboptimal investment efficiency, as an extension of the central hypothesis, we posit the following hypothesis

H1a: Sensitivity of investment efficiency to cash flow is positive for both underinvestment and overinvesting firms.

Based on the above analysis, we also posit the following hypothesis to investigate the financial constraint effect on investment efficiency.

H2: Financing constraints and investment efficiency have a positive relationship for the total sample and constrained firms but negative for unconstrained firms.

As an extension of the H2, we framed the following hypothesis concerning overinvestment and underinvestment scenarios

H2a: There is a negative relationship between financing constraint and investment inefficiency in both underinvestment and overinvestment scenarios for constrained and uncontained firms but negative for the overall data.

b) The moderating effect of earning quality

Agency theory suggests that owners and their management are separate (Jensen and Meckling, 1979). Due to this separation of role raise agency friction among the stakeholders. The theory also suggested that financial reporting as corporate governance tools can mitigate agency problems from agency frictions (Graham *et al*., 2005, Bushman and Smith, 2001). Roychowdhury *et al*. (2019) have discussed two scenarios in which earning quality matters for an investment decision. First, information asymmetry gives rise to agency frictions, such as adverse selection and moral hazard costs. Second, the existence of uncertainty about growth opportunities. They framed that the earning quality of the firm influences investment efficiency by facilitating external finance and monitor managers and thus reduce managerial incentives to over-invest.

Salehi *et al*. (2018) found a positive relationship between earnings quality and managerial access to bank debt financing. They also indicated that a negative relationship between earnings quality and managerial access to internal debt financing. Kurt (2018) also noted that accruals are likely to offer more significant perceived benefits and have lower expected costs for constrained firms than unconstrained firms, constrained firms are expected to report higher income-increasing accruals

Kardan *et al*. (2016) claim a positive relationship between the quality of financial reporting and debt

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financing. Ding *et al*. (2016), using a sample consisting of privately held firms, found that better earnings quality increases private firms' access to debt financing and lowers their cost of debt. Li and Wang (2010) suggest that financial reporting and disclosure can mitigate both under- and overinvestment problems, increasing overall investment efficiency. The above analysis shows that earning quality influences investment efficiency by providing access to external capital.

The constrained firm cannot raise external funds from capital providers, which leads to inefficient investment. Under such situations earning quality plays a crucial role in solving this problem. High earning quality would help the firm to reduce the cost of external finance. On the other hand, the manager also invests in unprofitable projects for the sake of their benefit, which raises the issue of inefficient investment decisions (over investment). Earning quality could curb this problem by disciplining managers not to invest in unprofitable projects. Moreover, (Leonel Carvalho and Elie Guimarães Kalatzis, 2018) noted that better-earning quality improves investment efficiency decisions decreasing investment-cash flow and information asymmetry. Another study also showed how the corporate governance components like board independence and board size use accounting conservatism (accounting reporting) to monitor the manager's economic decisions (Nasr and Ntim, 2018).

Based on the above analysis and arguments, earning quality affects the relationship between financing constraints and investment efficiency through reducing to cost of external finance and enabling managers to invest in visible projects. So, we posit the following hypothesis;

H3: The sensitivity of investment efficiency and both (underinvestment and overinvestment) to cash flow is conditional to the earning quality.

H4: The relationship between financing constraints and investment inefficiency, and both underinvestment and overinvestment conditional to Earning quality.

III. Research Design

a) Data sources and sample selection

We collect firm-level and country-level data from the OSIRIS databases, respectively. We employed the multi-stage sampling determination following prior studies (Nasr and Ntim, 2018, Gomariz and Ballesta, 2014, Bacha and Ajina, 2019, Guariglia, 2008, Waweru *et al*., 2019). Our initial sample is 1211 non-financial firms from 31 countries listed on the database. First, we extract all African firms listed on the stock market of each country in the database. Second, we eliminate financial firms, including banks and insurance institutions. Third, exclude firms that do not have ten years of data. Fourth, we eliminate Firms with missing data of financing constraints, investment, and earning quality variables. Finally, we extract 690 among 1211 firms for the year 2009 to 2018 from 15 African countries.

We categorize the firm into an overall sample, financially constrained and unconstrained firms. We separately regress for both with and without moderating variables to see the effect of earning quality in the relationship between financing constraints and investment efficiency. We applied ordinary least squares to estimate the baseline analysis. We then employed a general method of moment (GMM) to deal with endogeneity issues and the robustness check purpose.

Table I presents the sample distribution by country and economic sector of the firm. We categorized industries into ten industry groups based on the Global Industry Classification Standard (GICS). The largest number of firms engaged in the consumer staple sector, followed by the industrial sector. The lowest share is taken by firms providing different utilities. South Africa and Egypt share the largest number of the sample firm, while Uganda takes the lowest share of the sample. Panel C reports the sample distribution based on the firm's financial status. The subsample that comprises financially constrained firms are 584, and financially unconstrained firms are 106 in number. In percentage, 84.64% and 15.36% of the firms are constrained and unconstrained, respectively.

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Table 1: Sample data distribution

Panel A: Sample distribution by industry			Panel B: Sample distribution by country			Panel C: Distribution by financial status			
						Constrained firms		Unconstrained firms	
Industry	Freq.	%	Country	Samples	%	Samples	%	Samples	%
Communication Services	280	4.08	Botswana	10	1.45				
Consumer Discretionary	975	14.2	Cote'DViore	22	3.19				
Consumer Staples	1,400	20.39	Egypt	161	23.33				
Energy	250	3.64	Ghana	16	2.32				
Health Care	297	4.33	Kenya	33	4.78				
Industrials	1,243	18.1	Morocco	44	6.38				
Information Technology	250	3.64	Mauritius	46	6.67				
Materials	1,353	19.7	Malawi	6	0.87				
Real Estate	729	10.62	Nigeria	89	12.89				
Utilities	90	1.31	Tunisia	39	5.65				
			Tanzania	7	1.01				
			Uganda	4	0.58				
			South Africa	163	23.62				
			Zambia	12	1.74				
			Zimbabwe	38	5.51				
Total	6,867	100		690	100	584	84.64	106	15.36

b) Variables definitions and measurements

i. *Dependent variables*

Investment efficiency, overinvestment, and underinvestment: Under the investment theory, Modigliani and Miller (1958) postulated that the firm would invest in capital projects with positive net present value (hereafter NPV) and reject projects with negative NPV. Accordingly, following prior studies (Ullah *et al*., 2020b, Guariglia and Yang, 2016, García Lara *et al*., 2016, Li, 2011, Hirth and Viswanatha, 2011, Bassetto and Kalatzis, 2011, Li and Wang, 2010, Biddle *et al*., 2009, Agyei-Mensah, 2021b, Ullah *et al*., 2020a), we define our investment efficiency variable as a function of firm growth opportunities and firms investing in positive NPV is efficient in their investment efficiency. A deviation from this expected investment level is considered an inefficient investment, either underinvestment or overinvestment.

For measuring investment efficiency, previous studies applied different proxies to calculate investment efficiency based on investment-q sensitivity, growth opportunities, average Tobin's q ratio, cost of capital, and the cost of capital rate divided by the return of investment(Li and Wang, 2010).

Considering the data on hand, we use two investment models (e.i, one for the baseline analysis and the other for robustness checks). First, we apply Biddle *et al*. (2009), which considers the investment as a firm's sales growth opportunities in a given year for baseline analysis. Many studies use this model to measure investment efficiency (Gomariz and Ballesta, 2014, Naeem and Li, 2019, Ullah *et al*., 2020b, Ullah et al., 2020a). For robustness analysis, we employed a model developed by Chen *et al*. (2011)to measure investment as a revenue growth function. To calculate the investment efficiency variable, we first regress the following model to estimate the residual value.

$$\mathrm{Inv}_{i,t} = \beta_0 + \beta_1 \mathrm{Sales\ growth}_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots eqn \quad (1)$$

Where $Inv_{i,t}$-is the total capital expenditure on fixed assets of the firm in period t, and $SalesGrowth_{i,t}$-percentage change sales from year t-1 to year t. Using this model, we estimate the residual value industry-wise for industries with at least ten observations and consider the residual's absolute value as an overall investment efficiency variable. Following prior studies, we classify the firm into two groups based on the residual value estimated from the model. We consider firms as overinvesting if their investment level is a positive deviation from the predicted residual value—the firms with a negative residual value regarded as underinvesting. Finally, we use the estimated underinvestment and overinvestment as dependent variables in our investment model.

c) Independent variables

Financing constraints: To analyze the impact of financing constraints on investment efficiency, following prior studies (Mansali *et al*., 2019, Laghari and Chengang, 2019, Leonel Carvalho and Elie Guimarães Kalatzis, 2018, Schauer *et al*., 2019), we adopt the financing constraints indexes (FIN_CONS) as developed by (Schauer et al., 2019). Then we use the value to classify the firm as constrained and unconstrained, and then we employ it as an explanatory variable in the primary investment efficiency model. To compute the index, we adopt the same variable definition (Schauer *et al*., 2019, Baker *et al*., 2003). We measure FCP as follows;

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$$\text{Fin\_Cons}_{i.t} = -0.123 * \text{Size}_{i,t-1} - 0.024 * Interest\ coverage_{i,t-1} - 4.404 * ROA_{i,t-1} - 1.716 * Cash\ holding_{i.t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots.eqn \quad (2)$$

Where $\text{Size}_{i,t-1}$ is the natural log of the firm's lagged total asset, $Interest\ coverage_{i,t-1}, is$ EBIT over interest expenses of firm *i* at year t-1 calculated. $ROA_{i,t-1}$is net income over total assets, and $Cash\ holding_{i.t-1}$ is cash holding over the beginning-of-year total.

Cash flow: We use the operating cash flow as the second independent variable to analyze the cash flow's investment efficiency sensitivity. We measure it as net cash flow from operating activities scaled by the total asset.

i. *Moderating variable*

Earning quality: In the literature, there is no commonly agreed approach to measure earning quality. Due to the unobservable behavior of accounting information, it is not easy to measure financial reporting quality. Several methodological research develops an approach to measure the earning quality of the firm, includes performance-based discretionary accruals (Kothari *et al*., 2005), revenue-based measure (Stubben, 2010, McNichols and Stubben, 2008), earning smoothness (Francis *et al*., 2005), accruals (Dechow and Dichev, 2002), value relevance, earnings persistence (Lev, 1983, Ali and Zarowin, 1992), earnings management(Jones, 1991), and readability (Li, 2008).

Considering the data in our data set, we use performance-based discretionary accruals or revenue discretionary of the firm developed by(Kothari *et al*., 2005). The extent of literature used this method to measure the accounting or earning quality (Lourenço *et al*., 2018, Gomariz and Ballesta, 2014, Chen *et al*., 2011). Following their steps earning quality is measured as follows.

$$\Delta ARec_{i,t} = \alpha_0 + \alpha_1 \Delta Rev_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{eqn} \quad (3)$$

Where $\Delta ARec_{i,t}$ An annual change of account receivable of firm i at year t divided by the lagged total asset is an annual change of account receivable. $\Delta Rev_{i,t}$ is the annual change in revenue of firm *I* at year *t* scaled by lagged total asset and $\varepsilon_{i,t}$ represent a random error term. Following Chen *et al*. (2011), estimate the residual value from equation 3 to determine discretionary revenue. Discretionary value estimated cross-sectional for each industry group in a year that has at least eight observations. Then we multiply the absolute value of discretionary revenues by -1. The higher the value, the higher-earning quality.

ii. *Control variables*

Under the neoclassical investment model, the theory assumes that capital investment decisions are determined only by marginal q ratios (Abel, 1983, Hayashi, 1982, Yoshikawa, 1980). However, there are a variety of factors affecting efficient investment decisions. Many researchers included controlling variables in their investment model *(Chen et al., 2011, Li and Wang, 2010, Biddle et al.*, 2009, Verdi, 2006, Biddle and Hilary, 2006). Following prior studies, we include asset tangibility, leverage, firm size, firm age, interest coverage ratio, and dividend payout ratio as control variables in our investment models. We also control the year to control year variability. To address omitted country-level specific variables, we include country as a dummy variable.

d) *Model specification*

i. *Financing constraints and cash flow sensitivity of investment efficiency*

To investigate the effect of financial constraints and cash flow on investment efficiency, we estimate the following model;

$$Inv\_Eff_{i,t} = \beta_0 + \beta_1 Fin\_Cons_{i,t} + \beta_2 CashFlow_{i,t} + \beta_3 Controls_{i,t} + \beta_4 YearDummy_t + \beta_5 CountryDumm + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\text{eqn} \quad (4)$$

Where $In\ v\_Eff_{i,t}$ an overall investment inefficiency, measured as the absolute residuals of investment efficiency from Biddle et al. (2009) model. $FinCons_{i,t}$ is the financing constraint index of firm *i* at year *t*. $CashFlow_{i,t}$ *, represent net cashflow scaled by lagged total asset,* $Controls_{i,t}$ represents the list of control variables, including tangibility, leverage, firm size, firm age, interest coverage ratio, dividend payout ratio, etc. $YearDummy_t$ and $CountryDumm$ represents year, and country dummies respectively. In this model β_1 and β_2 measure the financing constraint effects and the cash flow sensitivity of the investment efficiency.

To estimate the impact of financing constraints and cash flow on the two inefficient investment scenarios (overinvestment and underinvestment), we apply the same model only by changing the dependent variable to underinvestment *(Under_Inv)* or overinvestment (*Over_Inv)*.

ii. *The moderating role of earning quality*

This study investigates the moderating role of earning quality on the relationship between financing constraints and investment efficiency. To investigate the moderating role of earning quality, we include the interaction terms in the prior models from eqn(4) as follows;

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To investigate the role of earning quality in the relationship between financing constraints and investment efficiency, we estimate the following model by adding the interaction variable.

$$Inv\_Eff_{i,t} = \beta_0 + \beta_1 Fin\_Cons_{i,t} + \beta_2 CashFlow_{i,t} + \beta_3 EQ_{i,t} + \beta_4 Fin\_Cons_{i,t} * EQ_{i,t} + \beta_5 Cashflow * EQ_{i,t} + \beta_6 Controls_{i,t} + \beta_7 Year\ Dummy_t + \beta_8 CountryDumm\varepsilon_{i,t} \ldots\ldots eqn \quad (5)$$

Where $INV_{i,t}$ -is overall investment inefficiency, measured as the absolute residuals of investment efficiency from Biddle *et al*. (2009) model. $FinCons_{i,t}$ -is the financing index as developed by Schauer et al. (2019) in *I* firm at year *t*,$EQ_{i,t}$ -is the earning quality in *i* firm at year *t*.$Cashflow_{i,t}$ -is the operating cash flow in *I* firm at year *t*. $FinCons_{i,t} * EQ$ is the interaction term of financing constraints and earning quality in *i* firm at year t. $Cashflow_{i,t} * EQ$ is the interaction term of cashflow and earning quality in *i* firm at year t. $Controls_{i,t}$ It controls variables like leverage, firm size, firm age, interest coverage, and tangibility. $YearDummy_t$ and $Country\ Dumm$ represents the year, and country dummies, respectively. The same procedure applied two the overinvestment and underinvestment scenarios.

IV. Empirical Results

a) Descriptive statistics

Table II provides detailed summary statistics of all variables. Panel A, B, and C present the descriptive statistical summary of all variables for overall data and subsamples (unconstrained and constrained firms). The columns include the number of observations, mean value, standard deviation, and the minimum and maximum value of each variable for both the overall sample and subsamples. The mean of corporate investment efficiency (Inv_Eff) is 0.552, 0.550, and 0.559 for overall samples, unconstrained, and constrained firms, respectively. The minimum value of Inv_Eff is 0.383, while its maximum value approximately 0.922 across all total samples and subsamples. This value indicates there are no extreme values.

Table 2: Descriptive statistics

	Panel A: Total sample					Pane B: Constrained					Pane C: Unconstrained				
Variable	Obs	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max
Inv_Eff	5785	0.552	0.016	0.383	0.922	4855	0.550	0.55	0.383	0.922	930	0.559	0.02	0.39	0.683
Over_Inv	2562	0.563	0.015	0.552	0.922	1919	0.562	0.562	0.552	0.922	643	0.568	0.015	0.552	0.683
Under_Inv	3223	0.542	0.01	0.383	0.552	2936	0.540	0.542	0.383	0.552	287	0.539	0.017	0.39	0.552
Cashflow	6177	0.097	0.162	-3.022	5.723	5172	0.085	0.085	-3.022	1.989	1005	0.159	0.244	-1.22	5.723
Fin_Cons	6900	1.496	1.060	-1.499	2.533	4610	3.740	3.750	2.090	7.180	908	3.420	2.460	-2.800	5.040
EQ	6251	0.096	0.119	-0.284	0.554	5231	0.089	0.089	-0.251	0.535	1020	0.131	0.197	-1.992	3.233
*Cashflow*EQ*	6024	0.02	0.035	-0.009	0.223	5025	0.017	0.017	-0.007	0.206	999	0.036	0.048	-0.022	0.286
*Fin_cons*EQ*	5436	0.061	1.552	-1.444	13.092	4528	0.034	0.034	-1.41	10.558	908	0.126	2.225	-1.784	17.757
TQ	6186	1.053	1.228	0.001	6.893	5225	0.922	0.922	0.001	6.22	961	1.756	1.816	0	8.649
Firm_Grow	6546	0.038	0.415	-2.324	1	5515	6.853	6.853	-0.457	6.88	1031	3.329	0.022	2.618	3.329
Tang	6295	0.373	0.284	0	3.908	5266	0.37	0.37	0	3.908	1029	0.39	0.273	0	1.47
Size	6739	14.65	2.531	4.533	21.625	5687	14.082	14.082	4.533	21.625	1052	14.614	2.583	8.007	21.251
Inter_Cov	5920	7.972	1.057	-2.399	8.153	4894	7.117	7.117	-0.887	11.68	843	8.415	0.957	-0.693	8.561
Age	6879	3.453	0.767	1.099	4.836	5804	3.412	3.412	0	5.236	1075	3.66	0.728	0	4.883
Div	5950	-0.025	0.048	-0.27	0	4995	-0.027	-0.027	-12.053	0	955	-0.072	0.135	-2.548	0
Lev	6615	0.565	0329	0.014	1.976	5582	0.546	0.546	0.014	1.781	1033	0.764	1.231	-0.054	17.159
Reg_Q	6900	-0.282	0.653	-2.12	1.13	5825	-0.258	-0.258	2.12	1.13	1075	-0.41	0.722	-2.12	1.13

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Overinvestment (Over_Inv) has a mean of 0.563, 0.562, and 0.568 for overall samples, unconstrained and constrained firms, respectively. For overall samples, the minimum and maximum values of Over_Inv are 0.552 and 0.922, respectively. However, for the unconstrained subsample, the minimum and maximum values are 0.5516 and 0.6828, while for constrained, it is 0.5515 and 0.9222, respectively. Underinvestment (Under_Inv) has a mean of 0.542, 0.540, and 0.539 for the overall data set, unconstrained and constrained, respectively. The minimum and maximum values are 0.383 and 0.552, both for the total and constrained samples. But for the unconstrained firm, it is 0.390 and 0.552. All the minimum and maximum amounts of the overinvestment and underinvestment variable shows no extreme value.

Likewise, Table II reports that cash flow (*CashFlow*) and financing constraints (*Fin_Cons*) the mean and the standard deviation of financing constraint indicators. Cash flow has a mean value of 0.097, 0.085, and 0.159 for whole samples, unconstrained and constrained subsamples, respectively. In comparison, financing constraints have a mean value of 1.496, 3.740, and 3.420 for total samples, unconstrained and constrained subsamples.

b) Correlation analysis

Table III reports the pair wise correlations among all the variables used in the study analysis. The result shows that cash flow and financing constraints positively and significantly correlate with investment efficiency, indicating investment efficiency is highly affected by firms financing constraints and sensitive to their internal cash flow. Cash flow and financing constraint indicators have a positive and significant correlation to each other. Similarly, earning quality also shows a positive and significant correlation with investment efficiency, indicating that higher-earning quality leads to efficient capital investment; the result is consistent with previous studies (Gomariz and Ballesta, 2014). Concerning earning quality and cash flow and financing constraint indicator relations, the result indicates that earning quality has a positive and significant correlation with cash flow. In contrast, it has a negative and significant correlation with financing constraint indicators.

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Table 3: Correlation matrix

	Inv_Eff	Casflow	Fin_Cons	EQ	TQ	Firm_Grow	Tang	Size	Inter_Cov	Age	Div	Lev	Reg_Q
Inv_Eff	1												
Casflow	0.476***	1											
Fin_Cons	0.075***	0.022***	1										
EQ	0.061***	0.167***	-0.0474***	1									
TQ	-0.049***	0.012***	0.0131***	-0.002***	1								
Firm_Grow	-0.434	0.019***	-0.0171	0.053***	0.004***	1							
Tang	0.091***	0.126***	-0.034***	0.100***	-0.018***	0.026***	1						
Size	0.108***	0.092***	-0.033***	0.271***	-0.092	0.024*	0.148***	1					
Inter_Cov	-0.138***	-0.146***	-0.627***	0.002***	-0.018***	0.009	0.002**	0.021	1				
Age	0.030**	0.025*	-0.004*	0.007**	-0.023*	-0.005**	0.066***	0.178***	0.007	1			
Div	-0.059**	-0.177*	0.089	-0.062**	-0.006	-0.003***	-0.063	0.001**	0.015	-0.030***	1		
Lev	-0.038*	0.175**	-0.262	0.156***	0.012	0.015**	0.178**	0.071*	0.029	0.004**	-0.324***	1	
Reg_Q	0.058***	0.081***	-0.008	-0.048	0.050***	0.005	-0.126***	0.158***	0.004	0.070**	0.011***	-0.037**	1

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Correlation between all independent and controlling variables is not high, showing that our data set has no collinearity problem. The correlation coefficient between the interest coverage (Inter_Cov) and financing constraint indicator is -0.627, which is relatively the highest coefficient, but it is less than the threshold value of 0.7 (Dormann*et al*., 2013). These all show that there are is no such high multicollinearity problem among the variables used for the analysis.

c) *Investment efficiency on Cash flow and financing constraints with moderating variable*

Table IV presents the estimation results of the investment efficiency on cash flow (cash flow) and financing constraints (Fin_Cons) with the effect of earning quality (EQ) as moderating variables across all total samples and subsamples. Panel A depicts the regression result without moderating variable, whereas panel B reports the regression's moderating variable. In panel A, the result indicates that both cash flow and Fin_Cons variables are significant at 1% across all the overall samples and the two subsamples (Constrained and Unconstrained firm). As predicted in hypotheses (H1) and (H2), the result confirms that Cash Flow has positively associated with investment efficiency across all samples, whereas Fin_Cons has a positive coefficient for the overall and constraint subsample except for unconstrained firms, which is negative. The positive coefficient shows that the firm's investment efficiency is sensitive to internal cash flow and their investment activities affected by the financing constraints, which is consistent with previous studies (Hovakimian and Hovakimian, 2009). It indicates when companies are externally constrained, they tend to look for internal cash flow.

However, in panel B, after we include the interaction terms (Cash Flow*EQ) between cash flow and earning quality, the strengthening of the cash flow coefficient dramatically reduced due to the moderating effect of earning quality across total, constrained, and unconstrained firms. The result proved hypothesis three (H3) that the sensitivity of investment efficiency is conditional to its earning quality. Moreover, this evidence reveals that earning quality, as a corporate governance tool, reduces investment efficiency on internal cash flow and helps the firm get external finance for their investment projects.

Table 4: Regression results of investment efficiency on Cash flow and financing constraints with moderating variable

Variables	*Panel A*			*Panel B*		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Inv_Eff						
Cashflow	0.0936*** (0.0010)	0.0884*** (0.0011)	0.1062*** (0.0026)	0.0871*** (0.0012)	0.0181*** (0.0021)	0.1035*** (0.0030)
Fin_Cons	0.0003*** (0.0001)	0.0081*** (0.0006)	-0.0174*** (0.0013)	0.0072*** (0.0007)	0.0175*** (0.0010)	-0.0161*** (0.0013)
EQ				0.0471*** (0.0012)	0.0015*** (0.0005)	0.0126 (0.0087)
Cashflow*EQ				-0.0009 (0.0007)	0.0053** (0.0007)	0.0217*** (0.0077)
Fin_Cons*EQ				0.1367*** (0.0042)	-0.0012*** (0.0001)	-0.0017* (0.0009)
TQ	-0.0002*** (0.0001)	-0.0004*** (0.0003)	0.0013*** (0.0004)	-0.0002*** (0.0008)	-0.0004*** (0.0001)	0.0012*** (0.0004)
Firm_Grow	0.0085*** (0.0005)	0.0041*** (0.0012)	0.0015 (0.0012)	0.0008* (0.0005)	1.6174*** (0.2202)	-0.0017 (0.0020)
Tang	0.0075*** (0.0008)	0.0018*** (0.0006)	0.0110*** (0.0016)	0.0019*** (0.0007)	0.0068*** (0.0007)	0.0093*** (0.0021)
Size	0.0010*** (0.0001)	0.0012*** (0.0001)	-0.0019*** (0.0003)	0.0010*** (0.0001)	0.0004*** (0.0001)	-0.0017*** (0.0003)
Inter_Cov	0.0011*** (0.0003)	-0.0019 (0.0013)	-0.0004*** (0.0004)	0.0012*** (0.0003)	-0.0080*** (0.0010)	-0.0004*** (0.0001)
Age	-0.0002 (0.0003)	0.0003 (0.0002)	-0.0018*** (0.0006)	0.0001 (0.0002)	0.0006** (0.0003)	-0.0019*** (0.0006)
Div	-0.0112*** (0.0009)	-0.0159* (0.0096)	-0.0041 (0.0037)	-0.0043*** (0.0008)	-0.0060*** (0.0008)	-0.0041 (0.0038)
Lev	0.0012*** (0.0001)	-0.0055*** (0.0018)	0.0030 (0.0019)	-0.0108*** (0.0003)	-0.0008*** (0.0002)	0.0028 (0.0017)
Reg_Q	-0.0014 (0.0015)	-0.0009 (0.0010)	0.0019 (0.0014)	-0.0015 (0.0020)	-0.0043*** (0.0019)	0.0020 (0.0021)
Constant	0.5304*** (0.0039)	0.5141*** (0.0118)	7.7773*** (4.1611)	-0.6164*** (0.0353)	-10.4966*** (1.5085)	3.6268*** (4.4336)
CountryDummy	Yes	Yes	Yes	Yes	Yes	Yes
YearDummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,636	2,225	789	4,636	3,652	789
R-squared	0.3072	0.3193	0.7050	0.5231	0.3859	0.7092

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, Variable definition as given in table 2*

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The result also consistent with the theory that states earning quality, as corporate governance tools, facilitate external finance for capital investment by providing relevant accounting information to an external party so as reduce the dependency of investment decisions on the internal funds(Sloan, 2001, Bushman and Smith, 2001).

Similarly, panel B also reports the interaction term, Fin_Cons* EQ, is significant and has a positive coefficient for the overall sample and constrained firms but negative for unconstrained firms. Fin_Cons' coefficient of financing constraints indicator, Fin_Cons, decreases after we employed the interaction term (Fin_Cons*EQ), proving that earning quality has a conditional effect on the relationship between financing constraints investment efficiency is expected. It implies that accounting quality as a corporate governance mechanism improves the firm's investment decision, reducing financing constraints by curbing information asymmetry. The result is consistent with the work of (Leonel Carvalho and Elie Guimarães Kalatzis, 2018, Chen *et al*., 2011, Beatty *et al*., 2009, Verdi, 2006) that earning quality mitigates investment inefficiency by curbing information asymmetry between the shareholders and managers.

d) Overinvestment on financing constraints and cash flow with moderating variable effects

Panel a of Table V presents regression results of overinvestment (inefficiency) over financing constraint and cash flow, whereas panel B shows the moderating effects of earning quality. Both Cash flow and Fin_Cons are significant at 1% across all samples. Cash flow is positively related to overinvestment across all sample sizes, whereas Fin_Cons has a positive coefficient for the total sample but negative for constrained and unconstrained firms. The result indicates that as the internal cash flow increases, the manager tends to overinvest to attract the investor. On the other hand, the estimated result proved that constrained firms more likely overinvest than unconstrained using their internal cash flow. This result aligns with previous empirical work (Naeem and Li, 2019, Laghari and Chengang, 2019, Lerskullawat, 2018).

Table 5: Regression result of overinvestment on financing constraints and cashflow sensitivity including moderating variable

Variables	Panel A			Panel B		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Over_Inv						
CashFlow	0.1078*** (0.0018)	0.0345*** (0.0029)	0.1114*** (0.0035)	0.0913*** (0.0018)	0.0770*** (0.0013)	0.1030*** (0.0045)
Fin_Cons	0.0042*** (0.0001)	-0.0032*** (0.0002)	-0.0147*** (0.0010)	0.0011** (0.0001)	-0.0176** (0.0083)	-0.0117*** (0.0011)
EQ				0.0263*** (0.0019)	0.0047*** (0.0014)	0.0033*** (0.0005)
CashFlow*EQ				-0.0013* (0.0010)	-0.0034*** (0.0015)	0.0329*** (0.0127)
Fin_Cons*EQ				0.0582*** (0.0068)	0.0012** (0.0006)	-0.0011*** (0.0001)
TQ	0.0017*** (0.0002)	-0.0004*** (0.0001)	0.0012*** (0.0004)	0.0026*** (0.0002)	-0.0004*** (0.0001)	0.0012*** (0.0003)
Firm_Grow	0.0076*** (0.0013)	0.0142* (0.0074)	-0.0013 (0.0021)	-0.0020 (0.0012)	0.6498*** (0.1269)	-0.0098*** (0.0024)
Tang	0.0058*** (0.0011)	0.0084*** (0.0008)	0.0084*** (0.0022)	0.0013 (0.0009)	0.0015*** (0.0005)	0.0056*** (0.0022)
Size	0.0002 (0.0002)	0.0007*** (0.0001)	-0.0014*** (0.0003)	0.0002 (0.0001)	0.0011*** (0.0001)	-0.0010*** (0.0003)
Inter_Cov	0.0010** (0.0004)	-0.0097*** (0.0011)	-0.0004*** (0.0001)	0.0007** (0.0003)	-0.0016 (0.0011)	-0.0003*** (0.0001)
Age	-0.0012*** (0.0004)	0.0003 (0.0003)	-0.0027*** (0.0006)	-0.0012*** (0.0003)	0.0003 (0.0002)	-0.0030*** (0.0006)
Div	-0.0052*** (0.0009)	-0.0079*** (0.0009)	-0.0115** (0.0053)	-0.0016** (0.0007)	-0.0143*** (0.0041)	-0.0026 (0.0054)
Lev	0.0011*** (0.0002)	0.0016*** (0.0001)	0.0057*** (0.0016)	-0.0068*** (0.0005)	-0.0058*** (0.0004)	0.0030* (0.0016)
Reg_Q	-0.0064*** (0.0022)	-0.0047*** (0.0015)	-0.0058 (0.0043)	-0.0068*** (0.0018)	-0.0006 (0.0010)	-0.0050 (0.0041)
Constant	0.5363*** (0.0071)	0.5175*** (0.0512)	1.0614*** (3.4260)	0.0555 (0.0574)	-3.9725*** (0.8670)	9.1880*** (3.6240)
CountryDummy	Yes	Yes	Yes	Yes	Yes	Yes
YearDummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,148	3,774	551	2,148	2,145	551
R-squared	0.3857	0.2962	0.5567	0.5939	0.3520	0.5923

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, Variable definition as given in table 2*

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Panel B illustrates the effects of moderating variables or the two interaction terms, Cashflow*EQ and Fin_Cons*EQ, on the relationship between cash flow and overinvestment. The results indicate that the Cashflow*EQ is significant at least 10% across all samples, whereas Fin_Cons*EQ is significant at least 5%. The coefficient of Cashflow*EQ is positive for total samples but negative for the remaining constrained and unconstrained firms. Similarly, Fin_Cons*EQ has a positive coefficient for the overall sample but negative for unconstrained firms. It indicates that earning quality has increasing power for the total sample but decreasing power for constraining and unconstrained firms. The result implies firm with high earning quality, be it constrained and unconstrained, has to reduce overinvestment the ability to avoid financing constraints to finance their projects. On the other hand, the result implies that as cash flow increases, the managers tend to underinvest for the sake of personal benefit. The result is consistent with previous studies (Roychowdhury *et al*., 2019, Lin *et al*., 2016).

e) Underinvestment on financing constraints and cash flow with moderating variable effects

Panel a of Table VI reports the regression results of underinvestment over financing constraint and cash flow. In contrast, panel B depicts moderating variables or interaction (Cashflow* EQ, and Fin_Cons* EQ) on the model's relationship. In panel A, the result demonstrates both cash flow and financing constraint significant at 1% across all samples except for financing constraints indicators(Fin_Cons) under total samples, accounting for 10%. Cashflow has a positive coefficient across all samples, whereas Fin_Cons shows negative to the subsamples but positive for the total asset. The results illustrate that underinvestment highly sensitive to internal cash flow. The Unconstrained and constrained tends to use their internal cash flow when they are underinvesting situation.

Table 6: Regression results of underinvestment on financing constraints and cash flow sensitivity, including moderating variable

Variables	*Panel A*			*Panel B*		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Under_Inv						
CashFlow	0.0454***	0.0203***	0.0601***	0.0419***	0.0441***	0.0467***
	(0.0012)	(0.0016)	(0.0042)	(0.0016)	(0.0036)	(0.0056)
Fin_Cons	0.0021*	-0.0018***	-0.0106***	0.0031**	0.0177***	-0.0100***
	(0.0003)	(0.0002)	(0.0008)	(0.0004)	(0.0011)	(0.0009)
EQ				0.0310***	-0.0123***	0.0014*
				(0.0015)	(0.0030)	(0.0008)
CashFlow*EQ				-0.0198***	0.0047***	-0.0860***
				(0.0037)	(0.0022)	(0.0160)
Fin_Cons*EQ				-2.7986***	-0.0013***	0.0005*
				(0.6347)	(0.0002)	(0.0003)
TQ	-0.0004***	0.0011***	-0.0029***	-0.0004***	0.0022***	-0.0027***
	(0.0001)	(0.0002)	(0.0007)	(0.0001)	(0.0002)	(0.0007)
Firm_Grow	0.0038***	7.3170***	0.0028***	0.0000	6.0202***	0.0025**
	(0.0004)	(1.2285)	(0.0011)	(0.0003)	(1.2556)	(0.0011)
Tang	0.0027***	0.0047***	0.0042**	-0.0008	0.0029***	0.0037*
	(0.0006)	(0.0011)	(0.0018)	(0.0006)	(0.0010)	(0.0019)
Size	0.0011***	-0.0006***	-0.0021***	0.0009***	-0.0007***	-0.0021***
	(0.0001)	(0.0002)	(0.0004)	(0.0001)	(0.0002)	(0.0004)
Inter_Cov	0.0004**	-0.0197***	-0.0003***	-0.0005	-0.0102***	-0.0003***
	(0.0002)	(0.0014)	(0.0001)	(0.0003)	(0.0014)	(0.0000)
Age	0.0001	0.0001	0.0006	0.0001	-0.0001	0.0008
	(0.0002)	(0.0004)	(0.0008)	(0.0002)	(0.0004)	(0.0008)
Div	-0.0041*	-0.0031***	0.0013	-0.0023	-0.0021***	0.0019
	(0.0024)	(0.0008)	(0.0022)	(0.0018)	(0.0007)	(0.0036)
Lev	-0.0069***	0.0000	-0.0030***	-0.0053***	-0.0023***	-0.0023**
	(0.0013)	(0.0002)	(0.0011)	(0.0004)	(0.0002)	(0.0011)
Reg_Q	0.0006	-0.0073***	0.0033	0.0008	-0.0093***	0.0032
	(0.0010)	(0.0022)	(0.0030)	(0.0009)	(0.0020)	(0.0030)
Constant	0.5317***	-9.4538***	6.8726***	4.0776***	-2.6139***	5.0395***
	(0.0027)	(8.4209)	(2.6816)	(5.3400)	(8.6040)	(2.9011)
CountryDummy	Yes	Yes	Yes	Yes	Yes	Yes
YearDummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,488	1,549	238	2,488	1,507	238
R-squared	0.3527	0.5186	0.7078	0.4586	0.6099	0.7150

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, Variable definition as given in table 2*

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The results in Panel B confirm both interaction variables, Cashflow*EQ and Fin_Cons*EQ variables, are significant, at least 10% across all samples. Cashflow*EQ interaction is negatively related across all samples except for the constrained category, a positive coefficient. While the interaction Fin_Cons*EQ variable has a negative for the total sample and constrained but positive to unconstrained firms. It indicates that earning quality has to decrease power for the total sample but increasing power for constraining and unconstrained firms.

f) Robustness check and additional analysis

i. *Robustness check using an alternative measurement of investment efficiency*

To check our result's robustness(Chen *et al*., 2011) as an alternative measurement for investment measure.

$$Inv_{i,t} = \alpha_0 + \alpha_1 Neg_{i.t-1} + \alpha_2 \%RevGrow_{i.t-1} + \alpha_3 Neg * RevGrow_{i,t-1} + \varepsilon_{i.t}$$

Where $Inv_{i,t}$, investment computed as total capital expenditure on fixed assets of the firm in period t scaled by total asset, $Neg_{i.t-1}$ an indicator which takes one if revenue growth is negative value, 0 otherwise. $\%RevGrow_{i.t-1}$, the percentage growth of revenue.

Accordingly, we proved that the result is robust. The regression results report that all variable of interest is significant and similar to our main regression results. Tables 7, 8, and 9 reports the regression results of our analysis using the alternative measurement of investment efficiency, overinvestment, and underinvestment.

ii. *Robustness checks (Endoginty issues)*

In many corporate governments and corporate finance, variables can be affected by the previous performance. For example, in our baseline model, investment efficiency might be influenced by the firm's prior year investment performance. It raises the issue of the endogeneity problem in the model. So, to handle this problem, we employed a generalized two-step method of moments (GMM). GMM is powerful estimation technique than OLS in solving unobserved heterogeneity and endogeneity problems (Wintoki et al., 2012). Prior studies examining corporate governance variables have also proved that GMM can solve the endogeneity problem (Ullah et al., 2020b, Sewpersadh, 2019). Thus, we estimate our analysis using lagged variables for investment efficiency, overinvestment, and underinvestment in the GMM method. We find consistent results with the previous result we got using ordinary least square (OLS). We lose some observations due to the requirement of the GMM.

Tables X, XI, and XII, report the GMM estimation results for all the hypotheses we predicted in the study, and the regression results of two-step GMM confirm robust results. The results of lagged variable also significant in all cases. Thus, the two-step GMM model offers us a robust result.

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Table 7: Robustness check using an alternative proxy for investment efficiency

Variables	*Panel A*			*Panel A*		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Chen_Inv						
CashFlow	0.420*** (0.056)	0.067*** (0.007)	0.230** (0.117)	0.155*** (0.058)	0.138*** (0.020)	0.103* (0.079)
Fin_Cons	0.003* (0.002)	0.018 (0.002)	-0.060** (0.024)	0.008*** (0.003)	0.001** (0.001)	-0.009** (0.004)
EQ				-0.058*** (0.011)	0.372*** (0.027)	-0.614*** (0.125)
Cashflow*EQ				-0.325*** (0.037)	0.282*** (0.045)	0.001* (0.001)
Fin_Cons*EQ				0.875*** (0.078)	-0.004 (0.003)	-0.060*** (0.019)
TQ	-0.008 (0.001)	0.001 (0.001)	0.002 (0.006)	0.006 (0.001)	0.001 (0.001)	0.001 (0.006)
Firm_Growth	0.663*** (0.027)	0.009*** (0.002)	-0.019 (0.025)	0.552*** (0.018)	0.007*** (0.001)	0.071** (0.034)
Tang	0.049** (0.023)	0.011*** (0.003)	0.690*** (0.034)	-0.020 (0.024)	-0.020*** (0.002)	0.749*** (0.034)
Size	0.007* (0.003)	0.011* (0.004)	0.018*** (0.005)	0.005 (0.003)	0.002*** (0.001)	0.013*** (0.005)
Age	-0.002 (0.008)	0.000 (0.001)	0.001** (0.001)	-0.003 (0.008)	0.002* (0.001)	-0.031*** (0.011)
Inters_Cov	0.010** (0.005)	0.006 (0.005)	-0.033*** (0.011)	0.008* (0.005)	0.014** (0.006)	0.001 (0.001)
Div	-0.005 (0.015)	0.001 (0.003)	0.100* (0.056)	-0.035 (0.027)	-0.006 (0.004)	0.072 (0.095)
Lev	-0.014*** (0.004)	0.011*** (0.003)	0.023 (0.021)	0.032*** (0.007)	-0.007* (0.003)	0.050** (0.023)
Reg_Q	-0.098** (0.043)	-0.010* (0.005)	0.056 (0.061)	-0.086** (0.041)	0.002 (0.004)	0.061 (0.061)
Constant	-0.128 (0.109)	0.513*** (0.040)	-196.710** (77.579)	-0.133 (0.103)	0.446*** (0.041)	-0.472** (0.225)
Countrydummy	Yes	Yes	Yes	Yes	Yes	Yes
Yeardummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,636	3,774	789	4,636	3,775	765
R-squared	0.350	0.143	0.543	0.368	0.416	0.559

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, Variable definition as given in table 2*

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Table 8: Robustness check using alternative proxy overinvestment

Variables	Panel A			Panel B		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Chen_OverInv						
Cashflow	0.016** (0.007)	0.137*** (0.006)	0.182 (0.163)	0.017*** (0.006)	0.132*** (0.007)	0.054 (0.168)
Fin_Cons	0.031*** (0.008)	-0.021*** (0.004)	-0.098* (0.051)	0.008* (0.001)	-0.002* (0.000)	-0.030*** (0.009)
EQ				-0.054*** (0.009)	0.359*** (0.008)	-0.383** (0.170)
Cashflow*EQ				-0.025* (0.021)	0.256*** (0.023)	0.785** (0.360)
Fin_Cons*EQ				0.002*** (0.001)	0.021*** (0.004)	-0.058*** (0.021)
TQ	-0.005 (0.001)	-0.001** (0.001)	0.007 (0.009)	-0.006 (0.001)	0.011 (0.001)	0.019** (0.009)
Firm_Growth	-0.028*** (0.004)	0.001*** (0.001)	0.065 (0.055)	-0.015*** (0.003)	0.011*** (0.003)	0.032 (0.053)
Tang	0.004* (0.002)	-0.019*** (0.002)	0.271*** (0.048)	0.006*** (0.002)	-0.020*** (0.002)	0.290*** (0.048)
Size	-0.005*** (0.001)	0.002*** (0.001)	0.019* (0.010)	-0.005*** (0.001)	0.001*** (0.000)	0.005 (0.007)
Age	0.003*** (0.001)	0.002 (0.002)	0.002* (0.001)	0.002*** (0.001)	0.002 (0.002)	0.006 (0.001)
Inters_Cov	-0.001 (0.000)	0.001* (0.001)	-0.015 (0.015)	0.001 (0.001)	0.001* (0.001)	-0.020 (0.016)
Div	0.043*** (0.015)	-0.005*** (0.002)	0.142 (0.116)	0.041*** (0.011)	-0.004** (0.002)	-0.073 (0.141)
Lev	-0.004** (0.002)	-0.007*** (0.002)	0.133*** (0.030)	-0.000 (0.002)	-0.004** (0.002)	0.225*** (0.039)
Reg_Q	-0.002 (0.004)	0.003 (0.004)	-0.034 (0.090)	-0.001 (0.003)	0.001 (0.004)	-0.035 (0.089)
Constant	0.390*** (0.009)	0.522*** (0.016)	-6.617* (167.403)	0.375*** (0.011)	0.516*** (0.016)	-0.908 (7.755)
Countrydummy	yes	yes	yes	yes	yes	yes
Yeardummy	yes	yes	yes	yes	yes	yes
Observations	3,228	3,772	381	3,205	3,635	381
R-squared	0.330	0.433	0.279	0.380	0.451	0.307

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, Variable definition as given in table 2*

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Table 9: Robustness check using alternative proxy underinvestment

Variables	Panel A			Panel B		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Chen_UI						
Cashflow	0.041* (0.023)	0.018*** (0.002)	0.125** (0.062)	0.056*** (0.013)	0.015*** (0.002)	0.130* (0.078)
Fin_Cons	0.010** (0.002)	-0.005*** (0.001)	-0.023* (0.012)	-0.012** (0.002)	-0.004*** (0.001)	0.022* (0.012)
EQ				-0.003** (0.001)	-0.049*** (0.009)	0.118*** (0.017)
Cashflow*EQ				0.002*** (0.000)	-0.023** (0.004)	0.485*** (0.049)
Fin_Cons*EQ				-0.119** (0.050)	-0.009*** (0.003)	0.003*** (0.001)
TQ	-0.001 (0.001)	-0.002*** (0.003)	-0.010*** (0.003)	-0.001 (0.001)	-0.002*** (0.001)	-0.003*** (0.001)
FirmGrow	0.006** (0.003)	-0.004 (0.001)	-0.028** (0.014)	-0.002 (0.003)	-0.006 (0.001)	-0.002 (0.002)
Tang	0.007 (0.008)	0.002*** (0.001)	0.760*** (0.036)	-0.009 (0.012)	0.001** (0.001)	-0.011** (0.005)
Size	0.002** (0.001)	0.001*** (0.001)	0.009** (0.004)	0.001 (0.001)	0.011*** (0.002)	0.001 (0.001)
Age	-0.004* (0.002)	-0.001 (0.001)	0.001* (0.000)	-0.004* (0.002)	-0.001 (0.001)	-0.004** (0.002)
Inters_Cov	-0.002* (0.001)	0.011 (0.001)	-0.007 (0.007)	-0.004** (0.001)	0.003 (0.001)	-0.004** (0.002)
Div	-0.083* (0.049)	-0.211*** (0.017)	0.006 (0.023)	-0.079 (0.051)	-0.196*** (0.018)	-0.044 (0.033)
Lev	0.011* (0.006)	0.011*** (0.001)	-0.035*** (0.012)	0.016** (0.007)	0.010*** (0.001)	0.007* (0.004)
Reg_Q	-0.008* (0.005)	-0.001 (0.001)	-0.038 (0.028)	-0.009* (0.005)	-0.001 (0.001)	-0.008 (0.007)
Constant	-0.690*** (0.013)	0.534*** (0.006)	-76.072* (40.428)	-0.664*** (0.016)	0.541*** (0.006)	-0.725*** (0.044)
Countrydummy	yes	yes	yes	yes	yes	yes
Yeardummy	yes	yes	yes	yes	yes	yes
Observations	1,432	1,946	408	1,434	1,890	408
R-squared	0.128	0.342	0.695	0.161	0.362	0.696

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Table 10: Ro bustness check using two-step system GMM for investment efficiency

	Panel A			Panel B		
Variables	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Inv_Eff						
L_Inv	0.5375*** (0.0622)	0.5514*** (0.1004)	0.1834** (0.0743)	0.2453*** (0.0902)	0.2148*** (0.0649)	0.4122*** (0.0883)
CashFlow	0.0906*** (0.0039)	0.0793*** (0.0021)	0.0898*** (0.0008)	0.0865*** (0.0018)	0.0865*** (0.0018)	0.0538*** (0.0109)
Fin_Cons	0.0002*** (0.0001)	0.0001 (0.0001)	-0.0220*** (0.0039)	0.0001* (0.0001)	0.0002*** (0.0001)	-0.0088*** (0.0018)
EQ				0.0193*** (0.0047)	0.0246* (0.0146)	0.0180 (0.0129)
CashFlow*EQ				0.0100*** (0.0011)	-0.0157*** (0.0020)	0.0737*** (0.0209)
Fin_Cons*EQ				0.0021** (0.0003)	0.0017** (0.0007)	-0.0011 (0.0001)
TQ	-0.0002 (0.0002)	-0.0004*** (0.0001)	-0.0013 (0.0011)	-0.0001 (0.0002)	-0.0001*** (0.0001)	0.0006 (0.0006)
FirmGrow	0.0068*** (0.0009)	0.0003*** (0.0001)	0.0006 (0.0019)	0.0049*** (0.0011)	0.0444*** (0.0158)	0.0012 (0.0013)
Tang	0.0233** (0.0093)	0.0419* (0.0230)	0.0183*** (0.0051)	0.0068*** (0.0024)	-0.0012 (0.0017)	0.0054** (0.0025)
Size	-0.0002 (0.0004)	-0.0013** (0.0005)	-0.0031*** (0.0006)	0.0010** (0.0004)	0.0007* (0.0004)	-0.0015*** (0.0003)
Inters_Cov	0.0004 (0.0004)	-0.0043 (0.0051)	-0.0005*** (0.0001)	0.0006 (0.0004)	0.0056*** (0.0020)	-0.0002*** (0.0001)
Age	-0.0006 (0.0006)	-0.0014 (0.0016)	-0.0004 (0.0013)	-0.0001 (0.0005)	-0.0003 (0.0003)	-0.0010 (0.0008)
Div	-0.0065 (0.0060)	-0.0034 (0.0022)	-0.0001 (0.0041)	-0.0053 (0.0034)	-0.0104 (0.0087)	-0.0091 (0.0099)
Lev	0.0034* (0.0019)	0.0062*** (0.0020)	0.0060** (0.0024)	-0.0052*** (0.0016)	-0.0018 (0.0046)	0.0010 (0.0013)
Reg_Q	0.0027 (0.0059)	0.0163** (0.0079)	0.0075 (0.0051)	-0.0041* (0.0024)	-0.0004 (0.0007)	0.0009 (0.0007)
Constant	0.2465*** (0.0341)	0.2859*** (0.0712)	2.9900*** (3.0309)	0.3964*** (0.0475)	0.0734 (0.1428)	29.2086*** (5.9850)
CountryDummy	Yes	Yes	Yes	Yes	Yes	Yes
YearDummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,062	3,305	692	4,062	3,305	692
AR(2)	0.119	0.332	0.223	0.142	0.185	0.232
Hansen test	0.394	0.219	0.268	0.113	0.5	0.105

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Table 11: Robustness check using two-step system GMM for overinvestment

Variables	Panel A			Panel B		
	Overall	Constrained	Unconstrained	Overall	Constrained	Unconstrained
Over_Inv						
L_ Over_Inv	0.1215*** (0.0040)	0.0865*** (0.0048)	0.1355*** (0.0218)	0.1196*** (0.0041)	0.0871** (0.0410)	0.1094*** (0.0290)
CashFlow	0.0970*** (0.0009)	0.0858*** (0.0009)	0.1022*** (0.0033)	0.0962*** (0.0009)	0.1160*** (0.0304)	0.1033*** (0.0077)
Fin_Cons	0.0002** (0.0001)	-0.0020 (0.0004)	-0.0350*** (0.0105)	0.0001* (0.0001)	-0.0002 (0.0002)	0.0018** (0.0007)
EQ				0.0040*** (0.0006)	0.0050 (0.0118)	-0.0197*** (0.0064)
CashFlow*EQ				-0.0022*** (0.0003)	-0.0237 (0.0792)	0.0591** (0.0288)
Fin_Cons*E				0.0030*** (0.0005)	0.0004** (0.0002)	-0.0029*** (0.0011)
TQ	0.0001*** (0.0001)	0.0007*** (0.0001)	-0.0009*** (0.0003)	0.0001*** (0.0001)	-0.0003 (0.0006)	-0.0010*** (0.0004)
FirmGrow	0.0035*** (0.0002)	0.0038*** (0.0002)	0.0067*** (0.0007)	0.0013*** (0.0004)	0.0020 (0.0031)	0.0078*** (0.0027)
Tang		0.0013*** (0.0002)	0.0065** (0.0032)	0.0004 (0.0004)	0.0014 (0.0016)	0.0031 (0.0039)
Size	0.0001 (0.0001)	0.0002*** (0.0001)	0.0001 (0.0003)	0.0010 (0.0002)	-0.0030 (0.0002)	0.0002 (0.0003)
Inters_Cov	-0.0021 (0.0004)	0.0005*** (0.0002)	0.0236 (0.0264)	-0.0020 (0.0003)	0.0006 (0.0007)	-0.0344 (0.0423)
Age	-0.0002 (0.0002)	-0.0003** (0.0002)	0.0005 (0.0007)	-0.0002 (0.0002)	-0.0002 (0.0003)	0.0010 (0.0007)
Div	-0.0004*** (0.0001)	-0.0004*** (0.0001)	-0.0158*** (0.0033)	-0.0004*** (0.0001)	-0.0028 (0.0022)	-0.0052 (0.0068)
Lev	0.0046*** (0.0003)	0.0049*** (0.0001)	0.0036*** (0.0010)	0.0047*** (0.0003)	0.0058*** (0.0017)	0.0037*** (0.0012)
Reg_Q	-0.0008*** (0.0003)	-0.0039*** (0.0003)	0.0070** (0.0031)	-0.0008*** (0.0003)	-0.0003 (0.0004)	0.0082** (0.0032)
Constant	0.4740*** (0.0021)	0.4880*** (0.0032)	0.1817 (0.3109)	0.4746*** (0.0022)	0.4855*** (0.0218)	0.8823* (0.4942)
CountryDummy	yes	yes	yes	yes	yes	yes
YearDummy	yes	yes	yes	yes	yes	yes
Observations	1,538	1,055	447	1,538	1,053	447
AR(2)	0.392	0.315	0.381	0.327	0.62	0.193
Hansen test	0.52	0.539	0.672	0.536	0.869	0.589

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Table 12: Robustness check using two step system GMM for underinvestment

Variables	Panel A			Panel B		
	Overall	constrained	unconstrained	Overall	constrained	unconstrained
Under_Inv						
L_ Under_Inv	0.4147*** (0.0094)	0.2709*** (0.0158)	0.3341*** (0.0644)	0.3630*** (0.0086)	0.3140*** (0.0647)	0.3549*** (0.1176)
CashFlow	0.0371*** (0.0008)	0.0436*** (0.0016)	0.0572*** (0.0036)	0.0407*** (0.0012)	0.0358*** (0.0089)	0.0495*** (0.0136)
Fin_Cons	0.0030* (0.0005)	0.0021*** (0.0004)	-0.0104*** (0.0029)	0.0011 (0.0002)	-0.0007 (0.0005)	-0.0017 (0.0002)
EQ				-0.0026 (0.0017)	0.0105** (0.0050)	-0.0050 (0.0176)
CashFlow*EQ				-0.0004** (0.0002)	-0.0053* (0.0031)	0.1906 (0.3737)
Fin_Cons*EQ				-0.0707*** (0.0012)	-0.0541 (0.0333)	0.0872* (0.0450)
TQ	-0.0002*** (0.0001)	-0.0003*** (0.0001)	-0.0037*** (0.0009)	-0.0002*** (0.0001)	-0.0013*** (0.0003)	-0.0016 (0.0020)
FirmGrow	0.0039*** (0.0002)	0.0030*** (0.0004)	0.0006 (0.0007)	0.0037*** (0.0004)	0.0006*** (0.0002)	0.0017 (0.0014)
Tang	0.0006 (0.0005)	0.0008 (0.0010)	0.0039 (0.0038)	0.0018*** (0.0007)	0.0010 (0.0008)	0.0021 (0.0030)
Size	0.0001** (0.0001)	0.0002*** (0.0001)	-0.0008** (0.0003)	0.0010 (0.0002)	0.0002 (0.0001)	-0.0006 (0.0006)
Inters_Cov	0.0001*** (0.0001)	-0.0010 (0.0007)	0.0000*** (0.0001)	0.0001** (0.0001)	0.0027 (0.0018)	0.0304*** (0.0058)
Age	0.0001 (0.0001)	-0.0010 (0.0001)	-0.0002 (0.0005)	0.0011 (0.0001)	0.0002 (0.0002)	-0.0004 (0.0010)
Div	0.0007** (0.0003)	0.0084 (0.0064)	0.0012 (0.0009)	0.0001 (0.0003)	0.0042 (0.0114)	0.0003 (0.0019)
Lev	-0.0001 (0.0002)	0.0001 (0.0004)	0.0016** (0.0007)	0.0013*** (0.0002)	-0.0033 (0.0041)	0.0023 (0.0017)
Reg_Q	-0.0001 (0.0004)	0.0005 (0.0006)	0.0043*** (0.0015)	0.0008** (0.0004)	0.0012 (0.0011)	0.0033 (0.0022)
Constant	0.3137*** (0.0050)	0.3994*** (0.0101)	0.0001 (0.0001)	0.3429*** (0.0045)	0.3512*** (0.0344)	0.0000 (0.0000)
CountryDummy	yes	yes	yes	yes	yes	yes
YearDummy	yes	yes	yes	yes	yes	yes
Observations	1,875	1,680	173	1,875	1,663	173
AR(2)	0.378	0.201	0.252	0.307	0.671	0.51
Hansen test	0.201	0.286	0.57	0.397	0.549	0.9

V. Conclusion

The study's main objective was to examine the effects of financing constraints on firm investment efficiency and the role of earning quality has in moderating this effect among African firms. Many studies showed that financial constraints have a limited impact on firm investment decisions. We extend this to the African context by providing robust results for different proxies and empirical evidence on the relationship between financing constraints, earning quality, and investment efficiency. Our findings confirmed that investment efficiency is sensitive to cash flow based on the agency and investment theory when the firms are externally constrained. They use internal cash flow to make their investment for African firms. It is more pronounced in financially constrained firms than unconstrained firms. The estimated result proved that constrained firms more likely overinvest than unconstrained using their internal cash flow. The external financing constraints level is more pronounced for constrained firms than unconstrained ones. The

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underinvestment is very sensitive to cash flow for constrained firms than unconstrained firms.

Based on corporate governance and financial disclosure theory, we showed that earning quality has conditional effects on the relationship between financing constraints and investment inefficiency. The results reveal that earning quality reduces the relationship between financing constraints and investment efficiency. The firm with high earning quality can avoid financing constraints to finance their projects by avoiding overinvestment and underinvestment of both constrained and unconstrained firms

In conclusion, we believe this study contributes to the literature in four ways; first, this study links corporate finance and corporate governance theories by showing how corporate governance tools, namely corporate financial disclosure (earning quality), could play a role in easing financing constraint effects on firm investment decisions. Second, we contributed to the literature by showing how financial constraints and accounting quality impact the two investment inefficiency scenarios, overinvestment, and underinvestment using the Africa data set where prior studies were overlooked to investigate. Third, the study gives a signal showing that earning quality, as a corporate governance tool, can avoid financing constraints and improve investment efficiency. We believe this crucial addition to the literature shows evidence from the developing world where prior studies concluded that the value relevance of financial reporting quality is non-existent. Fourth, since the first to study a data set from Africa, we believe it has a valuable contribution to the literature by showing that the effect of financing constraints is conditional to the firm's earning quality. We contribute to the literature by evidencing that earning quality could mitigate overinvestment and underinvestment using data set from developing countries. We break this conclusion by showing that accounting information has excellent relevance in firm economic (investment) decisions in developing countries as it does for advanced nations.

References Références Referencias

1. ABEL, A. B. 1983. Optimal investment under uncertainty. The American Economic Review, 73, 228.
2. AGYEI-MENSAH, B. 2021a. The impact of board characteristics on corporate investment decisions: an empirical study. Corporate Governance, 2014-2018.
3. AGYEI-MENSAH, B. K. 2021b. The impact of board characteristics on corporate investment decisions: an empirical study. Corporate Governance: The International Journal of Business in Society.
4. ALI, A. & ZAROWIN, P. 1992. The role of earnings levels in annual earnings-returns studies. Journal of Accounting Research, 30, 286-296.
5. ALTI, A. 2003. How sensitive is investment to cash flow when financing is frictionless? The journal of finance, 58, 707-722.
6. ASGHAR, A., SAJJAD, S., SHAHZAD, A. & MATEMILOLA, B. T. 2020. Role of discretionary earning management in corporate governance-value and corporate governance-risk relationships. Corporate Governance: The International Journal of Business in Society.
7. BACHA, S. & AJINA, A. 2019. CSR performance and annual report readability: evidence from France. Corporate Governance: The International Journal of Business in Society.
8. BAKER, M., STEIN, J. C. & WURGLER, J. 2003. When does the market matter? Stock prices and the investment of equity-dependent firms. The Quarterly Journal of Economics, 118, 969-1005.
9. BASSETTO, C. F. & KALATZIS, A. E. 2011. Financial distress, financial constraint and investment decision: Evidence from Brazil. Economic modelling, 28, 264-271.
10. BEATTY, A., LIAO, S. & WEBER, J. 2009. The effect of private information and monitoring on the role of accounting quality in investment decisions. Joseph Peter, The Effect of Private Information and Monitoring on the Role of Accounting Quality in Investment Decisions (June 30, 2009).
11. BIDDLE, G. C. & HILARY, G. 2006. Accounting quality and firm-level capital investment. The accounting review, 81, 963-982.
12. BIDDLE, G. C., HILARY, G. & VERDI, R. S. 2009. How does financial reporting quality relate to investment efficiency? Journal of Accounting and Economics, 48, 112-131.
13. BOND, S., ELSTON, J. A., MAIRESSE, J. & MULKAY, B. 2003. Financial factors and investment in Belgium, France, Germany, and the United Kingdom: A comparison using company panel data. Review of economics and statistics, 85, 153-165.
14. BUSHMAN, R. M. & SMITH, A. J. 2001. Financial accounting information and corporate governance. Journal of accounting and Economics, 32, 237-333.
15. CHEN, F., HOPE, O.-K., LI, Q. & WANG, X. 2011. Financial reporting quality and investment efficiency of private firms in emerging markets. The accounting review, 86, 1255-1288.
16. CHERKASOVA, V. & RASADI, D. 2017. Earnings quality and investment efficiency: evidence from Eastern Europe. Review of Economic Perspectives, 17, 441-468.
17. CLEARY, S. 1999. The relationship between firm investment and financial status. The Journal of Finance, 54, 673-692.

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18. CLEARY, S., POVEL, P. & RAITH, M. 2007. The U-shaped investment curve: Theory and evidence. Journal of financial and quantitative analysis, 42, 1-39.
19. DECHOW, P. M. & DICHEV, I. D. 2002. The quality of accruals and earnings: The role of accrual estimation errors. The accounting review, 77, 35-59.
20. DING, S., LIU, M. & WU, Z. 2016. Financial reporting quality and external debt financing constraints: The case of privately held firms. Abacus, 52, 351-373.
21. DORMANN, C. F., ELITH, J., BACHER, S., BUCHMANN, C., CARL, G., CARRÉ, G., MARQUÉZ, J. R. G., GRUBER, B., LAFOURCADE, B. & LEITAO, P. J. 2013. Collinearity: a review of methods to deal with it and a simulation study evaluating their performance. Ecography, 36, 27-46.
22. EBAID, I. E. S. 2013. Corporate governance and investors' perceptions of earnings quality: Egyptian perspective. Corporate Governance: The international journal of business in society.
23. FAZZARI, S., HUBBARD, R. G. & PETERSEN, B. C. 1988. Financing constraints and corporate investment. National Bureau of Economic Research Cambridge, Mass., USA.
24. FERRACUTI, E. & STUBBEN, S. R. 2019. The role of financial reporting in resolving uncertainty about corporate investment opportunities. Journal of Accounting and Economics, 68.
25. FRANCIS, J., LAFOND, R., OLSSON, P. & SCHIPPER, K. 2005. The market pricing of accruals quality. Journal of Accounting and Economics, 39, 295-327.
26. GARCÍA LARA, J. M., GARCÍA OSMA, B. & PENALVA, F. 2016. Accounting conservatism and firm investment efficiency. Journal of Accounting and Economics, 61, 221-238.
27. GOMARIZ, M. F. C. & BALLESTA, J. P. S. 2014. Financial reporting quality, debt maturity and investment efficiency. Journal of Banking & Finance, 40, 494-506.
28. GRAHAM, J. R., HARVEY, C. R. & RAJGOPAL, S. 2005. The economic implications of corporate financial reporting. Journal of Accounting and Economics, 40, 3-73.
29. GUARIGLIA, A. 2008. Internal financial constraints, external financial constraints, and investment choice: Evidence from a panel of UK firms. Journal of banking & finance, 32, 1795-1809.
30. GUARIGLIA, A. & YANG, J. 2016. A balancing act: managing financial constraints and agency costs to minimize investment inefficiency in the Chinese market. Journal of Corporate Finance, 36, 111-130.
31. HAYASHI, F. 1982. Tobin's marginal q and average q: A neoclassical interpretation. Econometrica: Journal of the Econometric Society, 50, 213-224.
32. HIRTH, S. & VISWANATHA, M. 2011. Financing constraints, cash-flow risk, and corporate investment. Journal of Corporate Finance, 17, 1496-1509.
33. HOVAKIMIAN, A. & HOVAKIMIAN, G. 2009. Cash flow sensitivity of investment. European Financial Management, 15, 47-65.
34. HUBBARD, T. N. 1998. An empirical examination of moral hazard in the vehicle inspection market. The RAND Journal of Economics, 29, 406-426.
35. JENSEN, M. C. & MECKLING, W. H. 1979. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Economics social institutions. Springer.
36. JONES, J. J. 1991. Earnings management during import relief investigations. Journal of accounting research, 29, 193-228.
37. KANODIA, C. & LEE, D. 1998. Investment and disclosure: The disciplinary role of periodic performance reports. Journal of Accounting Research, 36, 33-55.
38. KARDAN, B., SALEHI, M. & ABDOLLAHI, R. 2016. The relationship between the outside financing and the quality of financial reporting: evidence from Iran. Journal of Asia Business Studies, 10.
39. KOTHARI, S. P., LEONE, A. J. & WASLEY, C. E. 2005. Performance matched discretionary accrual measures. Journal of Accounting and Economics, 39, 163-197.
40. KURT, A. C. 2018. How do financial constraints relate to financial reporting quality? Evidence from seasoned equity offerings. European Accounting Review, 27, 527-557.
41. LAGHARI, F. & CHENGANG, Y. 2019. Investment in working capital and financial constraints. International Journal of Managerial Finance.
42. LEONEL CARVALHO, F. & ELIE GUIMARÃES KALATZIS, A. 2018. Earnings quality, investment decisions, and financial constraint. Review of Business Management, 20, 573-598.
43. LERSKULLAWAT, A. 2018. Financial development, financial constraint, and firm investment: Evidence from Thailand. Kasetsart Journal of Social Sciences.
44. LEV, B. 1983. Some economic determinants of time-series properties of earnings. Journal of Accounting and Economics, 5, 31-48.
45. LI, F. 2008. Annual report readability, current earnings, and earnings persistence. Journal of Accounting and economics, 45, 221-247.
46. LI, F. 2011. Earnings quality based on corporate investment decisions. Journal of Accounting Research, 49, 721-752.
47. LI, Q. & WANG, T. 2010. Financial reporting quality and corporate investment efficiency: Chinese experience. Nankai Business Review International.

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48. LIN, C.-J., WANG, T. & PAN, C.-J. 2016. Financial reporting quality and investment decisions for family firms. Asia Pacific Journal of Management, 33, 499-532.
49. LOURENÇO, I. C., RATHKE, A., SANTANA, V. & BRANCO, M. C. 2018. Corruption and earnings management in developed and emerging countries. Corporate Governance: The International Journal of Business in Society.
50. LU, X. 2017. Three essays on the role of external governance mechanisms in managerial real decisions. University of Southampton.
51. MANSALI, H., DEROUICHE, I. & JEMAI, K. 2019. Accruals quality, financial constraints, and corporate cash holdings. Managerial Finance, 48, 1129-1145.
52. MCNICHOLS, M. F. & STUBBEN, S. R. 2008. Does Earnings Management Affect Firms' Investment Decisions? The Accounting Review, 83, 1571-1603.
53. MODIGLIANI, F. & MILLER, M. H. 1958. The cost of capital, corporation finance and the theory of investment. The American Economic Review, 48, 261-297.
54. MULIER, K., SCHOORS, K. & MERLEVEDE, B. 2016. Investment-cash flow sensitivity and financial constraints: Evidence from unquoted European SMEs. Journal of Banking & Finance, 73, 182-197.
55. MUTTAKIN, M. B., MIHRET, D., LEMMA, T. T. & KHAN, A. 2020. Integrated reporting, financial reporting quality and cost of debt. International Journal of Accounting & Information Management.
56. MYERS, S. C. 1977. Determinants of corporate borrowing. Journal of financial economics, 5, 147-175.
57. NAEEM, K. & LI, M. C. 2019. Corporate investment efficiency: The role of financial development in firms with financing constraints and agency issues in OECD non-financial firms. International Review of Financial Analysis, 62, 53-68.
58. NASR, M. A. & NTIM, C. G. 2018. Corporate governance mechanisms and accounting conservatism: evidence from Egypt. Corporate Governance: The International Journal of Business in Society.
59. ÖSTBERG, P. 2006. Disclosure, investment and regulation. Journal of Financial Intermediation, 15, 285-306.
60. ROYCHOWDHURY, S., SHROFF, N. & VERDI, R. S. 2019. The effects of financial reporting and disclosure on corporate investment: A review. Journal of Accounting and Economics, 68.
61. RUDIGER, D., STANLEY, F. & RICHARD, S. 2011. Macroeconomics New York, McGraw-Hill/Irwin.
62. SALEHI, M., TIMACHI, M. & FARHANGDOUST, S. 2018. Earnings quality and managerial access to debt financing: empirical evidence from Iran. Journal of Economic and Administrative Sciences, 34.
63. SCHAUER, C., ELSAS, R. & BREITKOPF, N. 2019. A new measure of financial constraints applicable to private and public firms. Journal of Banking & Finance, 101, 270-295.
64. SEWPERSADH, N. S. 2019. A theoretical and econometric evaluation of corporate governance and capital structure in JSE-listed companies. Corporate Governance: The International Journal of Business in Society.
65. SLOAN, R. G. 2001. Financial accounting and corporate governance: a discussion. Journal of accounting and economics, 32, 335-347.
66. STEIN, J. C. 2003. Agency, information and corporate investment. Handbook of the Economics of Finance. Elsevier.
67. STUBBEN, S. R. 2010. Discretionary Revenues as a Measure of Earnings Management. The Accounting Review, 85, 695-717.
68. ULLAH, I., MAJEED, M. A., FANG, H.-X. & KHAN, M. A. 2020a. Female CEOs and investment efficiency: evidence from an emerging economy. Pacific Accounting Review.
69. ULLAH, I., ZEB, A., KHAN, M. A. & XIAO, W. 2020b. Board diversity and investment efficiency: evidence from China. Corporate Governance: The International Journal of Business in Society, 17.
70. VERDI, R. S. 2006. Financial reporting quality and investment efficiency. Available at SSRN 930922.
71. WANG, F., ZHU, Z. & HOFFMIRE, J. Financial reporting quality, free cash flow, and investment efficiency. SHS Web of Conferences, 2015. EDP Sciences, 01027.
72. WAWERU, N., MANGENA, M. & RIRO, G. 2019. Corporate governance and corporate internet reporting in sub-Saharan Africa: the case of Kenya and Tanzania. Corporate Governance: The international journal of business in society.
73. WHITED, T. M. 1992. Debt, liquidity constraints, and corporate investment: Evidence from panel data. The Journal of Finance, 47, 1425-1460.
74. WHITED, T. M. & WU, G. 2006. Financial Constraints Risk. Review of Financial Studies, 19, 531-559.
75. WINTOKI, M. B., LINCK, J. S. & NETTER, J. M. 2012. Endogeneity and the dynamics of internal corporate governance. Journal of financial economics, 105, 581-606.
76. YOSHIKAWA, H. 1980. On the" q" Theory of Investment. The American Economic Review, 70, 739-743.

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