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How does Environmental Social and Governance (ESG) affect firm value and what are the determinants of ESG disclosure? Evidence from the Gulf Cooperation Council (GCC) countries.

par

Zaid Ahmad

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Résumé

Ce mémoire examine les liens entre la performance et la divulgation Environnement, Société et Gouvernance (ESG) sur la valeur des entreprises, ainsi que les déterminants de la divulgation ESG pour les pays membres du Conseil de coopération du Golfe (CCG). L'analyse économétrique est menée à l'aide d'effets aléatoires et de régressions à effets fixes couvrant la période 2015-2021. Pour répondre aux problèmes d'endogénéité, nous utilisons le système GMM. En utilisant les données de divulgation ESG de Bloomberg et les scores de performance de S&P Global, nous constatons que la performance ESG est liée positivement et significativement avec la valeur de l'entreprise en utilisant des mesures basées sur la valeur au marché. Cependant, il s'avère que la divulgation des scores de gouvernance n'est pas lié significativement avec la valeur de l'entreprise en raison potentiellement du niveau déjà élevé de divulgation de la gouvernance qui est obligatoire dans de nombreux pays du CCG. De plus, lorsqu'une mesure comptable est utilisée, nous ne trouvons aucune association entre l'ESG et la valeur de l'entreprise, ce qui suggère que le principal moteur de la valeur provient de l'appréciation du cours des actions. Nous constatons également que les déterminants les plus importants de la transparence ESG sont les dépenses de R&D, le pourcentage d'administrateurs indépendants, les fonds propres détenus par les investisseurs institutionnels et l'existence d'un comité de responsabilité sociale des entreprises. Les aspects négativement associés à la divulgation ESG sont la liquidité et le levier financier. À notre connaissance, cette recherche est la première à aborder la relation entre la performance ESG et la valeur de l'entreprise dans le contexte de la région du CCG.

Mots Clés: ESG, Environnemental, Social, Gouvernance, Responsabilité sociale de l'entreprise, Divulgation, Valeur de l'entreprise, Moyen-Orient, Conseil de coopération du Golfe

Abstract

This study examines the relationship between Environmental, Social and Governance (ESG) performance and disclosure on firm value, as well as the determinants of ESG disclosure in Gulf Cooperation Council (GCC) countries. The empirical analysis is carried out using random effects and fixed effects regressions spanning the period 2015–2021. To address endogeneity concerns, we use system Generalized Method of Moments (GMM). Using Bloomberg ESG disclosure and S&P Global ESG performance scores, we find that ESG scores are positively and significantly associated with firm value using market-based metrics. However, governance disclosure is found to have no significant relationship with firm value, potentially due to the already high level of governance disclosure that is mandated in many GCC nations. Furthermore, when an accounting-based metric is used, we find no association between ESG and firm value, suggesting that the main driver of ESG value comes from stock price appreciation. We also find that the most important determinants of ESG transparency are R&D expenditure, the percentage of independent directors, the equity held by institutional investors, and the existence of a Corporate Social Responsibility committee. The aspects negatively associated with ESG disclosure are liquidity and financial leverage. To our knowledge, this research is the first to examine the relationship between ESG performance and firm value in the context of the GCC region.

Keywords: ESG, Environmental, Social, Governance, Corporate Social Responsibility, Disclosure, Firm value, Middle East, Gulf Cooperation Council

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Acronyms

CSR	Corporate Social Responsibility
ESG	Environmental, Social, and Governance
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GRI	Global Reporting Initiative
IIR	Intuitive for Integrated Reporting
MENA	Middle East and North Africa
OLS	Ordinary Least Squares
PB	Price to Book
R&D	Research and Development
ROA	Return on Assets
UN	United Nations

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1. Introduction

Corporate social responsibility (CSR) and Environmental, Social, and Governance (ESG) have been widely discussed topics in finance lately (Yu et al., 2017; Fatemi et al., 2018; Sassen et al., 2016; Alshehhi et al., 2018; Molina-Azorin et al., 2009). The debates have traditionally focused on whether firms' managers have a duty only toward shareholders or should the responsibility be broadened to encompass all firms' stakeholders. Some view such practices as harmful to the firm's operation and consider them to be theft from the shareholder perspective (Friedman, 1970). Others believe that the impact of firms' operations extends beyond shareholders and, therefore, should address all parties concerned (Freeman, 1984). This debate has influenced investors' understanding of risks that may impact the firm's operation and, in turn, investors' returns. To inform investors about the firm's CSR performance and the potential risks associated therewith, ESG scores quantify the firm's adherence to CSR principles and their impacts on its operation. However, does having high ESG performance and transparency scores lead to increased value for the firm? And what are the factors that influence firms in disclosing their sustainability practices?

Most of the research on this subject has focused on well-established markets such as the United States and Europe (Fatemi et al., 2018; Yu et al., 2017; Sassen et al., 2016; Peloza, 2009; Cheng et al., 2013). Little research has been done for assessing the impact of ESG on developing nations and less established markets (Alshehhi et al., 2018), and even less about the Middle East and North Africa (MENA) (Janah et al., 2021; Ammer et al., 2020). This represents a gap in the research and addressing these issues may be informative for future investors and governing bodies in those regions. In developing economies, including the Middle East, ESG and corporate social responsibility are quite new topics, leading to fresh angles for researchers to analyze this subject.

Given the scarcity of research regarding this region, this study seeks to shed light on the importance of ESG in the Gulf Cooperation Council (GCC) nations and, in doing so, encourage the adoption of sustainability practices in more firms throughout the Middle East. More specifically, the

objective of this study is to assess the impact of ESG performance and ESG disclosure on firm value. Furthermore, we assess the main determinants of ESG disclosure.

The econometric analysis is conducted using panel regressions, as does much of the literature, and is supplemented by System GMM to address dynamic panel endogeneity. The proxies used to assess the level of ESG transparency and performance are the ESG scores provided by Bloomberg and the S&P performance scores. Our sample comprises publicly listed firms in the six Gulf Cooperation Council (GCC) nations of Saudi Arabia, Qatar, Kuwait, Oman, UAE, and Bahrain, spanning the period 2015–2021. The GCC nations are still very new to ESG practices, and little research has been conducted on this region specifically.

Our empirical results show a positive and significant association between ESG performance and disclosure with market-based metrics of firm value. These results concur with some of the literature (e.g., Yu et al., 2018; Clarkson et al., 2013; Fatemi et al., 2017; Endrikat et al., 2014; Chelawat et al., 2016; Yoon et al., 2018; Ammer et al., 2020) but contradict others (e.g., Al-Jalahma et al., 2020; Surroca et al., 2009; Verbeeten et al., 2016; Garcia et al., 2020; Grisales et al., 2021; Al-Jalahma et al., 2020), highlighting the lack of consistency in the extant research. We also find that when an accounting-based metric is used as the proxy for firm value, no association is found between ESG and firm value. Furthermore, governance disclosure is found to have no significant relationship with either form of firm value metrics potentially due to the already high level of governance disclosure present in the GCC. Regarding the determinants of ESG transparency, R&D expenditure, percentage of independent directors, equity held by institutional investors, and the existence of a CSR committee are positively related to increased ESG disclosure. However, liquidity and financial leverage are found to have the opposite effect.

This study comprises six chapters. Following the introduction, Chapter 2 presents the primary literature on corporate social responsibility and ESG. Chapter 3 discusses the data and time frame of the study and describes the methodology. Chapter 4 presents the main econometric results. Chapter 5 examines robustness checks and Chapter 6 presents the conclusion.

2. Literature Review

This chapter discusses the prevailing literature relating to CSR and ESG. It begins with a macro-level overview of the general concept of CSR and the prevailing literature, followed by an analysis of the relationship between CSR/ESG on firm performance. Following a discussion of the main criticisms of using ESG as a metric, the study covers the different ways ESG is disclosed, followed by an analysis of the literature on the relationship between disclosure and performance scores. The final section is concerned with a more micro-level focus on ESG in the developing world and GCC nations.

2.1 Overview of Corporate Social Responsibility (CSR) and ESG

The world of finance has been predominately focused on the aspect of return on investments and the "bottom line." However, there is a growing concern in the industry regarding this myopic view. Some believe that the firm must not only be accountable to its shareholders but also to all stakeholders. This concept is referred to as the stakeholder theory, proposed by Freeman (1984), which states that firms must not only be focused on shareholder interests but also must consider the stakeholders. The term stakeholder encompasses a broader range of parties, such as the firm's environment, customers, employees, and any party directly or indirectly impacted by the firm's operations. However, the concept of Corporate Social Responsibility dates back decades ago and went through multiple evolutionary stages through the years. Whether firms have any form of duty beyond the interest of their shareholders dates back to the 1930s, to the Berle-Dodd debate (Pollmen, 2019; Bratton et al., 2008). As indicated by Pollmen (2019), the term 'socially responsible' emerged in the 1950s, referring to the incorporation of stakeholders in how the firm operates (Carroll, 1999; Ostas, 2004). However, the debate took center stage during the 1970s, with the emergence of government regulation regarding the environment and worker safety (Carroll, 1999; Pollmen, 2019). A wave of criticism began to emerge, with authors like Friedman (1970) arguing that the firms' only responsibility is to its shareholders and any form of investment beyond the pursuit of maximizing shareholder value would be considered socialism. Manne et al.

(1972) further argued that firms who engage in socially reasonable behavior do so not with any altruistic motive but as a form of public relations strategy and the result of agency cost. However, despite the criticism, investors' growing concern regarding the firms' exposure to CSR risk could not be ignored, thus, creating a growing demand for increased quantitative metrics for evaluating a firm's exposure to non-financial risks (Pollmen, 2019).

However, CSR description tend to be purely qualitative, making it difficult to ascertain how good or poor a firm's performance would be if it chooses to comply with CSR standards. Indeed, CSR may encompass a broad set of goals or governance perspectives when making firm-wide decisions. For orienting good practice and quantifying a firm's performance in CSR matters, Environmental, Social, and Governance (ESG) metrics were proposed. ESG is an extra set of financial information the firm presents regarding its sustainability progress (Bassen at el., 2008). There has been no formal definition of ESG in the literature (Bassen at el., 2008; Singhania et al., 2021). The term ESG was coined by the United Nations in its global compact initiative report, to stress the importance for investors to consider sustainability as an important element when making investment decisions (Yoon et al., 2018). An ESG score encompasses Environmental (E), Social (S), and Governance (G) practices. The environmental component focuses on the firm's impact on the environment, measured generally through its greenhouse gas emissions and general polluting acts. The social score comprises aspects such as how the firm interacts with employees and customers and addresses human rights concerns. Lastly, the governance score tends to address management and board-related matters, such as the number of non-executive board members on the board of directors, executives' payment structure, the number of meetings held, and the number of female executives on the board (Yoon et al., 2018).

2.2 Benefits of CSR/ESG to Firms

As mentioned, the main argument against CSR is that a firm should focus only on returns to shareholders and engaging in practices that may destroy value is not advantageous. However, a plethora of research has been conducted to answer the question of whether CSR has any tangible benefit to a firm. These studies have used "a theoretical as well as an empirical lens" (Cheng et al., 2013, p. 5). The antagonists of CSR assert that CSR puts firms at a competitive disadvantage by raising costs not directed at increasing shareholder value and inevitability harms the firm's bottom

line (Friedman, 1970**;** Manne et al., 1972*;* McWilliams et al., 1997). As indicated by Cheng et al. (2013) in their literature review, a theoretical lens can be employed when analyzing CSR, as did Brammer et al. (2008)**.** They argue that concentrating on the monetary value of these decisions is not the best perspective on CSR. Examining the issue through the lens of agency theory could better explain the benefits of CSR. They argue that firms that practice CSR reap managerial benefits. However, in doing so, financial benefits are sacrificed in the short run.

Other qualitative sources of value are also mentioned in the literature, such as increased access to valuable resources, as noted by Cochran et al. (1984) and Waddock et al. (1997). Turban et al. (1997**)** found that firms engaging with CSR tend to retain better-performing employees than those that do not and that these firms' reputations improved. Other authors concurred that CSR adds value through increased social legitimacy (Hawn et al., 2014*),* which leads to an increased competitive advantage. Moskowitz (1972) found that added benefit comes from higher exposure to the firm's products. CSR can be seen as a form of advertising benefit (Navarro, 1988; Cheng et al., 2013; Milgrom et al., 1986*).*

On their part, Fombrun et al. (2000**)** did not find a direct link between CSR and the firm's financial performance, but aver that firms that engage with CSR enjoy the benefits of increased "stock of reputational capital" (Fombrun **e**t al., 2000, p. 1) and increased value of their intangible assets. Other scholars viewed the importance of CSR through the lens of risk management *(*Berman et al., 1999; Hillman et al., 2001). For instance, Orlitzky et al. (2001) argued that firms that perform well in CSR practices will suffer less financial risk than firms that do not, finding a reciprocal causality relationship between financial risk and CSR performance. This means that past CSR performance is negatively associated with future financial risk, and past financial risk is negatively associated with future CSR performance. Furthermore, Berman et al. (1999) found that the most critical link between firm value and CSR are variables that pertain to customer and product safety, due to the elimination of legal or legislative consequences due to reduced risk. Authors such as Hillman et al. (2001) argued that CSR can provide the firm with new clientele, who may choose a particular firm over similar ones based on the CSR policies. This also aligns with the concept of social legitimacy *(*Hawn et al., 2014*),* which is enjoyed more by firms that practice socially sustainable behavior.

However, when considering the relationship between sustainability practices and the appreciation of firm value perspective, much of the literature reflects inconsistent results. For instance, a literature review by Huang (2021) on ESG performance and firm financial performance found mixed outcomes with a slight tilt to the positive side. This perspective is echoed by much of the literature (Friede et al., 2015**;** Orlitzky et al., 2003**;** Hoepner et al., 2009**;** Revelli et al., 2015; Peloza, 2009). While the overall results tend to be positive, other authors like Surroca et al. (2009) denied any connection between ESG and financial performance.

A possible driver for the inconsistency in the literature could be the authors' indecision regarding how to measure ESG (Orlitzky, 2013; Wood, 2010; Authers, 2015; Reynolds, 2014). For instance**,** Olmedo et al. (2019) found that ESG rating agencies do not fully integrate CSR criteria in their assessment of a firm's ESG performance. Indeed, the inconclusive nature of the literature could be observed even when analyzing each element of E, S, and G. Each of the elements poses the question of whether adherence to these specific sustainability practices brings about increased firm value performance. In the following sub-sections, we discuss the inconsistent views of researchers for each sustainability element.

2.2.1 Environmental Performance

Environmental performance focuses on how a firm may reduce its negative impact on the environment it operates. This can be in the form of reducing its carbon footprint, which may be costly to some firms. Because of this, the question of whether increasing environmental performance increases firm value is raised in much of the literature, with no consensus on the answer thereto (Saygili et al., 2021). Authors like Verbeeten et al. (2016) found a negative relationship between environmental practices and firm financial performance in the German market, as did other authors, some of whom even found no clear connection between the two (Saygili et al., 2021). However, Endrikat et al. (2014), who conducted a meta-analysis on the impact of environmental practices on financial performance, came up with the opposite finding that financial performance is impacted positively by environmental performance. The study made use of market-based metrics as well as accounting-based variables, both of which showed a positive association. However, the authors caveat their findings by arguing that this relationship is

stronger when proactive, rather than reactive policies are put in place. This is echoed by Dixon-Fowler et al. (2013) who also found a positive connection between the market-based metrics of firm value and environmental performance. This relationship is less evident for firms outside the United States.

2.2.2 Social Performance

Similar to the issue mentioned regarding environmental performance, there is no clear consensus regarding the relationship between social performance and firm value (Saygili et al., 2021). Flammer (2015) argued that increased positive social performance leads to positive outcomes regarding accounting-based performance measures. They argue that this relationship is causal and that increased social performance leads to increased labor productivity and sales. Blasi et al. (2018) also found a positive relationship between social performance and firm value; however, they found the degree of impact larger when using market-based valuation than accounting-based valuation. They argued that investor sentiment is a strong driving force for increased value. However, Adegnite et al. (2019) concluded that an average social score tends to have a negative relationship with firm value, while a low or high social score leads to increased financial performance.

2.2.3 Governance Performance

Governance performance also suffers from a lack of consistency in the literature regarding its effects on firm value. Gompers et al. (2001), studying the US market, found a positive association between strong governance practices and firm value. They found that investment in firms with strong governance practices yields a higher level of return than in firms with weaker governance. Using a similar methodological lens, Auer (2016) found that portfolios containing stocks of firms with strong corporate governance performed better. The same could not be said when concentrating on environmental and social performances, where portfolios weighted based on such metrics could underperform. However, contradictorily, Bebchuk et al. (2009) found a negative association between governance performance and firm value.

2.3 Criticism of ESG

The literature discussed thus far assumes that ESG scores are a true reflection of firm performance regarding CSR practices**.** However, some authors have criticized ESG measurement approaches, which potentially lead to inconsistent results. This criticism has two main aspects: (i) ESG metrics used to assess performance are not standardized, and are inconsistent across different rating agencies, making it difficult to infer performance; (ii) ESG scores do not necessarily represent how well a firm performs towards its CSR goals and its actions towards its stakeholders.

i)   Lack of Standardization in measurement and disclosure

Regarding the initial concern, Kotsantonis et al. (2019) raised multiple issues regarding ESG data used in research, pointing out how firms disclose ESG information, by analyzing a random sample of 50 firms from Fortune 500 companies. They found 20 different ways these companies reported their employee health and safety data. Such reporting inconsistency may lead to different outcomes when trying to ascertain the level of performance. Further, doing so may lead to inaccurate results when researching the connection between ESG and firm value. The authors further argued that the peer group benchmark used to assess the best and worst-performing firms is also inconsistent. For a firm to be a strong ESG performer, it must outperform other firms in the market. However, what is included in the benchmark group can differ, depending on the rating agency. This means that a firm could perform higher in one sample pool and worse in another, depending on how a particular agency creates its sample pools. A visual representation of this issue is presented in Figure 1.

Figure 1: Example Showing the Importance of the Peer Group in Assessing the Relative Performance of a Company on Any Given ESG Metric
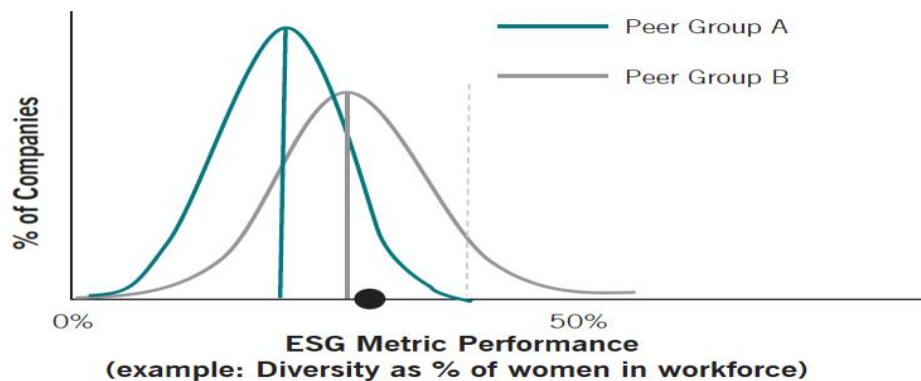
Source: Kotsantonis et al (2019, p. 53)

Figure 1 displays the percentage of female employees in 2 different peer group benchmarks. It can be seen how what is considered an average performance in this matter changes with a change in the sample used to compare. An average performance in peer-group A would be a low performance when it is compared to peer group B.

Due to this criticism, calls for standardization in ESG reporting have been increasing. An example of incentives aimed at standardizing ESG criteria is the HEC Montreal and Saïd Business School of the University of Oxford's "Measuring Beyond" initiative (HEC Montreal, 2022). This is a joint initiative of the two universities seeks to help create international standards for ESG measurement. This partnership also includes the International Sustainability Standards Board (ISSB), which aims to set international standards for ESG measurement.

ii) ESG Scores Do Not Correspond to CSR Practices

Regarding the second major criticism, Raghunandan et al. (2022) analyzed a sample of self-proclaimed ESG mutual funds to ascertain whether the firms included in their assets under management perform well, considering their CSR compliance. Their measure of CSR compliance

is adherence to environmental and labour regulations. They found that the firms included in these ESG funds had a worse track record regarding CSR compliance than those invested in regular mutual funds. Furthermore, ESG mutual fund investments tend to disclose more environmental information than most other firms voluntarily. However, these firms have the highest carbon emissions per dollar of revenue. With that being said, the total average ESG scores for the firms included in the ESG mutual fund portfolio are higher than non-ESG mutual funds, even though their compliance with their stakeholders is poor. These ESG funds also tend to underperform vis-a-vis traditional mutual funds and tend to have a higher fee structure. The authors offered two possible conclusions regarding their findings. First, ESG scoring could be a poor indicator of CSR performance, and second, ESG funds use ESG as a form of advertising to charge larger fees. The issues addressed in this section may be a key reason why much of the literature regarding the relationship between ESG and firm financial performance has been inconsistent as earlier mentioned.

2.4 Methods of ESG Disclosure

Leaving aside these criticisms, an important aspect of assessing a firm's performance regarding its ESG practices comes from the information made available, which could be disclosed through mandatory or voluntary means.

2.4.1 ESG Mandatory Disclosure

To increase the transparency regarding ESG risks for investors, and in response to the disconnect between what is demanded by investors and the amount of disclosure a firm voluntarily provides, some countries have introduced mandatory ESG disclosure policies (Krueger et al., 2021)**.** An example that highlights the issues with voluntary disclosure is that about 83% of the firms listed in the U.S. disclose some information regarding their ESG practices. However, according to the Sustainability Accounting Standards Board (SASB), 50% of all the listed firms provide only basic and uninformative information (Christensen et al., 2021; Christensen et al., 2018; SASB, 2017). Some regulatory bodies have created rules to remedy this issue. An example is the EU, which introduced its Non-Financial Reporting Directive (NFRD), which mandates all firms with more

than 500 employees and all listed companies to report on "non-financial and diversity information" (Christensen et al., 2021, p. 1177). In the United Kingdom, all firms listed on the London stock exchange must report their greenhouse gas emission (Yu et al., 2018). China passed the Environmental Information Disclosure Act in 2008, which mandates firms to disclose their environmental impact information. However, it is not clear in the literature whether these mandatory disclosure guidelines increase the transparency on ESG-related issues (Krueger et al., 2021: Christensen et al., 2021: Burgstahler et al., 2006). These authors attributed this to these mandatory guidelines being too limited to a few required data points, such that the firms would not volunteer a more comprehensive disclosure.

Furthermore, for firms with a high disclosure policy, mandatory disclosure policies will not affect the amount of information they provide. Christensen et al. (2021) stated that the actual benefit of compulsory disclosure is still unclear and research on the matter still scarce. What can be argued confidently, however, is the amount of information disclosed is significantly increased as mandatory legislation is imposed, as reported by Krueger et al. (2021). Figure 2 shows the drastic difference mandatory reporting makes when implemented across countries.

Figure 2: ESG Disclosure Before and After Mandatory Legislation in Different Countries
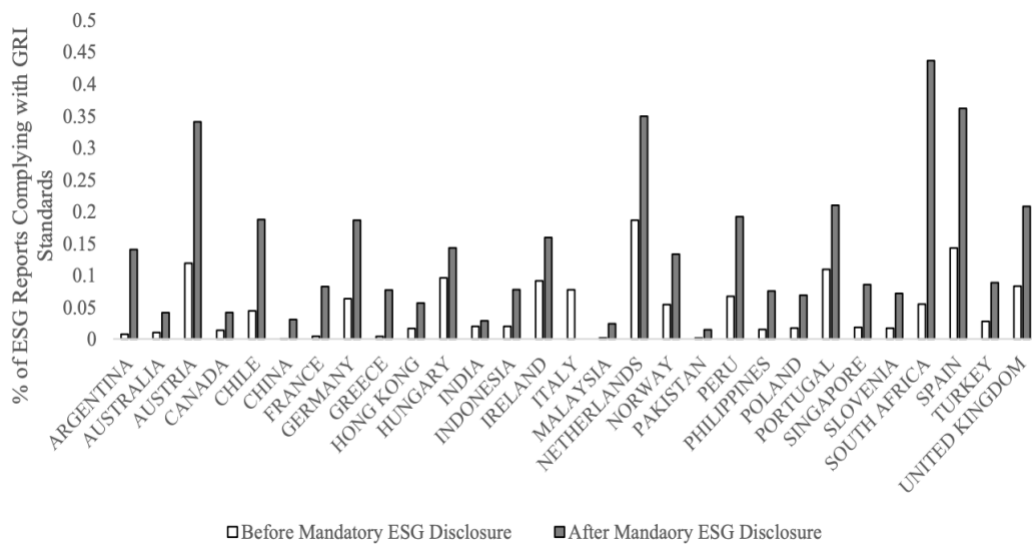
Source: Krueger et al. (2021, p. 43)

Figure 2 displays the drastic difference mandatory legislation has on the amount of ESG information disclosed. This phenomenon can be observed in all the nations listed, the amount of disclosure is almost triple what it was before. Some countries like China and France, which had no ESG disclosure before mandatory legislation, have significant ESG-related disclosures.

2.4.2 ESG Voluntary Disclosure

Another method of disclosure is when a firm discloses its ESG practices voluntarily. How firms report this information can vary across different firms (Ioannou et al., 2016; Fatemi et al., 2017) as well as the motives behind the disclosure.

Methods of voluntary disclosure

One of the main challenges in ESG research is the considerable variation in reporting across different firms and countries. Many authors mention this issue when pointing out the lack of consistency in the literature (Alshehhi et al., 2018; Ioannou et al., 2016). However, some rough standards have become prominent; for instance, the Global Reporting Initiative (GRI) guidelines are the most widely used standards for reporting ESG-related practices (Vigneau et al., 2015; Fatemi et al., 2017). In 2013, the Intuitive for Integrated Reporting (IIR) formulated international standards to have all firms adhere to similar guidelines (Eccle et al., 2014; Fatemi et al., 2017; Reuter et al., 2015).

To further tackle the lack of consistency in reporting, the UN has established a global initiative through the Sustainable Stock Exchanges Initiative, which provides standards and guidance for stock exchanges to follow. The goal of the UN initiative is " to provide a global platform for exploring how exchanges, in collaboration with investors, companies (issuers), regulators, policymakers and relevant international organizations, can enhance performance on ESG (environmental, social and corporate governance) issues and encourage sustainable investment, including the financing of the UN Sustainable Development Goals" (SSE, 2022). The guidelines help exchanges draft their recommendations, keeping particular sustainability goals in mind. These

goals coincide with the United Nations Sustainable Development Goals (SDGs), made up of 17 goals and 167 targets. Target number 12.6 directly calls for the increase of sustainability practices and increased disclosure of those practices. Since its inception, the SSE has had 66 stock exchanges committed to these goals, representing 56% of stock exchanges worldwide.

Regarding how most of the literature examines ESG (or CSR) related topics, they rely on third-party firms or vendors to provide the scores based on the firm's internal checklist or methodology. Independent agencies, such as Bloomberg, synthesize the information provided and formulate scoring schemes. For instance, MSCI offers ESG ratings ranging from AAA to CCC, comprising 35 ESG key issues, ten themes, and three pilers (for more examples, see Tables A 1 – 3 in the appendix).

Theoretical background for voluntary disclosure

When discussing voluntary disclosure, it is important to assess why firms voluntarily disclose such non-financial information. The voluntary disclosure theory is proposed to help understand this phenomenon (Dye, 1985; Verrecchia, 1983). This theory argues that firms with high performance in ESG matters will disclose more than firms that do poorly, to distinguish themselves from the poorly performing firms. Akerlof (1970) argued that due to the creation of distinction between firms in sustainability matters, higher performing firms also disclose to reduce the consequences of adverse "selection." Furthermore, firms that receive positive publicity due to their ESG disclosure enjoy a lower cost of capital than other firms (Cahan et al., 2015). However, if firms voluntarily disclose their ESG practices but do not receive publicity for it, they do not reap the benefits of disclosure.

Firms also use ESG disclosure to divert public perception away from negative aspects or behavior in which they were involved (Cho et al., 2007; Brown et al., 1998). This also aligns with the legitimacy theory which states that firms interact with their stakeholders so as to better their reputation (Suchman, 1995). An extension of this argument is that firms may misuse ESG information as a tool to appear to be high ESG performers when they are actually poor performers (Cho et al., 2015; Raghunandan et al., 2022), in an act known as "greenwashing".

2.5 ESG Performance *vs* ESG Disclosure

ESG disclosure and how well a firm performs in its ESG practices are two different concepts. A firm can disclose much of its sustainability practices and still perform poorly in ESG matters. Literature regarding the relationship between the two has been conflicting, similar to what is observed regarding the relationship between ESG performance and firm value. Authors like Wiseman (1982), Freedman et al. (1990), and Ingram et al. (1980) found no link between ESG performance and the intensity of ESG disclosure. Some authors find a negative relationship between increased disclosure and performance.

For instance, Fatemi et al. (2017) found that increased ESG disclosure, given a strong ESG score, provides no value to the firm due to the cost of the increased disclosure. The authors attribute this to investors not rewarding firms that already perform well in their ESG practices because they have already incorporated that value in the stock price. However, the authors did find that when looking at disclosure alone, other things being equal, there is a positive relationship with firm value. Kim et al. (2015) argued that companies who are high ESG performers would opt to reduce the intensity of their disclosure for fear of adverse reactions from shareholders. Increased disclosure comes at the cost of some investors perceiving ESG as wasteful since the firm already performs well in ESG matters. Similarly, Anderson et al. (2001) and Pattern (2002) found a negative relationship between environmental disclosure and environmental performance. The more highly rated the firm is concerning its environmental performance, the less likely it is to disclose more information.

Other authors, on the other hand, found a positive effect. Al-Tuwaijiri et al. (2004) analyzed the interrelations between environmental disclosure, environmental performance, and economic performance and found a strong positive connection between these three variables. Not only does high environmental performance yield higher disclosure, but it also presents high economic returns. Other authors concur with this finding, such as Clarkson et al. (2008), Dhaliwal et al. (2011), and Lyon et al. (2011). Gelb et al. (2001) found that firms that achieve their particular corporate social responsibility goals will disclose more than those that do not. Verrecchia (1983) too found a similar result where high ESG performers disclosed more ESG information.

This is demonstrated by comparing firms' ESG scores and the amount of disclosure made for that particular score. The wide variations in results are attributed to measurement error, endogeneity concerns (Fatemi et al., 2017), and econometric limitations (Pattern, 2002). Clarkson et al. (2008) argued that the reason for some of the literature reporting a negative relationship between ESG performance and disclosure is the mandatory reporting put in place in some countries regarding the environment. Therefore, there is a distinction between the amount of voluntary disclosure a firm makes *versus* the mandatory amount, which some studies do not control.

When analysing disclosure alone as it relates to economic performance, there is no consensus among the authors (Gray et al., 2015; Fatemi et al., 2017). Some authors find positive associations between increased transparency and firm value (Middleton, 2015; Gao et al., 2016; Yu et al., 2018). Clarkson et al. (2013) investigated the relevance of environmental disclosure and how this relates to firm value. The underpinning point is whether investors find such disclosure relevant and whether it can be used in the valuation methodology. They found that environmental disclosure plays an essential variable in valuation practices and leads to an increased firm value. They also concluded that the increase in Toxic Releases Inventory is positively associated with the cost of capital, which translates to a loss in value. Yu et al. (2018) analysed all the firms listed on the MCSI all-country world index and found that ESG disclosure has a U-shaped relationship with firm value, represented by a quadratic ESG disclosure variable, as disclosing firms' sustainability practices are costly. This may come from extra employees higher or external consulting services to create reports describing the firm's practices. Therefore, firms begin with a negative return on disclosure, but as disclosure reaches a certain threshold, they reap the added benefit. Figure 3 reflects their finding by displaying the non-linear relationship.

Figure 3: Impact of ESG Disclosure on Tobin's Q
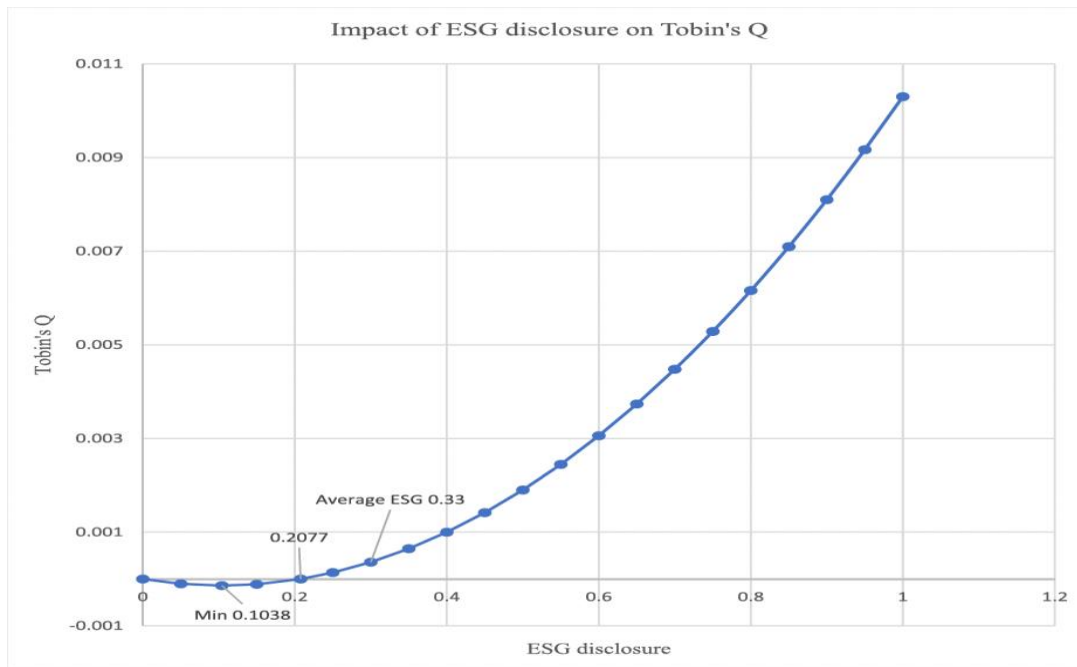
Source: Yu et al. (2018, p. 995)

Other authors found a negative association between increased transparency and firm value (Ho et al., 2007; de Villiers, 2011). Ho et al. (2007) studied the determinants of non-financial disclosure, encompassing economic, social, and environmental factors. They focused on 50 of the largest firms in the United States and Japan. Their results indicated that low profitability and liquidity are strong determinants of increased disclosure, suggesting a negative relationship between firm value and disclosure. Some of the disparity in the conclusions of different authors can depend on how "disclosure" is defined. Brammer et al. (2006) distinguished between different types of disclosures thus: "soft talk disclosures, characterized by qualitative, non-verifiable statements concerning corporate aims, and higher quality disclosures that have the attributes of being verifiable and forward-looking" (Brammer et al., 2006, p. 1176).

2.6 ESG in Developing Nations

Thus far, the literature we have covered predominately focused on developed economies. Regarding developing nations, ESG/CSR research tend to be scarce (Dobers et al., 2009). This leaves a gap in understanding on this subject. However, the situation is slowly changing with the emergence of recent literature. Research does show differences between the two types of economies concerning ESG. For instance, investor sentiment differs in developed and developing economies, specifically regarding ESG disclosure. Chauhan et al. (2018) and Janah et al. (2021) found that investors in developed economies value ESG disclosure more than those in developing economies. They pointed to the lack of investor protection usually prevalent in developing countries as the primary factor. Due to the developing nature of ESG and sustainability in many developing countries, some investors are unaware of such disclosure. For instance, Chauhan et al. (2019) found that there is lower recognition regarding ESG disclosure among domestic investors in India.

As mentioned in section 2.2, research concerning ESG performance, as it relates to firm value, has provided mixed results in industrialized countries. The same is true in respect of developing nations (Janah et al., 2021). For instance, a positive relationship was established by Yoon et al. (2018) in Korean firms, with the finding of a positive impact with an increase in ESG performance score and firm value. However, the effect is less when considering environmentally sensitive firms. This result coincides with that of Milarlles-Quiros et al. (2018); however, they conducted their study in the context of Brazil and found that environmentally sensitive firms do not have a firm value and environmental performance relationship. However, the same cannot be said about social and governance scores, where a positive association was observed.

Chelawat et al. (2016) conducted a similar study in India and found that ESG contributes positively to firm value, as did Yoon et al. (2018). On the governance performance side, Mashayekhi et al. (2008) researched Iranian firms and whether positive corporate governance practices would yield increased firm value. Contrary to most research, they did not use a governance score but individual governance criteria to ascertain governance performance. They found the board size to be

negatively associated with firm value and the leadership structure without any bearing on company performance. However, there was a positive and significant relationship between outside directors' presence and how well a firm performed financially.

Other authors have found contradicting results leading to the conclusion that ESG is negatively associated with the firm value in developing nations. Garcia et al. (2020) conducted their research in Brazil and South Africa and found a negative association when using an accounting-based metric of firm value. They strengthened this conclusion by swapping the firms analyzed for ones from developed nations and found the opposite effect. Therefore, their findings suggest that ESG performance leads only to a positive firm value in developed countries. Other authors such as Grisales et al. (2021) also concur in their subsequent research in Latin America, finding a negative association when using market and accounting-based firm value measures.

2.7 ESG in the Gulf Cooperation Council

The Gulf Cooperation Council is a political and economic union that is comprised of six nations: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. In this section, we review the growth of ESG in the GCC countries and the major research conducted on ESG in the region.

2.7.1 The Emergence of ESG in the GCC

The concept of CSR/ESG in the GCC countries is relatively new, with few nations having developed any policies or regulations. Most notable efforts came in the last six years to encourage firms to move in that direction through the help of NGOs and, more recently, stock exchange regulators (Bamahros et al., 2022; Al-Janadi et al., 2016; Alazzani et al., 2022; Saudi Exchange, 2018; Dubai Financial Market, 2018). However, some efforts have been made in the region to increase the emphasis on sustainability. Most notably, the most significant driver of ESG transparency and sustainability is the UN Sustainable Stock Exchanges Initiative (SSE).

Oman

Oman spearheaded the first notable effort in 2003 by introducing a corporate governance code (Al-Hadi et al., 2016; Alazzani et al., 2021). Oman also established the Omani Capital market authority in 2009, encouraging firms to follow general guidelines to help improve their sustainability standing (GulfBase, 2012). In terms of officially incorporating ESG as best practice, Oman joined the UN Sustainable Stock Exchanges Initiative in March 2022 (SSE, 2022). Due to their recent joining, the stock exchange still does not provide guidance regarding ESG-related disclosure or sustainability reporting. This may change in the future, as ESG disclosure is still a relatively new topic for this nation.

Saudi Arabia

Saudi Arabia began its focus on addressing governance issues by establishing the Saudi Code of Corporate Governance (SCCG) in 2006, laying down corporate governance guidelines. In 2010, these guidelines no longer remained voluntary, becoming compulsory for all listed firms (Al-Janadi et al., 2016). The guidelines govern "board of directors, shareholders' rights, board committees, external auditor, transparency and disclosure, and, finally, the code's implementation" (Bamahros et al., 2022, p. 4). These guidelines ensure that firms maintain a healthy percentage of non-executive and independent members on the board of directors, to ensure that the board acts in the company's best interest, by avoiding agency problems. Figure 4 below demonstrates the impact of these guidelines on the Saudi stock market:

Figure 4: Board Members Break Down for Saudi Firms for 2020 and 2021
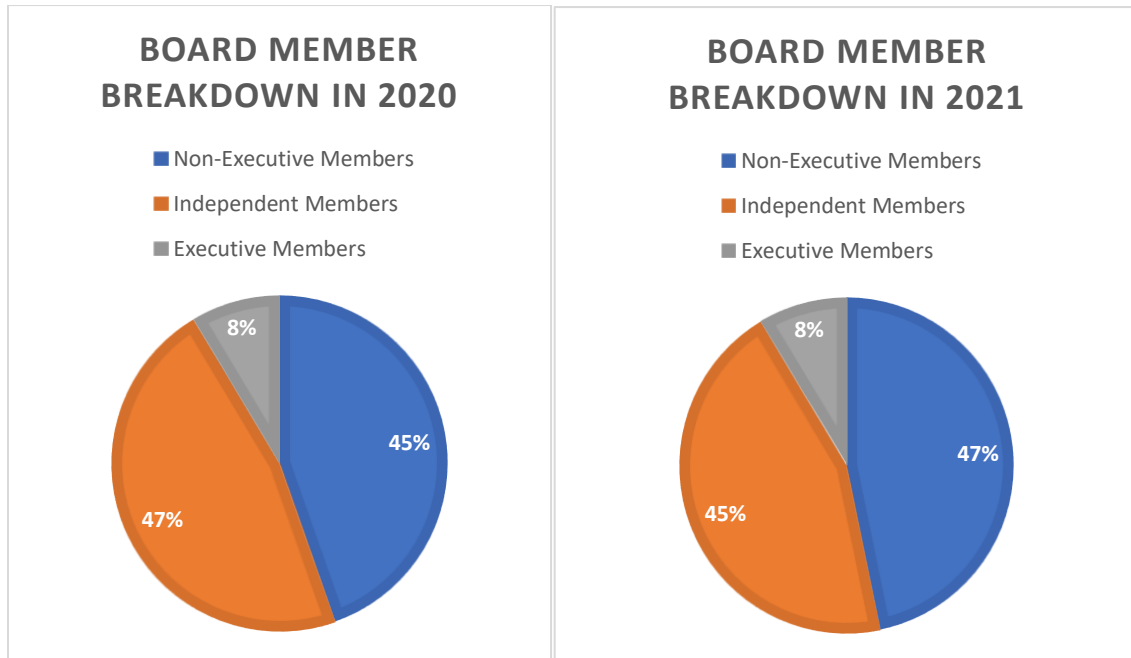
Source: Author using data from the Capital Market Authority

Saudi Arabian stock exchange "Saudi Exchange" officially declared its intention to incorporate ESG reporting as part of its standard in 2018, by joining the UN Sustainable Stock Exchanges Initiative, leading to an official ESG reporting guidance and a yearly sustainability report (Saudi Exchange, 2018). As of 2019, Saudi Arabia is officially one of the exchanges to follow the United Nations sustainability recommendations. Due to this, the Saudi exchange provides annual official sustainability reports that encompass the progress listed firms have accomplished. Further, in keeping with the UN-listed exchanges, the Saudi stock exchange offers guidelines on reporting sustainability practices (SSE, 2022). In conjunction with the efforts of Saudi Exchange, the Saudi sovereign wealth fund, the Public Investment Fund (PIF), has incorporated ESG in its investing methodology and is committed to expanding its investments under the ESG risk factors (Public Investment Fund, 2022).

Qatar

In pursuance of its 2030 vision, Qatar has incorporated much more CSR. The pillars of this vision are "human development, social development, economic development, and environmental development" (Alazzani et al., 2022, p. 4). Due to the overlapping of these pilers with general CSR policies, the Ministry of Economy and Commerce established the Qatari CSR index. In 2009, the Qatari Financial Market Authority (QFMA) imposed corporate governance rules on its listed firms to increase the strength of corporate governance (Alazzani et al., 2021). In pursuance of the 2030 vision, Qatar joined the UN Sustainable Stock Exchanges Initiative in 2015 to develop disclosure guidance to help firms regarding ESG compliances (SSE, 2022). This is similar to Saudi Arabia joining the Initiative; however, QFMA does not submit an annual sustainability report.

Kuwait

In 2017, the Kuwaiti stock exchange, "Boursa Kuwait," officially joined the UN Sustainable Stock Exchanges Initiative, through which they provide disclosure guidelines for the firms listed in the exchange (Boursa Kuwait, 2017). Similar to Saudi Exchange in Saudi Arabia, these guidelines are voluntary to help guide firms in their disclosure practices. The guidelines list 26 sustainability indicators to guide best practices. This focus on ESG and sustainability is a part of Kuwait's 2035 national developmental plan, in which sustainability is one of the goals set forth. As of 2021, Boursa Kuwait also began publishing annual sustainability reports, highlighting the results of the CSR policies implemented and outlining future goals (Boursa Kuwait, 2017; SSE, 2022).

Bahrain

Like other GCC nations, the Bahraini stock exchange (Bahrain Bourse) joined the UN Sustainable Stock Exchanges Initiative in 2019. It guides firms that wish to increase their disclosure of ESG-related matters (SSE, 2022). These guidelines encompass 32 ESG metrics, following the UN recommendations (Bahrain Bourse, 2020). According to this report, the increased emphasis on ESG is due to the nation's economic vision for the future 2030. In keeping with UN

recommendations**,** Bahrain Bourse publishes annual sustainability reports which provide the sustainability goals and the impacts that occurred during the year.

United Arab Emirates (UAE)

The UAE has two stock exchanges (Abu Dhabi Securities Exchange and Dubai Financial Market) governed by the Emirati Securities and Commodities Authority (SCA). In 2009, the commission introduced a mandatory code of governance guidelines to strengthen corporate governance in both exchanges. These requirements include specifications regarding the number of independent directors that must be included on the board, frequency of board meetings, formation of special committees, and yearly reporting regarding the aforementioned requirements (The Chartered Governance Institute UK & Ireland, 2018). Further, both exchanges have established guidelines regarding ESG disclosure and best practices. The Abu Dhabi Securities Exchange began incorporating ESG guidelines in 2019, following its commitment to the Sustainable Stock Exchange Initiative (SSE) (SSE, 2022). Similarly, the Dubai Financial Market also provides guidelines regarding ESG-related disclosure established in 2018 following their induction into the SSE in 2016 (Dubai Financial Market, 2018). Both exchanges follow a set of 32 ESG metrics in line with the SSE recommendations. Further, both exchanges release annual sustainability reports as in other SSE-listed countries.

2.7.2 ESG as it Relates to Performance in the GCC

Due to the paucity of information and the recent focus on sustainability and ESG matters, research on this matter has been minimal in the GCC nations. This issue is not exclusive to the GCC but encompasses the entire Middle East and North Africa (Janah et al., 2021). However, a few recent studies have analysed the relationship between ESG and firm value, partly due to the growing interest in these nations. Ammer et al. (2020) researched whether environmental sustainability practices in Saudi Arabia will yield an increase in firm value, given the presence of independent directors. They found that firms that engage with positive environmental sustainability practices and are further moderated by independent directors yield positive firm value. Alazzani et al. (2022) studied the role of ESG disclosure and its connections with analysts' recommendations in

the GCC and the moderating role of a royal family director. They concluded that ESG-related information is incorporated in analysts' recommendations. This means that as ESG disclosure increases, the firm gets more recommendations. This includes all three pillars of ESG disclosure.

Amba (2014) investigated the relationship between different corporate governance attributes and whether they influence firm value and found that characteristics such as non-executive directors, leverage, and CEO duality had a negative association with firm value, but a positive association existed between the increase in the proportion of institutional ownership and board member as chair of the audit committee. While most of the ESG research presented thus far reflects a positive view of ESG in the GCC, Al-Jalahma et al. (2020) reported contrary findings when investigating ESG disclosure in the banking sector, concluding that increased ESG disclosure resulted in a decrease in firm value, further highlighting the inconsistencies in ESG research. A further negative outlook on ESG disclosure in the GCC was voiced by Garfatta (2021), who concluded that managers engage with ESG reporting to "cover up" their poor managerial practices. He further argued that managers who are more likely to manipulate earnings are more likely to increase their ESG transparency to garner stakeholder support.

3. Data and Methodology

This chapter presents an overview of the data used in this study. We present the data source, the period analyzed, and how the final data set has been chosen. Some descriptive analyses of the main variables used in the study are also presented, followed by a description of the methodology used, including the research design and the models used, as well as the description of the main variables included in the models and the regression methods.

3.1 Data and Variables

ESG performance scores used in this study come from Bloomberg. While the data has been retrieved from the Bloomberg database, the scoring is from S&P Global, which provides ESG scores for 10,000 companies globally using over 1,000 data points to assess a company's performance concerning its sustainability practices. The scoring system follows a 0-100 scale, where 0 represents the lowest performance regarding, and the highest score of 100 indicating strong ESG performance.

Along with the ESG performance scores, disclosure scores are used in this study to assess how much ESG information a firm is actually disclosing. This disclosure score does not evaluate whether the firm performed well regarding its sustainability practices. Instead, it assesses the level of disclosure the firm provides. The source for the disclosure scores is the database of Bloomberg, which provide comprehensive ESG disclosure scores for 14,000 companies spanning 100+ countries, including GCC nations. The ESG scoring by Bloomberg ranges from 0 to 100, comprising an overall score, as well as individual scores for E, S, and G. Further, the Bloomberg scores map on to the widely used Global Reporting Initiative (GRI), increasing the validity of the true representation of a firm's sustainability transparency. All other markets and accounting-based valuation metrics are also retrieved from the Bloomberg database.

The firm sample analyzed in the study comprises all the listed firms in the GCC region. Table 1 shows the sample's total firm observations and country shares, and provides the average ESG disclosure and performance scores for the six countries.

Table 1: Distribution of Firm Observations and ESG Disclosure/Performance Scores by Country

Country	Average ESG Disclosure	Average ESG performance	Number of observations	Percentage of observations
Bahrain	35.45	9.7	14	4.33
Kuwait	24	15.8	21	6.50
Oman	31.29	14	28	8.67
Qatar	22.83	8.03	56	17.34
Saudi Arabia	29.55	10.08	103	31.89
United Arab Emirates	30.85	19.8	101	31.27

Source: Author using Bloomberg data.

The highest number of observations in the data goes to Saudi firms and the lowest to Bahrain. This is expected due to the size of the Saudi stock market relative to that of Bahrain. Further, the concentration of observations coincides with the works of Alazzani et al. (2021), suggesting an accurate depiction of the final data set for the region. Regarding ESG disclosure, Bahrain has the highest average disclosure among the six nations, while Qatar has the lowest. However, the lowest performer in ESG-related matters is Bahrain, with an ESG performance score of 9.7. The highest performer is the United Arab Emirates, with a score of 19.8.

The period analyzed spans 2015–2021. The start period follows the works of Ammer et al., (2020) and Al-Jalahma et al., (2020), who conducted similar research in Saudi Arabia and the GCC. The rationale behind the chosen date is the increased ESG disclosure and importance given to this

subject, which will lead to a more robust and informative study. However, the period analyzed for ESG performance scores is shortened to 2017–2021, because Bloomberg provides those scores for the GCC nations starting only from 2017. The total number of publicly traded firms spanning the six nations as of 2021 is 797. However, due to only 141 firms obtaining an ESG score by S&P Global, the sample was reduced to 141; however, the sample size is still greater than those of Ammer et al., (2020) and Al-Jalahma et al., (2020), whose sample size in the GCC was only around 34 firms. The increase in sample size will help produce more consistent results, as more information can be analyzed. The sample size is further reduced to 55 firms when analyzing ESG disclosure scores, due to missing control variables for some firms.

Dependent variable

Firm value in this study is measured using Tobin's Q. The choice of this variable is motivated by the fact that most research on the influence of ESG on firm value use Tobin's Q as a proxy (e.g., Chelawat et al., 2016; Yu et al., 2018; Fatemi et al., 2017; Alazzani et al., 2018; Ammer et al., 2020). Tobin's Q is what is known as a market-based valuation measure, meaning it considers stock price-related valuation. It is computed as the total market capitalization divided by the asset replacement cost. Both of these values are obtained through valuation made by the market, hens the term "market-based". It represents the value that exceeds the actual market value of the firm's assets. In other words, it is an excess value that cannot be explained through tangible assets. Due to ESG reporting and performance being non-financial information, Tobin's Q will be a good indicator of whether ESG adds any value to the firm.

Control variables

Additional control variables are included in all the regressions to reduce the possibility of endogeneity. These controls were chosen by aggregating the primary literature on these topics. The first set of controls involves quantitative financial figures that assess a firm's profitability and performance, which may impact ESG disclosure/performance and firm value. For instance, in much of the literature, the firm's size is believed to affect ESG disclosure and performance (Chelawat et al.,2016; Yu et al., 2018; Fatemi et al., 2017**;** Al-Jalahma et al., 2020; Yoon et al.,

2018; Ammer et al., 2020). For this analysis, the natural logarithm of total assets is used as a proxy of firm size.

Financial leverage is used as a proxy for a firm's financial health; authors as Yoon et al. (2018), Al-Jalahma et al. (2020), Ammer et al. (2020), and Fatemi et al. (2017) argue that firms who are in poorer financial health will have an effect on ESG-related matters, which includes both disclosure and performance. A firm that is heavily leveraged has a large amount of debt relative to its equity. Regarding ESG performance, the average 3-year earnings per share (EPS) is included in the regression to address the growing trend in the firm's value. This variable impacts Tobin's Q and ESG performance, as reported by authors such as Balatbat (2012). EPS is calculated by dividing the net income by the weighted average number of shares outstanding. Another variable used to assess financial health is the Quick ratio, which is a proxy for liquidity. A firm with a high Quick ratio can meet its short-term debt obligation. The ratio is obtained by dividing current assets by current liabilities. Current assets in this context are a combination of cash, marketable securities, and net accounts receivable. Authors such as Yu et al., (2018) include this ratio in their analysis when assessing the impact of ESG disclosure on firm value.

The variable Return on Assets has been used to control for firm performance in the context of the determinants of ESG disclosure (Yu et al., 2018). It is measured by dividing net income by total assets. The final financial ratio included is research and development (R&D) as a percentage of sales, which captures how much money the firm invests in creating new products or ventures. Authors such as Yu et al. (2018) and Fatemi et al. (2017) argue that the level of R&D investment is a proxy for firms' agency and monitoring cost, which they use in their investigation on whether ESG disclosure impacts firm value.

Non-financial variables are also incorporated in much of the literature, due to their explanatory power toward firm value and ESG disclosure. The board's structure may have a consequential impact on the amount of disclosure and how well a firm performs. The percentage of independent directors on the board is used to control the independence of the board of directors. Authors such as Yu et al., (2018) and Bamahros et al. (2022), argue that it is essential to control this variable because more non-executives on the board tend to impact the amount of ESG disclosure a firm

provides. Further, board of director controls include the board's size, which the literature argues may increase the amount of disclosure that occurs and impact firm value (Alazzani et al., 2021; Yu et al., 2018). We use the natural logarithm of board size. For the regressions where ESG disclosure is the dependent variable, Yu et al. (2018) also included the percentage of female executives employed at the firm. They argued that it is a possible variable that may correlate with an increased level of disclosure. Also included in this regression is the amount of equity held by institutional investors and whether a committee is dedicated to CSR matters. CSR committee is a dichotomous variable with a value of 1 if such a committee exists, and 0 otherwise.

Since this study spans multiple countries in the Gulf region, GDP *per capita* is also controlled to ensure that these countries' economic situations do not impact the results. Yu et al. (2018), Al-Jalahma et al. (2020) and Alazzani et al. (2021) also included this variable due to their sample spanning multiple nations. The data were retrieved from the World Bank database. The GDP *per capita* values for this research are in a natural logarithm form. Table 2 summarizes each variable discussed.

Table 2: Variable Description

Variables	Description
ESGDisclosureScore	Indicates the level of overall ESG transparency measured out of 100 (ESGDisclosureScore/100).
EnvironmentalDisclosureScore	Indicates the level of overall environmental transparency measured out of 100 (EnvironmentalDisclosureScore /100).
SocialDisclosureScore	This variable indicates the level of overall social transparency measured out of 100 (EnvironmentalDisclosureScore /100).
GovernanceDisclosureScore	Indicates the level of overall governance transparency measured out of 100 (EnvironmentalDisclosureScore /100).
ESGPerfomanceScore	This variable indicates how well a firm performer regarding there ESG practices measured out of 100 (ESGPerfomanceScore /100).

Dependent variables	
lnTobinQ	This is a market-based firm value proxy measured by total market value of the firm divided by asset replacement cost. It is in natural logarithm form.
LPB	This is a market-based firm value proxy measured by dividing the market value per share by its book value per share. It is in natural logarithm form.
ReturnOnAsset	This is an accounting-based firm value proxy measured by dividing net income by total assets.
Control variables	
lnGDP	GDP is the gross domestic product of each nation in natural logarithm form.
lnBoard	The natural logarithm of the number of board members on the board of directors.
LnTotalAssets	The natural logarithm of total assets.
CSRSustainabilityCommittee	A dichotomous variable with 1 indicating the existence of a Corporate Social responsibility committee and 0 otherwise.
InstitutionalOwnedEquity	This is the amount of equity owned by institutional investors.
FinancialLeverage	This measures the level of debt a firm has, relative to its shareholders' equity. It is calculated by dividing total debt by shareholders' equity.
PCTIndependentDirectors	This measures the percent number of independent directors on the board of directors.

PercentageOfFemaleExecutives	This measures the percentage of female executives in the firm.
QuickRatio	This measures the firm's level of liquidity. It is calculated by dividing current assets by current liabilities.
R&DExpenditures	This measures the level of Research and Development expenditure as a percentage of sales.
EPS3YearAverageGrowth	This measures the average 3-year growth in Earnings per Share (EPS). EPS is calculated by dividing net income with weighted average of shares outstanding

3.2 Empirical Evidence

This section provides a preliminary relationship between ESG disclosure and performance with firm value to convey a general idea regarding the main relationships. Figure 5 presents the evolution of the average ESG performance and Tobin's Q in the GCC region between 2015 and 2021.

Figure 5: ESG Performance and Tobin's Q (2015-2021)
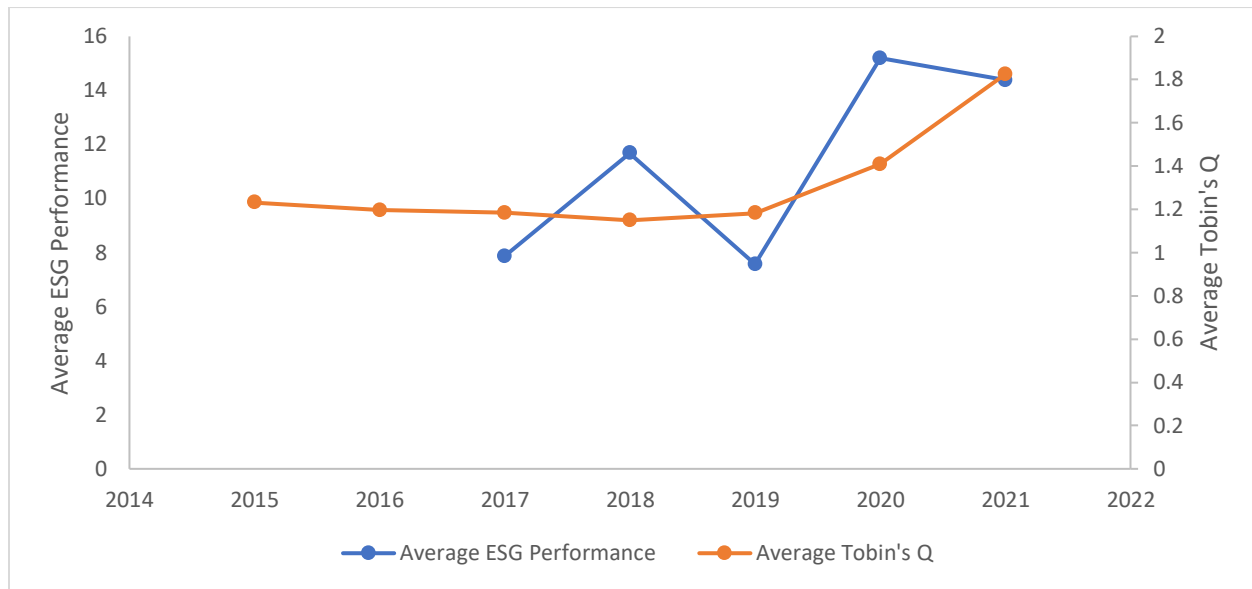
Source: This figure was created by the author with relevant data from Bloomberg

We observe that the ESG performance score has been volatile during the period. However, there seems to be an overall upward trend in the level of performance when considering the total years in aggregation. In contrast, Tobin's Q was relatively constant until 2019 and showed an upward trend, which seems to coincide with the upward trend that the ESG performance score also demonstrated, suggesting a potential correlation between the two variables. Both variables experienced significant growth around the same period. This relationship will be tested in chapter 4 using multivariate analysis and accounting for potential endogeneity.

Figure 6: ESG Disclosure and ESG Performance (2015-2021)
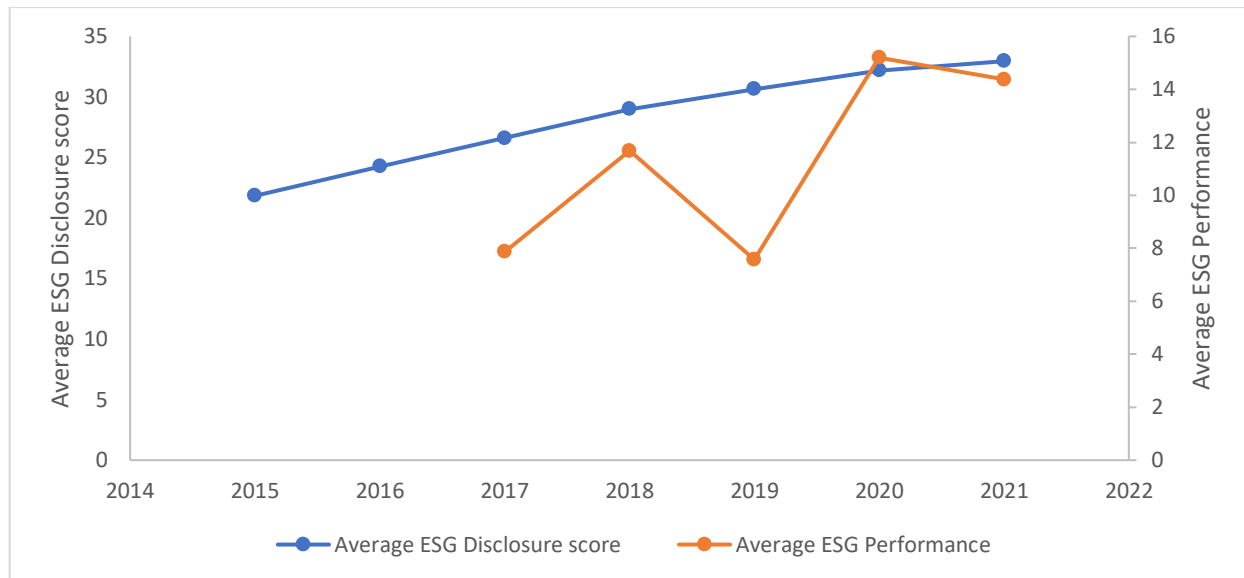
Source: This figure was created by the author with relevant data from Bloomberg.

As mentioned in section 2.5, ESG disclosure and performance are two different concepts. Figure 6 shows the average ESG disclosure and performance levels. We observe *prima facie* how these two variables differ. The average ESG disclosure has a fairly linear growth pattern; this is in sharp contrast with ESG performance, which is much more volatile. A possible reason for the difference in volatility is that firms may already have a reporting policy regarding ESG-related matters, where ESG performance is evaluated by a third party and may vary depending on the firm's performance. However, based on the trend lines, a positive trend can be shown in disclosure and performance. This furthers the claim that ESG-related matters are becoming more important in the GCC.

Figure 7: ESG Disclosure and Tobin's Q (2015-2021)
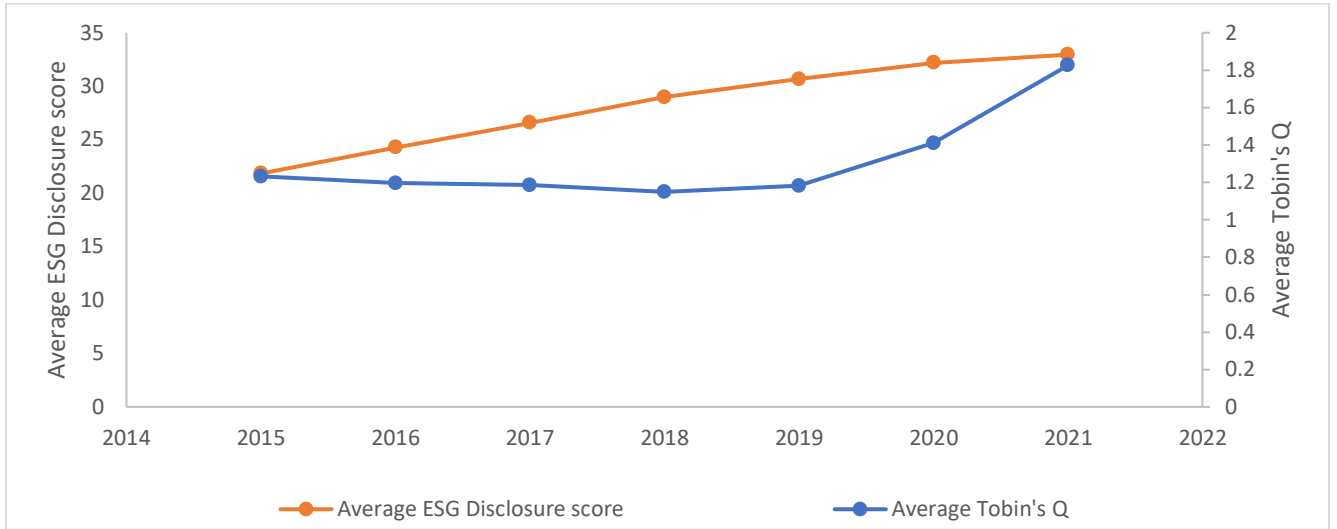
Source: This figure was created by the author with relevant data from Bloomberg.

Figure 8: Disclosure Types (Governance, Environment, Social, Total ESG) (2015-2021)
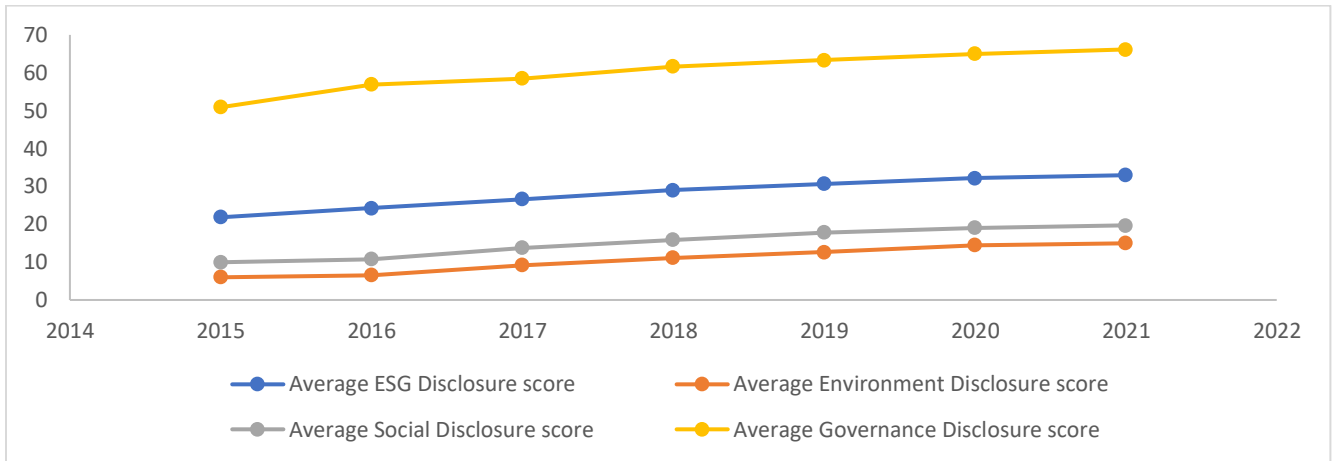
Source: This figure was created by the author with relevant data from Bloomberg.

Figure 7 displays the trend lines for the Tobin's Q and ESG disclosure. ESG disclosure seems to have a more consistent growth trend throughout the years than Tobin's Q, which had a significant spike in 2019. In aggregate, they are both growing, as time goes on. However, it is difficult to ascertain a *prima facie* relationship.

From all the different ESG disclosure types in Figure 8, one can see that they almost follow a similar growth trend. Governance disclosure is the highest-ranking disclosure out of the four disclosure types. This is expected due to the mandatory disclosure policies that firms in the GCC must abide by, as mentioned in section 2.7. The total ESG disclosure score follows in second place, Social disclosure is third, and Environmental disclosure is fourth. The fact that the environmental score is the lowest is abnormal, compared to other firms outside the GCC. In fact, the environmental disclosure score is typically the highest to be recorded among firms. The average environmental disclosure score is 46 out of 100 (S&P Global, 2022), which dramatically contrasts the GCC nations with an average environmental score of 14.96. Further, the average global governance disclosure score is 45.81, compared to the average governance score in the GCC of 60.54.

3.3 Model Specification and Estimation Strategy

We now present the model specification and estimation strategy. As mentioned, the objective of this study is to analyze the relationship between ESG and firm value. This is done by assessing the links between firm value, ESG performance, and ESG disclosure. We also examine the determinants of ESG disclosure. Our empirical methodology involves three econometric models. Each model uses unbalanced panel regressions, controlling for financial ratios, board characteristics and time trend. We first present an overview of the three models, followed by diagnostic tests used to ascertain which regression is the best fit.

The first model focuses on how firms perform in their ESG practices through ESG performance scores and assesses whether having a high score leads to a positive firm value. Tobin's Q is the dependent variable and ESG performance is the independent variable, followed by the controls. This strategy will follow the works of Yoon et al. (2018), Balatbat (2012), and Chelawat et al. (2016).

$$
\begin{aligned}
\ln TobinQ_{i,t} = {} & \beta_0 + \beta_1\, ESGPerfomanceScore_{i,t} + \beta_2\, LnTotalAssets_{i,t} \\
& + \beta_3\, FinancialLeverage_{i,t} + \beta_4\, EPS3YearAverageGrowth_{i,t} + \beta_5\, \ln GDP_{i,t} \\
& + \nu_t + \varepsilon_{i,t}
\end{aligned}
$$

The <u>second model</u> examines the impact of ESG disclosure on firm value, controlling for the financial ratios and board characteristics. The first equation assesses the total ESG disclosure score for each firm. For the subsequent equations, the score addresses each aspect of the E (Environment), S(Social), and G (governance) scores. Similar to equation (1), Tobin's Q is the dependent variable, and the disclosure scores are the independent variable.

$$
\begin{aligned}
\ln TobinQ_{i,t} = \beta_0 &+ \beta_1\, ESGDisclosureTypesScores_{i,t} + \beta_2\, LnTotalAssets_{i,t} \\
&+ \beta_3\, FinancialLeverage_{i,t} + \beta_4\, QuickRatio_{i,t} + \beta_5\, R\&DExpenditures_{i,t} \\
&+ \beta_6\, PCTIndependentDirectors_{i,t} + \beta_7\, lnBoard_{i,t} + \beta_8\, lnGDP_{i,t} + \nu_t \\
&+ \varepsilon_{i,t}
\end{aligned} \tag{2}
$$

The <u>third model</u> focuses on the main determinants of ESG disclosure, by making ESG disclosure the dependent variable, with several variables chosen from the literature determined to have explanatory power regarding the tendency for ESG transparency. The first equation focuses on total ESG disclosure, followed by each element of E, S, and G. ESG disclosure methodology follows the works of Yu et al. (2018), Fatemi et al. (2018), and Bamahros et al. (2022).

$$
\begin{aligned}
ESGDisclosureTypeScores_{i,t} \\
= \beta_0 &+ \beta_1\, ReturnOnAsset_{i,t} + \beta_2\, LnTotalAssets_{i,t} \\
+ \beta_3 &\, FinancialLeverage_{i,t} + \beta_4\, QuickRatio_{i,t} + \beta_5\, R\&DExpenditures_{i,t} \\
+ \beta_6 &\, PCTIndependentDirectors_{i,t} + \beta_7\, lnBoard_{i,t} \\
+ \beta_8 &\, InstitutionalOwnedEquity_{i,t} + \beta_9\, CSRSustainabilityCommittee_{i,t} \\
+ \beta_{10} &\, PercentageOfFemaleExecutives_{i,t} + \beta_{11}\, lnGDP_{i,t} + \nu_t + \varepsilon_{i,t}
\end{aligned} \tag{3}
$$

Most research on this topic uses Pooled OLS, random effects, or fixed effects. To ascertain which regression is the best fit, we first run a few diagnostic tests. The <u>first</u> test seeks choose the best type of regression. The choice is between a Pooled OLS or random effects model. The Breusch and Pagan Lagrangian multiplier test is performed on all the models mentioned above and the result suggests that the random effect model is the most appropriate.

The <u>second step</u> is to specify whether random effects or fixed effects are the best, through the Hausman test. The null hypothesis for this test is that the random effect regression is the optimal choice while the alternative is fixed effects.

The <u>third step</u> is to test heteroskedasticity for the random and fixed effect regressions. If the results suffer from such an issue, it violates one of the underlying assumptions, leading to an uninformative significance level. Breusch and Pagan test is the diagnostic test used for heteroskedasticity. The result shows a rejection of the null hypothesis in favor of heteroskedasticity for all the models presented. The existence of heteroskedasticity in econometric models leads to an unreliable test statistic which could cast doubt on the inference of the significance of the coefficient. However, under this violation, the coefficients are still considered unbiased, assuming all the previous assumptions hold. To correct for heteroskedasticity, robust standard errors are administered.

The <u>fourth step</u> involves testing for the multicollinearity problem. Table 3, using Pearson's correlation matrix, shows that multicollinearity is not a concern in our data set.

Table 3: Pearson's Correlations

Variables	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19
(1) ESGDisclosureScore	1																		
(2) EnvironmentalDisclosureScore	0.792*	1																	
	0																		
(3) SocialDisclosureScore	0.840*	0.778*	1																
	0	0																	
(4) GovernanceDisclosureScore	0.789*	0.265*	0.381*	1															
	0	0	0																
(5) ESGPerfomanceScore	0.531*	0.524*	0.434*	0.330*	1														
	0	0	0	0															
(6) lnTobinQ	0.075*	0.148*	0.118*	0.025	0.152*	1													
	-0.032	0	-0.001	-0.479	-0.003														
(7) LPB	0.095*	0.134*	0.141*	0.016	0.143*	0.885*	1												
	-0.007	0	0	-0.656	-0.006	0													
(8) ReturnOnAssets	0.051	0.066	0.012	0.022	0.144*	0.146*	0.100*	1											
	-0.151	-0.069	-0.731	-0.532	-0.005	0	0												
(9) lnGDP	-0.177*	-0.075*	-0.057	-0.253*	-0.043	-0.137*	-0.118*	0.008	1										
	0	-0.043	-0.119	0	-0.421	0	0	-0.567											
(10) lnBoard	0.018	-0.068	0.046	0.024	0.059	0.049	0.059	0.002	-0.222*	1									
	-0.602	-0.06	-0.207	-0.505	-0.315	-0.167	-0.1	-0.965	0										
(11) LnTotalAssets	0.106*	0.014	0.136*	0.06	0.123*	0.123*	0.154*	0.126*	0.349*	0.141*	1								
	-0.002	-0.701	0	-0.087	-0.017	0	0	0	0	0									
(12) CSRSustainabilityCommittee	0.232*	0.112*	0.186*	0.227*	0.357*	0.118*	-0.025	0.084*	-0.149*	0.167*	0.055	1							
	0	-0.002	0	0	0	-0.001	-0.491	-0.018	0	0	-0.124								
(13) InstitutionalOwnedEquity	0.201*	0.164*	0.201*	0.111*	0.579*	0.105*	0.157*	0.076*	0.198*	0.109*	0.374*	0.208*	1						
	0	0	0	-0.002	0	0	0	0	0	-0.002	0	0							
(14) FinancialLeverage	0.026	-0.108*	-0.006	0.088*	-0.008	0.025	0.157*	-0.062*	-0.008	0.014	0.080*	0.026	0.013	1					
	-0.462	-0.003	-0.867	-0.012	-0.877	-0.097	0	0	-0.571	-0.69	0	-0.465	-0.387						
(15) PCTIndependentDirectors	0.147*	0.102*	0.094*	0.188*	0.202*	0.07	-0.012	-0.031	-0.136*	-0.04	-0.210*	0.004	0.101*	-0.065	1				
	0	-0.01	-0.018	0	-0.001	-0.072	-0.762	-0.422	-0.001	-0.302	0	-0.912	-0.011	-0.093					
(16) PercentageOfFemaleExecutives	0.093*	0.108*	0.137*	0.052	0.414*	0.062	-0.032	-0.098*	0.04	-0.093*	-0.100*	0.183*	0.160*	-0.038	0.057	1			
	-0.01	-0.004	0	-0.154	0	-0.087	-0.381	-0.007	-0.28	-0.01	-0.006	0	0	-0.295	-0.151				
(17) QuickRatio	-0.128*	-0.132*	-0.183*	-0.087	-0.193*	-0.016	-0.019	0.002	-0.011	-0.205*	-0.040*	-0.057	-0.008	-0.01	-0.256*	-0.089	1		
	-0.01	-0.011	0	-0.078	-0.006	-0.416	-0.357	-0.906	-0.578	0	-0.032	-0.255	-0.704	-0.591	0	-0.081			
(18) R&DExpenditures	0.208*	0.107*	0.223*	0.183*	0.236*	0.036	-0.001	-0.006	0.037	0.145*	0.093*	0.406*	0.025	-0.024	0.016	0.149*	-0.01	1	
	0	-0.043	0	0	-0.001	-0.073	-0.969	-0.759	-0.06	-0.004	0	0	-0.227	-0.224	-0.771	-0.004	-0.616		
(19) EPS3YearAverageGrowth	0.081*	0.093*	0.057	0.053	0.106*	-0.03	-0.048*	0.052*	0.019	0.023	-0.012	0.143*	0.007	-0.014	-0.033	0.004	-0.028	0.006	1
	-0.027	-0.013	-0.129	-0.148	-0.046	-0.077	-0.005	-0.002	-0.258	-0.539	-0.464	0	-0.668	-0.405	-0.422	-0.91	-0.204	-0.797	

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

We observe that none of the variables on the same regression exceeds a problematic threshold, suggesting the absence of multicollinearity issues in the variables. The highest levels of correlation are among the variables not included in the same model. For instance, ESG disclosure types and ESG performance are closely related, represented by the high level of correlation, which hovers around 50%. Similarly, all the disclosure types strongly correlate with ESG disclosure, as observed in Figure 8, where they follow very similar trend lines. The correlation hovers around 80% and is significant. ESG performance score follows what is expected in terms of the variables it is correlated with; for instance, the level of correlation between ESG performance and the existence of CSR is 35.7%. Regarding firm value, Tobin's Q has a significant and positive correlation with ESG performance at a 15.2%. Tobin's Q is also significantly and positively correlated with total ESG disclosure at a level of 7.5%, environmental disclosure at 14.8%, and social disclosure at 11.8%.

<u>Dynamic Model</u>

The econometric methods in equations 1 – 3 follow what is used in much of the literature; however, one of the assumptions made by random and fixed effects is strict exogeneity, meaning that the independent variables are not correlated with the error term at any point in time. For instance, it is possible that past values of the Tobin's Q can affect its present value, leading to biased results due to dynamic panel bias. A popular method used to address this problem is the two-step system GMM used for instance by Ammer et al. (2020) and Garfatta (2021) in the context of ESG. In this study, the results will be presented in both random effects or fixed effects and two-step system GMM in separate sections.

System GMM was first proposed by Blundell and Bond (1998), which is a further evolution of the Difference GMM of Arellano and Bond (1991) and level-GMM of Arellano and Bover (1995). Blundell and Bond (1998) found that Difference GMM could suffer from issues arising from weak instruments and suffer from downward bias in finite sample. This issue is further worsened when the sample time period is small, hence leading to the development of system GMM, which uses first difference instruments for the equations in levels and then instruments in levels for the first differenced equations (Garfatta, 2021). Two-step is used instead of one-step because the former is

more asymptotically efficient (Musah et al., 2022). The advantage of using system GMM is that the instruments used are easier to come by than a strong instrumental variable. Further, it is also robust under heteroskedasticity and efficient under unobserved heterogeneity and simultaneity bias. However, an issue with system GMM is a potential downward bias of the standard errors. To fix this problem, we use the robust correction of the standard errors. A lagged dependent variable is included as a regressor to introduce the dynamic component to the models discussed.

Table 4 outlines the descriptive statistics for the main variables used in the analysis.

Table 4: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ESGDisclosureScore	28.371	13.677	0	62.328
EnvironmentalDisclosureScore	10.84	15.448	0	66.717
SocialDisclosureScore	15.437	13.015	0	58.253
GovernanceDisclosureScore	60.542	21.712	0	91.24
ESGPerfomanceScore	12.594	17.822	0	87
lnTobinQ	.1	.488	-1.637	5.223
TobinQ	1.32	2.952	.195	185.52
LnPB	.15	.816	-2.852	6.052
PB	1.938	8.539	.058	425.104
ReturnOnAsset	2.248	9.769	-164.067	73.583
lnGDP	10.184	.358	9.581	11.096
GDP	28375.389	11530.164	14485.386	65907.948
lnBoard	2.175	.206	1.099	2.996
Board	8.989	1.838	3	20
LnTotalAssets	6.474	2.58	-1.025	14.821
TotalAssets	19338.697	127371.6	.359	2732960.8
CSRSustainabilityCommittee	.087	.282	0	1
InstitutionalOwnedEquity	13.449	45.351	0	1071
FinancialLeverage	4.062	16.802	1.002	560.751
PCTIndependentDirectors	49.193	25.802	0	100
PercentageOfFemaleExecutives	5.785	10.965	0	50
QuickRatio	2.156	24.314	-.016	1240.744
R&DExpenditures	.061	.441	0	7.692
EPS3YearAverageGrowth	38.391	1007.915	-3791.467	31350.574

Note: The variables TotalAssets and InstitutionalOwnedEquity are in 100,000s.

The maximum and minimum total assets show a significant difference between a small and a large firm in the region. As seen in Figure 8, governance disclosure has the highest level of disclosure among the four types, with an average of 60.542 and a standard deviation of 21.712. The next highest average disclosure type is total ESG disclosure, with a mean of 28.371 and a standard deviation of 13.677, followed by social disclosure, with a mean of 15.437 and a standard deviation of 13.015. The lowest level of disclosure is environmental disclosure, with a mean of 10.84 and a standard deviation of 15.448. ESG performance has a mean of 12.594 with a standard deviation of 17.822. The average Tobin's Q is 1.32 with a standard deviation of 2.952, suggesting that the average firms in the data have a stock value exceeding their physical assets. However, the maximum and minimum have a considerable range, with some firms highly undervalued, and some overvalued, compared to their physical assets.

4. Empirical Results

This chapter presents the empirical results of the methodological approaches discussed in chapter 3. We first present the regression results for model 1, which attempts to ascertain the relationship between ESG performance and firm value. The second section presents the results of model 2, which analyzes the relationship between ESG disclosure and firm value. The last section presents the results of Model 3 of the determinants of ESG disclosure. In each model, endogeneity is addressed through system GMM.

4.1 Model 1: Relationship Between ESG Performance and Firm Value

We first assess the impact of ESG performance on firm value, as measured by Tobin's Q. The Hausmann test results in Table A 4 in the appendix lead to the inability to reject the hypothesis that the random effect model is the best fit. Table 5 shows the results of model 1 estimating equation (1) using random effects.

Table 5: Regression Results for the Relationship Between ESG Performance and Firm Value-Dependent Variable: Tobin's Q (Random Effects)

Dependent variable	(1) lnTobinQ
ESGPerfomanceScore	0.00126**
	(0.000634)
LnTotalAssets	-0.0462**
	(0.0221)
FinancialLeverage	-0.0139
	(0.00952)
EPS3YearAverageGrowth	-4.13e-06
	(7.13e-06)
lnGDP	-0.173**
	(0.0704)
Constant	2.587***
	(0.704)
Observations	329
Number of firms	141

Note: Model used is Random Effects. The dependent variable is natural logarithm of Tobin's Q. ESGPerfomanceScore measures the ESG performance, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, EPS3YearAverageGrowth is the 3-year average earning per share, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

We observe a positive and significant relationship at a 95% confidence level between ESG performance score and firm value, as measured by Tobin's Q. An increase of one point in ESG performance is associated with a 0.126% increase in firm value, as measured by Tobin's Q. This result adds credence to the stakeholder theory in that increased performance relating to the firm's ESG practices is rewarded in the form of increased firm value. Investors recognize the value of a firm that makes strong sustainability decisions that reflect their commitment to ESG matters. Shareholders may perceive a high ESG performance as a reduced level of risk and as valuable.

Concerning control variables, the logarithm of the total assets result suggests a negative relationship with firm value. This leads to the conclusion that as firms grow in size, they begin to experience diseconomies of scale (Yu et al., 2018). The results suggest an increase of 1% in a firm's total assets will reduce Tobin's Q by 0.046%. GDP appears to have a negative relationship with firm value as well. A 1% increase in the country's GDP will yield a reduction of 0.17% in

firm value. A possible reason for this result is that Qatar has the highest GDP per capita among all the nations in the region; however, Saudi Arabia has the largest total GDP and economy. This discrepancy is because of the small population of Qatar; thus, that number is quite large. Further, Saudi Arabia has the largest firms in the data set regarding Tobin's Q, resulting in a negative association.

4.1.1 Model 1: GMM estimation

The results presented in Table 5 assume strict exogeneity. However, this assumption may not hold, leading to endogeneity concerns. We now attempt to relax that assumption by introducing a dynamic component to the analysis by adding a lagged dependent variable as a regressor. Much of the literature expresses the concern that ESG performance scores correlate with the error term, thus leading to an unreliable result. To address this problem, Table 6 presents the results of a system GMM.

Table 6: Regression Results for the Relationship Between ESG Performance and Firm Value-dependent Variable: Tobin's Q (GMM)

	(1)
Dependent variable	lnTobinQ
ESGPerfomanceScore	0.00161***
	(0.000551)
L.lnTobinQ	0.872***
	(0.0441)
LnTotalAssets	-0.0222*
	(0.0128)
FinancialLeverage	0.00448
	(0.00618)
ESG3YearAverageGrowth	2.87e-05
	(5.30e-05)
lnGDP	-0.0618*
	(0.0355)
Constant	0.863**
	(0.358)
Observations	329
Number of firms	141
Number of Instruments	68
Hansen test of overid restrictions (p-value)	0.310
AR(1) in first differences	0.05
AR(2) in first differences	0.553

Note: The dependent variable is natural logarithm of Tobin's Q. ESGPerfomanceScore measures the ESG performance, L.lnTobinQ is the lagged Tobin's Q, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, EPS3YearAverageGrowth is the 3-year average earning per share, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$. AR(1) and AR(2) are the p-values for the Arellano-Bond tests for the existence of autocorrelation for the first and second orders respectively. The Hansen test of overidentification are the p-values for the validity of the instruments. In the GMM specification, two lags are utilized, ESGPerfomanceScore is considered endogenous and the exogenous instruments are the control variables.

The results presented in Table 6 are similar to the initial results presented in Table 5 using the random effects model. This adds further validity to the conclusion that ESG performance has a positive and significant effect on firm value. as measured by Tobin's Q. Indeed, after addressing the endogeneity concern, the performance coefficient is larger in terms of the magnitude of impact and level of significance. With a 1-point increase in ESG performance, there is a 0.161% increase in firm value with a 99% confidence level. This result is supported by authors such as Yoon et al. (2018), Milarlles-Quiros et al. (2018), Hemlata (2016), and Chelawat et al. (2016). In the context

of the GCC region, to our knowledge, there are no papers that investigate the relationship between ESG performance and firm value in the context of any GCC nation.

The most crucial diagnostic statistic for regression of this type is the AR (2) and the Hansen test of overidentification. The former tests whether a second-order autocorrelation exists. The null hypothesis is that no autocorrelation exists, which cannot be rejected based on the p-value being higher than the rejection threshold of 5%. The latter addresses whether the instruments included in the regression are well specified. The null hypothesis is that the instruments are strong and aid in providing the best answer. Based on the result above, the null hypothesis cannot be rejected with a p-value higher than 5%, suggesting the instruments are valid.

4.2 Model 2: Relationship Between ESG Disclosure and Firm Value

Our second model assesses the relationship between each ESG disclosure type and firm value, still measured by Tobin's Q. Table 7 presents the results estimating equations (2) for overall disclosure, as well as the sub-components of disclosures using the fixed effects model. Indeed, as shown in Table A 4 in the appendix, we could reject the null hypothesis in the Hausman test in favor of the fixed effect model.

Table 7: Regression Results for the Relationship Between ESG Disclosure and Firm Value - dependent Variable: Tobin's Q (Fixed effects)

	(1)	(2)	(3)	(4)
Dependent variable		lnTobinQ		
ESGDisclosureScore	0.00650*			
	(0.00383)			
EnvironmentalDisclosureScore		0.00322		
		(0.00218)		
SocialDisclosureScore			0.00426*	
			(0.00252)	
GovernanceDisclosureScore				0.00298*
				(0.00156)
LnTotalAssets	-0.396**	-0.118**	-0.107**	-0.392**
	(0.182)	(0.0453)	(0.0459)	(0.180)
FinancialLeverage	-0.00103	-0.00902***	-0.00857***	-0.000873
	(0.0116)	(0.00270)	(0.00297)	(0.0111)
QuickRatio	-0.00437	0.0242	0.0277	-0.00721
	(0.0268)	(0.0358)	(0.0362)	(0.0288)
R&DExpenditures	-0.0777***	-0.0783***	-0.0860***	-0.0801***
	(0.0101)	(0.0168)	(0.0178)	(0.0137)
PCTIndependentDirectors	-0.00128	-0.000813	-0.000792	-0.00148
	(0.00101)	(0.000968)	(0.00101)	(0.00116)
lnBoard	0.495***	0.322*	0.320*	0.577***
	(0.168)	(0.185)	(0.181)	(0.191)
lnGDP	0.121	0.108	0.135	0.134
	(0.275)	(0.241)	(0.249)	(0.272)
Constant	1.547	-0.403	-0.807	1.198
	(3.568)	(2.743)	(2.791)	(3.495)
Observations	323	296	300	323
Number of Firms	55	51	52	55

Note: Model used is Fixed Effects. The dependent variable is natural logarithm of Tobin's Q. ESGDisclosureScore, EnvironmentalDisclosureScore, SocialDisclosureScore and GovernanceDisclosureScore measure the level of transparency for the total ESG, environmental, social and governance respectively, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

As observed in Table 7 (column 1), there is a positive and significant relationship between ESG overall disclosure and the Tobin's Q at the 90% confidence level. An increase of 1-point in ESG transparency yields 0.65% in firm value appreciation. This supports the hypothesis that increased ESG disclosure positively correlates with firm value.

We also observe that Governance and Social disclosures (columns 2 – 3) are positively and significantly associated with firm value. The coefficients follow the same significance level as the total ESG disclosure as the results above suggest. This further emboldens the idea that increased disclosure in each ESG criterion will yield positive firm valuation. While the result of each individual disclosure criteria does not yield the same amount of value increase as the total ESG disclosure score, each does prove to have a positive impact, except for Environmental disclosure (column 2). As presented in column 4, Governance disclosure yields a 0.298% increase in firm value for a 1-point increase in disclosure. Social disclosure is also associated with positive firm value, with a 0.426% increase in Tobin's Q with a 1-point rise in social transparency (column 3). This may be due to the perception that firms who disclose more of their social practices are at lower risk (Orlitzky et al., 2001). Investors may perceive such firms positively, which leads to increased valuation.

Following the results in Table 5, total assets also have a negative association with Tobin's Q, further representing the diseconomies of scale reported by Yu et al. (2018). Similarly, financial leverage negatively affects Tobin's Q as expected. Over-leveraged firms generally are in a poor financial situation compared to firms that do not incur too much debt. Interestingly, R&D expenditure is negatively associated with firm value, suggesting that shareholders may find R&D expenditure wasteful. The final significant variable is the size of the board of directors. There seems to be a positive and significant relationship with firm value. This is because firms with a large board size tend to address shareholders' concerns more effectively and reduce agency problems due to increased scrutiny by board members (Yu et al., 2018; Brammer et al., 2008).

When looking at the environmental disclosure results (column 2), it is positive but insignificant. This result is puzzling as it contradicts the works of Ammer et al. (2020), who conducted a similar study in Saudi Arabia, a country included in this research. A possible explanation for this diverging result is that there could be possible endogeneity in the regression, causing bias in the coefficients. Section 4.2.1 address the issue using system GMM to investigate whether endogeneity is the cause for the discrepancy.

4.2.1 Model 2: GMM Estimation

Similar to the concern of Table 5, the results are unbiased only if strict exogeneity holds. However, the results presented in Table 7 may suffer from endogeneity as discussed in Fatemi et al. (2017) and Ammer et al. (2020). Table 8 examines this issue by using system GMM.

Table 8: Regression Results for the Relationship Between ESG Disclosure and Firm Value-dependent Variable: Tobin's Q (GMM)

	(1)	(2)	(3)	(4)
Dependent variable		lnTobinQ		
ESGDisclosureScore	0.00358**			
	(0.00166)			
EnvironmentalDisclosureScore		0.00213**		
		(0.000922)		
SocialDisclosureScore			0.00241**	
			(0.00108)	
GovernanceDisclosureScore				0.00623
				(0.00472)
L.lnTobinQ	0.915***	0.884***	0.859***	0.971***
	(0.0712)	(0.0366)	(0.0261)	(0.238)
LnTotalAssets	-0.0194	-0.00650	-0.00520	-0.00693
	(0.0132)	(0.0105)	(0.0101)	(0.0229)
FinancialLeverage	-0.00386	-0.00199	-0.00460	0.00933
	(0.00796)	(0.00635)	(0.00513)	(0.00848)
QuickRatio	0.0343**	0.0304***	0.0346***	0.0959**
	(0.0136)	(0.0107)	(0.0104)	(0.0447)
R&DExpenditures	-0.0192*	-0.00251	-0.00820	-0.0348
	(0.0114)	(0.00437)	(0.0134)	(0.0214)
PCTIndependentDirectors	0.00116	0.000941	0.000896	-0.000221
	(0.00109)	(0.000722)	(0.000958)	(0.000920)
lnBoard	0.182	0.0564	0.0835	0.155
	(0.179)	(0.0712)	(0.159)	(0.146)
lnGDP	0.00281	-0.0365	-0.0481	-0.0136
	(0.0522)	(0.0316)	(0.0368)	(0.0641)
Constant	-0.408	0.244	0.295	-0.642
	(0.741)	(0.328)	(0.544)	(0.900)
Observations	285	262	266	285
Number of firms	55	51	52	55
Number of instruments	37	39	54	27
Hansen test of overid. restrictions (p-value)	0.328	0.332	0.508	0.438
AR(1) in first differences	0.001	0.000	0.000	0.019
AR(2) in first differences	0.174	0.222	0.272	0.248

Note: The dependent variable is natural logarithm of Tobin's Q. ESGDisclosureScore, EnvironmentalDisclosureScore, SocialDisclosureScore and GovernanceDisclosureScore measure the level of transparency for the total ESG, environmental, social and governance respectively, L.lnTobinQ is the lagged Tobin's Q, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses*** $p<0.01$, ** $p<0.05$, * $p<0.1$. AR(1) and AR(2) are the p-values for the Arellano-Bond tests for the existence of autocorrelation for the first and second orders respectively. The Hansen test of overidentification are the p-values for the validity of the instruments. In the GMM specification, two lags are utilized, each disclosure type is considered endogenous and the exogenous instruments are the control variables.

The results presented in Table 8 show a positive and significant relationship between ESG disclosure and firm value (column 1). However, environmental disclosure is significant now (column 2), while governance disclosure is insignificant (column 4). The significance level has increased from 90% to 95% for all the significant disclosure types in columns 1 – 3. The total ESG disclosure coefficient suggests that an increase of 1 point in disclosure will yield a 0.358% increase in firm value (column 1). This supports the idea that investors reward firms for increased transparency. A similar outcome occurs regarding environmental disclosure, where a 1-point increase in environmental disclosure score yields a 0.213% increase in firm value (column 2). The same level of increase will yield a 0.241% increase in firm value when social disclosure scores increase (column 3). Governance is the only disclosure type that is not significant (column 4), possibly because governance disclosure is largely mandated in many GCC nations, as mentioned in section 2.7. Further, as presented in Figure 8, governance disclosure scores are the highest when compared to all the other disclosure types, suggesting an increase in the said disclosure is not as meaningful to investors as other types of disclosures.

This result coincides with those of Clarkson et al. (2013), Middleton (2015), Gao et al. (2016), Yu et al. (2018), and Fatemi et al. (2017), who found a positive association with increased disclosure and firm value. It is also congruent with research on the GCC, such as Ammer et al. (2020), Amba (2014), and Alazzani et al. (2022), who too found that firms benefit positively from a high ESG disclosure score. However, the result contradicts the findings of Al-Jalahma et al. (2020), who found a negative association, possibly due to the different proxies used when assessing firm value. In this study, Tobin's Q is used as the indicator for firm value, whereas Al-Jalahma et al. (2020) used Return on Assets. This difference will be addressed in the robustness section.

Regarding the diagnostic test, the validity of the results reflects an outcome similar to that observed in Table 6. The Hansen test is not significant, suggesting that the instruments used are valid. Further, the AR(2) diagnostics test supports the inability to reject the absence of second-order autocorrelation.

4.3 Model 3: Determinants of ESG Disclosure

The previous sections focused on how ESG disclosure and performance are associated with firm value, to explore whether such practice leads to tangible returns. We now turn to our third model and examine the determinants of ESG disclosure using ESG disclosure types as the dependent variables and assessing which financial and board characteristics influence them. After running the Hausman test, we conclude that the best regression type is a random effects model (see Table A 4 in the appendix). The regression results of model 3 estimating equations (3) using random effects are presented in Table 9 with robust standard errors.

Table 9: Regression Results for the Determinants of ESG Disclosure Types (Random Effects)

Dependent variable	(1) ESG Disclosure Score	(2) Environmental Disclosure Score	(3) Social Disclosure Score	(4) Governance Disclosure Score
LnTotalAssets	0.434	-0.00740	-0.204	1.720*
	(0.830)	(1.159)	(0.865)	(0.959)
ReturnOnAsset	0.00768	-0.0717	-0.0453	0.0557
	(0.0313)	(0.130)	(0.107)	(0.0371)
FinancialLeverage	-0.245	-0.0373	-0.111	-0.590***
	(0.155)	(0.220)	(0.116)	(0.212)
QuickRatio	-1.797***	-2.261**	-2.864***	-1.047
	(0.562)	(0.934)	(0.668)	(0.694)
R&DExpenditures	2.452***	1.933	3.621*	0.757
	(0.480)	(1.322)	(1.896)	(1.245)
PCTIndependent Directors	0.00317	-0.0638	-0.0445	0.119**
	(0.0573)	(0.0760)	(0.0524)	(0.0578)
lnBoard	1.806	2.911	2.651	-6.845
	(4.717)	(10.78)	(6.889)	(7.305)
Institutional OwnedEquity	0.0342***	0.0386**	0.0237	0.0236**
	(0.0123)	(0.0170)	(0.0154)	(0.0119)
CSRSustainabilityCommittee	6.110***	8.460**	7.900**	1.223
	(1.708)	(3.511)	(3.765)	(1.656)
PercentageOf FemaleExecutives	0.0346	0.0759	-0.0122	0.130
	(0.101)	(0.134)	(0.111)	(0.141)
lnGDP	-0.759	-1.257	2.344	-3.722
	(2.667)	(4.025)	(3.178)	(2.800)
Constant	32.22	25.09	-6.819	99.33***
	(32.16)	(50.87)	(40.02)	(36.39)
Observations	294	267	271	294
Number of firms	52	48	49	52

Note: Model used is Random Effects. The dependent variables are total ESG, environmental, social, and governance disclosure scores respectively. LnTotalAssets is the natural logarithm of the total assets, ReturnOnAsset is the return on assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, InstitutionalOwnedEquity is the amount of equity owned by institutional investors, CSRSustainabilityCommittee is the existence of Corporate social reasonability committees, PercentageOfFemaleExecutives is the amount of female executives on the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Interestingly, Table 9 shows that not all the variables have the same effects on different disclosure types. For instance, the logarithm of total assets is statistically insignificant for all the disclosures except for governance disclosure (column 4), which is significant at 90%. This could be due to large firms tending to have increased agency problems due to the size of capital available. To alleviate such issues, firms disclose more information regarding governance practices to increase the confidence of their shareholders. This can also be tied to country-specific legislation that requires firms of a particular size to disclose governance practices (Bamahros et al., 2022). As mentioned in section 2.7, many GCC nations impose governance requirements on large firms. An increase of 1% in total assets is associated with an increase of 0.017 in governance disclosure.

Similarly, financial leverage is significant only for governance disclosure (column 4). The result suggests that the more leveraged a firm is, the less likely it is to report governance practices. An increase in financial leverage will result in a decrease in the governance disclosure score of 0.59. However, the opposite is true when looking at the Quick ratio, where the variable is significant and negatively associated with all the disclosure types except for governance (columns 1 – 3). The result suggests that increased liquidity will lead to a reduction in the total ESG disclosure. This can also be observed in columns 2 and 3 regarding environmental and social disclosure, where increased liquidity reduces disclosure. An increase in liquidity will yield a reduction of 1.797 in total ESG disclosure score, 2.261 in environmental disclosure score, and 2.864 in social disclosure score. This result aligns with that of Ho et al. (2007). However, it differs from the findings of Yu et al. (2018) that found the Quick ratio variable has no significant association with the level of transparency a firm provides.

R&D expenditure intensity is associated with increased total ESG disclosure (column 1), with a 1-point increase in R&D to net sales yielding a 2.452-point increase in ESG disclosure. The same cannot be said for environmental disclosure, where the coefficient is positive but insignificant (column 2). This suggests that R&D has no impact where environmental disclosure is concerned. However, the variable is positive and significant at 90% confidence level regarding social disclosure (column 4). According to the results, an increase in R&D will yield a 3.621-point increase in the social disclosure score. This association could be observed in the analysis of Yu et al. (2018) and Fatemi et al. (2018).

The level of independence of the board of directors primarily influences governance disclosure. The results are significant at a 95% confidence level with a coefficient that suggests an increase in the percentage of an independent board of directors will yield a 0.119 increase in governance disclosure. This result is intuitive when considering that the independent directors of the board are not members of the management team; thus, it would be in their best interest to have more transparency regarding governance-related practices (Yu et al., 2018; Brammer et al., 2008).

Equity held by institutional investors tends to increase the amount of disclosure of all types except social, as reported in Table 9 (columns 1,2, and 3). As the amount of equity held by institutional investors increases, the environmental disclosure score increases by 0.0386 (column 2), the governance score by 0.0286 (column 4), and the total ESG disclosure score by 0.0342 (column 1). This result contradicts the findings of Yu et al. (2018), who found a negative relationship, which could be due to the different markets analysed. Their data set consisted of multiple countries worldwide. This suggests that institutional investors in the GCC may be more concerned about ESG transparency than in other regions. This conclusion is supported by the findings of Amba (2014), who arrived at similar results in the context of Bahrain.

The variable with the biggest influence on ESG transparency, based on the results in Table 9, is the presence of a CSR committee. The existence of such a committee in the firm will yield a 6.110 increase in the total ESG disclosure score (column 1), 8.460 in the environmental disclosure score (column 2), and 7.9 in the social disclosure score (column 3). This result is intuitive because if firms have a dedicated committee that focuses primarily on advocating and enforcing policies to increase the firm's CSR standings, increased disclosure would be an important requirement for that committee. However, the coefficient for governance disclosure is insignificant, suggesting CSR committees may not be focused on that form of transparency, possibly due to the regulation that already mandates such disclosure.

4.3.1 Model 3: GMM Estimation

The main concern in this model is the possible endogeneity that occurs with the Return on Assets (ROA) variable due to its being a proxy for firm value. All the previous models investigated the relationship between ESG-related matters and firm value. This highlights the simultaneity concerns, which was one possible way endogeneity may arise (Yu et al., 2018). The random effects model in Table 9 shows no significant relationship between ESG disclosure types and ROA. However, to ensure the relationship indeed does not exist, Yu et al. (2018) used the two-stage least square method by instrumenting the ROA variable and demonstrated the lack of association. In this section, we use a dynamic panel model to address the issue through the use of system GMM.

Table 10: Regression Results for the Determinants of ESG Disclosure (GMM)

	(1)	(2) Environmental	(3) Social	(4) Governance
Dependent variable	ESG DisclosureScore	DisclosureScore	DisclosureScore	DisclosureScore
L.ESG DisclosureScore	0.729***			
	(0.0811)			
L.Environmental DisclosureScore		0.571***		
		(0.127)		
L.Social DisclosureScore			0.839***	
			(0.0516)	
L.Governance DisclosureScore				0.518***
				(0.115)
LnTotalAssets	0.197	2.205	0.399	0.218
	(0.971)	(1.727)	(0.822)	(1.144)
ReturnOnAsset	0.0377	0.0970	0.0611	0.0614
	(0.0333)	(0.0694)	(0.0690)	(0.0452)
FinancialLeverage	-0.128	-0.204	-0.0837	-0.391**
	(0.124)	(0.226)	(0.128)	(0.153)
QuickRatio	-1.212**	-1.593*	-0.924*	-1.607*
	(0.517)	(0.843)	(0.502)	(0.855)
R&D Expenditures	1.117	1.618	0.672	1.571*
	(1.667)	(1.975)	(0.897)	(0.839)
PCTIndependent Directors	0.0166	0.0237	0.0409*	0.0237
	(0.0247)	(0.0464)	(0.0237)	(0.0371)
lnBoard	-0.147	0.127*	0.0452	-0.231
	(0.0975)	(0.0734)	(0.0477)	(0.154)
Institutional OwnedEquity	4.093	-3.619	0.783	-5.006
	(5.803)	(7.734)	(4.839)	(9.728)
CSRSustainability Committee	0.000325	-0.00416	-0.00351	0.00424
	(0.00363)	(0.0108)	(0.00641)	(0.00617)
PercentageOf FemaleExecutives	5.204*	2.015	1.383	6.622**
	(2.814)	(3.447)	(2.183)	(3.308)
lnGDP	5.098**	0.443	6.080*	-0.0319
	(2.599)	(6.804)	(3.416)	(2.480)
Observations	261	238	241	261
Number of firms	52	48	49	52
Number of instruments	53	35	30	53
Hansen test of overid. restrictions (p-value)	0.273	0.397	0.243	0.389
AR(1) in first differences	0.001	0.025	0.002	0.005
AR(2) in first differences	0.207	0.709	0.761	0.595

Note: The dependent variables are total ESG, environmental, social, and governance disclosure scores respectively. Lagged depended variables are included as regressors, LnTotalAssets is the natural logarithm of the total assets, ReturnOnAsset is the return on assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, InstitutionalOwnedEquity is the amount of equity owned by institutional investors, CSRSustainabilityCommittee is the existence of Corporate social reasonability committees, PercentageOfFemaleExecutives is the amount of female executives on the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1. AR(1) and AR(2) are the p-values for the Arellano-Bond tests for the existence of autocorrelation for the first and second order respectively. The Hansen test of overidentification is the p-value for the validity of the instruments. In the GMM specification, two lags are utilized, ReturnOnAsset is considered endogenous and the exogenous instruments are the control variables.

Based on the results presented in Table 10, there is no level of significance for any of the ROA coefficients for any of the disclosure types. This result follows that of Yu et al. (2018) and Bamahros et al. (2022). As in Tables 6 and 8, the Hansen test of over-identification p-values suggests a failure to reject the null hypothesis that the instruments are valid for all the disclosure types. Further, there seems to be no existence of second-order autocorrelation with a p-value higher than 5% for all four equations.

4.4 Discussion

Using the system GMM, we can argue that the results presented reflect a strong relationship between ESG and firm value. However, it is crucial to scrutinize the results due to the many criticisms leveled against using ESG scores as a metric of performance or transparency for a firm's CSR practices. As stated in section 2.3, some authors question the validity of the use of current metrics of ESG scores (e.g., Kotsantonis et al., 2019; Raghunandan et al., 2022; Orlitzky, 2013)**.** It could be that the ESG performance scores inaccurately portray a particular firm with a high level of ESG performance when, in reality, it may be causing harm to its stakeholders. The increased transparency could also be used as a form of greenwashing to cover up mismanagement practices due to the agency problem (Kim et al., 2015; Lyon et al., 2011; Cho et al., 2015).

Further, the driving force of the firm value appreciation could be the investor sentiment toward the perception of increased ESG performance and transparency. As expressed in the literature review section, firms may use ESG as a form of advertising and signaling to investors, apart from their financial performance. Due to this, the increased firm value may not be observed if an accounting-based metric of firm value is used. To further investigate this concern, we conduct in Chapter 5 a sensitivity analysis with different proxies for firm value.

5. Robustness Check

We now examine the robustness of the main results of models 1 and 2 by introducing different measures of firm value. The robustness tests are designed to assess whether the changes in the firm value variable will have any meaningful impact on the results. As in chapter 4, each model is assessed using random effects or fixed effects and system GMM.

5.1 Model 1: Alternative Variables for Firm Value

The variable used to assess firm value throughout this study was Tobin's Q. To test the sensitivity of the results, Price-to-Book (PB) and Return on Assets (ROA) are used as a proxy instead of Tobin's Q. PB is similar to Tobin's Q as a measure of firm value in that they are both market-based valuations. PB is the ratio between the total market value per share divided by its book value per share. On the other hand, Return on Assets is considered an accounting measure of firm value. Using ROA provides an extra layer of validity to the results presented in chapter 4 by challenging the idea that firm value gains are associated with investor sentiments and not reflective of accounting-based firm valuation. Table 11 follows the same type of regression as in Table 5, using random effects.

Table 11: Regression Results for the Relationship Between ESG Performance and Firm Value-dependent Variable: Price-to-Book Ratio and Return on Assets (Random Effects)

Dependent variable	(1) LPB	(2) ReturnOnAsset
ESGPerfomanceScore	0.00257** (0.00121)	0.0303* (0.0165)
LnTotalAssets	-0.0424 (0.0355)	-0.143 (0.395)
FinancialLeverage	0.0114 (0.0209)	-0.446** (0.177)
EPS3YearAverageGrowth	-1.25e-05 (1.31e-05)	0.000975* (0.000553)
lnGDP	-0.397*** (0.113)	-1.672 (1.276)
Constant	5.015*** (1.142)	24.84* (13.29)
Observations	317	329
Number of Firms	138	141

Note: Model used is Random Effects. The dependent variable is natural logarithm of price-to-book and return on assets. ESGPerfomanceScore measures the ESG performance, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, EPS3YearAverageGrowth is the 3-year average earning per share, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

The results presented in Table 11 reflect what is expected when PB ratio is used as a proxy for firm value (column 1). There is a positive association between ESG performance score and PB ratio, due to Tobin's Q and PB ratio being firm value proxies for market-based metrics. The results suggest an increase of one point in ESG performance score will yield 0.257% in firm value with a 95% confidence level. The original coefficient in Table 5 when Tobin's Q was the dependent variable is 0.126%. A similar result can be observed in column 2, where ROA is the proxy for firm value. This result suggests a positive association between ESG performance score and ROA, an increase of 1 point in the former leading to a 0.0303 increase in the latter.

5.1.1 Model 1: Alternative Variables for Firm Value GMM Estimation

The results presented in Table 11 assume that the ESG performance score is exogenous, which may not be the case. To relax this assumption, we now employ system GMM.

Table 12: Regression Results for the Relationship Between ESG Performance and Firm Value-dependent Variable: Price-to-book Ratio and Return on Assets (GMM)

	(1)	(2)
Dependent variable	LPB	ReturnOnAsset
ESGPerfomanceScore	0.00272*	0.0556
	(0.00142)	(0.0397)
L.LnPB	0.872***	
	(0.0620)	
L.ReturnOnAsset		0.774***
		(0.150)
LnTotalAssets	-0.0717**	-1.075*
	(0.0286)	(0.555)
FinancialLeverage	0.0200*	0.128
	(0.0110)	(0.266)
EPS3YearAverageGrowth	4.16e-05	0.00511
	(0.000102)	(0.00505)
lnGDP	-0.130**	1.779*
	(0.0662)	(0.914)
Constant	2.020***	-8.315
	(0.738)	(6.927)
Observations	317	317
Number of firms	138	138
Number of instruments	70	45
Hansen test of overid restrictions (p-value)	0.149	0.305
AR(1) in first differences	0.018	0.09
AR(2) in first differences	0.793	0.538

Note: The dependent variable is natural logarithm of price-to-book and return on assets. ESGPerfomanceScore measures the ESG performance, L.LnPB and L.ReturnOnAsset is the lagged dependent variables, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, EPS3YearAverageGrowth is the 3-year average earning per share, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$. AR(1) and AR(2) are the p-values for the Arellano-Bond tests for the existence of autocorrelation for the first and second orders respectively. The Hansen test of overidentification are the p-values for the validity of the instruments. In the GMM specification, two lags are utilized, ESGPerfomanceScore is considered endogenous and the exogenous instruments are the control variables.

The results presented in Table 12 show a positive and significant association between ESG performance and firm value measured by the PB ratio. However, the same cannot be said about ROA. The significance of the PB variable increases the validity of market-based valuation increase. This means that investors reward firms with increased ESG performance in the form of excess returns on the firm's asset value. A 1-point increase in ESG performance will yield a 0.272% increase in PB ratio at a 90% level of confidence (column 1). The original coefficient in Table 6, when Tobin's Q was the dependent variable, is 0.161%.

The lack of significance of a positive ESG performance relationship concerning ROA reflects that ESG performance does not influence the accounting-based metric of firm value (column 2). This suggests that any observable financial performance gains are driven by investor sentiment in the form of abnormal stock price appreciation. Based on this result, one can conclude that ESG performance does not influence a company's net income. Similar to previous GMM methods, the Hansen test p-values suggest a failure to reject the strength and validity of the instruments used with 0.146 and 0.305, respectively. Further, there is also no second-order autocorrelation, as the p-values are above the rejection threshold of 5%.

5.2 Model 2: Alternative Variables for Firm Value

We now examine the results for model 2, but now the dependent variable is swapped for PB ratio and ROA as proxies of firm value. Table 13 presents the results for equations 2 for each disclosure type, using the fixed effect regression.

Table 13: Regression Results for the Relationship Between ESG disclosure and Firm Value-dependent Variable: Price-to-book Ratio and Return on Assets (Fixed Effects)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable		LPB				ReturnOnAsset		
ESGDisclosureScore	0.00643*				0.0840			
	(0.00353)				(0.0605)			
EnvironmentalDisclosureScore		0.00335*				0.00867		
		(0.00197)				(0.0293)		
SocialDisclosureScore			0.00362				0.0227	
			(0.00241)				(0.0412)	
GovernanceDisclosureScore				0.00311				0.0937
				(0.00300)				(0.0644)
LnTotalAssets	-0.368***	-0.257***	-0.247***	-0.365***	0.407	0.364	0.364	0.394
	(0.0635)	(0.0755)	(0.0755)	(0.0641)	(0.416)	(0.434)	(0.439)	(0.406)
FinancialLeverage	-0.00291	-0.00967	-0.00933	-0.00272	-0.463***	-0.410***	-0.412***	-0.429***
	(0.00790)	(0.00745)	(0.00745)	(0.00810)	(0.128)	(0.0866)	(0.0847)	(0.126)
QuickRatio	0.00409	0.0233	0.0247	-0.000390	1.693**	1.619**	1.646**	1.674**
	(0.0384)	(0.0399)	(0.0400)	(0.0387)	(0.700)	(0.781)	(0.773)	(0.706)
R&DExpenditures	-0.105	-0.0993	-0.111	-0.0975	-0.547	-0.630	-0.665	-0.615
	(0.103)	(0.0959)	(0.0963)	(0.103)	(0.426)	(0.398)	(0.407)	(0.432)
PCTIndependentDirectors	-0.00353**	-0.00328**	-0.00330**	-0.00376**	-0.00715	-0.000802	-0.000444	-0.0134
	(0.00162)	(0.00152)	(0.00152)	(0.00166)	(0.0225)	(0.0223)	(0.0219)	(0.0256)
lnBoard	0.907***	0.715**	0.729**	0.994***	2.497	5.711	5.160	2.928
	(0.304)	(0.341)	(0.341)	(0.302)	(3.791)	(4.831)	(4.393)	(3.785)
lnGDP	-0.0232	-0.165	-0.129	-0.0109	-1.435	-2.165	-2.070	-0.984
	(0.392)	(0.378)	(0.377)	(0.395)	(1.807)	(2.121)	(2.066)	(1.646)
Constant	2.068	3.044	2.541	1.717	8.674	12.03	12.06	0.0467
	(4.153)	(4.044)	(4.032)	(4.199)	(19.97)	(24.06)	(23.70)	(18.08)
Observations	311	284	288	311	324	297	301	324
Number of firms	53	49	50	53	55	51	52	55

Note: Model used is Fixed Effects. The dependent variable is natural logarithm of price-to-book and return on assets. ESGDisclosureScore, EnvironmentalDisclosureScore, SocialDisclosureScore and GovernanceDisclosureScore measure the level of transparency for the total ESG, environmental, social and governance respectively, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

ESG disclosure in column 1 follows an output similar to that observed in Table 7 when Tobin's Q was the dependent variable. The results suggest an increase of 1 point in ESG disclosure will yield an increase of 0.64% in firm value. This coincides with the initial results in Table 7 with a positive coefficient of 0.65% at a significant level of 90%. The environmental disclosure in column 2 is now significant, in contrast with the initial results in Table 7. The coefficient magnitude is very similar to the previous result, with 0.335% in column 2 compared to the original result of 0.322%. The social disclosure score in column 3 is positive but insignificant, with a coefficient of 0.362%, compared to the original result in Table 7 of 0.426%, which is significant at a 90% level. Governance disclosure in column 4 is insignificant, with a positive coefficient of 0.311%. The coefficient magnitude is similar to that observed in Table 7, with a positive value of 0.298%. However, the original result is significant at a level of 90%, in contrast to what is observed in column 4. In the results on columns 5 – 8, none of the disclosure type coefficients are significant, which suggests ESG transparency has no impact on accounting-based metrics.

5.2.1 Model 2: Alternative Variables for Firm Value GMM Estimation

Similar to section 4.2.1, the strict exogenous assumption is now relaxed by introducing a dynamic element to the model and estimating using system GMM. Table 14 displays the results when PB and return on assets (ROA) are used as proxies for firm value.

Table 14: Regression Results for the Relationship Between ESG Disclosure and Firm Value-dependent Variable: Price to Book Ratio and Return on Assets (GMM)

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			LPB				ReturnOnAsset	
L.LPB	0.913***	0.901***	0.902***	0.881***				
	(0.0297)	(0.0484)	(0.0359)	(0.0501)				
L. ReturnOnAsset					0.197***	0.285***	0.384***	0.388**
					(0.0723)	(0.106)	(0.0896)	(0.169)
ESGDisclosureScore	0.00393**				0.293			
	(0.00183)				(0.210)			
EnvironmentalDisclosureScore		0.00257*				0.0223		
		(0.00151)				(0.0458)		
SocialDisclosureScore			0.00273*				-0.0237	
			(0.00165)				(0.0513)	
GovernanceDisclosureScore				0.00418				0.700
				(0.00308)				(0.629)
LnTotalAssets	-0.0200	-0.0292	-0.00699	-0.0259	-0.647	-0.543	0.363	-9.041*
	(0.0152)	(0.0199)	(0.0220)	(0.0205)	(2.233)	(0.598)	(0.686)	(5.023)
FinancialLeverage	0.0152***	0.0104	0.00344	0.00687	-0.537	-0.336***	-0.405***	0.861
	(0.00535)	(0.0117)	(0.00367)	(0.0149)	(0.547)	(0.101)	(0.156)	(1.649)
QuickRatio	0.0299***	0.0499**	0.0225**	0.0584**	9.684**	0.760**	0.599	8.272
	(0.00969)	(0.0239)	(0.0112)	(0.0260)	(4.830)	(0.312)	(0.432)	(9.593)
R&DExpenditures	-0.0208	0.152	-0.0292	-0.0283	-10.65	-0.0735	-0.0585	-8.750
	(0.0315)	(0.174)	(0.0248)	(0.107)	(13.98)	(0.291)	(0.458)	(6.797)
PCTIndependentDirectors	-0.000399	0.00264	-0.000212	0.00131	-0.148	0.00142	0.00830	0.0197
	(0.000848)	(0.00176)	(0.000817)	(0.00198)	(0.103)	(0.0194)	(0.0114)	(0.178)
lnBoard	0.0919	0.112	0.0146	0.377	20.18	1.594	0.238	-1.727
	(0.0796)	(0.124)	(0.105)	(0.257)	(25.41)	(2.623)	(3.447)	(42.87)
lnGDP	-0.0581	-0.0415	-0.0951**	-0.0836	1.238	1.342	0.197	5.371
	(0.0491)	(0.0507)	(0.0441)	(0.108)	(7.300)	(1.281)	(1.238)	(6.607)
Constant	0.461	0.256	1.007**	-0.0693	-57.09	-9.686	-2.776	-23.89
	(0.500)	(0.529)	(0.449)	(1.373)	(114.4)	(13.54)	(13.97)	(114.7)
Observations	275	252	256	275	288	265	269	288
Number of firms	53	49	50	53	55	51	52	55
Number of instruments	44	33	44	36	38	31	33	19
Hansen test of overid. restrictions (p-value)	0.421	0.115	0.347	0.164	0.190	0.211	0.210	0.461
AR(1) in first differences	0.00263	0.00390	0.00684	0.00284	0.0902	0.0191	0.00994	0.0730
AR(2) in first differences	0.742	0.826	0.755	0.805	0.669	0.966	0.970	0.684

Note: The dependent variable is natural logarithm of price-to-book and return on assets. ESGDisclosureScore, EnvironmentalDisclosureScore, SocialDisclosureScore and GovernanceDisclosureScore measure the level of transparency for the total ESG, environmental, social and governance respectively, L.LnPB and L.ReturnOnAsset is the lagged dependent variables, LnTotalAssets is the natural logarithm of the total assets, FinancialLeverage is the amount of leverage, QuickRatio measures liquidity, R&Dexpenditures is the research and development expenditure as a percentage of sales, PCTIndependentDirectors is the percentage of independent directors on the board, lnBoard is the natural logarithm of the size of the board, lnGDP is the natural logarithm of the country's gross domestic product. Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1. AR(1) and AR(2) are the p-values for the Arellano-Bond tests for the existence of autocorrelation for the first and second orders respectively. The Hansen test of overidentification are the p-values for the validity of the instruments. In the GMM specification, two lags are utilized, each disclosure type is considered endogenous and the exogenous instruments are the control variables.

When analyzing the results of ESG disclosure types in columns 1–4 on PB, the results are similar to those in Table 8 when Tobin's Q was used as the dependent variable. This further adds validity to the conclusion that increases in ESG disclosure types yield increases in firm value through investor sentiment. Similar to what was observed in Table 8, the ESG disclosure score has a greater impact on firm value compared to each score. A 1-point increase in firm ESG disclosure score yields a 0.393% increase in the PB ratio (column 1) at a significance level of 95%. This is similar to the original result of 0.358% in Table 8. Environmental disclosure is also positive and significant at 90%, with a 1-point increase yielding a 0.257% increase in the PB ratio (column 2). This aligns with the original result in Table 8 with a 0.213% increase. Further, the social disclosure score is also positive and significant at a 90% level, with a 1-point increase yielding a 0.273% increase in the PB ratio (column 3). This result is similar to that observed in Table 8 with an increase of 0.241%.

Governance is the only disclosure type that is not significant (column 4). This agrees with the results presented in Table 8, increasing the validity of the lack of association between the increase in governance disclosure and market-based metrics of firm value. As expressed in section 4.2.1, increases in governance transparency may not be valued by investors due to the already high level of transparency available (see Figure 8).

In contrast with results with market-based valuation variables as the dependent variable, accounting-based variables are not impacted by ESG disclosure types. This echoes the results observed in Table 12 regarding ESG performance. Columns 5–8 show no significant level for any disclosure types affecting ROA. This leads to the conclusion that ESG disclosure only positively impacts investor sentiment in the form of abnormal increases in stock value. This is an important distinction when stating that ESG disclosure has a causal impact on firm value, for that impact seems to come primarily from the investor perception of the firm. The Hansen test p-values for all eight regressions fail to reject the null hypothesis, which is that the instruments used are valid. Further, the AR(2) p-values are also above the 5% threshold, failing to reject the null, which states that there is no second-order autocorrelation.

6. Conclusion

The relationship between ESG and firm value has been a widely discussed topic in financial literature, with little consensus on the results. All forms of association have been found–negative, positive, and nonlinear relationships. This lack of consensus can be seen in both ESG performance and disclosure scores, leading to no clear answer to this question. However, most of the research on this topic has primarily been done in developed economies, which leaves a gap in the literature regarding ESG in developing nations. Our main contribution to the evolving literature is that we shed light on a topic that is quite new to the GCC region and aid in bridging the gap in the literature that offered little insight into ESG issues in the context of the GCC. Further, to our knowledge, no papers have analyzed the effect of ESG performance on firm value in the context of the GCC, with only a handful focusing on ESG disclosure.

To tackle these questions, we used ESG performance scores created by S&P Global to assess how well a firm performs regarding its sustainability practices and the Bloomberg ESG disclosure scores, which assess the level of transparency a firm provides. The timespan chosen was from 2015 to 2021, due to a large emphasis on ESG in the nations being analyzed (Ammer et al., 2020; Al-Jalahma et al., 2020). We used a panel regression analysis of fixed and random effects to assess the impact of ESG performance and disclosure on firm value and investigate the determinants of ESG transparency. Further, we used System GMM to address endogeneity concerns to truly ascertain the relationship between ESG performance and disclosure with firm value and address the reverse causality concern for the determinants of ESG transparency.

The results show a significant positive association between the increase in ESG performance and firm value appreciation. The same result was observed when analyzing the relationship between ESG disclosure and firm value. It was also found that Environmental and Social disclosure positively impacted firm value. However, Governance disclosure was found to have no impact due to the already high governance disclosure that many GCC nations mandate. Regarding the determinants of ESG disclosure, we found that the most important variables that increase the level

of transparency are R&D expenditure, percentage of independent directors, equity held by institutional investors, and the existence of a CSR committee. The variables found to have the opposite effect are the Quick ratio and financial leverage.

We also conducted robustness tests on the results using different firm value metrics by introducing other market-based and accounting-based dependent variables. The results for the new market-based metric were almost identical to the original output for ESG performance and disclosure relationship with firm value. However, when the accounting-based metric of firm value was used, we found no association between ESG performance and disclosure with firm value, suggesting that the source of value appreciation is investor sentiment and does not translate to increases in Return on Assets.

While the empirical results presented are compelling, it is important to remain skeptical, as one of the main assumptions made in this study is that the ESG scores for both performance and disclosure reflect the firm's CSR commitment toward its stakeholders. However, as mentioned in section 2.3, some authors argue that this may not be the case. For instance, the positive association between ESG performance and firm value may not mean that these firms are performing well in CSR matters. More research is needed to address the lack of consistency regarding CSR scoring practices and whether the traditional measures used are biased. Further, more research is needed in the GCC region regarding ESG, due to the growing emphasis on sustainability in these economies. As more information becomes available, future research will benefit from larger sample sizes for a more robust result.

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Appendix

Table A 1: MSCI ESG Criteria

3 Pillars	10 Themes	35 ESG Key Issues	
Environment	Climate Change	Carbon Emissions	Financing Environmental Impact
		Product Carbon Footprint	Climate Change Vulnerability
	Natural Capital	Water Stress	
		Biodiversity & Land Use	Raw Material Sourcing
	Pollution & Waste	Toxic Emissions & Waste	
		Packaging Material & Waste	Electronic Waste
	Environmental Opportunities	Opportunities in Clean Tech	Opportunities in Renewable
		Opportunities in Green Building	Energy
Social	Human Capital	Labor Management	Human Capital Development
		Health & Safety	Supply Chain Labor Standards
	Product Liability	Product Safety & Quality	Privacy & Data Security
		Chemical Safety	Responsible
		Consumer Financial	Investment
		Protection	Health & Demographic Risk
	Stakeholder Opposition	Controversial Sourcing	
		Community Relations	
	Social Opportunities	Access to Communications	Access to Health Care
			Opportunities in
		Access to Finance	Nutrition & Health

Governance	Corporate Governance	Ownership & Control Board	Pay Accounting
	Corporate Behavior	Business Ethics Tax Transparency	

Source: MSCI ESG Research LLC (2022, p. 4)

Table A 2: Thomson Reuters ESG Criteria

Pillar	Category	Indicators in Scoring	Weights
Environmental	Resource Use	20	11%
	Emissions	22	12%
	Innovation	19	11%
Social	Workforce	29	16%
	Human Rights	8	4.50%
	Community	14	8%
	Product Responsibility	12	7%
Governance	Management	34	19%
	Shareholders	12	7%
	CSR Strategy	8	4.50%
TOTAL		178	100%

Source: Thomson Reuters (2017, p. 8)

Table A 3: S&P Global ESG Criteria

S&P Global CSA Criteria Weights by Dimension
Environmental Dimension
Climate Strategy
Environmental Policy & Management Systems
Environmental Reporting
Operational Eco-Efficiency
Product Stewardship
Social Dimension
Addressing Cost Burden
Corporate Citizenship and Philanthropy
Financial Inclusion
Health Outcome Contribution
Human Capital Development
Human Rights
Labor Practice Indicators
Occupational Health & Safety
Social Reporting
Strategy to Improve Access to Drugs or Products
Talent Attraction & Retention
Governance & Economic Dimension
Anti-Crime Policy & Measures
Codes of Business Conduct
Corporate Governance
Customer Relationship Management
Financial Stability & Systemic Risk
Information Security/Cybersecurity & System Availability
Innovation Management
Marketing Practices
Materiality

| Policy Influence |
| Privacy Protection |
| Product Quality & Recall Management |
| Risk & Crisis Management |
| Strategy for Emerging Markets |
| Supply Chain Management |

Source: S&P Global (2022, p. 13)

Table A 4: Hausman (1978) Specification Test

	P-value	Model
	0.0962	1
	0.000	2
	0.139	3