

Jafeel, Adam Yahya; Abdalla, Yousif Abdelbagi; Abdalla, Alaa Amin; Warsame, Mohammed Hersi

Article

How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020

Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Jafeel, Adam Yahya; Abdalla, Yousif Abdelbagi; Abdalla, Alaa Amin; Warsame, Mohammed Hersi (2023) : How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-23, <https://doi.org/10.1080/23311975.2023.2198061>

This Version is available at:

<https://hdl.handle.net/10419/294375>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020

Adam Yahya Jafeel, Yousif Abdelbagi Abdalla, Alaa Amin Abdalla & Mohammed Hersi Warsame

To cite this article: Adam Yahya Jafeel, Yousif Abdelbagi Abdalla, Alaa Amin Abdalla & Mohammed Hersi Warsame (2023) How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020, Cogent Business & Management, 10:1, 2198061, DOI: [10.1080/23311975.2023.2198061](https://doi.org/10.1080/23311975.2023.2198061)

To link to this article: <https://doi.org/10.1080/23311975.2023.2198061>



© 2023 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.



Published online: 05 Apr 2023.



Submit your article to this journal [↗](#)



Article views: 1546



View related articles [↗](#)



View Crossmark data [↗](#)



Received: 12 February 2023
Accepted: 29 March 2023

*Corresponding author: Adam Yahya Jafeel,
E-mail: adamjafeel@gmail.com

Reviewing editor:
Collins G. Ntim, Accounting,
University of Southampton, United
Kingdom

Additional information is available at
the end of the article

ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020

Adam Yahya Jafeel^{1*}, Yousif Abdelbagi Abdalla², Alaa Amin Abdalla³ and Mohammed Hersi Warsame²

Abstract: Motivated by agency and stakeholder theories, this study aims to investigate the effect of corporate governance quality as measured by a single index on investment efficiency in the six Arab Gulf countries, commonly known as Gulf Cooperation Council (GCC) for the period 2015–2020. The study tries to develop a corporate governance quality model comprises 60 items under five main corporate governance elements of disclosure; responsibilities of the board; board effective composition; rights of shareholders and the role of stakeholders; and examines its effect on firms' investment efficiency in 301 non-

ABOUT THE AUTHORS

Dr. Adam Jafeel is an assistant professor of Accounting and corporate governance. He has been an instructor of accounting and finance at universities in the United Arab Emirates for more than 15 years. He taught Accounting and finance at Community college, University of Sharjah, as well as the College of Economics and Management, Al Qasimia University, UAE. He received his Ph.D. in Accounting and Governance (accounting and performance measurement) from Universiti Sains Malaysia (USM), Malaysia in 2021. He is an accomplished researcher in the fields of accounting and corporate governance.

Dr. Yousif Abdelbagi Abdalla is an associate professor at the College of Business Administration, University of Sharjah, United Arab Emirates. He earned his PhD in management accounting from Universiti Sains Malaysia, Malaysia in 2013. Dr. Yousif has published numerous articles in international journals, including the *Journal of Cleaner Production*, *Qualitative Research in Accounting & Management*, and the *Journal of Environmental Assessment Policy and Management*. He also serves as an editorial board member and reviewer for various international journals.

Dr. Alaa Amin Abdalla is an assistant professor of sustainable development and management (HRM) at Academic Programs of Military Colleges, Abu Dhabi University, UAE. She received her Ph.D. in sustainable development and management (HRM) from the University of Sciences Malaysia (USM) in Malaysia in 2016. She previously held academic and administrative appointments in four countries and leadership positions in two countries. Dr. Alaa is the recipient of several academic awards, and she has a rich research career with papers published in reputable journals (Q1, Q2 journals). Dr. Alaa serves as an editorial board member and reviewer for several international journals. Mohammed Warsame received his Ph.D. in Banking and Finance from Durham University (UK).

Dr. Warsame also holds two prestigious professional qualifications, namely, ACCA (Chartered Certified Accountant) and CIPA (Certified Islamic Professional Accountant). Dr. Warsame is currently a faculty member and the former chairman of Finance and Economics Department at the University of Sharjah, UAE. The author has published in the *British Accounting Review*, *Journal of Cleaner Production*, *Journal of African Business*, *Journal of Behavioral and Experimental Finance*, *International Journal of Bank Marketing*, *Journal of Teaching and International Business*, *Journal of Public Affairs* among others.

financial firms listed in six emerging capital markets in the GCC region. The findings reveal significant evidence that good corporate governance quality as a composite index enhances investment efficiency and mitigates both over- and under-investment. However, when the subcomponents of the corporate governance quality index were regressed individually on investment inefficiency, the findings were mixed. Our findings remain consistent when we control for potential endogeneity bias. The study has theoretically contributed to the corporate governance literature on corporate governance indices and quality by proposing a corporate governance quality model that considers all stakeholders. The practical implications of the study emphasize the significance of good company governance as a driver of investment efficiency; companies are expected to manage resources effectively, and regulators can implement regulations that enhance corporate governance standards in the GCC countries using the developed corporate governance quality model.

Subjects: Middle East Studies; Finance; Business, Management and Accounting

Keywords: Corporate governance quality; investment efficiency; Gulf Cooperation Council; overinvestment; underinvestment

1. Introduction

According to agency theory, conflict of interest between managers and shareholders can cause inefficient investment, resulting in overinvestment or underinvestment, because of information asymmetry (Bimo et al., 2021). Jensen and Meckling (1976) argue that, because ownership (principal) and management (agent) of a company are separated, the issues of agency problem lead to waste of corporate resources because of inefficient investment. Corporate governance is a key factor in determining investment decisions (Miroshnychenko & De Massis, 2020). Corporate governance is the term used to describe all the elements that influence institutional procedures for planning the production and sale of goods and services, such as those for choosing managers and/or supervisors (Turnbull, 2019). In more detail, it refers to the framework used to balance the interests of the many stakeholders, or, as stated by the IFC, the interactions between management, directors, dominating shareholders, minority shareholders, and other stakeholders (International Finance Corporation, 2018, p. 3).

Investment efficiency measures how well a firm's manager can make decisions on investments without under- or overinvesting (Al-hadi et al., 2017). Overinvestment occurs when management invests excessively, even in projects with negative net present value (Agyei-Mensah, 2021; Assad & Alshurideh, 2020; Jensen, 1986). On the other hand, the term "underinvestment" refers to ignoring investment possibilities that are expected to have a positive net present value (Agyei-Mensah, 2021). Ineffective practice of corporate governance hurts a company's potential in both over- and under-investment, which could result in financial issues and fraud (The Human Capital Hub, 2019).

Rapid investment has occurred in the GCC nations recently (Fernandez & Joseph, 2022). However, little information is available on the efficiency of these investments. Over the last two decades, various economic regulations, investment policies, and CG codes have been enforced and reviewed for the GCC region. These regulations have been accompanied by remarkable economic development over a short period, and a huge amount of money has been spent on different public and private enterprises. Given that GCC cash-rich countries have undergone significant reforms in their economies and investment policies over the past two decades, the effectiveness of such reforms on firms' financial performance, specifically on the right capital allocations and thus on firms' investment efficiency, remains an unresolved issues (Ghosh, 2018). These problems served as the motivation for this study, which aims to ascertain how the quality of corporate governance in this region affects firms' investment efficiency. The aim of the regional policymakers and regulators for the

establishment of solid corporate governance practices to provide investor protection served as another impetus for the study. It is crucial to comprehend the relationship between corporate governance quality and investment efficiency in this region given the economic significance of the Gulf and the interaction between these factors in making business decisions. Besides, studies on the impact of CG quality, as measured by one metric that includes key CG principles and mechanisms, on investment efficiency are still rare in the region. This research aims to close that gap.

Several earlier research examined the impact of some elements of corporate governance, including board composition and responsibility, disclosure, type and structure of ownership, shareholders' rights, and reporting quality on monitoring managers' decisions and hence reducing agency issues; see for example Assad and Alshurideh (2020); Biddle et al. (2009); Syan (2011); and Bimo et al. (2021). This study moves a step further by developing a CG quality index to assess the levels of corporate governance in GCC countries and examining its impact on the efficiency of investments within the GCC region's public firms. Corporate governance quality (CGQ) is described as a code of governance, standards, and best practices created to determine whether a company is well governed (Rahman & Khatun, 2017). According to Rahman and Khatun (2017) CG quality combines multiple components of a company's governance system into a single figure to show how well a company's governance practices are doing, and it may be employed to evaluate a company's capacity to make effective investment decisions. From this perspective, it addresses corporate governance principles, such as shareholder rights, board responsibilities, stakeholder rights, and CG mechanisms of board composition.

Earlier studies on corporate governance examined how certain CG elements may affect investment effectiveness. The goal of this study is to look beyond the individual aspects of corporate governance and attempts to incorporate the key CG principles and mechanisms that are deemed important in determining corporate governance quality and examine its effect on investment efficiency. The constructed corporate governance quality index considers CG principles, such as disclosure and transparency, shareholder rights and equal treatment, stakeholders' roles, board responsibilities, and board composition. The relationship between CG quality and investment efficiency will be examined using a sample of 301 publicly listed firms in Gulf Cooperation countries (GCC) for the period 2015–2020. Initially, the investment expectation model suggested by Biddle et al. (2009), is used to evaluate investment inefficiency, and then an aggregate CG quality index is constructed using the unweighted corporate governance index approach following Al-Gamrh et al. (2020); Nsour and Al-Rjoub (2022); and Younas et al. (2021)

The remaining portions of the study are broken up into different sections. Section 2 talks about the background of the GCC countries. Section 3 provides a brief review of the literature and develops the hypotheses. Section 4 discusses the methodology and data-collection process. Section 5 discusses the analysis and findings. Finally, Section 6 concludes the study.

2. Background of GCC countries

Six nations make up the Gulf Cooperation Council (GCC): Kuwait, Qatar, the Sultanate of Oman, the United Arab Emirates, Bahrain, and the Kingdom of Saudi Arabia. The member states have a lot in common, including Arab ethnicity, Islam as their religion, monarchy as their form of government, and their shared culture and traditions (Shehata et al., 2015).

GCC member countries are rich in oil and gas deposits and have a relatively high Gross Domestic Product (GDP) per capita (Al-Shboul & Al Rawashdeh, 2022; Erdoğan et al., 2020; Maghyreh & Abdoh, 2021). The region's economies are among the world's fastest expanding, attributable to the rise in oil and natural gas income as well as to the construction and investment boom (Assad & Alshurideh, 2020; Callen et al., 2014). Due to persistent increases in regional oil and natural gas production and the rising global prices, there has been a noteworthy increase in both public and private investment over the past two decades (Ari et al., 2019). Furthermore, Global events, such as the Dubai World Expo 2020 in the United Arab Emirates, the FIFA World Cup 2022 in Qatar, and the significant investments

in Saudi Arabia as it moves through Vision 2030, all serve as examples of the enormous investments made by the GCC economies. Over the last two decades, the financial markets in these oil-rich nations have experienced an era of fast expansion, attracting domestic, regional, and foreign direct investments (Tawfik et al., 2022). The proper allocation of these investments in efficient projects is a topic of discussion. This study examines this issue and explores whether CG quality reduces inefficient investments based on corporate practices in non-financial firms in the region.

3. Literature review and hypotheses development

3.1. Corporate governance quality and investment efficiency

Poor CG structures increase the cost of capital and businesses with concealed CG practices are less likely to receive funding, making them more likely to underinvest (AlHares, 2020). Good corporate governance reduces investment sensitivity to cash flows (Francis et al., 2013), and minimizes inefficient investment decisions (S. Y. Chen et al., 2016).

The advantages of effective corporate governance on a firm's investment efficiency have been shown by numerous research. Francis et al. (2013) found that improved corporate governance alleviates financial restrictions and improves investment efficiency. Similar research was conducted by S. Y. Chen et al. (2016) who found that overinvestment is more marked in firms with positive free cash flows. A similar study by Lei and Chen (2019) on Chinese listed companies revealed that when corporate governance is poor, investment becomes inefficient. In a later study, Bimo et al. (2021) showed that corporate governance has increased Indonesian firms' investment efficiency. Another study conducted in Egypt by Menshawy et al. (2021) demonstrated how the efficiency of investments is positively correlated with the efficacy of corporate governance.

Other researchers have studied the effect of specific corporate governance elements, like disclosure, reporting quality, composition of the board, and ownership on investment efficiency, and they have shown evidence that some CG characteristics reduce inefficiencies in firms' investment decisions. See for example Biddle et al. (2009); Lai et al. (2014); Le (2018). Thus far, no study has investigated the how the quality of corporate governance, as proxied by a single metric affect investment efficiency in GCC countries. A small number of studies have studied the impact of some corporate governance elements, such as risk disclosure (Al-hadi et al., 2017), financial reporting, and auditing quality (Assad & Alshurideh, 2020), on investment efficiency, and they demonstrated that the studied CG characteristics had a positive effect on investment efficiency in the GCC region. The lack of research on the relationship between corporate governance and investment efficiency in the GCC region has inspired this study; therefore, it attempts to fill this gap and add to the body of knowledge on the context of GCC countries.

Given these results and the agency cost argument that corporate governance is a key mechanism to thwart opportunistic managerial behavior (Hlel et al., 2020), the present study aims to evaluate the following hypothesis in the context of the GCC.

Hypothesis 1. There is a positive association between a firm's corporate governance quality and efficient investment.

3.2. Hypotheses development: disclosure and transparency

Disclosure was the first subcategory of the CG quality index in our study. Some earlier researches have emphasized evidence on the relationship between a firm's information disclosure and investment efficiency and have revealed mixed outcomes. Le (2018) suggested that reducing the knowledge gap between the company management and external stakeholders might increase investment efficiency, and a company's investment is less likely to deviate from expectations (Biddle et al., 2009). However, some researchers claim that there is no association between disclosure and investment efficiency. Others have shown a negative relationship between a company's degree of transparency and investment efficiency (e.g., Dong et al., 2019; Elberry &

Hussainey, 2020). Similarly, Cheng et al. (2013), argue that managers who are poor at projects evaluation are more inclined to provide more information in order to persuade investors and creditors that the projects have a strong prospective return, even if they aren't the best. Higher reporting quality, according to Roychowdhury et al. (2019), improves shareholders' capacity to monitor managers and, as a result, lessens the incentives for managers to overinvest. In addition, managers are motivated to reach or surpass financial reporting criteria due to the reliance on accounting information in contracts and for valuation, which affects their investment decisions.

Despite the mixed results, this study follows the assumptions of Biddle et al. (2009), in United States, Lai et al. (2014) in China, Elberry and Hussainey (2020) in UK, and Ellili (2022) in UAE, that a higher disclosure level encourages management to act in the best interests of the company's shareholders, lowers information asymmetry, and improves capital investment efficiency. In line with these assumptions, and based on the beneficial effect of information disclosure, the second hypothesis is as follows:

Hypothesis 2. Information disclosure is positively associated with investment efficiency.

3.3. Hypotheses development: the rights of shareholders

One of the primary components of a healthy corporate governance system is the shareholder rights. When a shareholder's rights are violated, they should be given the opportunity to seek effective recourse, and the corporate governance framework should ensure that all shareholders, particularly minority and foreign shareholders, are treated fairly (OECD, 2015). Santiago-Castro and Brown (2011) found that the lack of investor protection in developing economies could lead to expropriation of minority shareholders' rights, which can lead to inferior performance.

According to Tran (2020), countries with strong shareholder protection have a more favorable effect on corporate investment efficiency. Jiang et al. (2018) documented that the presence and power of large shareholders are related to much higher investment efficiency. Similarly, Wan et al. (2015) documented that the decline in investment efficiency is mitigated by enhanced shareholder oversight.

Based on the above discussion and stakeholder theory, where shareholder rights are considered a fundamental component of a successful corporate governance system, the third hypothesis is articulated as follows.

Hypothesis 3. The level of shareholder rights and equal treatment is positively associated with investment efficiency.

3.4. Hypotheses development: stakeholders' role

The concept of stakeholders is concerned with the interaction between a company and its stakeholders in the process of a corporate wealth creation and their important role in the long term success and firm performance (OECD, 2015). According to Lahouel et al. (2022), good stakeholder management increases productivity and efficiency. Similarly Gu and Zhang (2022) revealed that stakeholder role enforcement promotes business investment, particularly for younger and more opaque firms.

Despite the fact that all GCC nations have corporate governance regulations stressing stakeholders' rights, notably social responsibility and employee protection measures, the impact of guaranteeing such rights are unknown. Using the rationale of stakeholder theory, which affirms that key stakeholders are crucial to a company's success and significantly increase investment efficiency (Benlemlih & Bitar, 2018), this study proposes a positive relationship between stakeholders' roles and investment efficiency in GCC countries.

Hypothesis 4. Stakeholders' role is positively associated with investment efficiency.

3.5. Hypotheses development: board responsibilities

The primary responsibilities of the board of directors include reviewing corporate strategy, hiring and rewarding management, supervising, and guaranteeing the accuracy of the company's accounting and financial reporting systems (OECD, 2015). According to OECD (2015), corporate governance policies should ensure that the company's strategic direction, effective managerial oversight, and board accountability to the company and its shareholders are all upheld. Corporate boards can keep a company's operations successful by upholding higher standards of accountability, truthfulness, integrity, and moral responsibility (Ferrer et al., 2012).

Several recent researches found a positive correlation between the board's effectiveness and financial performance, notably investment efficiency. Strong proof was presented by He, H. R. He et al. (2020) showing that the efficiency of a board's investment decisions is strongly correlated with both board potential and board dynamics. Similarly, Yu (2023) finds that a company is more likely to enhance monitoring and has significantly less investment inefficiency if the board of directors is diverse and the directors have a range of qualities. In the context of agency theory, and in line with prior research, Hypothesis 5 is expressed as follows:

Hypothesis 5. Effective board responsibilities associate positively with investment efficiency

3.6. Hypotheses development: board structure and composition

Board composition and structure as internal governance mechanisms may include board size, board independence, leadership structure, board committees, and others (Puni & Anlesinya, 2020). Effective board composition and structure considerably increase the level of commitment on the board (Trinh et al., 2021). Agency theory claims that CEO duality promotes dominance behaviors, impedes transparency and accountability, and creates moral hazard, all of which have a negative impact on performance and growth (Puni & Anlesinya, 2020)

Previous studies showed a positive association between effective board composition and firms' investment efficiency. R. He (2017) documented that an effective board composition and structure reduce both overinvestment and underinvestment. Similarly, according to Agyei-Mensah (2021), companies can decrease overinvestment and increase investment efficiency with the support of independent directors and financial professionals on the board. Al-Hadrami et al. (2020) found that independence of audit committee significantly and favorably influences investment decision-making process. Ullah et al. (2020) also found that effective board structure associated with high level of investment efficiency.

In line with the agency theory and previous empirical research findings, we propose the sixth hypothesis:

Hypothesis 6. Effective board composition associates positively with investment efficiency

4. Methods

4.1. Sample and data

In this study we manually collected data from the sample firms' annual reports, related stock markets, and firms' websites and employ the collected data to construct a corporate governance quality index based on the our CG quality model in appendix 1. Our sample consists of 301 nonfinancial firms listed in the six GCC countries stocks markets, with 903 total firm-year observations. The measurement of the CG quality is detailed in Section 4.3. Data on investments and control variables were obtained from the Thomson Reuters DataStream (DS). The data were collected over six years, from 2015 to 2020, with a lag of one-year distribution, as in Equation 2 Firms' investment efficiencies in 2016, 2018, and 2020 were regressed on CG Quality in 2015, 2017, and 2019, respectively. As investment in the following year ($Investment_{i,t}$) will be affected by the corporate governance quality of the preceding year ($firmCGquality_{i,t-1}$).

4.2. Corporate governance quality measurement

The CG quality index in this study examines 60 attributes/items classified into five main governance categories (components), as indicated in the corporate governance quality index (Appendix 1). The major components are disclosure (DISCLOSURE), board responsibilities (BOARD RESP.), board composition (BOARD COMP.), shareholder rights (SHARE H. RIGHTS), and stakeholder rights (STAKE H. RIGHTS), with sub-items numbered differently for each group. The contents of the key CG elements and their sub-items are derived from G20/OECD corporate governance principles and cross-validated against each country's governance code. Items (attributes) within each component that mostly reflect the quality of corporate governance are addressed based on a thorough examination and comparison of all CG codes in the GCC countries. The items under each sub-component were listed as questions, and the answers were used to create scores for firms on the relevant category scale. Each question or item was given a binary variable that could only have a value of 1 or 0. If the company implements the item, a value of 1 is given; if not, a value of 0 is assigned. Data that were not available were assigned a value of 0.

According to Black et al. (2017); Gompers et al. (2003); Pillai and Al-Malkawi (2016), the overall score for a company on all items availability represents an unweighted CG quality level that ranges from 0 to 60, which is then transformed into a percentage. Appendix 1 contains further information on corporate governance quality components and characteristics.

4.3. Investment inefficiency estimation

Few studies have provided various proxies for a company's investment efficiency. This study follows Biddle et al. (2009) investment expectations model to assess investment inefficiency. Efficient investment is predicted as a function of a firm's sales growth in this model. Deviations from the predicted firms' investment levels are used as inefficient investments. This study uses the expected investment approach to predict a firm's expected investment level and uses residuals (deviations) as proxies for inefficient investments. Firm capital expenditure was regressed on sales growth. Regression residuals were used as firm-specific proxies for investment deviations. As a result of the current year's growth potential (proxied by growth in sales), the investment volume for the subsequent year is projected using the following equation:

$$Investment_{i,t} = \beta_0 + \beta_1 SalesGrowth_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where $Investment_{i,t}$ = capital expenditure used to buy fixed assets other than those related to acquisition. The values of the residuals from Equation 1 are used as proxy measures for investment inefficiency (INV INEFF) and will be regressed on firms' CG quality and other variables in Equation 2. If Equation 1 produces positive (negative) regression residuals, they are utilized as proxies for over-(under-) investment. Al-hadi et al. (2017) find that companies with residuals at zero or near zero have greater investment efficiency. Equation 2 can be rewritten as follows:

$$Inv - ineff_{i,t} = \beta_0 + \beta_1 firmCGquality_{i,t-1} + \beta_2 ROE_{i,t-1} + \beta_3 FCF_{i,t-1} + \beta_4 Levergae_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 Age_{i,t-1} + \beta_8 M cap Dev_{i,t-1} + BM_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

Where *Inv-in-eff.* is the residual obtained from Equation 1 and represents inefficient investment.

4.4. Regression models

We analyze the effect of CG quality on investment efficiency using the following regression as indicated in Equation 2:

$$Inv - ineff_{i,t} = \beta_0 + \beta_1 firmCGquality_{i,t-1} + \beta_2 ROE_{i,t-1} + \beta_3 FCF_{i,t-1} + \beta_4 Levergae_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 Age_{i,t-1} + \beta_8 M cap Dev_{i,t-1} + BM_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Table 1. Dependent, independent, and control variables definitions		
Variable	Symbol	Definitions
Panel A: Dependent variables		
Investment Efficiency	IN-EFF.-INV.	Proxied by Inefficient Investment (In-Eff.-Inv.): equals the residuals from expected investment model.
Panel B: Independent variables		
CG Quality Index	CG_QUALITY	A binary-based governance quality score based on 60 CG indicators.
Disclosure	DISCLOSURE	A binary-based sub-CG component and calculated based on 12 governance characteristics (0–12).
Board Responsibilities	BOARD RESP.	A binary-based sub CG calculated on the basis of ten governance characteristics.
Board Composition	BOARD COMP.	A binary-based sub CG component based on a set of ten governance characteristics.
Shareholders Rights	SHARE H. RIGHTS	A binary-based sub CG component based on 22 Governance characteristics.
Stakeholders Rights	STAKE H. RIGHTS	A binary-based sub-CG component based on six governance characteristics.
Panel C. Control Variables		
Free Cash Flow	FCF	The cash flows from operations minus (depreciation, working capital adjustments, and capital investment); scaled by total assets
Return on Equity	ROE	Net income after tax divided by total equity
Leverage	LEV.	(Short Term Debt & Current Portion of Long Term Debt + Long Term Debt)/Total Assets * 100
Market to Equity Book Value	M/B	Ratio of market value of common equity to its book value.
Market Capitalization Development	M CAP DEV.	Total stock market capitalization of each country divided by total GDP in year t
Firm Age	FIRM AGE	Natural logarithm of (number of years since establishment)
Firm Size	FIRM SIZE	Natural logarithm of total assets

Where $(Inv - ineff_{i,t})$ is a proxy of inefficient investment of company i in year t ; β_0 is the constant; $firmCGquality_{i,t-1}$ represents firm i CG quality in year $t-1$; and the rest are control variable as defined in Table 1.

Using STATA16 and following Biddle et al. (2009), Benlemlih and Bitar (2018), Al-hadi et al. (2017) and Petersen (2009) among others, we constructed a panel regression model based on ordinary least squares (OLS) with standard errors to examine the effect of CG quality on investment inefficiency. The fixed firm effect was added to control for any unobservable heterogeneity that varies across firms but remains fixed over time (Almustafa et al., 2023). We also included White's Robust Standard error in STATA to correct for the heteroscedasticity. The root mean square errors (RMSE) were also calculated to assess how well our regression model fits the dataset. Furthermore, to treat the endogeneity

Table 2. Descriptive statistics

Panel A: Dependent variables						
	No.	Mean	Median	Std. Dev.	Minimum	Maximum
TOTAL INV. (m \$)	903	360,746	7,916	2,498,282	0	56,263,952
IN-EFF.-INV. (Absolute)	903	0.021	0.009	0.053	0.000	1.056
OVERINV.	389	0.025	0.009	0.065	0.000	1.056
UNDERINV.	514	-0.019	-0.008	0.041	-0.528	-0.000
Panel B: Independent variables						
	No.	Mean	Median	Std. Dev.	Minimum	Maximum
CG_QUALITY	903	0.825	0.833	0.096	0.333	1
DISCLOSURE	903	0.163	0.167	0.025	0.033	0.200
BOARD_RESP.	903	0.154	0.153	0.016	0.051	0.170
BOARD_COMP.	903	0.140	0.153	0.027	0	0.170
SHARE_H_RIGHTS	903	0.322	0.327	0.033	0.147	0.360
STAKE_H_RIGHTS	903	0.046	0.033	0.038	0	0.100
Panel C: Control Variables						
	No.	Mean	Median	Std. Dev.	Minimum	Maximum
FCF	903	0.064	0.036	0.083	0	0.700
ROE	903	5.089	6.790	32.340	-617.08	252.684
LEV.	903	0.418	0.377	0.379	0.003	7.461
M CAP DEV	903	0.862	0.644	0.821	0.003	3.035
M/B	903	0.953	0.805	1.590	-35.47	5.625
FIRM AGE (years)	903	25.9	23	12.9	1	65
FIRM SIZE (m \$)	903	7,997	649.6	34,215	1,038	480,000

Notes: The dependent, independent, and control variables' descriptive statistics for the current study's regression model are shown in this table. All of the aforementioned variables' definitions are listed in Table 1.

issues, we employ two-stage least squares regression (2SLS) using two instrumental variables in order to account for any bias brought on by endogeneity.

4.5. Control variables

In line with the related literature, Al-hadi et al. (2017), Assad and Alshurideh (2020), and Bimo et al. (2021) this study uses free cash flow (FCF), firm profitability measured by return on equity (ROE), firm leverage (LEV.) as control variables. Market capitalization development (McapDev), and market-to-book value of common stocks (M/B), firm age (FIRM AGE), and firm size (FIRM SIZE) were also used. The dependent, independent, and control variable definitions are listed in Table 1.

5. Results and discussion

5.1. Descriptive statistics

Panel (A) of Table 2 shows the descriptive statistics for the dependent and control variables. Investment inefficiency (INV-INEFF) had an absolute mean value of 2.1%. Overinvestment and underinvestment have mean values of 2.5% and (-1.9%) respectively. The mean values of investment inefficiency, overinvestment, and underinvestment show an inefficient allocation of investment expenditures over the study period, which represent good indicators of the scope of the problem. The values of the control variables are consistent with previous research; for example, see Benlemlih and Bitar (2018) and Biddle et al. (2009)

Panel (B) of Table 2 shows the independent variables. CG quality levels ranges from 0.33 to 1.0, with a mean value of 0.82. The values of the individual components of the CG quality are also shown. The CG quality index and its subcomponents presented positive medians. This suggests that the distributions of the CG quality and component levels are all positive.

5.2. Univariate analysis

To get a general picture of the point-estimate relationship, potential strength, and interaction among the variables, we first look at the correlation among the variables in order to determine the relationship between CG quality and investment efficiency. As shown in Table 3, the overall CG quality level was adversely related to inefficient investment, indicating its positive effect on investment efficiency. These correlations reveal that inefficient investment (In-Eff.-Inv.) is not strongly related to a CG quality of-0.061. Yet, the negative result suggests that CG quality has a moderating effect on inefficient investments (In-Eff.-Inv.) and hence has a beneficial impact on investment efficiency. The correlations also show that inefficient investments are related to most of the control variables, providing assurance about the relevance of the control variables. In addition, the correlation coefficients between the independent variables and the variance inflation factors (VIFs) displayed in Table 3 suggest that multicollinearity is not a serious problem in our regression models.

5.3. Validity and reliability analysis of the CG quality

Following Ararat et al. (2017); Black et al. (2017); Pillai and Al-Malkawi (2016); Younas et al. (2021) approach the study used psychometric statistic of Cronbach's Alpha (α) reliability test to examine the CG quality construct validity. In this test, an alpha (α) score of 0.00 indicates that there is no consistency measurement at all, while a score of 1.0 indicates that measurement consistency is perfect. Alpha (α) values above 0.7 are considered strong, while values above 0.6 are considered respectable.

Table 4 displays data on Cronbach's (α) values and the average mean inter-item correlations. Panel (A) shows the reliability test for the five key CG quality elements of disclosure, board responsibilities, board composition, shareholders' rights, and stakeholder roles, with an alpha (α) value of 0.732. The inter-item correlations are shown in Panel (B), with an average correlation value of 0.354, which is good. The Cronbach's (α) score of 0.732, as shown in Table 4, suggests that

Table 3. Correlation matrix and Variance Inflation Factor VIF

	IN-EFF.-INV.	CG QULTY.	FCF	ROE	LEV	M CAP DEV	M/B	FIRM AGE	FIRM SIZE	VIFs
IN-EFF.-INV.	1.00									

CG QUALITY	-0.061	1.00								1.13
	0.066*	---								
FCF	0.023	-0.052	1.00							1.03
	0.481	0.121	---							
ROE	0.288	0.017	0.109	1.00						1.04
	0.00***	0.605	0.001***	---						
LEV	0.027	0.087	-0.082	-0.010	1.00					1.17
	0.412	0.009***	0.013***	0.765	---					
M CAP DEV	-0.065	0.163	-0.077	-0.079	-0.003	1.00				1.09
	0.051*	0.00***	0.020***	0.018***	0.9184	---				
M/B	-0.069	-0.019	-0.042	-0.081	-0.346	-0.038	1.00			1.16
	0.036**	0.559	0.211	0.014***	0.00***	0.260	---			
FIRM AGE	-0.037	-0.050	0.028	-0.013	-0.089	0.083	0.051	1.00		1.05
	0.273	0.129	0.400	0.699	0.008***	0.013***	0.128	---		
FIRM SIZE	-0.014	0.314	-0.085	0.091	0.104	0.214	-0.015	-0.157	1.00	1.20
	0.678	0.00***	0.011***	0.006***	0.002***	0.00***	0.661	0.00***	---	

Notes: This table displays the correlation matrix of dependent, independent, and control variables. Table 1 defines each variable, and the notations *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 4. CG quality components reliability test

Panel A: Reliability Statistics							
	N of Items	Cronbach's Alpha Based on Standardized Items					
Reliability Statistics	5	0.732					
Panel B: Summary Item Statistics							
	No. of Items	Av. Mean	Min.	Max.	Range	Max./Min.	Variance
Inter-Item Correlations	5	0.354	0.128	0.569	0.441	4.449	0.019

Notes: This table displays CG quality index inter-item average mean correlation and Cronbach's (α) value.

Table 5. CG quality and inefficient investments

	IN-EFF.-INV.		OVER INVESTMENT		UNDER INVESTMENT	
	Simple	Main	Simple	Main	Simple	Main
	(1)	(2)	(3)	(4)	(5)	(6)
CG QUALITY	-0.36	-0.034	-0.072	-0.71	1.091	1.096
	0.137	0.05**	0.00***	0.00***	0.00***	0.00***
FCF		-0.009		0.14		0.61
		0.67		0.47		0.11
ROE		0.0005		0.001		-0.002
		0.02**		0.003***		0.011***
LEVERAGE		0.003		-0.028		0.053
		0.28		0.46		0.37
M CAP DEV		-0.002		-0.08		0.042
		0.293		0.00***		0.087*
M/B		-0.0014		-0.001		-0.019
		0.46		0.92		0.36
FIRM AGE		-0.003		-0.048		1.6
		0.32		0.10*		0.00***
FIRM SIZE		-0.0005		0.012		0.27
		0.73		0.067*		0.001***
CONSTANT	1.02	0.046	1.02	1.067	-0.319	-9.287
	0.00***	0.16	0.00***	0.00**	0.023	0.000
F STAT.	17.18	3.64	17.18	7.49	42.076	1.382
PROB.	0.00***	0.00***	0.00***	0.00***	0.00***	0.001***
R SQUARED	0.02	0.09	0.02	0.066	0.045	0.115
RMSE	0.49	0.054	0.49	0.48	0.040	0.038
Breusch-Pagan test Ch2(1)	285.7 0.00***	1170.11 0.00***		3426.4 0.00***		771.7 0.00***
OBSERVATIONS	903	903	903	903	903	903

Notes: The regression results for the association between inefficient investment proxies and CG quality, including control factors, are presented in this table. All of the regression variables are defined in Table 1. The first row displays the coefficients, while the second row displays the probabilities associated with each variable. Significance levels of 10%, 5%, and 1%, respectively, are indicated by the symbols *, **, and ***.

the CG quality index's measurement consistency is good, its construction validity is high, and the index reflects a coherent underlying notion of corporate governance quality.

5.4. Corporate governance quality: main results

To investigate the effect of CG quality on investment efficiency, we employ OLS and White's Robust Standard errors to correct for heteroscedasticity, including firm fixed effects. Using the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, the validity of the system White's Robust Standard errors was empirically assessed. The results of the Breusch-Pagan test, which are presented in Table 5, demonstrate the presence of heteroscedasticity in the data and support the rejection of the null hypothesis of constant variance.

The main model regression results show that there is a significant negative relationship between CG quality and inefficient investment. Column (1) in Table 5 excludes the control variables and regresses the proxy for investment inefficiency (In-Eff.-Inv.), on CG quality. The findings demonstrates that corporate governance quality has an adverse effect on inefficient investments (In-Eff.-Inv.) indicating a positive effect on investment efficiency.

Column (2) in Table 5 corroborates the previous finding by regressing the inefficient investment (In-Eff.-Inv.) on corporate governance quality (CG quality) including the control variables. The projected coefficient for CG quality has a negative coefficient of (-0.034) and is statistically significant at (0.05), suggesting that improved (CG quality) reduces inefficient investment. This conclusion is in line with the study's first hypothesis, which assumes that companies with good CG qualities are more likely to have reduced information asymmetry and, hence, greater investment efficiency.

These findings are consistent with previous studies by Agyei-Mensah (2021); Bimo et al. (2021); Menshawy et al. (2021) which revealed that firms with good corporate governance quality are more likely to have investments that are more efficient. The findings support the agency theory by showing that effective corporate governance has a positive effect on monitoring management's investment decisions. Corporate governance can protect investors' interests by lowering the likelihood of opportunistic management behavior, preventing conflicts of interest, and minimizing information asymmetry (Bimo et al., 2021; Jensen & Meckling, 1976; Menshawy et al., 2021).

The effects of the control variables on investment efficiency show varying results. Leverage and return on equity insignificantly loaded positively on inefficient investments (In-Eff.-Inv.) indicating a negative impact on investment efficiency. The positive effect of leverage on inefficient investments (In-Eff.-Inv.) indicates that firms with higher leverage are more likely to underinvest because new debt funding is less likely for overleveraged firms.

High profitability (ROE) increases inefficient investments, as shown by its positive and statistically significant coefficient. This is because profitability encourages the firm to increase its investment, and hence, overinvest.

Firm size and firm age have shown negative coefficients, confirming their positive effect on investment efficiency. Because they may reach a threshold of expansion beyond which no further expenditure is necessary, larger companies may make investments more efficiently, leading to less overinvestment.

Market capitalization development loaded negatively on inefficient investment. This means that a good country's economic output reduces inefficient investments and, hence, improves firms' investment efficiency. The findings of the control variables taken collectively are similar to those of prior studies.

Table 6. CG quality individual components and inefficient investments

	In-Eff.-Inv.				
	1	2	3	4	4
DISCLOSURE	0.178				
	0.00***				
SHARE H. RIGHTS		-0.092			
		0.011***			
STAKE H. RIGHTS			-0.028		
			0.00***		
BOARD RESP.				-0.192	
				0.00***	
BOARD COMP.					-0.052
					0.459
FCF	-0.004	-0.010	-0.004	-0.010	-0.010
	0.56	0.677	0.123	0.11	0.658
ROE	0.001	0.001	0.001	0.001	0.001
	0.00***	0.281	0.00***	0.00***	0.00***
LEV.	0.007	0.003	0.001	-0.007	0.002
	0.00***	0.687	0.657	0.00***	0.658
M CAP DEV	0.0010	-0.002	-0.002	0.001	-0.002
	0.00***	0.456	0.00***	0.00***	0.370
M/B	-0.002	-0.002	-0.001	-0.002	-0.002
	0.007***	0.498	0.284	0.015**	0.204
FIRM AGE	-0.088	-0.004	-0.001	-0.068	-0.003
	0.00***	0.244	0.037**	0.00***	0.332
FIRM SIZE	-0.053	-0.001	-0.001	-0.053	-0.001
	0.00***	0.546	0.134	0.00***	0.309
CONSTANT	Included	Included	Included	Included	Included
F STAT	8.8	11.3	15.2	11.19	11.077
PROB.	0.00***	0.00***	0.00***	0.00***	0.00***
R SQUARED	0.22	0.10	0.12	0.18	0.09
RMSE	0.054	0.0542	0.054	0.0543	0.054
OBSERVATIONS	903	903	903	903	903

Notes: This table shows the regression results for the relationship between inefficient investment and CG quality components, including control variables. The probabilities associated with each variable are shown in the second row, whereas the first row displays the coefficients. Significance levels of 10%, 5%, and 1%, respectively, are indicated by the symbols *, **, and ***.

Underinvestment and overinvestment were assessed in Columns 3, 4, 5, and 6 of Table 5. In Columns 3 and 4, the dependent variable (overinvestment) is a dummy variable with positive deviations (positive residuals) with respect to expected investment. In columns 5 and 6, the dependent variable (underinvestment) is a dummy variable with negative deviations with regard to expected investment.

In the case of overinvestment, the finding showed that CG quality had a significant negative effect, which implies that CG quality reduces investment inefficiency. These findings are consistent with prior research showing that good corporate governance lowers the sensitivity of investments to cash flows (Francis et al., 2013), which reduces the likelihood of making inefficient overinvestment decisions (S. Y. Chen et al., 2016).

Contrary to its impact on overinvestment, CG quality has a substantial positive influence on the (negative residuals) proxies of underinvestment. This is because good CG quality mitigates underinvestment. When the negative deviation (residuals) values increase, they approach zero. In other words, a positive correlation with negative residuals' values indicates a negative correlation with their absolute values, and hence, a negative correlation with inefficient investment in the case of underinvestment. Bimo et al. (2021); Syan (2011); and Wang and Hoffmire (2015) used the absolute values of the negative residuals (underinvestment) to regress for inefficient investment

5.5. Corporate governance quality: sub-components analysis

This section shows the effects of the individual key elements of corporate governance quality on investment efficiency. In Table 6 CG quality index is decomposed into its subcomponents: disclosure, shareholder rights, stakeholder rights, board responsibilities, and board composition. The findings support the previous results of the main analysis. Three out of the five CG quality sub-elements showed significant negative effects on inefficient investments.

Board's responsibilities significantly decreased inefficient investment with a coefficient (-0.192). This finding is consistent with the previous research by H. R. He et al. (2020) and Yu (2023) which showed that a company is more likely to improve monitoring and has significantly reduced investment inefficiency if the board of directors is diverse and the directors have a range of skills. The most likely explanation of this finding is that, an effective corporate governance system is built on the foundation of accountable board responsibilities. A successful business board is more likely to adopt and establish efficient policies and plans, execute effective management oversight, and monitor top management effectively. This guarantees that capital is directed toward the proper goals and that inefficient investment is minimized.

Shareholder rights loaded negatively on inefficient investment with a significant coefficient of (-0.028). Similar studies by Tran (2020) and Jiang et al. (2018) showed that companies with strong shareholder protection have a better impact on corporate investment efficiency. This is because firms with adequate shareholder rights, especially voting rights, equipped with robust instruments for appointing directors, making prudent investment decisions, and their recommendations appear to play an increasingly important role in reducing agency costs. Therefore, shareholders engagement enhances corporate governance improvements, leads to efficient investment, lowers overall risks, and secures long-term sustainability

Stakeholder rights had significant negative effects on inefficient investment indicating an increased investment efficiency. This finding is consistent prior research by (Benlemlih & Bitar, 2018); Gu and Zhang (2022); and Lahouel et al. (2022) which found that enforcing stakeholder roles is essential for firms' performance and significantly boosts investment efficiency. This is because, improvement in a company's stakeholder relationships is considered as a strategy that increases its competitive advantage and, as a result, the efficiency of its investments (Attig et al., 2014)

On the other hand, disclosure loaded positively on inefficient investments with a significant coefficient of 0.1775 , implying a negative effect on investment efficiency. This finding is in contrast to the findings of Biddle et al. (2009), Gomariz and Ballesta (2014), and hypothesis 2. The most likely reason for this result is that when corporate executives invest inefficiently, they may provide more information to justify their deviation from efficient investments. This could also be because, when managers make efficient investments, regulators and investors expect less information from them, and as a result, disclosure may be inversely related to investment efficiency. This argument was supported by D. Chen et al. (2019) and Elberry and Hussainey (2020). The conclusion is that within the GCC region, and according to the findings of the current study, the effect of disclosure on investment efficiency was negative, which contradicts the prediction of Hypothesis 2.

Board composition had a negligible negative effect on (In-Eff.-Inv), with a coefficient of -0.052 . The negative sign indicates that board composition has a diminishing effect on inefficient

Table 7. Endogeneity analysis

	IN-EFF.-INV.		OVER INVESTMENT		UNDER INVESTMENT	
	1 st stage Reg.	2SLS	1 st stage Reg.	2SLS	1 st stage Reg.	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
CG QUALITY		-0.199		-3.65		0.53
		0.000***		0.000***		0.130
FCF		-0.0125		0.093		0.39
		0.612		0.662		0.4
ROE		0.0005		0.001		-0.001
		0.022**		0.001***		0.03**
LEVERAGE		0.005		0.015		0.41
		0.6		0.70		0.63
M CAP DEV		0.000		-0.047		0.039
		0.95		0.04**		0.183
M/B		-0.0014		0.0006		-0.011
		0.48		0.95		0.57
FIRM AGE		-0.004		-0.054		1.06
		0.30		0.115		0.000***
FIRM SIZE		0.001		0.044		0.19
		0.52		0.000***		0.07*
CONSTANT		0.157		3.034		-5.80
		0.000***		0.000***		0.000***
WALD CHI2		34 0.000***		67.9 0.000***		78.6 0.000***-
R - SQUARED		0.02		0.025		0.11
RMSE		0.056		0.55		0.037
DURBIN SCORE	6.29 0.012***		25 0.000***		0.067 0.000***	
WU-HAUSMAN	6.26 0.013***		25.4 0.000***		0.068 0.000***	
F STATISTIC	51.7 0.000***		51.7 0.000***		22.3 0.000***	
R-Sq.	0.19		0.19		0.22	
PARTIAL R-sq.	0.08		0.08		0.08	
MAXIMUM CRITICAL VALUE	19.9		19.9		19.9	
OBSERVATIONS	903	902	902	514	902	902

Notes: This table displays the findings of 2SLS regressions using CG quality (CG QUALITY) and inefficient investment (In-Eff.-Inv.) as endogenous variables. The first row displays the coefficients, while the second row displays the probabilities associated with each variable. Significance levels of 10%, 5%, and 1%, respectively, are indicated by the symbols *, **, and ***.

investment and hence a positive effect on investment efficiency. Although some other studies (See for example Agyei-Mensah, 2021; Ullah et al., 2020), indicated a positive effect of board structure on investment efficiency, this study was unable to support such findings.

5.6. Endogeneity analysis

Endogeneity issues may impact the relationship between CG quality and investment efficiency (Yu, 2023). We used STATA16 to perform two-stage least squares regression (2SLS) using two instrumental variables in order to account for any bias brought on by endogeneity. The outcomes demonstrate that even after accounting for endogeneity, our OLS statistics remain reliable. The Durbin and Wu-

Hausman endogeneity tests also produced incredibly low (p) values (0.012 and 0.013, respectively), which led us to further reject the null hypothesis that CG quality is an exogenous variable.

We used the industry-mean CG quality as an instrumental variable due to its potential correlation with the CG quality. The justification is that, whereas inefficient investments caused by agency issues may have an impact on the CG quality of a single firm, they are less likely to have an impact on CG quality at the industry level. Since it is unlikely that the industry-mean CG quality may be associated with a firm's inefficient investments, we assume that it should operate as a reliable instrument. We also used lagged market capitalization development variable (MCAPDEVlag) as a second instrumental variable for the same justifications. Similar instruments used in prior studies (See for example Feng et al., 2011; García-sánchez & García-meca, 2018; Lu & Wang, 2015). For further evaluation of the relationship between the two instruments and the endogenous variable (CG quality), we ran first stage regression statistics. Table 7, columns (1, 3, and 5) show the test results. The partial R-sq, which assesses the relationship between the instrument and the endogenous variable, was (0.08), and the F statistic was (51.7). The hypothesis that our instruments are inadequate is rejected since the F statistic value (51.7) is statistically significant and substantially greater than any one of the test findings' critical values. Sargan and Basman tests, which test for over-identifying restrictions, produce higher p -values (0.4071, and 0.4095), showing that our model is valid and well specified.

The outcomes of the two-stage 2SLS regression are shown in Columns (2, 4, and 6 of Table 7. Our instrumented CG quality coefficients on inefficient investment and overinvestment were both negative (-0.199, -3.65) and significant at $P=(0.000, 0.000)$ respectively. Underinvestment had a significant and positive coefficient. The overall results imply that higher CG quality decreases inefficient investments, and hence raises investment efficiency. The outcomes agree with our primary conclusions, which are presented in Table 5.

6. Conclusion and implications

6.1. Conclusion

This study investigates how CG quality level as a composite index affects investment efficiency in publicly listed companies in GCC countries. Based on the results of our regression model estimations, we can conclude that good CG quality as a composite index enhances investment efficiency and reduces both over- and under-investment in the six GCC countries. The CG quality index's sub-components, however, exhibited conflicting effects on the firm's investment efficiency. Using a sample of 903 firm-year observations from 301 nonfinancial firms listed in the six emerging stock markets of the GCC countries, we find that firms with good CG quality are more likely to have higher investment efficiency. We believe that improved CG quality protects investors through effective capital allocation, integrates accountability and responsibility with empowerment for the benefit of all stakeholders, and accelerates the region's economic growth and development.

6.2. Practical implications

This study's findings have implications for corporate governance research. This study adds to the body of knowledge by analyzing the impact of a constructed CG quality index as one metric on investment efficiency in an emerging economy context and demonstrates that individual CG characteristics may not produce the same results as if they were combined. The findings highlight the significance of good corporate governance as a factor in investment efficiency and could have an impact on how investors choose investments for their portfolios, allowing them to invest in companies that encourage effective corporate governance practices. To enhance efficient investment decisions, malfunctioning firms are likely to change their inadequate governance processes. As a result, investable resources are efficiently allocated to projects where they are most required to create jobs and increase a firm's sustainability.

These findings have considerable practical implications for businesses, investors, academics, and legislators, among others. Knowing the relevance of corporate governance quality in improving

investment efficiency, companies should manage their resources effectively. Governments should be persuaded to improve regional corporate governance quality. Regulators can use the CG quality model to enact policies that improve the quality of corporate governance in the region. The findings also suggest that the CG quality model is suited to the GCC region and other markets with similar social, political, and cultural contexts from the standpoint of stakeholders.

6.3. Limitations and future research recommendations

The study's limitations may include the fact that it studied all GCC countries at once, rather than country-by-country. As a result, we recommend that researchers interested in the GCC region perform comparable studies inside the region's countries to discover in which country, and even in which industry, CG quality has a greater influence on investment efficiency. Another limitation was that the research sample was drawn from a broad group of businesses in various industries. To avoid over- or under-representation of certain subsectors, future researchers can utilize a divided sampling strategy to choose a significant number of firms from each subsector. The complexity of the CG quality index and investment efficiency measurements is another limitation of this study. Alternative measures of CG quality and investment efficiency proxies most likely affect the research findings. These alternative proxies should be further investigated in future studies.

Funding

There was no specific grant for this research from any funding organizations.

Author details

Adam Yahya Jafeel¹
E-mail: adamjafeel@gmail.com
ORCID ID: <http://orcid.org/0000-0002-9790-131X>
Yousif Abdelbagi Abdalla²
ORCID ID: <http://orcid.org/0000-0002-0714-5451>
Alaa Amin Abdalla³
ORCID ID: <http://orcid.org/0000-0001-9899-6544>
Mohammed Hersi Warsame²
ORCID ID: <http://orcid.org/0000-0003-0202-1449>
¹ Graduate School of Business, Universiti Sains Malaysia 11800Gelugor, Penang, Malaysia.
² College of Business Administration, University of Sharjah, Sharjah, United Arab Emirates.
³ Military Programs, Abu Dhabi University, Abu Dhabi, United Arab Emirates.

Disclosure statement

No potential conflict of interest was reported by the authors.

Data Availability statement

The corresponding author will provide the data necessary to support the study's conclusions upon reasonable request.

Citation information

Cite this article as: How corporate governance quality affects investment efficiency? An empirical analysis of nonfinancial companies in the Gulf Cooperation Council 2015-2020, Adam Yahya Jafeel, Yousif Abdelbagi Abdalla, Alaa Amin Abdalla & Mohammed Hersi Warsame, *Cogent Business & Management* (2023), 10: 2198061.

References

- Agyei-Mensah, B. K. (2021). The impact of board characteristics on corporate investment decisions: An empirical study. *Corporate Governance the International Journal of Business in Society*, 21(4), 569–586. <https://doi.org/10.1108/CG-04-2020-0125>
- Al-hadi, A., Hasan, M. M., Taylor, G., Hossain, M., & Richardson, G. (2017). Market Risk Disclosures and Investment Efficiency: International Evidence from the Gulf Cooperation Council Financial Firms. *Journal of International Financial Management & Accounting*, 28(3), 349–393. <https://doi.org/10.1111/jifm.12063>
- Al-Gamrh, B., Ku Ismail, K. N. I., Ahsan, T., & Alquhaif, A. (2020). Investment opportunities, corporate governance quality, and firm performance in the UAE. *Journal of Accounting in Emerging Economies*, 10(2), 261–276. <https://doi.org/10.1108/JAEE-12-2018-0134>
- Al-Hadrami, A. H., Rafiki, A., Sarea, A., & Nasution, M. D. T. P. (2020). Is the investment decision affected by the independence and competence of the audit committee? A comparative study between Bahrain and Indonesia. *Journal of Investment Compliance*, 21(1), 29–48. <https://doi.org/10.1108/JOIC-05-2020-0005>
- AlHares, A. (2020). Corporate governance and cost of capital in OECD countries. *International Journal of Accounting and Information Management*, 28(1), 1–21.
- Almustafa, H., Kijkasiwat, P., Jreisat, A., Al-Mohamad, S., & Khaki, A. R. (2023). Corporate risk-taking and national governance quality: Empirical evidence from MENA emerging markets. *Cogent Business & Management*, 10(1), 2156141. <https://doi.org/10.1080/23311975.2022.2156141>
- Al-Shboul, M., & Al Rawashdeh, R. (2022). The impact of institutional quality and resources rent on health: The case of GCC. *Resources Policy*, 78, 102804. <https://doi.org/10.1016/j.resourpol.2022.102804>
- Ararat, M., Black, B., & Yurtoglu, B. B. (2017). The effect of corporate governance on firm value and profitability: Time-series evidence from Turkey. *Emerging Markets Review*, 30, 113–132. <https://doi.org/10.1016/j.ememar.2016.10.001>
- Ari, I., Akkas, E., Asutay, M., & Koç, M. (2019). Public and private investment in the hydrocarbon-based rentier economies: A case study for the GCC countries. *Resources Policy*, 62, 165–175. <https://doi.org/10.1016/j.resourpol.2019.03.016>
- Assad, N. F., & Alshurideh, M. T. (2020). Financial reporting quality, audit quality, and investment efficiency: Evidence from GCC economies. *WAFEN-UND Kostumkd J*, 11(3), 194–208.
- Attig, N., Cleary, S. W., El Ghouli, S., & Guedhami, O. (2014). Corporate legitimacy and investment-cash flow sensitivity. *Journal of Business Ethics*, 121(2), 297–314. <https://doi.org/10.1007/s10551-013-1693-3>

- Benlemlih, M., & Bitar, M. (2018). Corporate social responsibility and investment efficiency. *Journal of Business Ethics*, 148(3), 647–671. <https://doi.org/10.1007/s10551-016-3020-2>
- Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics*, 48(2), 112–131. <https://doi.org/10.1016/j.jacceco.2009.09.001>
- Bimo, I. D., Silalahi, E. E., & Kusumadewi, N. L. G. L. (2021). Corporate governance and investment efficiency in Indonesia: The moderating role of industry competition, *Journal of Financial Reporting and Accounting*, 20(2), 371–384 <https://doi.org/10.1108/JFRA-12-2020-0351>
- Black, B., De Carvalho, A. G., Khanna, V., Kim, W., & Yurtoglu, B. (2017). Corporate governance indices and construct validity. *Corporate Governance an International Review*, 25(6), 397–410. <https://doi.org/10.1111/corg.12215>
- Callen, M. T., Cherif, R., Hasanov, F., Hegazy, M. A., & Khandelwal, P. (2014). *Economic Diversification in the GCC: Past, Present, and Future*. International Monetary Fund.
- Cheng, M., Dhaliwal, D., & Zhang, Y. (2013). Does investment efficiency improve after the disclosure of material weaknesses in internal control over financial reporting? *Journal of Accounting and Economics*, 56(1), 1–18. <https://doi.org/10.1016/j.jacceco.2013.03.001>
- Chen, & Sheng-Syan. (2011). *Corporate Governance and Investment Efficiency of Diversified firms: Evidence from Corporate Asset Purchases*.
- Chen, S. Y., Xiaodong, X., & Xu, X. (2016). Free cash flow, over-investment and corporate governance in China. *Pacific-Basin Finance Journal*, 37, 81–103. <https://doi.org/10.1016/j.pacfin.2015.06.003>
- Chen, D., Y. N. J., Tsang, A., & Tsang, A. (2019). Cross-listings and voluntary disclosure: International evidence. *Journal of Financial Reporting*, 4(2), 89–113. <https://doi.org/10.2308/jfir-52576/>
- Dong, Y., Chen, L., Ng, J., & Tsang, A. (2019). Cross-listings and voluntary disclosure: International evidence. *Journal of Financial Reporting*, 4(2), 89–113. <https://doi.org/10.2308/jfir-52576>
- Elberry, N., & Hussainey, K. (2020). Does corporate investment efficiency affect corporate disclosure practices? *Journal of Applied Accounting Research*, 21(2), 309–327. <https://doi.org/10.1108/JAAR-03-2019-0045>
- Ellili, N. O. D. (2022). Impact of ESG disclosure and financial reporting quality on investment efficiency. *Corporate Governance the International Journal of Business in Society*, 22(5), 1094–1111. <https://doi.org/10.1108/CG-06-2021-0209>
- Erdoğan, S., Çevik, E. İ., & Gedikli, A. (2020). Relationship between oil price volatility and military expenditures in GCC countries. *Environmental Science and Pollution Research*, 27(14), 17072–17084. <https://doi.org/10.1007/s11356-020-08215-3>
- Feng, C., Ole-Kristian, H., Qingyuan, L., & Xin, W. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, 86(4), 1255–1288. <https://doi.org/10.2308/accr-10040>
- Fernandez, M., & Joseph, R. (2022). Role of economic factors on foreign direct investment inflows in the gulf cooperation council countries. *International Journal of Economics and Finance Studies*, 14(1), 358–376.
- Ferrer, R. C., Banderlipe, I., & McReynald, S. (2012). The influence of corporate board characteristics on firm performance of publicly listed property companies in the philippines. *Academy of Accounting & Financial Studies Journal*, 16(4), 123–142.
- Francis, B., Hasan, I., Song, L., & Waisman, M. (2013). Corporate governance and investment-cash flow sensitivity: Evidence from emerging markets. *Emerging Markets Review*, 15, 57–71. <https://doi.org/10.1016/j.ememar.2012.08.002>
- García-sánchez, I. M., & García-meca, E. (2018). Do talented managers invest more efficiently? The moderating role of corporate governance mechanisms. *Corporate Governance an International Review*, 26(4), 238–254. <https://doi.org/10.1111/corg.12233>
- Ghosh, S. (2018). Governance reforms and performance of MENA banks: Are disclosures effective? *Global Finance Journal*, 36, 78–95. <https://doi.org/10.1016/j.gfj.2018.01.002>
- Gomariz, M. F. C., & Ballesta, J. P. S. (2014). Financial reporting quality, debt maturity and investment efficiency. *Journal of Banking & Finance*, 40, 494–506. <https://doi.org/10.1016/j.jbankfin.2013.07.013>
- Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, 118(1), 107–156. <https://doi.org/10.1162/00335530360535162>
- Gu, L., & Zhang, H. (2022). Stakeholder-oriented corporate investment: A catering perspective. *Finance Research Letters*, 48, 102863. <https://doi.org/10.1016/j.frl.2022.102863>
- He, R. (2017). *Board effectiveness and firm investment efficiency*. (MRes, Macquarie University, Faculty of Business and Economics, Department of Accounting and Corporate Governance Thesis MRes), Macquarie University. Retrieved from <http://hdl.handle.net/10.25949/19435001.v1handle:10.25949/19435001.v1>
- He, H. R., Evans, E., & Evans, E. (2020). Board influence on a firm's long-term success: Australian evidence. *Journal of Behavioral and Experimental Finance*, 27, 100327. <https://doi.org/10.1016/j.jbef.2020.100327>
- Hlel, K., Kahloul, I., & Bouzgarrou, H. (2020). IFRS adoption, corporate governance and management earnings forecasts. *Journal of Financial Reporting and Accounting*, 18(2), 325–342. <https://doi.org/10.1108/JFRA-01-2019-0007>
- The Human Capital Hub. (2019, 2022, May 26). The Failure of Corporate Governance and Its Impact on Business. *Business*. Retrieved from <https://www.thehumancapitalhub.com/articles/The-Failure-Of-Corporate-Governance-And-Its-Impact-On-Business#:~:text=Not%20conforming%20to%20its%20corporate,making%20bad%20investments%20and%20decisions>.
- International Finance Corporation. (2018). Why Corporate governance. Retrieved from https://www.ifc.org/wps/wcm/connect/258e1815-a80c-462c-a3df-9419f04d1dfa/Why_Corporate_Governance.pdf?MOD=AJPERES&CVID=mpqJSxs
- Jensen, M. C. (1986). Agency cost of free cash flow, corporate finance, and takeovers. *Corporate Finance, and Takeovers. The American Economic Review*, 76(2), 323–329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Jiang, F., Cai, W., Wang, X., & Zhu, B. (2018). Multiple large shareholders and corporate investment: Evidence from China. *Journal of Corporate Finance*, 50, 66–83. <https://doi.org/10.1016/j.jcorpfin.2018.02.001>

- Lahouel, B. B., Taleb, L., Zaid, Y. B., & Managi, S. (2022). Does primary stakeholder management improve competitiveness? A dynamic network non-parametric frontier approach. *Economic Modelling*, 116, 106010. <https://doi.org/10.1016/j.econmod.2022.106010>
- Lai, S. -M., Liu, C. -L., & Wang, T. (2014). Increased disclosure and investment efficiency. *Asia-Pacific Journal of Accounting & Economics*, 21(3), 308–327. <https://doi.org/10.1080/16081625.2012.741791>
- Le, T. T. H. (2018). The Link between Information Transparency and Investment Efficiency: A Literature Review. *Business and Economic Research*, 8(4), 71–79. <https://doi.org/10.5296/ber.v8i4.13897>
- Lei, Q., & Chen, H. (2019). Corporate governance boundary, debt constraint, and investment efficiency. *Emerging Markets Finance and Trade*, 55(5), 1091–1108. <https://doi.org/10.1080/1540496X.2018.1526078>
- Lu, J., & Wang, W. (2015). Board independence and corporate investments. *Review of Financial Economics*, 24(1), 52–64. <https://doi.org/10.1016/j.rfe.2015.01.001>
- Maghyereh, A., & Abdoh, H. (2021). The effect of structural oil shocks on bank systemic risk in the GCC countries. *Energy Economics*, 103, 105568. <https://doi.org/10.1016/j.eneco.2021.105568>
- Menshawy, I. M., Basiruddin, R., Mohd-zamil, N. A., & Hussainey, K. (2021). Strive towards investment efficiency among Egyptian companies: Do board characteristics and information asymmetry matter? *International Journal of Finance & Economics*. <https://doi.org/10.1002/ijfe.2540>
- Miroshnychenko, I., & De Massis, A. (2020). Three decades of research on corporate governance and R&D investments: A systematic review and research agenda. *R&D Management*, 50(5), 648–666. <https://doi.org/10.1111/radm.12432>
- Nsour, M. F., & Al-Rjoub, S. A. (2022). Building a corporate governance index (JCGI) for an emerging market: Case of Jordan. *International Journal of Disclosure and Governance*, 19(2), 232–248. <https://doi.org/10.1057/s41310-021-00139-9>
- OECD. (2015). G20/OECD Principles of Corporate Governance. Retrieved from https://www.oecd-ilibrary.org/governance/g20-oecd-principles-of-corporate-governance-2015_9789264236882-en
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, 22(1), 435–480. <https://doi.org/10.1093/rfs/hhn053>
- Pillai, R. R., & Al-Malkawi, H. -A.N. (2016). Corporate governance in the GCC countries: Empirical assessment using conventional and non-conventional indices. *Journal of Developing Areas*, 50(6), 69–88. <https://doi.org/10.1353/jda.2016.0136>
- Puni, A., & Anlesinya, A. (2020). Corporate governance mechanisms and firm performance in a developing country. *International Journal of Law and Management*, 62(2), 147–169. <https://doi.org/10.1108/IJLMA-03-2019-0076>
- Rahman, M. M., & Khatun, N. (2017). Quality of corporate governance: A review from the literature. *The Journal of Asian Finance, Economics and Business*, 4(1), 59–66. <https://doi.org/10.13106/jafeb.2017.vol4.no1.59>
- 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(2–3), 101246. <https://doi.org/10.1016/j.jacc.2019.101246>
- Santiago-Castro, M., & Brown, C. J. (2011). Corporate governance, expropriation of minority shareholders' rights, and performance of Latin American enterprises. *Annals of Finance*, 7(4), 429–447. <https://doi.org/10.1007/s10436-009-0132-z>
- Shehata, N. F., Kakabadse, N., & Fleur, M. (2015). Development of corporate governance codes in the GCC: An overview. *Corporate Governance the International Journal of Business in Society*, 15(3), 315–338. <https://doi.org/10.1108/CG-11-2013-0124>
- Tawfik, O. I., Alsmady, A. A. A., Rahman, R. A., & Alsayegh, M. F. (2022). Corporate governance mechanisms, royal family ownership and corporate performance: Evidence in gulf cooperation council (GCC) market. *Heliyon*, 8(12), e12389. <https://doi.org/10.1016/j.heliyon.2022.e12389>
- Tran, Q. T. (2020). Creditor protection, shareholder protection and investment efficiency: New evidence. *The North American Journal of Economics and Finance*, 52, 101170. <https://doi.org/10.1016/j.najef.2020.101170>
- Trinh, V. Q., Cao, N. D., & Vo, X. V. (2021). At the boundary: Post-COVID agenda for business and management research in Europe and beyond. *European Management Journal*, 39(2), 171–178. <https://doi.org/10.1016/j.emj.2021.11.002>
- Turnbull, S. (2019). *Corporate governance: Its scope, concerns and theories corporate Governance*. Gower.
- Ullah, I., Majeed, M. A., Fang, H. -X., & Khan, M. A. (2020). Female CEOs and investment efficiency: Evidence from an emerging economy. *Pacific Accounting Review*, 32(4), 443–474. <https://doi.org/10.1108/PAR-08-2019-0099>
- Wang, F., Zhu, Z., & Hoffmire, J. (2015). Financial reporting quality, free cash flow, and investment efficiency. In SHS Web of Conferences (Vol. 17, pp. 01027). EDP Sciences.
- Wan, H., Zhu, K., & Chen, X. (2015). Career concerns, shareholder monitoring and investment efficiency: From the perspective of compensation contract rigidity in Chinese SOEs. *China Journal of Accounting Research*, 8(1), 59–73. <https://doi.org/10.1016/j.cjar.2015.01.003>
- Younas, N., UdDin, S., Awan, T., & Khan, M. Y. (2021). Corporate governance and financial distress: Asian emerging market perspective. *Corporate Governance the International Journal of Business in Society*, 21(4), 702–715. <https://doi.org/10.1108/CG-04-2020-0119>
- Yu, C. (2023). Board gender diversity and investment inefficiency. *Journal of Economics and Business*, 106–107. <https://doi.org/10.1016/j.jeconbus.2022.106107>

APPENDIX 1: CG QUALITY INDEX COMPONENTS

Panel A: CG quality component (1): Disclosure and transparency (12 items)	
1	The company offers channels for timely information delivery to the appropriate users.
2	There are available the company's annual reports.
3	The company's goals and main shareholders are made public.
4	The business reports adhering to the accounting standard.
5	An independent auditor conducts an annual audit of the company.
6	The board members' remunerations are available.
7	There is information about risk management.
8	Potential conflicts of interest, such as transactions involving related parties, are detailed in the annual reports.
9	Information on corporate social responsibility is provided by the business.
10	The business has a report on corporate governance.
11	Information on the credit rating is provided by the business.
12	Information on board member attendance at meetings is provided by the business.
Panel B: CG quality component (2): The responsibilities of the board (10 items)	
13	The board members' credentials are made clear.
14	Shareholdings of the directors are provided by the business.
15	The board follows strict ethical guidelines, acts in the best interests of the shareholders, and considers stakeholder interests.
16	When necessary, the board chooses, supervises, and ousted executives.
17	Management, board members, and shareholder conflicts of interest are monitored and handled by the board.
18	The disclosure and communication process is under the board's supervision.
19	Access to current, pertinent, and reliable information for the board members is necessary.
20	The board oversees and directs risk management procedures, key plans of action, and business strategy.
21	The board members have enough time to dedicate to their duties.
22	The board oversees related party transactions and the accuracy of financial and non-financial reporting.

(Continued)

<i>(Continued)</i>	
Panel C: CG quality component (3): Board structure and composition (10 items)	
23	Different individuals serve as the board chairman and CEO.
24	Internal audit committee of a company oversees the accuracy of the organization's financial reporting and accounting processes.
25	The board has a nominating committee for the selection of board members and key executives.
26	There is a compensation committee on the board.
27	A risk management committee is present on the board.
28	The purpose, structure, and working methods of the board committees are clearly stated.
29	The majority of the company's directors are non-executive.
30	The board size ranges from 5 to 12.
31	The board's independent directors make up one-third of the entire group.
32	Independent directors make up one-third of the audit committee's membership.
Panel D: CG quality component (4): The Right and Equitable treatment of Shareholders (22 items)	
33	On its website or stock exchange, the shareholders' information is disclosed.
34	The business helps shareholders transfer ownership to one another.
35	The shareholders have the right to share in company profits.
36	Shareholders are entitled to information about the company.
37	At the company's annual general meeting, shareholders are entitled to vote.
38	It is made easier for shareholders to participate effectively in the nomination, election, compensation, and removal of board members.
39	The business provides updates on the held and upcoming shareholder meetings.
40	On the company's website and stock exchange, the shareholding distribution between domestic and foreign shareholders is shown.
41	The permitted percentage of non-national shareholdings is accessible.
42	On its website, the corporation offers a section devoted to investor relations.
43	There is a way to file complaints.
44	Shareholders can access dividend declarations.
45	The shareholders have access to the share's market price.

(Continued)

46	Shareholders have the right to comment on the agenda and discuss the external auditor's report at the annual general meeting.
47	Shareholders are informed about the company's capital structure and the inherent conflicts of interest in transactions involving related parties.
48	The business notifies the shareholders of decisions involving major organizational changes.
49	All shareholders from the same series or class are treated similarly by the company.
50	Before shareholders buy shares, the corporation makes information about their voting rights available.
51	All shareholders are given equal treatment under the rules and procedures for general shareholder meetings.
52	Minority shareholders are safeguarded by the corporation from market manipulation.
53	The firm overcomes barriers that prevent shareholders from voting in person or by proxy across international borders.
54	Top executives and board members must disclose any stake they may have in a deal or legal issue that directly affects the company's operations.
Panel E: CG quality component (5): Stakeholders role (6 items)	
55	The business upholds legally mandated stakeholder rights.
56	The business allows the creation of performance-improving tools for worker involvement.
57	Stakeholders who had their rights violated could get fair compensation.
58	The right to timely access to sufficient, accurate information belongs to all stakeholders.
59	The board should hear from stakeholders when they have concerns about unethical or illegal behavior.
60	The business has a strong corporate governance structure that upholds creditors' rights.