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IMPACT OF FINANCIAL REPORTING QUALITY ON INVESTMENT EFFICIENCY AROUND THE GLOBE

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Abstract

In developed markets, the documented enhancement of investment efficiency due to financial reporting quality has yet to address the question of whether such a correlation persists in emerging, frontier, and other markets. This study investigates the association between financial reporting quality and investment efficiency across 21,741 publicly listed firms spanning 36 countries worldwide, encompassing developed, emerging, frontier, and other markets. Comprehensive accounting data spanning the years 1998 to 2022 is gathered for all listed firms in 40 industries across these 36 countries, having 166,453 firm-year observations. Causal connections are examined through fixed-effect regression analysis, supplemented by additional tests and robustness checks utilizing alternative proxies. Concerns about endogeneity are

mitigated through 2SLS analysis. The results reveal a positive impact of financial reporting quality on investment efficiency for firms in developed, emerging, frontier, and other markets. Our exploration of both over-investment and under-investment scenarios demonstrates a more pronounced link between financial reporting quality and investment efficiency in the underinvestment scenario. These findings contribute to the existing body of evidence, indicating that beyond its influence on investment efficiency in developed markets, the relationship between financial reporting quality and investment efficiency holds globally. This encompasses emerging, frontier, and other markets characterized by varying levels of reporting quality and financial frameworks.

Keywords

Investment Efficiency, Financial Reporting Quality, Developed Markets, Emerging Markets, Frontier Markets

1. Introduction

The term "investment efficiency" denotes a firm's ability to embrace ventures with positive net present value (NPV), contrasting with instances of over or underinvestment, participating in negative NPV projects, or refraining from positive NPV ventures, respectively. This efficiency aligns with the firm's goal of maximizing shareholder wealth (Gomariz & Ballesta, 2014; Biddle et al., 2009). Financial reporting quality (FRQ) signifies the precision of financial reports in conveying insights about a firm's activities, particularly projected cash flows crucial for equity investors (Biddle et al., 2009). Firms rely on financial reports to communicate their financial well-being, losses, operational risks, and interactions with investors (Trinh et al., 2022). Information asymmetry poses challenges in overseeing firms (Renneboog & Szilagyi, 2020).

While the literature has explored the FRQ-investment efficiency link in single-country settings of developed markets (Biddle et al., 2009; Gomariz & Ballesta, 2014), knowledge gaps persist regarding this connection in emerging, frontier, and other markets. Frontier markets, smaller and less accessible, often lag behind emerging markets. Despite their potential, information asymmetry challenges valuation in these markets (Alfraih, 2016).

FRQ may be less significant in emerging and frontier markets due to market imperfections impacting stock prices' ability to reflect available firm information. Notably, information scarcity might amplify information asymmetry, as seen in China's developing stock

market (Hussain et al., 2020). The importance of accounting information in developing and frontier markets may surpass alternative sources (Lopes, 2002).

Our study addresses the impact of FRQ on investment efficiency, extending prior research into a global setting that encapsulates developed, emerging, frontier, and other markets. Given concentrated ownership in frontier and other markets, less risky investment choices are anticipated. Distinctive dynamics in earnings management in these markets highlight variations in practices compared to developed markets (Martens et al., 2021; Lin and Wu, 2014).

To address this, we analyze FRQ's impact on investment efficiency in publicly listed firms in emerging, frontier, and other markets to give a holistic view. Utilizing accounting data from 2020 to 2022 for 21,741 firms across 36 countries and employing fixed-effects OLS regression and 2SLS analysis, our findings reveal a positive FRQ-investment efficiency link.

Our contribution lies in extending the FRQ-investment efficiency exploration to a cross-border developed, emerging, frontier and other markets, revealing a pronounced link in both underinvestment and overinvestment scenarios. Section 2 reviews relevant literature, theories, and empirical research, proposing hypotheses. Section 3 details the research design and methodology. Section 4 presents empirical results and discussion, while Section 5 concludes by outlining major contributions and implications.

2. Literature Review

This study relies on two fundamental theories to elucidate the relationships between variables. The first theory is agency theory (Jensen & Meckling, 1976), which posits that conflicts of interest stemming from the separation of power and control may lead managers to make decisions that do not solely benefit shareholders/investors (Alam, Ramachandran, & Nahomy, 2020). The second theory guiding the proposed variable associations is the signaling theory by Spence (1973). This theory suggests that corporate financial decisions act as signals from a firm's managers to investors, addressing information asymmetries.

Managers' voluntary information disclosure is consistent with these theories (e.g., Alsos et al., 2017; Yasar et al., 2020). Agency theory indicates a strong link between disclosure in financial reports and profitability, a measure of a firm's investment efficiency (Watson et al., 2002). Firms with higher-quality financial information show less divergence from appropriate investment levels (Chen, Hope, Li, Wang, 2011; Gomariz & Ballesta, 2014; McNichols &

Stubben, 2008). Signalling theory suggests that well-performing firms aim to convey their quality to investors through robust financial reporting, reducing information asymmetry, enhancing investment efficiency, and increasing investor confidence in managers (Watson et al., 2002).

Accounting standards and generally accepted accounting principles (GAAP) establish minimum requirements for disclosing accounting information but also allow flexibility in reporting, introducing the potential for managerial discretion and opportunistic behaviour (Leuz et al., 2003). Managers with strong performance seek to distinguish themselves through superior financial reporting quality (FRQ), using observable financial statements to signal the unobservable quality of their firms (Zhang & Wiersema, 2009). Low FRQ, associated with earnings management, can lead to adverse consequences, as seen in cases like Satyam Computer Services, WorldCom, and Enron (Hickman, Iyer, & Jadiyappa, 2021; Lara, Osma, & Penalva, 2016).

Owing to the agency issues of moral hazard and conflicts of interest, the study posits that high FRQ significantly impacts a firm's investment efficiency. This influence is driven by key factors. Firstly, quality financial reporting deters moral hazards and adverse selection, fostering increased investment efficiency by aiding in ~~the~~ selection of more profitable projects (Bushman & Smith, 2001). Secondly, robust FRQ mitigates information asymmetry between managers and investors/shareholders, reducing monitoring costs and enhancing investment efficiency (Chen, Hope, Li & Wang, 2011; Fazzari et al., 1988). Thirdly, improved FRQ enhances investors' ability to monitor and extract valuable insights from managerial/firm investment activities, boosting investment efficiency (Gomariz & Ballesta, 2014).

Based on this analysis, the study predicts that superior FRQ plays a pivotal role in enhancing a firm's investment efficiency in emerging frontier and other markets. Therefore, the hypothesis of the study is formally stated as follows:

H1: Financial reporting quality has a significant positive impact on investment efficiency around the globe

H1a: Financial reporting quality has a significant positive impact on investment efficiency in developed markets

H1b: Financial reporting quality has a significant positive impact on investment efficiency in emerging markets

H1c: Financial reporting quality has a significant positive impact on investment efficiency in frontier and other markets

3. Research Design and Methodology

3.1. Measurement of Variables

The dependent variable, Investment Efficiency (InvEff), is quantified as absolute residuals derived from the Biddle et al. (2009) model multiplied by -1. Higher InvEff values denote increased investment efficiency. Financial Reporting Quality (FRQ), the primary independent variable, is assessed through modified Jones (J_{FRQ}), Kothari (K_{FRQ}), and McNichols and Stubben (MS_{FRQ}) models. Each FRQ measure is determined by multiplying -1 with the absolute residuals from the respective accrual models, where higher values signify superior FRQ. FRQ models are estimated through separate regressions for each industry and year with at least 20 observations. ~~By~~ Following prior research, multiple control variables are employed to mitigate omitted variables bias and account for factors influencing firms' investment decisions.

3.2. Sample and Data

The study encompasses all listed firms based on Fama and French's 48-industry classification, excluding financials and utilities due to high regulations and incomparability. Data are extracted from Refinitiv Eikon DataStream for 2020 to 2022, resulting in a final dataset of 166,453 firm-year observations in 36 developed, emerging, frontier[1] , and other markets across 40 industries.

3.3. Econometric Model

To address the research question, a baseline regression in a panel setting is estimated:

$$InvEff_{(i,t)} = \beta_0 + \beta_1 FRQ_{i,t-1} + Controls + Year\ FE + \text{Industry FE} + \text{Country FE} + \varepsilon_{i,t} \quad (1)$$

Where $InvEff_{(i,t)}$ is the investment efficiency based on the Biddle model, $FRQ_{i,t-1}$ is financial reporting quality based on either modified Jones, Kothari or McNichols and Stubben models. Controls represent control variables, and Year FE, Industry FE, and Country FE are indicator variables for fixed effects. The random error term is denoted by $\varepsilon_{i,t}$. Before regression estimation, various statistical tests were conducted. Multi-collinearity concerns were addressed, with VIF values, with a tolerance limit of 5. Heteroscedasticity was managed using robust standard errors, where necessary.

[1] Frontier markets classification is done by Morgan Stanley Capital International (MSCI), Financial Times Stock Exchange (FTSE), and other index providers. This paper utilizes MSCI classification for identifying developed, emerging and frontier markets, remaining markets are titled as 'others'.

4. Results and Discussion

4.1. Descriptive Statistics

Descriptive statistics are presented in Table 1.1, encompassing mean, standard deviation, maximum, and minimum values for continuous variables (Panel A) and dichotomous variables (Panel B). Investment efficiency (InvEff) exhibits a mean (SD) value of -0.9 (86.3), while financial reporting quality (FRQ) measures, namely $J_{FRQ,}$ K_{FRQ} and MS_{FRQ}, have mean (SD) values of -0.8 (5.8), -0.2 (2.5), and -0.1 (5.3), respectively. These values align with findings from prior studies (e.g., see Gomariz & Ballesta, 2014). We observe positive correlations (not reported) between FRQ and investment efficiency measures.

Table 1.1: *Descriptive Statistics*

	Panel A: Overall Sample					**Panel B: Developed Markets**				
VARIABLES	*N*	*Mean*	*SD*	*Min*	*Max*	*N*	*Mean*	*SD*	*Min*	*Max*
Part A: Continuous Variables										
InvEff	166,453	-0.9	86.3	-442.7	0.0	85,633	-0.8	23.7	-169.2	0.0
J_{FRQ}	166,453	-0.8	5.8	-984.2	0.0	85,633	-1.4	8.1	-984.2	0.0
K_{FRQ}	166,453	-0.2	2.5	-470.4	0.0	85,633	-0.4	3.5	-470.4	0.0
MS_{FRQ}	166,453	-0.1	5.3	-208.0	0.0	85,633	-0.1	7.4	-208.0	0.0
SIZE	166,453	15.4	3.1	4.8	22.0	85,633	14.6	3.4	4.8	22.0
MTBV	166,453	1.3	2.2	0.0	30.4	85,633	1.4	2.5	0.0	30.4
OCFO	166,453	0.1	0.3	0.0	3.7	85,633	0.1	0.3	0.0	3.7
OSALES	166,453	0.5	1.0	0.0	13.0	85,633	0.6	1.1	0.0	13.0
OINVEST	166,453	0.1	1.8	0.0	28.3	85,633	0.1	2.5	0.0	28.3
Z-SCORE	166,453	0.3	7.9	-112.0	4.8	85,633	-0.5	10.7	-112.0	4.8
TANG	166,453	0.3	0.2	0.0	1.0	85,633	0.3	0.3	0.0	1.0
LEVERAGE	166,453	0.2	0.2	0	0.9	85,633	0.2	0.2	0.0	0.9
INDUSTRY	166,453	0.2	0.1	0.0	0.3	85,633	0.1	0.1	0.0	0.3
CFO	166,453	-0.8	6.4	-61.7	1.4	85,633	-1.6	8.6	-61.7	1.4
SLACK	166,453	3.7	15.6	0.0	15.1	85,633	5.3	19.0	0.0	15.1
AGE	166,453	25.3	15.9	0.0	15.0	85,633	30.2	18.5	0.0	15.0
O.CYCLE	166,453	3.8	2.5	-3.3	9.1	85,633	3.4	3.0	-3.3	9.1
Part B: Dichotomous Variables										
	0			1		0			1	
DVD	57,881	35%		108,572	65%	33,049	39%		52,584	61%
LOSS	129,802	78%		36,651	22%	63,251	74%		22,382	26%

	Panel C: Emerging Markets					Panel D: Frontier Markets				
VARIABLES	*N*	*Mean*	*SD*	*Min*	*Max*	*N*	*Mean*	*SD*	*Min*	*Max*
Part A: Continuous Variables										
InvEff	77,007	-0.6	57.9	-156.6	0.0	3,813	-0.1	0.3	-12.1	0.0
J_{FRQ}	77,007	-0.2	0.5	-80.5	0.0	3,813	-0.2	0.1	-1.4	0.0
K_{FRQ}	77,007	-0.1	0.1	-7.2	0.0	3,813	-0.1	0.1	-0.7	0.0
MS_{FRQ}	77,007	0.0	0.1	-9.7	0.0	3,813	0.0	0.1	-1.1	0.0
SIZE	77,007	16.0	2.4	5.5	22.0	3,813	18.8	2.7	7.5	22.0
MTBV	77,007	1.3	1.9	0.0	30.4	3,813	0.5	1.0	0.0	24.6
ʊOCFO	77,007	0.1	0.2	0.0	3.7	3,813	0.1	0.2	0.0	3.7
ʊOSALES	77,007	0.5	1.0	0.0	13.0	3,813	0.6	1.1	0.0	13.0
ʊOINVEST	77,007	0.1	0.3	0.0	29.4	3,813	0.0	0.0	0.0	0.5
Z-SCORE	77,007	1.2	2.7	-112.0	4.8	3,813	1.1	3.7	-112.0	4.8
TANG	77,007	0.3	0.2	0.0	1.0	3,813	0.3	0.3	0.0	1.0
LEVERAGE	77,007	0.1	0.2	0.0	0.9	3,813	0.2	0.3	0.0	0.9
INDUSTRY	77,007	0.2	0.1	0.0	0.3	3,813	0.2	0.1	0.1	0.3
CFO	77,007	0.0	2.0	-61.7	1.4	3,813	-0.1	2.2	-61.7	1.4
SLACK	77,007	2.0	10.6	0.0	15.1	3,813	1.5	9.1	0.0	156.1
AGE	77,007	20.4	10.1	1.0	11.0	3,813	15.6	9.4	0.0	64.0
O.CYCLE	77,007	4.2	1.7	-3.3	9.1	3,813	4.3	1.8	-3.3	9.1
Part B: Dichotomous Variables										
	0			1		0			1	
DVD	23,407	30%		53,600	70%	1,425	37%		2,388	63%
LOSS	63,251	82%		13,756	18%	3,300	87%		513	13%

Notes: This table presents descriptive statistics. Investment efficiency (InvEff) is the dependent variable. Independent variables include J_{FRQ}, $K_{FRQ,}$ and $MS_{FRQ,}$ which are measures of financial reporting quality based on modified Jones, Kothari, and McNichols, and Stubben models, respectively. Control variables include firm size (SIZE), ratio of book-to-market value (MTBV), standard deviation of operating cash flows (ʊOCFO), standard deviation of sales (ʊOSALES), standard deviation of total investments (ʊOINVEST), measure of distress (Z-SCORE), tangibility of assets (TANG), leverage measure for firm (LEVERAGE) and industry (INDUSTRY), ratio of operating cash flow to sales (CFO), ratio of cash and ST investment to net PPE (SLACK), firm age (AGE), indicator variable for dividend (DVD) i.e., 1 for paying and 0 for non-paying firm, operating cycle of the firm (O.CYCLE), indicator variable for loss (LOSS) i.e., 1 for firms having negative EBIT and 0 otherwise.

(Source: Authors' Own Illustration)

4.2. Baseline Results

Table 1.2, Panel A presents the outcomes of the unconditional analysis of the overall sample, where our baseline model, as defined by Eq. (1), is estimated. FRQ measures based on earnings management models of modified Jones (J_{FRQ}), Kothari (K_{FRQ}), and McNichols and

Stubben (MS_{FRQ}) are utilized in columns 1,4,7; 2,5,8; and 3,6,9; respectively. The analysis progresses by initially regressing FRQ measures without any control variables (models 1-3). Subsequently, twelve control variables are introduced (models 4-6), followed by the addition of four more variables (models 7-9).

The results consistently demonstrate a positive association between FRQ, whether measured by J_{FRQ}, $K_{FRQ,}$ or MS_{FRQ}, and investment efficiency based on the Biddle model (InvEff). All coefficients are not only positive but also significant at least 5% level across all models except 3. This supports our hypotheses (H1, H1a, H1b, and H1c)). Similar findings have been reported for developed markets by Biddle et al. (2009) and Gomariz and Ballesta (2014). In comparative terms, we see more positively significant results and increased R-squared values of Panel D than the rest of the panels, which shows that FRQ is more prominent in impacting the investment efficiency of frontier and other markets that have lower country-level governance framework.

Table 1.2: *Impact of Financial Reporting Quality on Investment Efficiency*

Dependent variable: **Investment Efficiency (InvEff)**									
Panel A: **Overall Sample**									
VARIABLES	1	2	3	4	5	6	7	8	9
J_{FRQ}	0.0244**			0.0084**			0.0081**		
	2.2037			(2.1381)			(2.1311)		
K_{FRQ}		1.8029***			0.4336**			0.4443**	
		6.3889			(2.5080)			(2.4956)	
MS_{FRQ}			0.3214			6.839***			7.212***
			0.1224			(4.4934)			(4.6482)
SIZE				0.3681***	0.2915***	0.3164***	0.3874***	0.3148***	0.3344***
				-5.5903	-5.4497	-6.0554	-5.42	-5.4175	-5.9222
MTBV				-0.822***	-0.537***	-0.510***	-0.872***	-0.577***	-0.546***
				(-15.5718)	(-14.0006)	(-13.8611)	(-15.9850)	(-14.4294)	(-14.2740)
ΔCFO				2.1241***	1.5369***	1.5076***	2.1340***	1.5616***	1.5274***
				-3.8627	-3.8444	-3.9363	-3.7616	-3.7746	-3.8578
ΔSALES				0.0835	0.0074	-0.0129	0.0789	0.0056	-0.0155
				-0.6604	-0.0809	(-0.1481)	-0.6112	-0.0603	(-0.1732)
ΔINVEST				-0.0556	-0.0279	-0.0256	-0.0562	-0.0288	-0.0262
				(-0.9644)	(-0.7432)	(-0.7229)	(-0.9651)	(-0.7618)	(-0.7346)
Z-SCORE				-0.0291*	-0.0066	-0.0063	-0.0313*	-0.0076	-0.0077
				(-1.7994)	(-0.5150)	(-0.5161)	(-1.8311)	(-0.5604)	(-0.5880)
TANG				-1.0912*	-0.9545**	-0.7026	-0.7573	-0.6835	-0.4256
				(-1.9115)	(-2.0700)	(-1.5658)	(-1.2775)	(-1.4218)	(-0.9096)
LEVERAGE				-2.232***	-1.667***	-1.607***	-2.245***	-1.697***	-1.597***
				(-3.6617)	(-3.3537)	(-3.3515)	(-3.5721)	(-3.3005)	(-3.2204)
INDUSTRY				4.0653	3.5406	3.3618	4.5655	3.8377	3.6711
				-0.7708	-0.8546	-0.8512	-0.8563	-0.9141	-0.9178
CFO				-0.0115	-0.0031	-0.0056	-0.0151	-0.0046	-0.0076
				(-0.6388)	(-0.2201)	(-0.4041)	(-0.7862)	(-0.3011)	(-0.5165)
SLACK				0.003	0.0023	0.0021	-0.0015	-0.0017	-0.002
				-0.4384	-0.4319	-0.4105	(-0.2038)	(-0.2972)	(-0.3556)

AGE				-0.012	-0.0114*	-0.0105	-0.0111	-0.0105	-0.0096
				(-1.4641)	(-1.7101)	(-1.6399)	(-1.3396)	(-1.5553)	(-1.4798)
DVD							-0.3616	-0.3201	-0.2558
							(-1.3192)	(-1.4489)	(-1.1960)
O.CYCLE							0.0477	0.0344	0.0367
							-0.9283	-0.8271	-0.9131
LOSS							-0.4351	-0.3114	-0.3234
							(-1.4503)	(-1.2718)	(-1.3705)
Constant	0.016	0.3435**	0.0103	-4.221***	-3.418***	-4.105***	-4.768***	-3.950***	-4.632***
	-0.0686	-1.9799	-0.0532	(-3.3477)	(-3.3959)	(-4.1582)	(-3.5350)	(-3.6558)	(-4.3868)
Observations	221,928	290,804	307,779	170,813	209,376	217,077	169,089	206,714	214,426
R-squared	0.0903	0.1025	0.0851	0.1640	0.1492	0.1473	0.1673	0.1510	0.1496
Panel B: **Developed Markets**									
VARIABLES	1	2	3	4	5	6	7	8	9
J_{FRQ}	0.0251**			0.0861**			0.0870**		
	2.1577			2.4755			2.5008		
K_{FRQ}		1.9105***			0.2299**			0.2287**	
		5.0091			(2.2983)			(-2.2862)	
MS_{FRQ}			0.5809**			9.942***			9.899***
			(2.1287)			(8.8548)			(8.8050)
Observations	117,619	149,222	160,744	87,060	105,983	111,392	87,060	105,983	111,392
R-squared	0.0801	0.0923	0.0818	0.1329	0.1263	0.1259	0.1329	0.1263	0.1259
Panel C: **Emerging Markets**									
VARIABLES	1	2	3	4	5	6	7	8	9
J_{FRQ}	0.1144**			0.9501			0.9455**		
	2.2504			(1.5091)			(2.4976)		
K_{FRQ}		0.1092			2.6003**			2.506**	
		(1.1113)			(2.4431)			(2.3884)	
MS_{FRQ}			1.588***			4.8831**			4.8252**
			2.7695			(2.4752)			(2.4515)
Observations	99,985	135,187	140,354	78,165	95,089	97,256	78,165	95,089	97,256
R-squared	0.0608	0.0725	0.0751	0.1602	0.1425	0.1418	0.1617	0.1435	0.1419
Panel D: **Frontier and Other Markets**									
VARIABLES	1	2	3	4	5	6	7	8	9
J_{FRQ}	0.1318**			0.0847**			0.0816**		
	2.1878			(2.4393)			(2.3565)		
K_{FRQ}		0.1978**			0.2797***			0.2643***	
		2.175			(4.4942)			(4.2671)	
MS_{FRQ}			0.7285***			0.5100***			0.5029***
			5.7083			(5.5280)			(5.4757)
Observations	4,324	6,395	6,681	3,864	5,642	5,778	3,864	5,642	5,778
R-squared	0.0617	0.0721	0.0498	0.3322	0.2213	0.2117	0.3353	0.2298	0.2199
Regression framework for Panels A, B, C, and D									
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONTROLS	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the results of OLS regression for the baseline model. In this estimation, all variables are as already defined in Table 1.1. All models (1-9) are estimated with the same baseline regression but with different control variables. For brevity, Control variables are reported only in Panel A. Heteroscedasticity-adjusted robust standard errors are used to calculate t-stats, which are clustered at the firm level and are reported in parenthesis. *, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

(Source: Authors' Own Illustration)

4.3. Additional Analysis

In this sub-section, we conduct additional analyses to present further insights on the relationship between Financial Reporting Quality (FRQ) and Investment Efficiency (InvEff), beyond our baseline regressions. To expand our baseline estimation, we employ two approaches. Firstly, we partition our sample based on firms with positive and negative residuals from the investment efficiency model, designating these samples as overinvestment and underinvestment, in line with the existing literature. We then re-estimate our baseline regressions using these two sub-samples. Un-tabulated results mostly reveal that FRQ is significantly and positively associated with under- and over-investment, demonstrating economic significance. This suggests that FRQ promotes investment efficiency by mitigating both under- and over-investments. Consequently, in all developed, emerging, frontier, and other markets, FRQ helps steer investments toward their optimal level by reducing information asymmetry and minimizing agency costs.

Next, by following Mian et al. (2023) to address the sample selection bias, we split our overall sample into two halves based on their proportion in the full dataset. Notably, over 74 % of firm-year observations (122,749) originate from China, India, Japan, Korea, Taiwan, and the USA. Consequently, we divide our sample into two sub-samples, with the first comprising firms from these six countries and the second including the remaining firms. Subsequently, we separately estimate Eq. (1) for each sub-sample. Un-tabulated results show the results of dividing the overall sample into two. Similar to earlier findings, the coefficients of the FRQ are mostly statistically significant ($p<0.1$) and economically meaningful. These results indicate that the FRQ-investment efficiency link is not influenced by the sample selection and is not driven by major observations that are from developed or emerging markets; rather, the relationship holds good in frontier and other markets as well.

4.4. Robustness Check

This subsection addresses the robustness checks, which encompasses three aspects. Primarily, we amalgamate the three proxies of FRQ to derive an aggregate measure, denoted as A_{FRQ}, and subsequently re-estimate our baseline models. Then, we employ alternative measures of

investment efficiency (InvEff) and financial reporting quality (FRQ) for these checks. Initially, we assess the unconditional relationship between FRQ and IE using Eq. (1), but with different proxies than those used in the baseline regressions. Lastly, we use an additional control variable for the global financial crisis (GFC) period of 2007-2009 to see the robustness of our findings. By doing all these robustness tests, un-tabulated results show that our results still hold good.

4.5. Endogeneity Test

Past research, exemplified by studies such as Chin et al. (2009), and La Porta et al. (1997), has established that common law countries typically provide a more favorable institutional framework. Additionally, empirical evidence from Dayanandan et al. (2016) suggests that these countries exhibit higher levels of financial disclosure, indicating elevated FRQ compared to civil law countries. Building on this insight, we construct an instrumental variable named "IP_{cc}" for our 36 developed, emerging, frontier and other markets. This binary variable takes the value of 1 for common law countries and 0 for civil law countries. In the first stage, we regress the aggregate measure of financial reporting quality (A_{FRQ}) on IP_{cc} and estimate the fitted value of FRQ (P_{FRQ}). In the second stage, we incorporate P_{FRQ} into our baseline estimation. Upon conducting this two-stage analysis in Table 1.3, we observe that our findings remain unaffected even after accounting for potential endogeneity across all four panels.

Table 1.3: *Endogeneity Check: 2SLS Regression*

	Panel A: Overall Sample		**Panel B:** Developed Markets	
	Stage 1	*Stage 2*	*Stage 1*	*Stage 2*
VARIABLES	A_{FRQ}	*InvEff*	A_{FRQ}	*InvEff*
	1	2	3	4
IP_{cc}	0.6938***		0.9979***	
	66.084		48.1177	
P_{FRQ}		2.8569***		2.4670***
		2.7836		5.5493
Observations	226,523	215,242	119,952	111,936
R-squared	0.1332	0.1246	0.1313	0.1213
	Panel C: Emerging Markets		**Panel D:** Frontier and Other Markets	
	Stage 1	*Stage 2*	*Stage 1*	*Stage 2*
VARIABLES	A_{FRQ}	*InvEff*	A_{FRQ}	*InvEff*
	5	6	7	8
IP_{cc}	0.0522***		0.0278***	
	17.9984		-2.8979	
P_{FRQ}		1.4097**		0.026**
		2.3492		2.5197

Observations	100,460	97,421	6,111	5,885
R-squared	0.0907	0.0948	0.0826	0.1901
Regression Framework for Panels A, B, C, and D				
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
CONTROLS	Yes	Yes	Yes	Yes

Notes: This table presents the results of two-stage least squares (2SLS) regression for the baseline model to address the concern for endogeneity. In this estimation, all variables are as already defined in Table 1.1. Additionally, for financial reporting, quality aggregate measure (A_{FRQ}) is used as proxy. The odd columns represent the first stage, where the IV (IP_{cc}) is used to predict the endogenous variable (A_{FRQ}), and the even columns represent the second stage, where the fitted values of the endogenous variable (P_{FRQ}) are used as an explanatory variable in the outcome equation and regressed on investment efficiency (InvEff) variable in Panels A, B, C and D. Heteroscedasticity-adjusted robust standard errors are used to calculate t-stats which are clustered at the firm level and are reported in parenthesis. For brevity, only coefficients of the main variables are reported. *, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

(Source: Authors' Own Illustration)

5. Conclusion and Recommendations

In this study, we scrutinized the impact of Financial Reporting Quality (FRQ) on investment efficiency across 21,741 listed firms in developed, emerging, frontier, and other markets—an area with limited prior research evidence. Our analysis focused on a sample encompassing 36 countries, spanning developed, emerging, frontier, and other markets over the period from 2020 to 2022. The regression results unveiled that amplified FRQ not only enhances investment efficiency in developed markets but extends its positive influence to emerging, frontier, and other markets as well. This aligns with established literature, affirming FRQ as a monitoring mechanism that reduces moral hazards and adverse selection, facilitating optimal investment decisions.

We delved further by categorizing our sample into over- and under-investment groups. The outcomes in both underinvestment and overinvestment scenarios echoed those obtained in the general investment efficiency model, reinforcing the impact of FRQ on investment efficiency across developed, emerging, frontier, and other markets.

Our findings contribute to the investment efficiency literature, revealing that elevated FRQ significantly and positively influences investment efficiency not only in the listed firms of developed markets but also this link is well established by the empirical findings in emerging,

frontier, and other markets. Notably, these results reverberate those observed in listed firms of developed markets by Biddle et al. (2009) and in private firms of emerging economies as observed by Chen et al. (2011); even amid the comparatively lower financial reporting quality in our dataset comprising frontier and other markets. The inclusion of both common and civil law countries within our sample adds complexity, yet our findings remain consistent with those from developed markets.

This study holds significance within the institutional framework of emerging, frontier, and other markets, spanning 36 countries with diverse legal origins. The implications extend to investors for gauging firms investment efficiency, managers for choosing appropriate reporting and investment strategies, and policymakers for making the appropriate country and transnational policies that impact the accounting and reporting practices of listed firms. This understanding has the potential to motivate firms to enhance ethical practices and regulatory compliance, fostering effective market operation.

However, our research is not without limitations. The proxies used for FRQ and investment efficiency may be susceptible to measurement errors. To overcome this limitation, future research may be targeted to get new and more robust measures of these variables. Additionally, due to huge data loss and the reduction of sample countries from 128 to 36, it raises concerns about the generalizability of our results to listed firms across the broader market spectrum to developed, emerging, frontier, and other markets. The future researcher may focus on utilizing recent years and having more observation from the alternative sources of databases. We also acknowledge the limitation of not exploring the possible channels, like the country's level of corporate governance or financial frictions faced by these markets. These are interesting lines of research for enthusiastic researchers.

REFERENCES

Alam, N., Ramachandran, J., & Nahomy, A. H. (2020). The impact of corporate governance and agency effect on earnings management–A test of the dual banking system. *Research in International Business and Finance*, 54, 101242. https://doi.org/10.1016/j.ribaf.2020.101242

Alfraih, M. M. (2016). Have financial statements lost their relevance? Empirical evidence from the frontier market of Kuwait. *Journal of Advances in Management Research*, 13(2), 225-239. doi: https://doi.org/10.1108/jamr-06-2015-0043.

Alsos, G. A., & Ljunggren, E. (2017). The role of gender in entrepreneur–investor relationships: A signaling theory approach. *Entrepreneurship Theory and Practice*, 41(4), 567-590. https://doi.org/10.1111/etp.12226

Biddle, G., G. Hilary, and R. S. Verdi (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics*, 48, 112–131. https://doi.org/10.1016/j.jacceco.2009.09.001.

Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32(1-3), 237-333. https://doi.org/10.1016/S0165-4101(01)00027-1

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(4), 1255-1288. doi: https://doi.org/10.2308/accr-10040.

Chin, C. L., Chen, Y. J., & Hsieh, T. J. (2009). International diversification, ownership structure, legal origin, and earnings management: Evidence from Taiwan. *Journal of Accounting, Auditing & Finance*, 24(2), 233-262. https://doi.org/10.1177/0148558X0902400205

Dayanandan, A., Donker, H., Ivanof, M., & Karahan, G. (2016). IFRS and accounting quality: legal origin, regional, and disclosure impacts. *International Journal of Accounting and Information Management*, 24, 296-316. doi: https://doi.org/10.1108/ijaim-11-2015-0075.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 193-225.

Fazzari, S.M., Hubbard, R.G. and Petersen, B.C. (1988). Financing constraints and corporate investment, *Brookings Papers on Economic Activity*, 1, 141-206.

Gomariz, F. C., & Ballesta, J. P. S. (2014). Financial reporting quality, debt maturity, and investment efficiency. *Journal of Banking & Finance*, 40, 494–506. doi: https://doi.org/10.1016/j.jbankfin.2013.07.013.

Hickman, L. E., Iyer, S. R., & Jadiyappa, N. (2021). The effect of voluntary and mandatory corporate social responsibility on earnings management: Evidence from India and the 2% rule. *Emerging Markets Review*, 46, 100750. https://doi.org/10.1016/j.ememar.2020.100750

Hussain, A., Akbar, M., Kaleem Khan, M., Akbar, A., Panait, M., & Catalin Voica, M. (2020). When does earnings management matter? Evidence across the corporate life cycle for non-financial Chinese listed companies. *Journal of Risk and Financial Management*, 13(12), 313.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163-197. doi: https://doi.org/10.1016/j.jacceco.2004.11.002.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, 52(3), 1131-1150. doi: https://doi.org/10.1111/j.1540-6261.1997.tb02727.x.

Lara, J. M. G., Osma, B. G., & Penalva, F. (2016). Accounting conservatism and firm investment efficiency. *Journal of Accounting and Economics*, 61(1), 221-238. https://doi.org/10.1016/j.jacceco.2015.07.003

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3), 505-527. https://doi.org/10.1016/S0304-405X(03)00121-1

Lin, F., & Wu, S. F. (2014). Comparison of cosmetic earnings management for the developed markets and emerging markets: Some empirical evidence from the United States and Taiwan. *Economic Modelling*, 36,466-473. https://doi.org/10.1016/j.econmod.2013.10.002

Lopes, A. B. (2002). The value relevance of Brazilian accounting numbers: an empirical investigation. *Financial Accounting Abstracts*, 6(31), 3-4.

Martens, W., Yapa, P., & Safari, M. (2021). Earnings management in frontier market: Do institutional settings matter? *Economies*, 9(1), 17. doi: https://doi.org/10.3390/economies9010017.

McNichols, M. F., & Stubben, S. R. (2008). Does earnings management affect firms' investment decisions? *The Accounting Review*, 83(6), 1571-1603. doi: https://doi.org/10.2308/accr.2008.83.6.1571.

Mian, R. U., Irfan, S., & Mian, A. (2023). Foreign institutional investment horizon and earnings management: Evidence from around the world. *International Review of Financial Analysis*, 86, 102509. https://doi.org/10.1016/j.irfa.2023.102509

Renneboog, L., & Szilagyi, P. G. (2020). How relevant is dividend policy under low shareholder protection? *Journal of International Financial Markets, Institutions and Money*, 64, 100776. https://doi.org/10.1016/j.intfin.2015.01.006

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374.

Watson, A., Shrives, P., & Marston, C. (2002). Voluntary disclosure of accounting ratios in the UK. *The British Accounting Review*, 34(4), 289-313. doi: https://doi.org/10.1006/bare.2002.0213.

Yasar, B., Martin, T., & Kiessling, T. (2020). An empirical test of signalling theory. *Management Research Review*, 43(11), 1309-1335. https://doi.org/10.1108/MRR-08-2019-0338

Zhang, Y., & Wiersema, M. F. (2009). Stock market reaction to CEO certification: The signaling role of CEO background. *Strategic Management Journal*, 30(7), 693-710. doi: https://doi.org/10.23977/ferm.2023.061002