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ESG and Financial Sustainability: The Role of Saudi Corporate

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ESG and Financial Sustainability: The Role of Saudi Corporate Governance Reforms

Abstract

There is rising interest among investors and regulators in companies' Environment, Social, and Governance (ESG) practices. Despite this, the various implications of ESG remain vague. To this end, this paper examines the relationship between corporate ESG and financial sustainability and how corporate governance reforms and pandemics can influence this relationship. Using a dataset comprising public companies on the Saudi Stock Exchange (*Tadawul*) between 2013 and 2021, we found that corporate ESG disclosure and financial sustainability are positively related. Moreover, the corporate governance reform of 2017 positively moderated this relationship, while the Covid-19 pandemic negatively moderated it. The results of this study contribute to the corporate governance and sustainability literature by providing new evidence that corporate ESG may improve financial sustainability and that this relationship is sensitive to corporate governance regulations and market conditions. These results have practical implications and may inform investors' and regulators' decisions.

Keywords: financial sustainability, ESG, corporate governance reforms, Saudi Arabia

1. Introduction

The non-financial elements not incorporated in companies' financial statements have received a growing interest among market participants as they contribute to the company's financial success and appreciation capital markets (Singh et al., 2022). These non-financial elements are frequently mentioned as sustainability measures. Over the last decade, sustainability has been considered one of the most critical developments in the financial market (Brogi et al., 2022). To meet the improved prospects and requirements of all stakeholders, most companies have changed their focus from short-term success to long-term sustainability and development (Bogacki and Letmathe, 2021).

To boost sustainability, increasing the call for investing in Environment, Social, and Governance (ESG) is becoming mainstream in capital markets worldwide (Naffa and Fain, 2022). ESG represents the activities and contributions of a company toward its environment, society, and governance to increase its beneficial effects on society. Policymakers worldwide place considerable emphasis on ESG reporting (Griffin and Sun, 2018) and practices (Zhou et al., 2022). Based on the Sustainable Stock Exchanges (SSE) (2015), the United Nations recommends that companies disclose and report their ESG activities by 2030. In 2019, a report on ESG factors by the CFA Institute found that governance received the highest

preference (64%) from investors, then social factors by 30%, and finally environmental factors by 24% (CFA Institute, 2019). By 2022, these percentages are expected to rise by nearly 20%. Furthermore, some bodies, such as the Organization for Economic Cooperation and Development (OECD) and the European Union (EU), have published guidelines for the reporting of non-financial information that should include issues related to ESG (Wasiuzzaman and Mohammad, 2020). Further reacting to growing awareness of ESG data by different stakeholders is that rating agencies like Thomson Reuters Corporate Responsibility Ratings (TRCRR), Morgan Stanley Capital International (MSCI), and the financial professionals' information platform (i.e., Bloomberg) disclose ESG information. Thus, in line with increasing ESG concerns, the number of companies that employ and report sustainability and ESG practices is growing worldwide.

In the current economic conditions, particularly in this global recession, it is a big challenge for companies to be financially sustainable. Financial sustainability is central to the company's long-term success (Mohamad and Murugesu, 2020). The economically sustainable company was the least influenced by financial turmoil (Gofman, 2017) and had an inverse connection with financial risk and distress (Imhanzenobe, 2020). In their study, Zabolotnyy and Wasilewski (2019) found that the financial sustainability of companies is their capability to enhance investment and sources of financing to maintain long-term operational capacity and create value for shareholders. To this end, we can define financial sustainability as the ability of a company to cover the requirements of its financial and operational activities, alleviate financial risk and maintain adequate earnings to finance its expansion and investments.

Guerrero-Villegas et al. (2018) suggested that ESG is a strategic mechanism to enhance the reputation of companies and support them to access financial resources. Hence, additional reporting data on company ESG practices could be employed to add competitive advantages, legitimize the company in front of its clients, and improve its financial sustainability. Pätäri et al. (2012) reported that more sustainable companies have higher market values and are better able to create profits and monitor costs than other companies. The initiatives of ESG should positively affect earnings, sales growth, productivity, and positive advantages from the stock market. That is, ESG activities contribute to the direction of enhancement of both market and operating performance. According to Bofinger et al. (2022), ESG is financially material to investment performance. Furthermore, companies with excellent ESG scores are associated with lower risks and are more robust during times of crisis (Cardoni et al., 2020; Qureshi et al., 2020). To this end, if the company follows sustainability development and actively pursues ESG activities, this could lead to financial sustainability.

Therefore, whether companies receive financial benefits from reporting ESG is a question, given that providing ESG will cost some resources. For example, in 2019, the portfolios in

the primary markets in which ESG is concentrated had capitalization that surpassed US$30 trillion (Broadstock et al., 2021). In some developing countries (i.e., India, Brazil, and South Africa), companies must disclose ESG practices (Buallay et al., 2020). Nevertheless, in some countries, such as Saudi Arabia, companies are not mandated to offer reports on ESG practices, which may decline or enhance the benefits of disclosing ESG information. There is evidence from earlier studies that proposes a positive connection between ESG reporting and companies' financial sustainability (Zhou et al., 2017; Carè and Forgione, 2019). On the contrary, an inverse ESG–financial sustainability relationship has been reported by Sharma et al. (2019). However, few studies have clarified the link between an individual company's financial sustainability and its investment in sustainable activities like ESG. This leaves a significant gap in the current literature that should be filled. Under the growing scrutiny of companies' ESG disclosures by local and global capital markets, these are crucial problems to resolve. In this context, the first objective of our study was to examine the association between ESG and the financial sustainability of listed Saudi companies.

Increasing transparency is a vital objective of corporate governance reforms (Ahmed, 2013). In emerging economies, reforms, and corporate governance developments could boost investor confidence and enhance companies' access to capital. Previous research indicates that well-governed companies are more inclined to participate in ESG investments (Crespi and Migliavacca, 2020; Bhasin et al., 2021). Due to the increasing level of ESG issues, the significance of corporate governance in forming long-term ESG policies has become an imperative opportunity for companies looking for a competitive advantage (Hussain et al., 2018; Orazalin and Mahmood, 2021). Thus, as Aslam et al. (2020) reported, it is important to emphasize country governance

Although countless studies have investigated the impacts of corporate governance on company financial performance and decision making, few pieces of evidence have specifically addressed how corporate governance reforms influence company financial performance and financial sustainability. Hence, further empirical studies are essential to realizing how companies work in line with their national bodies. By examining the importance of corporate governance reforms, this study proposes to fill the gap in the recent literature. We aimed to identify and empirically investigate whether the Saudi corporate governance reforms of 2017 were achieved in terms of financial sustainability. Thus, the second objective of our study was to examine the moderating impact of Saudi corporate governance reforms on the association between ESG and economic sustainability.

To this end, our study was based on data from 309 company-year observations over the 2013–2021 period. We found that companies with high ESG scores enhanced financial sustainability, as measured by sustainable growth rates. Accordingly, companies with continued commitment to environmental support, effective socially accountable behaviors, and well-established

governance mechanisms are more financially sustainable. In summary, we found that "doing well" leads to "doing good" in listed Saudi companies. Most importantly, we found that the Saudi corporate governance reforms of 2017 improved the association between ESG and financial sustainability.

The Covid-19 pandemic and its effects are still contemporary issues. As a result, in our additional analysis, we examine how the ESG–financial sustainability association has been affected by Covid-19. The value of companies with good ESG practices is comparatively stable during risk periods, such as economic crises and Covid-19 (Lins et al., 2017; Broadstock et al., 2021; Zhou et al., 2022). The initial results of Cheema-Fox et al. (2020) and Broadstock et al. (2021) proposed that ESG could enhance company performance and success through the Covid-19 pandemic. Reijonen (2021) found a strong positive connection between ESG successes and companies' return on assets during the Covid-19 pandemic. However, our results show that Covid-19 significantly and negatively moderated the ESG–financial sustainability relationship.

This study makes several significant contributions. First, it enlarges the existing literature on ESG and sustainability by offering innovative perceptions of the effects of ESG on financial sustainability. Until now, little evidence has provided critical considerations regarding the need for companies to adjust to and adopt the culture of ESG in their plans and strategies (Xie et al., 2019). Additionally, in previous ESG studies, we found inconsistencies and contradictions in the association between ESG and financial performance. The conflicts in this association are not only in the theoretical basis (i.e., legitimacy, stakeholder, and agency) but also in the empirical evidence (Qureshi et al., 2021). Prior studies have not reached a consensus on the ESG–financial performance association (Singh et al., 2022). Consequently, the theoretical and empirical inconsistencies in this association remain questionable and highlight the need for further studies.

Second, most ESG studies have concentrated on developed countries, with little evidence from emerging markets, such as Saudi Arabia. However, to our knowledge, no previous empirical study has addressed the connection between ESG disclosure and financial sustainability in the Saudi context. This deficiency in empirical studies can be attributed to the limited reporting of ESG practices and the fact that ESG practices and disclosures in Saudi Arabia are still in their infancy stage. Hence, in the Saudi capital market, the effect of ESG on financial sustainability remains an open empirical question, which our study attempts to answer and fills this gap in the Saudi context. Further, the relationships examined in this study are based on different theories (legitimacy, signaling, sustainable development, agency, and institutional). As a result, we believe that this study offers a broad theoretical framework.

Third, in addition to employing cumulative ESG scores, this study delved deeper into the individual components of ESG. That is, we differentiated between the three factors of sustainability

—environmental, social, and corporate governance—to understand each component's influence on financial sustainability. By counting all three ESG factors, this study offers further empirical evidence in the debate on ESG and economic sustainability.

Fourth, to the best of our knowledge, no study has examined the moderation effect of corporate governance reforms on the association between ESG disclosure and financial sustainability. Consequently, our study adds to the current empirical literature since it allows for exploring the efficacy and effects of the new Saudi corporate governance regulations of 2017 on the ESG–financial sustainability relationship. Furthermore, because this study includes the most current data until 2021, we controlled for unexpected events, such as the Covid-19 pandemic that started in early 2020. Thus, another innovation of our study is that it examined the influence of Covid-19 on the association between ESG and financial sustainability. In addition, in exploring the variables that are utilized to measure the economic sustainability of companies, we found that most previous studies used measures such as Tobin's Q and market-to-book ratio (Qureshi et al., 2021; Singh et al., 2022), return on assets (Maama, 2021), return on equity, and return on invested capital (Neto et al., 2020; Qureshi et al., 2021). However, we added this to the existing literature by employing sustainable growth rate indicators of financial sustainability.

Finally, this study's findings have both policy and management implications. By linking ESG reporting as a non-financial disclosure to company financial sustainability, our study delivered understandings and perceptions of ESG disclosures to companies' managers, institutional and individual investors, and financial analysts. From the perspective of policy, our study sheds light on the need to improve and develop rules and guidelines on ESG disclosures made by companies.

The remaining sections of this paper are structured as follows. Section 2 presents the institutional settings of ESG in Saudi Arabia. Then, the theoretical framework, literature review, and hypothesis development are presented in Section 3. Section 4 discusses the samples, data collection, and study methodology. Section 5 presents the study's empirical findings. Section 6 offers the study's conclusions, provides the theoretical and practical implications, and reviews the study's limitations and suggestions for future research.

2. Institutional settings of ESG reporting in the Saudi Arabian context

Saudi Vision 2030 is considered a sustainable vision for the future of Saudi Arabia. Sustainability is essential to policy improvement, investment, planning, and infrastructure. Saudi Vision 2030 is innovatively addressing today's climate challenges and energy issues. Further, to accomplish the Global Goals of the 2030 Agenda (e.g., "good life, good health, gender equality, clean water, clean energy, and sustainable cities and communities…."), Saudi Arabia is undertaking many efforts to achieve sustainability. A further strategic stage

corresponding to the Saudi Vision 2030 is the launched initiative of Sustainable Finance toward enhancing the Saudi financial sector with the essential mechanisms to empower and increase the sector's competencies in sustainable financing and investing.

In 2018, the Saudi Stock Exchange (*Tadawul*) was added to the Financial Times Stock Exchange (FTSE) Russell Index as a "Secondary Emerging" market. Further, based on its preceding "Standalone Market" rank, the Kingdom of Saudi Arabia in 2019 was also promoted to the status of "Emerging Market" by the MSCI Emerging Market Index. The Saudi Exchange is a fundamental player in supporting the economic transformation of Saudi Arabia since it provides crucial support for the Financial Sector Development Program (one essential program of the Saudi Vision 2030). Sustainable growth is at the heart of Vision 2030. ESG practices also direct the development and implementation of Vision 2030. This is the reason behind the commitment of the Saudi Exchange to boost ESG disclosure (Saudi Stock Exchange, 2022). Thus, in 2021 and in cooperation with the MSCI Emerging Market Index, the Saudi Stock Exchange launched its first specific ESG disclosure guidelines. The publication of these ESG guidelines encouraged sustainable growth and increased awareness of the significance of ESG in the Saudi capital market.

Corporate governance regulations have developed significantly during the last two decades in Saudi Arabia, starting in 2000 (publishing of internal control guidelines) and in 2006 (issuing the Saudi code of corporate governance). In 2010, the Saudi code of corporate governance moved from voluntary to mandatory for all listed companies. The last reform for the Saudi regulation of corporate governance was in 2017. Based on this regulation of Saudi corporate governance, the listed companies should offer non-financial information on their related ESG practices. According to Alhebri et al. (2021), Saudi Arabia is rated second in North Africa and the Middle East in adopting and applying ESG perceptions. The Saudi code of corporate governance emphasizes ESG practices. For example, Article 87, which is related to social responsibility, specified that:

The Ordinary General Assembly, based on the Board recommendation, shall establish a policy that guarantees a balance between its objectives and those of the community for purposes of developing the social and economic conditions of the community (Saudi Capital Market Authority, 2022, p.46).

Furthermore, Article 88, which relates to social initiatives, states, "The Board shall establish programmes and determine the necessary methods for proposing social initiatives by the Company" (Saudi Capital Market Authority, 2022, p.46).

3. Theoretical framework, literature review, and hypotheses development

3.1. ESG and financial sustainability

Several theories underpin the relationship between ESG and financial sustainability. The critical theories that aid in better understanding this relationship are legitimacy, signaling, sustainable development, and stakeholder. These theories shape the foundation for developing the hypotheses. Legitimacy theory clarifies the link between the reporting of ESG and the financial sustainability of companies. Legitimacy theory is related to the perception of a social contract, which entails legitimizing companies' operations depending on their environment besides its work to rationalize their existence (Casonato et al., 2019; Maama, 2021). Therefore, for companies to offer an ethical claim for this fundamental social contract, ESG activities are essential and also needed to influence the perceptions of stakeholders (Qureshi et al., 2021) and maintain their support (Silvestri et al., 2017). By gaining the confidence of stakeholders (i.e., customers, suppliers, and investors), attracting additional capital, and completing successful transactions, the financial sustainability of companies would be positively enhanced.

Consistent with signaling theory, by disclosing ESG practices, the company signals to investors and other stakeholders that it generates long-term value. Furthermore, ESG reporting by companies aims to inform their stakeholders about their ESG activities and initiatives, as this may lead to improved corporate responsibility and a healthier connection between companies and their environment and society (Velte and Stawinoga, 2020), thus building a better reputation, which may ultimately support financial sustainability. Regarding sustainable development theory, Zhou et al. (2022) indicated that for companies to attain sustainable development, it attempts to raise the attention paid to the management of ESG practices. Subsequently, the company can grow healthy and develop its financial performance. This will be reflected in supporting the company's market competitiveness and improving its market share, eventually leading to enhancing economic sustainability. Finally, based on stakeholder theory, companies disclose sustainability information on ESG practices to react to the concerns and prospects of the primary stakeholders (i.e., customers, employees, suppliers, government, and creditors) to maintain a healthy and long-term association with stakeholders (Katmon et al., 2019).

The sustainability performance–financial performance association signifies one of the most examined issues of sustainable business practices (Sroufe et al., 2019). The evidence on this association has documented three primary directions of literature that hypothesize a positive, negative, and neutral association (Singh et al., 2022). Lourenço and Branco (2013) examined the factors contributing to the sustainability performance of Brazilian companies. They pointed out that leading companies in corporate sustainability achieve significantly greater returns on equity than other companies. In their study, Datta et al.

(2015) found that transparency and sustainable disclosures positively impacted entire business performance.

It is remarkable to observe that Kapoor (2017) found that sovereign funds and institutional investors positively assess ESG elements to create long-term financial returns on their investment portfolios, accompanied by limiting risk. Further studies (i.e., Zhou et al., 2017; Carè and Forgione, 2019) have shown that ESG disclosures positively affect the companies' financial performance. Aboud and Diab (2018) examined ESG in Egypt. They reported that companies recorded in the ESG index had greater value, and those with greater ESG had a higher market value than others. On examining a sample of banks in North Africa and the Middle East, Buallay et al. (2020) observed that ESG disclosure significantly influences banks' financial performance and values. Qureshi et al. (2021) utilized both individual factors and the aggregated ESG score. They confirmed that increasing commitment by companies to ESG is receiving value appreciation from market participants. The positive impact of ESG on company performance is also supported by Wan Mohammad and Wasiuzzaman (2021). Finally, Silva et al. (2022) found that ESG reporting reduces companies' future crash risks.

Based on the studies mentioned above that advocate a positive relationship between ESG and company performance, companies have a motivation to invest more in environmental, social, and governance activities. That is, there is improved awareness concerning ESG disclosure among companies owing to its influence on their sustainability.

On the other hand, the findings of studies that support the presence of a negative ESG–company performance association are consistent with Friedman's (1970) classical opinion. This opinion supports the core objective of company management to maximize shareholders' wealth and not other stakeholders, except that focusing on stakeholders will also lead to maximizing shareholders' wealth (Singh et al., 2022). Some literature (i.e., Carnevale et al., 2009, Al-Hiyari and Kolsi, 2021) revealed that ESG disclosure inversely influenced companies' performance. The view provided by these studies indicates that the cost of ESG disclosure practices is high and exceeds the benefits attained from such practices. That is, ESG reporting will consume company resources.

These inconsistent findings in prior studies can be attributed to the countries' institutional regulations and dissimilar attributes. These findings propose that the environment is essential in examining the link between reporting of ESG and companies' performance. Furthermore, some researchers have attributed the mixed results to employing dissimilar measures for company performance.

Friede et al. (2015) conducted a comprehensive systematic literature review of 2,200 individual studies and reported that the association between ESG and company financial performance is well informed. About 90% of these studies found a non-negative relationship, and most found a positive ESG–financial performance connection.

Furthermore, Prado et al. (2020) conducted a literature review of studies that explored the connection between sustainable development and economic performance. Out of 79 studies, 39 reported a positive relationship, 21 did not find a significant relationship, 10 did not uncover sufficient evidence to define such a relationship, and seven found negative relationships.

Consequently, based on the above analyses and consistent with the several theories outlined earlier, we suggest our first hypothesis as follows:

Hypothesis 1 (H1): *ESG disclosure positively enhances the financial sustainability of listed Saudi companies.*

3.2. Moderating role of corporate governance reforms in the ESG–financial sustainability relationship

Because of the extended range of corporate governance and its expansion to involve issues such as social responsibility, many studies test the connection between corporate governance and sustainability performance (Orazalin and Mahmood, 2021). Consistent with the agency theory perspective, effective corporate governance tools can decrease agency costs, as managers are responsible to all stakeholders. Under this view, these operative mechanisms of corporate governance will lead to increasing the legitimacy of a company (Michelon and Parbonetti, 2012), enhancing the ability of a company to work with evolving challenges in addition to alleviating agency problems (Haniffa and Cooke, 2002), and as indicated by Hussain et al. (2018), resulting in improved sustainable performance.

Under institutional theory, to increase and safeguard their legitimacy, companies follow the guidelines, standards, and prospects of bodies and stakeholders (Berrone and Gomez-Mejia, 2009). Governments implement policies, procedures, and reforms to develop their institutional environment. Companies should integrate institutional requirements, regulatory frameworks, and social norms into their social responsibility practices (Liao et al., 2018). Governing organizations will stimulate companies to show advanced levels of ESG performance. Thus, consistent with institutional theory, governance reforms will positively influence ESG activities and companies' sustainable performance.

Lim and Tsutsui (2012) reported that in countries with strong regulations, companies are more committed to engaging with social responsibility practices and enhancing their ESG activities. Ortas et al. (2018) found that national institutions substantially affect the performance of companies' ESG. Orazalin and Mahmood (2021) provided further support for institutional theory, as their results show that developed country governance results in improved environmental performance. Several previous studies (i.e., Kim and Liu, 2013; Bae et al., 2020; Liao et al., 2021)

have reported that corporate governance reforms impact corporate decision making and company value.

The reforms of corporate governance regulations in 2017 by the Saudi Capital Market Authority have been restructured to be consistent with the Saudi Companies Law, the worldwide best practices, and the Saudi financial market. The goal of these reforms was to improve the legal basis for corporate governance, enhance the responsibilities of shareholders, and simplify the roles and accountabilities of the board of directors and committees, in addition to executive management, to advance their productivity and strengthen integrity, transparency, decision-making tools, disclosures, and justice. Therefore, these reforms to Saudi corporate governance could enable more contributions by boards and their committees to facilitate operative ESG practices, which may result in higher financial sustainability.

The above reasoning and discussion propose that companies operating in well-regulated markets will be expected to implement ESG policies to meet the terms and respond to regulatory reforms and demands. Thus, we believe that including corporate governance reforms will increase our understanding of the association between ESG and financial sustainability. In particular, we suppose that corporate governance reforms contribute to positively moderating this association. Consequently, the following hypothesis is proposed:

Hypothesis 2 (H2): *Corporate governance reforms positively moderate the association between ESG disclosure and financial sustainability*.

4. Data and research methodology

4.1. Sampling and data collection

Our study aims to empirically investigate the influence of ESG disclosure on financial sustainability, moderated by corporate governance reforms. The initial sampling conducted in this study comprised all companies listed on the primary market of the Saudi Stock Exchange (*Tadawul*). Nevertheless, to accomplish the purpose of this study, we utilized only the companies with ESG ratings on the Bloomberg database, in addition to having the other required data for the analysis. Consequently, out of 206 listed companies on the Saudi Stock Exchange through the end of 2021 and after removing companies with incomplete data or outliers, our final sample encompassed 309 company-year observations (38 companies) covering the period from 2013 to 2021. Because the corporate governance reforms took place in 2017, we divided our sample into two equal periods. Accordingly, our sample period was 2013–2021, the last year for which data were available. Furthermore, this period enabled some data before launching Saudi Vision 2030 and some

data that followed. This was because Vision 2030 focused additional attention on the concerns of society regarding the environment.

The data for all study variables (ESG aggregated scores, environmental scores, social scores, governance scores, financial sustainability, and other control variables) were extracted from the Bloomberg database, consistent with many previous studies (i.e., Baldini et al., 2018; Xie et al., 2019; Wasiuzzaman and Mohammad, 2020; Singh et al., 2022; Silva et al., 2022). Compared to different database platforms, the Bloomberg ESG scores are considered suitable for measuring ESG practices for several reasons, as follows:

1. The ESG disclosure scores from Bloomberg involved 247 potential standards through environmental, social, and governance elements (Campanella et al., 2020).
2. The ESG scores from Bloomberg were consistent with international guiding principles, such as the Global Reporting Initiative (GRI), the sustainability disclosure framework, and the United Nations (Atif et al., 2022). Therefore, these data were considered valuable in highlighting the strengths and weaknesses related to companies' ESG concerns.
3. Bloomberg collects its ESG data based on many company reports and sources (i.e., sustainability reports, corporate governance reports, annual reports, corporate social responsibility reports, and company websites, in addition to a special survey by Bloomberg that asks directly for companies' data) (Bloomberg, 2014).

As a result, the Bloomberg ESG database provides adequate data to examine ESG reporting and financial sustainability.

4.2. Measurement of variables

4.2.1. Measuring financial sustainability (*explained variable*)

The contradictions in the results of preceding studies related to the relationship between ESG and companies' financial performance leave unanswered questions. One key reason for these contradictions and disagreements can be attributed to the measurements utilized for corporate financial performance and sustainability. The most common metrics used in prior studies include market-based measures like share price and Tobin's Q and accounting-based measures like return on equity and assets. Thus, our research employed a sustainable growth rate (SGR) to measure financial sustainability. For assessing economic sustainability, selecting a tool that could support the analysis of policies and company decision making was important. The SGR of companies represents a key concern for managers and investors because it signifies their companies' anticipated operational stability (Lockwood and Prombutr, 2010). Furthermore, employing an SGR enables companies to balance operational features (asset efficiency and profit margin) and financial

features (retention rate and capital structure) into one specific comprehensive measure (Amouzesh et al., 2011).

Following many prior studies (i.e., Amouzesh et al., 2011; Hartono and Utami, 2016; Şahin and Ergün, 2018; Sunardi et al., 2021; El Madbouly, 2022; Altahtamouni et al., 2022), we calculated sustainable growth using the following equation:

SGR = Return on Equity (ROE) * Retention Rate (1)

ROE = Net Profits ÷ Total Equity (2)

Retention Rate = 1- Dividend Payout Ratio (3)

In our empirical analysis, we used another proxy for financial sustainability. We utilized return on assets (ROA) as an accounting-based method. It was more reliable because the accounting data were audited by an independent external auditor.

4.2.2. Measuring ESG (*explanatory variable*)

In this study, we measured ESG based on the Bloomberg database. The Bloomberg ESG score is utilized as a measurement that offers a rating for companies consistent with their level of ESG disclosure. This rating is subject to a group of weighted data points for every element of ESG concerning their significance. The ESG scores ranged from 0 to 100. ESG scores of 0 are the lowest or null disclosure level, while ESG scores of 100 represent the companies that disclose every data point collected by Bloomberg (full disclosure). This measurement is consistent with many previous studies (i.e., Xie et al., 2019; Campanella et al., 2020; Singh et al., 2022; Silva et al., 2022).

In our primary analysis, we used an aggregate measure of ESG scores. In further research, we employed the ESG scores divided into three subcomponents: environmental, social, and governance. By doing this, we further calculated the incremental influence of each ESG component on financial sustainability. Data on individual ESG scores were likewise collected from the Bloomberg database.

4.2.3. Measuring corporate governance reforms (*moderating variable*)

Corporate governance reform (CGR) was examined in this study as a moderator of the relationship between ESG and financial sustainability. Following previous studies, such as Ahmed et al. (2013) and Liao et al. (2021), we measured CGRs as a dummy variable that assumes the value of "0" for the period before the updated corporate governance code in 2017 and a value of "1" for the period that followed.

4.2.4. Measuring control variables

Company characteristics can impact ESG disclosure and financial sustainability. Thus, in line with many prior studies (i.e., Maama, 2021; Orazalin and Mahmood, 2021; Singh et al., 2022; Rahi et al., 2022; Zhou et al., 2022), we considered the following control variables:

- Company size (SIZE) measured by the natural logarithm of total assets.
- Financial leverage (LEV) measured by total debt to total assets.
- Company risk (RISK) measured by stock price volatility divided by market index volatility.
- Company age (AGE) measured by the natural log of company age.

4.3. Model development

This study examined the expected relationships between ESG disclosure and corporate financial sustainability and the moderating effect of CGRs on this relationship. To test our hypotheses, we developed the two models presented below. Evaluating the direct influence of our predictor variable (ESG) on the dependent variable (SGR) represents the test of our first hypothesis (HI), which is presented in Equation (4):

$$SGR_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 RISK_{i,t} + \beta_5 AGE_{i,t,+} Industry\ dummies + Year\ dummies + \varepsilon_{i,t} \quad (4)$$

To test the moderating effect of CGR on the ESG–SGR direct relationship, the above equation was incorporated with moderator and interaction terms, which represented our second hypothesis (H2) and is described in Equation (5) as follows:

$$SGR_{i,t} = \beta_0 + \beta_1 CGR_{i,t} + \beta_2 CGR_{i,t} * ESG_{i,t} + \beta_3 ESG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 RISK_{i,t} + \beta_7 AGE_{i,t,+} Industry\ dummies + Year\ dummies + \varepsilon_{i,t} \quad (5)$$

In the equation, *i* and *t* are company and time, respectively. SGR is calculated as the ROE multiplied by the retention rate. The Bloomberg ESG score ranges from 0 (null disclosure) to 100 (full disclosure). CGR is a dummy variable that assumes the value of "0" for the period before the updated corporate governance code was adopted in 2017 and a value of "1" for the period that followed. Company size (SIZE) is the natural logarithm of total assets. Financial leverage (LEV) is the ratio of total debt to total assets. Company risk (RISK) is stock price volatility divided by market index volatility. Company age (AGE) is the natural log of company age. The terms *industry dummies* and *year dummies* specify the overlooked industry fixed effects in addition to time-specific effects, which are time-variant and common to all companies.

To consider the lack of independence of observations within a given company over time, equations (4) and (5) were thus first assessed by utilizing pooled ordinary least squares (OLS) with activating robust standard errors adjusted for heteroskedasticity and clustering by company. These equations were further approximated using fixed effects regression to account for time-invariant company-specific effects.

5. Results, analysis, and discussions

5.1. Descriptive statistics and Pearson's correlation

Our sample ESG data (38 Saudi listed companies) are presented in Table 1. Panel A of Table 1 shows that companies in the consumer staples, energy, materials, and utility sectors disclosed considerably more ESG information than companies in other sectors. Furthermore, Panel B shows that corporate ESG disclosure is somewhat consistent over time and increases annually through 2021, signifying that Saudi companies are aware of the value of disclosing environmental, social, and governance information. The mean ESG score in 2013 was 14.24; later, it increased to 18.19 in 2017. In the last four years of our study, specifically following the launch of Saudi Vison 2030, the average increased to 30.13 for 2021. However, our sample shows only 38 companies with calculated ESG disclosure scores, demonstrating the need to boost Saudi companies in reporting their ESG practices.

The descriptive statistical values for all variables used in this study are presented in Table 2. The table shows that the average value of the SGR (dependent variables) was 4.98%, which specifies that the financial sustainability of Saudi companies is comparatively low. Thus, without external financing, this average implies that Saudi companies can reach a maximum SGR of 4.98%. The average also means that the ability of our sample companies to grow based on internal funds is 4.98%. That is, companies that need their growth to be above 4.98% need more external funds, or the dividend must be cut. The minimum SGR is 0, and the maximum value is 32.20%. This means that the SGR of Saudi companies is somewhat dissimilar, which is connected to the company's specific condition besides the cyclical industry where the company is situated. The ROA for our sample was 3.78%. In addition, SGR had the lowest standard deviation (5.74%) compared to ROA (6.63%), implying that SGR had the most downward variance among the two proxies for financial sustainability.

Table 1. Descriptive statistics values for environmental, social, and governance disclosures (ESG)

Panel A. ESG disclosures within each industry			
Industry	Number of observations	Number of companies	Mean
Communication Services	27	4	17.58
Consumer Discretionary	18	3	15.28
Consumer Staples	18	3	26.44
Energy	21	3	25.56
Financials	125	14	17.57
Healthcare	9	1	12.22
Industrials	9	1	17.10
Materials	55	6	26.73
Real Estate	18	2	12.43
Utilities	9	1	23.46
Panel B. ESG disclosures throughout each year			
Year	Number of observations	Number of companies	Mean
2013	34	34	14.24
2014	34	34	15.22
2015	34	34	15.38
2016	34	34	16.89
2017	34	34	18.19
2018	34	34	20.93
2019	35	35	22.66
2020	35	35	25.22
2021	35	35	30.13

In Table 2, the average ESG score is 19.93% ranging from 0.01 (minimum) to 61.34 (maximum), which proposes that ESG scores among Saudi listed companies during 2013-2021 are low. These results are in line with some prior evidence from the Saudi market (i.e., Ammer et al., 2020 (ESG = 17.08%); Bamahros et al., 2022 (ESG = 14.62%)). Because the ESG score is calculated as a weighted average score ranging between 0 and 100, this finding indicates that our 38 Saudi companies are not resourcefully assigning their environmental, social, and governance expenses to operative ESG initiatives. This low average ESG could also be attributable to the fact that ESG disclosure is still voluntary in Saudi Arabia. For the means of individual ESG elements, the ENV was 12.13%, SOC was 14.34%, and GOV was 47.07%. Furthermore, the average control variables were SIZE (10.65), LEV (22.59), RISK (0.91), and AGE (1.44).

Table 2. Descriptive statistics values

Variables	N	Mean	STD	Min	Max	25th percentile	Median	75th percentile
SGR	309	4.98	5.74	0	32.20	0	3.62	7.73
ROA	309	3.78	6.63	-14.81	36.68	1.03	1.99	4.81
ESG	309	19.93	11.69	0.01	61.34	11.40	16.67	25.82
ENV	265	12.13	16.45	0	81.43	0	3.10	19.82
SOC	303	14.34	13.05	0	61.67	6.17	11.67	21.67
GOV	304	47.07	17.80	0	87.36	39.29	44.64	54.89
SIZE	309	10.65	0.68	9.23	12.58	10.20	10.70	11.20
LEV	309	22.59	19.72	0	80.93	5.18	16.04	38.79
RISK	309	0.91	0.33	0.04	1.60	0.81	0.99	1.13
AGE	309	1.44	0.31	0.48	1.96	1.18	1.56	1.63

NOTE: The descriptive statistics values for all utilized variables in our study are clarified in this table. The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. We have SGR (dependent variable), which is the ROE multiplied by the retention rate; ROA is the return on assets. ESG (explanatory variable) is the aggregate Bloomberg ESG that ranges from 0 (null disclosure) to 100 (full disclosure); environmental score (ENV) is the score on environmental disclosure; the social score (SOC) represents social disclosure; and governance (GOV) represents governance disclosure. Control variables include company size (SIZE), the natural logarithm of total assets; financial leverage (LEV), the total debt to assets ratio; company risk (RISK) is the stock price volatility divided by the market index volatility; and company age (AGE) is the natural log of company age.

The Pearson correlation for all variables is reported in Table 3. The table shows positive but insignificant correlation coefficients between ESG, SGR, and ROA. While utilizing multiple regression analysis, multicollinearity was frequently a problem in the data set. However, the correlation coefficients among all variables of this study approve the nonexistence of multicollinearity issues, since no coefficient between variables surpasses the threshold value of 0.70 (Pallant, 2007). To further confirm the nonexistence of multicollinearity, the variance inflation factor (VIF) was calculated. The results (not documented here but accessible upon request) illustrate that no multicollinearity occurs since the VIF levels of each variable are reported within the satisfactory limits (VIF < 10) (Gujarati, 2004). We thus conclude that there is no multicollinearity problem in our study.

Table 3. Correlation coefficients among the study variables

Variables	*SGR*	*ROA*	*ESG*	*SIZE*	*LEV*	*RISK*	*AGE*
SGR	1						
ROA	0.168*	1					
ESG	0.070	0.006	1				
SIZE	0.220**	0.315***	0.172*	1			
LEV	-0.209***	-0.303**	0.118*	-0.135*	1		
RISK	-0.266***	-0.051	0.009	-0.043	0.185***	1	
AGE	0.151**	0.224**	0.093	0.174*	-0.265**	-0.192**	1

NOTE: The correlation matrix among all variables employed in the regression models is shown in this table. The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

5.2 Regression results and discussion

This section reports the empirical results of the influence of ESG disclosure on the financial sustainability of listed Saudi companies. To do so, we conducted both pooled OLS (Model 1) and fixed effects regressions (Model 2).

Table 4 shows that our first hypothesis (H1) is supported in Model (1) of the OLS regression. The results assert a positive and significant association between combined ESG and financial sustainability measured by SGR. The relationship is statistically significant at the 1% level, proposing that a higher level of disclosed corporate ESG practices leads to better corporate financial sustainability. In Model (2), the result was also assessed according to a fixed effects estimation model. We accepted fixed effects, as the Hausman test's p-value was significant. Similarly, our first hypothesis (H1) and the conclusion are still confirmed. ESG was still positively and significantly related to the SGR.

Table 4. The effect of ESG disclosures on financial sustainability

Variable	Expected Sign	OLS (1)	Fixed Effects (2)
INTERCEPT	-/+	-7.7476 (-0.96)	-40.7414*** (-2.71)
ESG	+	**0.0911***** (3.02)	**0.1237***** (3.36)
SIZE	+	1.8522** (2.30)	4.4029*** (3.62)
LEV	-/+	-0.0690** (-2.24)	-0.1307*** (-3.30)
RISK	-/+	-4.4199*** (-5.41)	-3.7463*** (-3.85)
AGE	-/+	-2.1276* (-1.97)	3.9153 (0.63)
Year_FE		Yes	Yes
Industry_FE		Yes	Yes
Sample Size		309	309
F_statistic *Adjusted R^2*		15.86*** 0.3826	6.70*** 0.2524

NOTE: The regression result of OLS and fixed effects of the relationship between ESG (predicting variable) –SGR (dependent variable) relationship is presented in this table. The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. Control variables included SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

This study claims that Saudi companies who report their ESG activities are found to create a long-term performance (i.e., financial sustainability) over the study period 2013-2021. When these companies invest in and disclose their ESG practices, they create and build a positive image in society, which should be reflected in their financial sustainability. These results show that Saudi companies spending on ESG activities reported financial benefits. Disclosing ESG enabled our sample companies to simplify the effective management of their resources, raise their value, and allow them to run their business successfully. The results indicate that once these Saudi companies progress with the sustainability responsible pathway, they experience constant growth in their ESG efforts, and these efforts are rewarded by market participants. This may suggest that companies in Saudi Arabia that are operative in employing ESG are aware of the significance of sustainable development. Our findings of the positive ESG–financial sustainability association lend empirical support to the legitimacy, sustainable development, signaling, and

stakeholder theories.

Regarding the control variables, our findings show that SIZE is positively and significantly related to the SGR. This finding supports the view that larger companies are more sustainable than smaller ones. LEV is also negatively and significantly associated with an SGR, which signifies that highly leveraged companies are less financially sustainable. For the RISK variable, the results show that a company associated with a higher risk has a negative and significant impact on the SGR. Finally, the older companies (AGE) are positively related to the SGR (in Model 2), but the result is not significant. These results suggest that a company's financial sustainability is related to its characteristics.

Table 5 shows the results of the pooled OLS analysis and fixed effects analysis for the regression of CGR (moderating variable) on the association between ESG and SGR. The estimated coefficient of CGR in Model (1) is positive and significant, proposing that the new corporate governance changes improve the SGR of Saudi companies. The predicted coefficient of CGR*ESG is positive and statistically significant, suggesting that changes in corporate governance codes enhance the positive impact of ESG disclosures on financial sustainability. This result supports our second hypothesis (H2), which states that the new Saudi CGRs adopted in 2017 have a positive moderating influence on the association between ESG activities and financial sustainability. This conclusion is also confirmed by the results of Model (2), which employs fixed effects regression, as CGR*ESG remains positive and significant. In addition, the coefficient of ESG disclosures is positive and significant, suggesting that H1 gains further support.

Our results support Ho (2020) that improving corporate governance and transparency of companies will enable an improved understanding of how non-financial reporting like ESG determines the value of companies. This confirms that companies within regulatory governance countries consider sustainability concerns during decision-making. This will enhance the performance of ESG in complying with regulatory instructions. Thus, this result supports agency and institutional theories. Our evidence is consistent with the results of Hartmann and Uhlenbruck (2015), who found that domestic organizations have a positive influence on the environmental performance of companies. Further, our reported result is consistent with Orazalin and Mahmood (2021) that the quality of country governance results in better environmental performance.

Generally, we offer evidence for the success of CGRs in Saudi Arabia in producing increased ESG activity and improved SGRs (higher financial sustainability). This result delivers a clear message for Saudi regulators to develop, issue, and implement operative regulations that require companies to pay attention to their surrounding society and environment and disclose their ESG efforts.

Table 5. The moderating effect of CGR on the association between ESG disclosures and financial sustainability

Variable	Expected Sign	OLS (1)	Fixed Effects (2)
INTERCEPT	-/+	-47.8143***	-14.4080***
		(-3.03)	(-1.80)
CGR	+	3.5189*	2.8383*
		(1.87)	(1.77)
*ESG*CGR*	+	**0.1146****	**0.0984***
		(2.05)	(1.80)
ESG	+	0.0858**	0.0798**
		(2.10)	(2.14)
SIZE	+	4.6077***	1.9727***
		(3.80)	(2.77)
LEV	-/+	-0.1347***	-0.0757***
		(-3.41)	(-3.13)
RISK	-/+	-3.4497***	-3.4866***
		(-3.53)	(-3.81)
AGE	-/+	4.3943	-0.0916
		(0.71)	(-0.05)
Year_FE		Yes	Yes
Industry_FE		Yes	Yes
Sample Size		309	309
F_statistic		6.06***	86.12***
Adjusted R^2		0.5459	0.2441

NOTE: This table reports findings of OLS and fixed effects of the moderating effect of CGR on the relationship between ESG (predicting variable) and financial sustainability as measured by SGR (dependent variable). The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. GGR is a dummy variable that assumes the value of "0" for the period before the updated corporate governance code in 2017 and a value of "1" for the period that followed. Control variables included SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

5.3. Additional analysis

5.3.1. The effects of environmental disclosures (ENV), social disclosures (SOC), and governance disclosures (GOV) on financial sustainability

Table 6 shows the regression of separate ESG components, ENV, SOC, and GOV, on financial sustainability using both pooled OLS and fixed effects regressions. First, the estimated coefficient of ENV in Models (1) and (2) was positive and statistically significant (at the 1% level), meaning that greater levels of disclosed environmental data lead to higher corporate financial sustainability.

This finding is consistent with Ammer et al. (2020) and Gerged et al. (2021), who reported that disclosing environmental sustainability activities had a strong positive impact on the value of companies. Second, the estimated coefficient of SOC is positive and statistically significant at the 1% and 5% levels for OLS and fixed effects, respectively. This shows that reporting social information has a favorable impact on the SGR of companies. Our results are comparable to those of Albuquerque et al. (2019), who specified that greater social responsibility investment would lower the company's systemic risk and higher company value.

Table 6. The effect of environmental (ENV) disclosure, social (SOC) disclosure, and governance (GOV) disclosure on financial sustainability

	ENV		SOC		GOV	
Variable	OLS (1)	Fixed Effects (2)	OLS (3)	Fixed Effects (4)	OLS (5)	Fixed Effects (6)
INTERCEPT	-50.8808** (-2.08)	-29.9268 (-1.14)	- 14.7505** (-2.25)	-39.9237*** (-2.63)	-10.3072 (-1.33)	-39.0338*** (-2.52)
ENV	**0.1085*** (2.58)**	**0.10837*** (2.86)**				
SOC			**0.0529*** (2.62)**	**0.0760** (2.08)**		
GOV					**-0.0237 (-0.95)**	**-0.0374 (-1.34)**
SIZE	5.4087*** (2.18)	4.8398* (1.87)	2.5260*** (3.86)	4.5766*** (3.72)	2.3734** (3.052)	4.4153*** (3.54)
LEV	-0.2006*** (-3.16)	-.21250*** (-5.18)	-0.0678*** (-2.43)	-.1525*** (-3.80)	-.0768*** (-2.53)	-0.1741*** (-4.31)
RISK	-3.6652*** (-4.18)	-4.1905*** (-4.44)	-4.6035*** (-5.71)	-3.7738*** (-3.87)	-4.4524*** (-5.71)	-3.4157*** (-3.38)
AGE	5.9952 (1.09)	-6.5456 (-1.51)	-1.7357* (-1.73)	2.9980 (0.47)	-2.4473*** (-2.26)	5.4648 (0.81)
Year_FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry_FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample Size	265	265	303	303	304	304
F_statistic	16.74***	12.85***	16.48***	6.41***	15.23***	5.84***
Adjusted R^2	0.3816	0.2221	0.3812	0.2478	0.3637	0.2307

NOTE: The results of regressing OLS and fixed effects of ENV, SOC, and GOV disclosures on the financial sustainability as measured by SGR (dependent variable) are presented in this table. The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. Control variables included SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

Finally, the estimated coefficient of GOV was negative but not statistically significant, indicating that corporate governance disclosure does not influence the SGR of Saudi companies. This result can be attributed to the fact that the market participants believe that these companies have previously attained excellence in governance. Any supplementary investment in corporate governance practices is value-diminishing and will not affect financial sustainability.

5.3.2. The influence of the Covid-19 pandemic on the association between ESG disclosures and financial sustainability

Based on the pooled OLS analysis and fixed effects analysis, Table 7 displays the findings of the regression of the Covid-19 pandemic on the relationship between ESG combined scores and financial sustainability.

ESG activities and financial sustainability are negatively impacted by the Covid-19 crisis. At the 1% level, the coefficient of COVID*ESG is negative and statistically significant, demonstrating that the Covid-19 crisis reduces the positive impact of ESG disclosures on financial sustainability. Our findings are consistent with Lööf et al. (2022), who reported that better ratings of ESG are associated with lower downside risk but with lower upside return potential. Further, our results support Demers et al. (2021), who found that ESG ratings did not positively impact returns for the duration of the Covid-19 crisis in the first quarter of 2020. On the other hand, while Covid-19 negatively impacted the ability of ESG to enhance the financial sustainability of Saudi companies, studies like Fernández-Méndez and Pathan (2022) found that Australian companies with environmentally sustainable activities produced greater abnormal returns during the Covid-19 pandemic. Furthermore, Bose et al. (2022) reported that the undesirable influence of Covid-19 on the value of companies is less noticeable for companies with healthier sustainability performance.

Table 7: The effect of Covid-19 on the association between ESG disclosures and financial sustainability

Variable	Expected Sign	OLS (1)	Fixed Effects (2)
INTERCEPT	-/+	-4.6552 (-0.69)	-43.6249*** (-2.95)
COVID	-	-.4952 (-0.28)	-1.4646 (-0.73)
*COVID*ESG*	-	**-0.1436***** (-2.88)	**-0.1764***** (-3.35)
ESG	+	0.1237*** (3.43)	0.1948*** (4.65)
SIZE	+	1.2466* (1.92)	4.5763*** (3.83)
LEV	-/+	-0.0477*** (-3.17)	-0.1484*** (-3.78)
RISK	-/+	-3.5609*** (-4.24)	-3.4700*** (-3.62)
AGE	-/+	.5943 (0.62)	4.0301 (0.66)
Year_FE		Yes	Yes
Industry_FE		Yes	Yes
Sample Size		309	309
F_statistic		13.24***	7.27***
Adjusted R^2		0.2112	0.2837

NOTE: This table reports findings of OLS and fixed effects of the moderating impact of Covid-19 (COVID) on the association between ESG (predicting variable) and financial sustainability as measured by SGR (dependent variable). The 309 company-year observations (38 listed Saudi companies on the primary market) represent our study sample spanning 2013–2021. Control variables included SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

5.4. Robustness checks

5.4.1. An alternative proxy for financial sustainability

As an additional check, we re-examine the sensitivity of our main results in Table 4 to another universally accepted measure of financial sustainability. The results are presented in Table 8, which shows comparable regression findings of the two baseline regression models used in Table 4 (the calculated coefficient of ESG has a positive and significant influence on ROA). However, this time, ROA was used as a measurement for financial sustainability instead of SGR.

A higher ROA, like a higher SGR, indicates a better sustainable growth rate for Saudi companies.

Table 8. Robustness regression of ESG and financial sustainability with ROA

Variables	OLS (1)	Fixed Effects (2)
INTERCEPT	50.4759***	-14.4080***
	(5.35)	(-1.80)
ESG	0.1263***	0.0895**
	(1.93)	(2.76)
SIZE	-4.6865***	-1.8408***
	(-5.03)	(-2.43)
LEV	-0.1233***	-0.1624***
	(-6.50)	(-6.31)
RISK	1.043	1.0323
	(1.24)	(1.13)
AGE	4.3923***	4.7556 ***
	(4.32)	(2.42)
Year_FE	Yes	Yes
Industry_FE	Yes	Yes
Sample Size	302	302
F_statistic	6.64***	117.62***
Adjusted R^2	0.3768	0.3059

NOTE: The regression result of OLS and fixed effects of the ESG (predicting variable)–ROA relationship are presented in this table. The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. Control variables included SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

5.4.2 Alternative methods of estimation

Similar to Petersen (2009) and Gow et al. (2010), our estimation method is changed to account for cross-sectional and serial dependence. Thus, Table 9 presents alternative estimation models employed to investigate the association between ESG and financial sustainability. The Model (1) estimate is based on White (1980), and the Model (2) estimate is based on the Fama–MacBeth procedure. To construct Model (3), we used the Newey-West (1987) procedure, and for Model (4), we employed the quantile regression method. As a final step, Model (5) used generalized linear model estimation (GML).

Table 9. The effect of ESG disclosures on financial sustainability using alternative estimation methods

Variables	White	Fama–MacBeth	Newey-West	Quantile	GML
INTERCEPT	-2.300 (-0.32)	-5.8164 (-1.01)	-2.0629 (-1.50)	-13.4427** (-2.34)	-6.8099 (-1.06)
ESG	**0.0648 *** **(1.72)**	**0.1121**** **(2.92)**	**0.1577***** **(2.85)**	**0.0961***** **(2.79)**	**0.1577***** **(4.09)**
SIZE	1.0204 (1.47)	1.1146* (1.90)	1.6378** (2.10)	1.9757*** (3.58)	1.6378*** (2.65)
LEV	-0.05401 *** (-3.46)	-0.0398** (-2.96)	-0.0607** (-2.01)	-0.0320 (-1.63)	-0.0607*** (-2.77)
RISK	-3.9773*** (-4.88)	-3.3838*** (-3.78)	-4.2547*** (-4.60)	-4.2028*** (-5.37)	-4.2547*** (-4.85)
AGE	0.873 (0.10)	0.8281 (1.07)	-2.0629 (-1.50)	-0.4575 (-0.46)	-2.0629* (-1.84)
Year_FE	Yes	Yes	Yes	Yes	Yes
Industry_FE	Yes	Yes	Yes	Yes	Yes
Sample Size	309	309	309	309	309
Adjusted R^2	0.1379	0.2366	0.1304	0.3075	0.2556

NOTE: This table reports findings of ESG disclosures (predicting variable)–SGR (dependent variable) relationship using alternative estimate methods (White, Fama–MacBeth, Newey-West, Quantile, and GML). The 309 company-year observations (38 Saudi listed companies on the primary market) represent our study sample spanning 2013–2021. Control variables include SIZE, LEV, RISK, and AGE. * is the significance level at 10%, ** is the significance level at 5%, and *** is the significance level at 1%. For all variable descriptions and measurements, refer to Table 2.

The results show that financial sustainability as measured by SGR is still influenced by ESG reporting. A positive and significant connection still exists between ESG disclosure and financial sustainability after alternative estimation techniques have been applied. Generally, the results reported in Table 9 using different estimating techniques show that our main empirical results remain robust.

6. Conclusions, implications, limitations, and future directions

Stakeholders, including shareholders and governments, demand that companies undertake more sustainable, well-governed, and responsible actions. Globalization, international, and national economic problems, and other challenges, such as the Covid-19 pandemic, force companies to manage their operations efficiently and ethically to be successful.

Our study examined the arguments associated with the ESG disclosure–financial sustainability relationship. Drawing on the theories for legitimacy, signaling, sustainable development, and stakeholder, we hypothesized that the relationship between ESG disclosure and economic sustainability is positive because ESG practices may strengthen the social contract between the listed company and all several stakeholders, leading the companies to more sustainable and long-term performance. Our study also investigated the individual ESG factors for their impact on financial sustainability, and which one of them was more important for Saudi companies. Next, drawing on agency and institutional theories, we investigated the moderating influence of CGRs on the relationship between ESG and financial sustainability.

To conduct our study, we utilized the Bloomberg database to evaluate the data of 38 Saudi listed companies (309 company-year observations) from 2013-2021. Our results support the underpinning theories of this study, which considers sustainability activities such as ESG as value improvements for both companies and stakeholders. The results confirmed that ESG reporting is value-relevant and positively associated with financial sustainability. These results demonstrate that it is beneficial and essential for companies to act sustainably to support their reputations, and be valued by other stakeholders, thus leading to more success and creating new growth opportunities. Because ESG disclosure is not mandatory for companies, our results encourage companies to explore non-financial disclosures as a significant indicator of a company's long-term sustainability.

The moderating impacts of CGRs indicate that the reforms adopted in 2017 for corporate governance positively influenced the association between ESG and financial sustainability. In further analysis, we extended our understanding by testing the association between separate ESG factors, specifically, corporate environmental score, corporate social score, and corporate governance score, with financial sustainability. The results showed that while environmental and social scores were positively and significantly related to financial sustainability, the governance score had a negative but minor impact. Furthermore, we examined the moderating influence of Covid-19 on the ESG–financial sustainability relationship and concluded that the Covid-19 pandemic negatively influenced such a connection.

6.1. Theoretical implications

Our study has some theoretical and practical implications. Regarding the theoretical implications, this study expanded the existing literature by offering additional evidence supporting the assumption that companies with good ESG disclosures are expected to have a better SGR (i.e., better financial sustainability). Although the sustainability literature includes many studies related to ESG, a few studies have empirically tested the association between ESG disclosure and financial sustainability. Furthermore, this association is still an issue without univocal consensus. Additionally, this study's results support the theories of legitimacy, signaling, sustainable development, stakeholder, agency, and institutional. An additional theoretical innovation for this study is that, to the best of our knowledge, this study is pioneering in examining the moderating role of CGRs on ESG–financial sustainably association. Finally, because our sampling period included the Covid-19 pandemic, we extended the literature by examining the role of Covid-19 in the association between ESG and financial sustainability.

6.2. Policy implications

The results achieved by this study have some policy implications. These implications include the following:

- To provide sustainable benefits and development for different stakeholders, regulators, and policymakers could develop/review policies or regulations to promote ESG disclosures.
- Based on the results of this study, the number of Saudi companies that disclose ESG and the level of this disclosed ESG is still low. Further, it is noticed that no many listed companies have sustainability committee. Thus, the regulators of capital markets may develop and implement guidelines/policies to encourage listed companies to form a specific committee for sustainability to facilitate better practices and monitoring of sustainability and ESG activities.
- Currently, the calculation of non-financial information (i.e., ESG) is still questionable, owing to the nature of this information. Thus, there is a need for standardized ESG measures (i.e., ESG index).
- Because ESG enhances the sustainability and long-term growth of companies, policymakers should monitor the performance of companies regarding their ESG activities, specifically after confirming that ESG practices enhanced the performance of companies during crises such as Covid-19.

- Consistent with the confirmed importance of ESG, policymakers may enhance the use of ESG indices as innovative benchmarks rather than financial ratios to construct so-called "green investment" and "sustainable portfolios."
- Because our study confirmed the effectiveness of the 2017 CGRs in sustainability practices, regulators should revise the rules or laws to encourage more sustainable development.
- Finally, policymakers should improve the corporate governance code and ESG disclosure guidelines issued at the end of 2021 to strengthen the companies' capability to attain external financing and attract cross-border capital flows.

6.3. Managerial implications

Further practical contributions of the study's results are the implications for companies and managers, which include the following:

- To enable better social responsibility and financial sustainability, listed companies should increase the efforts of investments in sustainability besides having and integrating their ESG policies within their management systems.
- To increase the benefits of ESG practices in sustainable development, listed companies should discuss and present ESG data in meetings of investors and analysts, in annual general meetings, and in other ways rather than just using published documents on their websites.
- Based on the documented advantages of ESG, company managers should revise their companies' goals from focusing only on maximizing shareholder value to the broader goal of surviving in the long term with stakeholder supremacy and the new ESG economy.
- To increase the benefits of ESG reporting, companies should improve the quality of their ESG reports and receive support from the Saudi Stock Exchange. Furthermore, to improve their ESG reporting, companies could also compare their ESG practices with other companies in the same sector and industry and analyze the feedback from their investors, financial analysts, and other stakeholders.
- Companies should understand the importance of ESG governance in gaining economic profits and flexibility throughout crisis periods. Therefore, ESG should be integrated into companies’ strategic development plans.

6.4. Implications for investors

Furthermore, our results have some implications for investors (individuals and institutions), as follows:

- ESG disclosures enhance investors' ability to alleviate information asymmetry, minimize risk, and undertake more informed and sound decisions.
- ESG disclosures may permit investors to define the company's engagement in sustainable development and its opportunities for long-term growth.
- Asset management institutions and investors should continue exploring the possibility of investment strategies according to ESG activities. Further, they must consider ESG risks that might impact the fluctuation of assets in their investment portfolios.
- Because ESG possibly influences long-term value creation, financial performance, and company sustainability, investors should recognize how companies address the risks related to ESG, in addition to opportunities.
- Based on the ESG score rating, investors can integrate ESG information into their investment strategies to choose high-quality companies and increase their assets' capability to avoid/reduce risks.

6.5. Limitations and directions for future research

Like other studies, our study has some limitations. However, the limitations outlined below could represent opportunities for future research.

- Because not all companies provided ESG data from 2013 to 2021, we used only companies with Bloomberg ESG data. Thus, the study sample was relatively small, which somewhat limited the possibility of generalizing the results. Future ESG and financial sustainability studies may have larger samples, especially after the Saudi Stock Exchange published the ESG Disclosure Guidelines at the end of 2021.
- This study was conducted in Saudi Arabia. Accordingly, our results for other countries would be generalized with caution due to some institutional differences.
- The issuance of the Saudi ESG Disclosure Guidelines at the end of 2021 did not allow our study to assess how the listed companies responded to and implemented the ESG practices in the guidelines. Future studies may have the opportunity to examine this issue.
- Our study was limited to companies listed on the Tadawul All Share Index (TASI), the leading Saudi stock market. Thus, future research may include companies from other Saudi indexes, such as the Saudi Market Capped Index (NomuC).

Notwithstanding the limitations defined above, we believe this study applies to the existing Saudi context, where the sustainability agenda, ESG, and corporate governance are gaining better public attention.

References

Aboud, A., and Diab, A. 2018. The impact of social, environmental, and corporate governance disclosures on firm value: Evidence from Egypt. *Journal of Accounting in Emerging Economies.* **8**(4), pp. 442–458.

Ahmed, S. 2013. Measuring quality of reported earnings' response to corporate governance reforms in Russia. *Journal of Accounting in Emerging Economies.* **3**(1), pp. 21–46.

Albuquerque, R., Koskinen, Y., and Zhang, C. 2019. Corporate social responsibility and firm risk: Theory and empirical evidence. *Management Science.* **65**(10), pp. 4451–4469.

Al-Hiyari, A., and Kolsi, M. C. 2021. How do stock market participants value ESG performance? Evidence from Middle Eastern and North African Countries. *Global Business Review.* pp. 1–23.

Alhebri, A.A., Al-Duais, S.D., and Almasawa, A.M. 2021. The influence of independence and compensation of the directors on family firms and real earnings management. *Cogent Economics & Finance.* **9**, 1934977.

Altahtamouni, F., Alfayhani, A., Qazaq, A., Alkhalifah, A., Masfer, H., Almutawa, R., and Alyousef, S. 2022. Sustainable growth rate and ROE analysis: An applied study on Saudi banks using the PRAT model. *Economies*. **10**(3), 70.

Ammer, M.A., Aliedan, M.M., and Alyahya, M.A. 2020. Do corporate environmental sustainability practices influence firm value? The role of independent directors: Evidence from Saudi Arabia. *Sustainability*. **12**, 9768.

Amouzesh, N., Moenifar, Z. and Mousavi, Z. 2011. Sustainable growth rate and firm performance: Evidence from Iran Stock Exchange. *International Journal of Business and Social Science.* **2**(23), pp. 249–255.

Aslam, S., Elmagrhi, M.H., Rehman, R.U., and Ntim, C.G. 2020. Environmental management practices and financial performance using data envelopment analysis in Japan: The mediating role of environmental performance. *Business Strategy and the Environment.* **30**, pp. 1655–1673.

Atif, M., Liu, B., and Nadarajah, S. 2022. The effect of corporate environmental, social, and governance disclosure on cash holdings: Life-cycle perspective. *Business Strategy and the Environment.* pp. 1–20.

Bae, K.H., El Ghoul, S., Guedhami, O., and Zheng, X. 2020. Board reforms and dividend policy: International evidence. *Journal of Financial and Quantitative Analysis.* **56**(4), pp. 1296–320.

Baldini, M., Maso, L.D., Liberatore, G., Mazzi, F., and Terzani, S. 2018. Role of country- and firm-level determinants in environmental, social, and governance disclosure. *Journal of Business Ethics.* **150**(1), pp. 79–98.

Bamahros, H.M., Alquhaif, A., Qasem, A., Wan-Hussin, W. N., Thomran, M., Al-Duais, S. D., and Khojally, H. 2022. Corporate governance mechanisms and ESG reporting: Evidence from the Saudi Stock market. *Sustainability*. **14**(10), 6202.

Berrone, P., and Gomez-Mejia, L. 2009. Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal.* **52**(1), pp. 103–126.

Bhasin, M., Makarov, R., and Orazalin, N. 2012. Determinants of voluntary disclosure in the banking sector: An empirical study. *International Journal of Contemporary Business Studies.* **3**, pp. 60–71.

Bloomberg, L.P. 2014. *Look Beyond: Bloomberg for environmental, social, and governance analysis*.

Bofinger, Y., Heyden, K.J., and Rock, B. 2022. Corporate social responsibility and market efficiency: Evidence from ESG and misvaluation measures. *Journal of Banking & Finance.* **134**, 106322.

Bogacki, J., and Letmathe, P. 2021. Representatives of future generations as promoters of sustainability in corporate decision processes. *Business Strategy and the Environment.* **30**(1), pp. 237–251.

Bose, S., Shams, S., Ali, M.J., and Mihret, D. 2022. COVID-19 impact, sustainability performance, and firm value: International evidence. *Accounting & Finance*. *62*(1), pp. 597–643.

Broadstock, D.C., Chan, K., Cheng, L.T.W., and Wang, X. 2021. The role of ESG performance during times of financial crisis: Evidence from COVID19 in China. *Finance Research Letters.* **38**, 101716.

Brogi, M., Cappiello, A., Lagasio, V., and Santoboni, F. 2022. Determinants of insurance companies' environmental, social, and governance awareness. *Corporate Social Responsibility and Environmental Management.* pp. 1–13.

Buallay, A., Fadel, S.M., Al-Ajmi, J.Y., and Saudagaran, S. 2020. Sustainability reporting and performance of MENA banks: Is there a trade-off? *Measuring Business Excellence.* **21**(2), pp. 197–221.

Campanella, F., Serino, L., Crisci, A., and D'Ambra, A. 2021. The role of corporate governance in environmental policy disclosure and sustainable development. Generalized

estimating equations in longitudinal count data analysis. *Corporate Social Responsibility and Environmental Management*. **28**(1), pp. 474–484.

Cardoni, A., Kiseleva, E., and Lombardi, R. 2020. A sustainable governance model to prevent corporate corruption: Integrating anti-corruption practices, corporate strategy, and business processes. *Business Strategy and the Environment.* **29**, pp. 1173 –1185.

Carè, R., and Forgione, A.F. 2019. Assessing the relationship between environmental performance and Banks' performance: Preliminary evidence. In M. La Torre and H. Chiappini ed, *Socially responsible investments*. Palgrave Pivot.

Carnevale, C., Giunta, F., and Cardamone, P. 2009. The value relevance of social report. *The European Financial Management Association.* 1–31.

Casonato, F., Farneti, F., and Dumay, J. 2019. Social capital and integrated reporting: Losing legitimacy when reporting talk is not supported by actions. *Journal of Intellectual Capital.* **20**(1), pp. 144–164.

CFA Institute. 2019. *ESG integration in Asia Pacific: Markets, practices, and data.* [Accessed 11 March 2022]. Available from: https://www.unpri.org/investor-tools/esg-integration-in-asia-pacific-markets-prac- tices-and-data/4452.article

Cheema-Fox, A., LaPerla, B.R., Serafeim, G. and Wang, H.S. 2020. *Corporate resilience and response during COVID-19*. Working Paper 20-108. Harvard Business School.

Crespi, F. and Migliavacca, M. 2020. The determinants of ESG rating in the financial industry: The same old story or a different tale? *Sustainability*. **12**, 6398.

Datta, P., Gopalakrishna-Remani, V., and Bozan, K. 2015. The impact of sustainable governance and practices on business performance: An empirical investigation of global firms. *International Journal of Sustainable Society.* **7**, pp. 97–120.

Demers, E., Hendrikse, J., Joos, P., and Lev, B. 2021. ESG didn't immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of Business Finance & Accounting.* **48**, pp. 433–462.

El Madbouly, D. 2022. Factors affecting the sustainable growth rate and its impact on firm value: Empirical evidence from the Egyptian stock exchange. *Accounting and Auditing Journal of the Association of Arab Universities*. **11**(1), pp. 1–40.

Fernández-Méndez, C., and Pathan, S. 2022. Environmental stocks, CEO health risk and COVID-19. *Research in International Business and Finance*. **59**, p. 101509.

Friede, G., Busch, T., and Bassen, A. 2015. ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment.* **5**(4), pp. 210–233.

Friedman, M. 1970. *The social responsibility of business is to increase its profits the New York Times Magazine*. New York: New York Times Company.

Gerged, A.M., Beddewela, E., and Cowton, C.J. 2021. Is corporate environmental disclosure associated with firm value? A multicountry study of Gulf Cooperation Council firms. *Business Strategy and the Environment.* **30**(1), pp. 185–203.

Gofman, M. 2017. Efficiency and stability of a financial architecture with too-interconnected-to-fail institutions. *Journal of Financial Economics*. **124**(1), pp. 113–146.

Gow, I.D., Ormazabal, G., and Taylor, D.J. 2010. Correcting for cross-sectional and time series dependence in accounting research. *The Accounting Review.* **85**(2), pp. 483–512.

Griffin, P.A., and Sun, EY 2018. Voluntary corporate social responsibility disclosure and religion. *Sustainability Accounting. Management and Policy Journal.* **9**(1), pp. 63– 94.

Guerrero-Villegas, J., Pérez-Calero, L., Hurtado-González, J.M., and Giráldez-Puig, P. 2018. Board attributes and corporate social responsibility disclosure: A meta-analysis. *Sustainability.* **10**, p. 4808.

Gujarati, D.N. 2004. *Basic econometrics*. McGraw-Hill Companies.

Haniffa, R.M., and Cooke, T.E. 2002. Culture, corporate governance, and disclosure in Malaysian corporations. *Abacus.* **38**(3), pp. 317– 349.

Hartmann, J., and Uhlenbruck, K. 2015. National institutional antecedents to corporate environmental performance. *Journal of World Business.* **50**(4), pp. 729–741.

Hartono, G.C., and Utami, S.R. 2016. The comparison of sustainable growth rate, firm's performance, and value among the firms in Sri Kehati Index and Idx30 Index in Indonesia Stock Exchange. *International Journal of Advanced Research in Management and Social Sciences.* **5**(5), pp. 68–81.

Ho, VH 2020. Disclosure overload? Lessons for risk disclosure & ESG reporting reform from the Regulation SK concept release. 65 *Vill. L. Rev.* 67.

Hussain, N., Rigoni, U., and Orij, R.P. 2018. Corporate governance and sustainability performance: Analysis of triple bottom line performance. *Journal of Business Ethics.* **149**(2), pp. 411–432.

Imhanzenobe, J.O. 2020. Managers' financial practices and financial sustainability of Nigerian manufacturing companies: Which ratios matter most? *Cogent Economics and Finance.* **8**(1), 1724241.

Kapoor, S. 2017. *The promise of sustainable investing—The case of the Norwegian Oil Fund*. [Accessed 4 April 2022] https://www.framtiden.no/aktuelle-rapporter/825-the-promise-of-sustainable-investing/file.html

Katmon, N., Mohamad, Z.Z., Mat Norwani, N., and Al Farooque, O. 2019. Comprehensive board diversity and quality of corporate social responsibility disclosure: Evidence from an emerging market. *Journal of Business Ethics.***157**, pp. 447–481.

Kim, E.H., and Y. Liu, Y. 2013. Corporate governance reforms around the world and cross-border acquisitions. *Journal of Corporate Finance.* **22**, pp. 236–53.

Liao, C.H., San, Z., Tsang, A., and Yu, L. 2021. Board reforms around the world: The effect on corporate social responsibility. *Corporate Governance: An International Review*. **29**(5), pp. 496–523.

Liao, L., Lin, T.P., and Zhang, Y. 2018. Corporate board and corporate social responsibility assurance: Evidence from China. *Journal of Business Ethics.* **150**(1), pp. 211–225.

Lim, A., and Tsutsui, K. 2012. Globalization and commitment in corporate social responsibility: Cross-national analyses of institutional and political - economy effects. *American Sociological Review.* **77**, pp. 69–98.

Lins, K.V., Servaes, H., and Tamayo, A. 2017. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance.* **72**(4), pp. 1785–1824.

Lockwood, L. and Prombutr, W. 2010. Sustainable growth and stock returns. *Journal of Financial Research.* **33**(4), pp. 519–538.

Lööf, H., Sahamkhadam, M., and Stephan, A. 2022. Is corporate social responsibility investing a free lunch? The relationship between ESG, tail risk, and upside potential of stocks before and during the COVID-19 crisis. *Finance Research Letters*. **46**, 102499.

Lourenço, I.C., and Branco, M.C. 2013. Determinants of corporate sustainability performance in emerging markets: The Brazilian case. *Journal of Cleaner Production.* **57**, pp. 134–141.

Maama, H. 2021. Achieving financial sustainability in Ghana's banking sector: Is environmental, social, and governance reporting contributive? *Global Business Review.* pp. 1–13.

Michelon, G., and Parbonetti, A. 2012. The effect of corporate governance on sustainability disclosure. *Journal of Management and Governance.* **16**(3), pp. 477–509.

Mohamad, N.E., and Murugesu, P. 2020. Linkages between capital structure, property overhang, and financial sustainability: Evidence from property sector in Malaysia. *Global Business and Management Research: An International Journal*. **12**(4), pp. 441–454.

Naffa, H., and Fain, M. 2022. A factor approach to the performance of ESG leaders and laggards. *Finance Research Letters.* **44**, 102073.

Neto, R.D.C.S., de Lima, C.R.M., Bazil, D.G., de Oliveira Veras, M., and de Andrade Guerra, J.B.S.O. 2020. Sustainable development and corporate financial performance: A study based on the Brazilian corporate sustainability index (ISE). *Sustainable Development.* **28**(4), pp. 960–977.

Newey, W.K., and West, KD 1987. A simple, positive, semi-definite, heteroskedasticity, and autocorrelation consistent covariance matrix. *Econometrica*. **55**(3), pp. 703–708.

Orazalin, N., and Mahmood, M. 2021. Toward sustainable development: Board characteristics, country governance quality, and environmental performance. *Business Strategy and the Environment*. pp. 1–20.

Ortas, E., Gallego-Álvarez, I., and Álvarez, I. 2019. National institutions, stakeholder engagement, and firms' environmental, social, and governance performance. *Corporate Social Responsibility and Environmental Management*. **26**(3), pp. 598-611.

Pallant, J. 2007. *SPSS survival manual: A step-by-step guide to data analysis using SPSS for Windows (Version 15).* Open University Press, McGraw Hill.

Pätäri, S., Jantunen, A., Kyläheiko, K., and Sandström, J. 2012. Does sustainable development foster value creation? Empirical evidence from the global energy industry. *Corporate Social Responsibility and Environmental Management.* **19**(6), pp. 317–326.

Petersen, M.A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies.* **22**(1), pp. 435–480.

Prado, G.F., Piekarski, C.M., Luz, L.M., Souza, J.T., Salvador, R., and Francisco, A.C. 2020. Sustainable development and economic performance: Gaps and trends for future research. *Sustainable Development.* **28**(1), pp. 368–384.

Qureshi, M.A., Akbar, M., Akbar, A., and Poulova, P. 2021. Do ESG endeavors assist firms in achieving superior financial performance? A case of 100 best corporate citizens. *SAGE Open.* **11**(2), pp. 1–18.

Qureshi, M.A., Kirkerud, S., Theresa, K., and Ahsan, T. 2020. The impact of sustainability (environmental, social, and governance) disclosure and board diversity on firm value: The moderating role of industry sensitivity. *Business Strategy and the Environment.* **29**, pp. 1199–1214.

Rahi, A.F., Akter, R. and Johansson, J. 2021. Do sustainability practices influence financial performance? Evidence from the Nordic financial industry. *Accounting Research Journal.* **35**(2), pp. 292–314.

Reijonen, J. 2021. *The importance of ESG factors for company performance during Covid-19 pandemic.* [Master's thesis]. At: Hanken School of Economics.

Sahin, A., and Ergün, B. 2018. Financial sustainable growth rate and financial ratios: A research on Borsa İstanbul manufacturing firms. *Journal of Business Research Turk.* **10**(1), pp. 172–197.

Saudi Capital Market Authority. 2022. Corporate governance regulations. [Accessed 4 February 2022]. https://cma.org.sa/en/RulesRegulations/Regulations/Documents/CGRegulations_en.pdf.

Saudi Stock Exchange. 2022. Saudi ESG disclosure guidelines. [Accessed 4 February 2022]. https://www.saudiexchange.sa/wps/wcm/connect/d0922cd6-e0bf-4554-ad4d-03f0c2eea5ad/ESG+Guidelines+EN+FINAL+221021.pdf?MOD=AJPERES&CVID=nOYd-01

Sharma, D., Bhattacharya, S., and Thukral, S. 2019. Resource-based view on corporate sustainable financial reporting and firm performance: Evidence from emerging Indian economy. *International Journal of Business Governance and Ethics.* **13**(4), pp. 323–344.

Silva, P.P. 2022. Crash risk and ESG disclosure. *Borsa Istanbul Review.*

Silvestri, A., Veltri, S., Venturelli, A., and Petruzzelli, S. 2017. A research template to evaluate the degree of accountability of integrated reporting: A case study. *Meditari Accountancy Research.* **25**(4), pp. 675–704.

Singh, A., Singh, P., and Shome, S. 2022. ESG–CFP linkages: A review of its antecedents and scope for future research. *Indian Journal of Corporate Governance.* **15**(1), pp. 1–22.

Sroufe, R., and Gopalakrishna-Remani, V. 2019. Management, social sustainability, reputation, and financial performance relationships: An empirical examination of US firms. *Organization & Environment*. **32**(3), pp. 331–362.

Sunardi, S., Pertiwi, A.A.P., and Supramono, S. 2021. Conservative working capital policy: Can it increase profitability and sustainable growth rate?" *Turkish Journal of Computer and Mathematics Education.* **12**(3), pp. 5630–5637.

Sustainable Stock Exchanges (SSE) 2015. Sustainable stock exchanges initiative: Model guidance on reporting ESG information to investors. [Accessed 4 April 2022]. www.sseinitiative.org/wp-content/uploads/2015/09/SSE-Model-Guidance-on-Reporting-ESG.pdf

Velte, P., and Stawinoga, M. 2020. Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical–quantitative research findings. *Journal of Management Control.* **31**, pp. 333–377.

Wan Mohammad, W.M., and Wasiuzzaman, S. 2021. Environmental, social, and governance (ESG) disclosure, competitive advantage, and performance of firms in Malaysia. *Cleaner Environmental Systems.* **2**, 100015.

Wasiuzzaman, S., and Wan Mohammad, W.M. 2020. Board gender diversity and transparency of environmental, social, and governance disclosure: Evidence from Malaysia. *Managerial and Decision Economics.* **41**, pp. 145–156.

White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*. **48**(4), pp. 817–838.

Xie, J., Nozawa, W., Yagi, M., Fujii, H., and Managi, S. 2019. Do environmental, social, and governance activities improve corporate financial performance? *Business Strategy and the Environment.* **28**(2), pp. 286–300.

Zabolotnyy, S., and Wasilewski, M. 2019. The concept of financial sustainability measurement: A case of food companies from Northern Europe. *Sustainability*. **11**(18), 5139.

Zhou, G., Liu, L., and Luo, S. 2022. Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment.* **5**, pp. 1–17.

Zhou, S., Simnett, R., and Green, W. 2017. Does integrated reporting matter to the capital market? *Abacus.* **53**(1), pp. 94–132.

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