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The Impact of Sovereign Wealth Funds on ESG Disclosure in Emerging Markets: The Moderating Effect of Financial Sustainability

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Abstract: This research examines the impact of Sovereign Wealth Fund (SWF) ownership on corporate Environmental, Social, and Governance (ESG) disclosure, with an emphasis on the Saudi Public Investment Fund (PIF), one of the world's fastest-growing SWFs. Using a sample of Saudi firms spanning from 2016 to 2023, the results reveal that SWF ownership significantly enhances ESG disclosure in Saudi-listed corporations. The findings also show that corporate financial sustainability amplifies this positive association, suggesting that financially sound firms are more receptive to SWF-driven ESG initiatives. As part of additional analysis, the impact of SWF on ESG pillars as well as the effect of COVID-19 are also examined. To ensure robustness, Generalized Moments Method and 2SLS are employed, and the results remain consistent. These findings offer valuable insights for policymakers and stakeholders seeking to stimulate sustainable development and accountability in corporate practices.

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Introduction

The emergence of Sovereign Wealth Funds (SWFs) in the global financial landscape has blurred the distinction between business and economic development policy (Drezner, 2008). These funds function in a manner like any institutional investor but usually with macroeconomic agenda set by their founding governments. Despite their long-standing existence, the number and size of SWFs have surged, with assets under management increasing by 51% over the past five years (Klein et al., 2024). Due to their broader macroeconomic objectives, their missions are not expected to be entirely focused on financial gains (Knill et al., 2012). As a result, their behavior is expected to differ from that of privately owned entities.

This study focuses on the impact of Sovereign Wealth Funds (SWFs) on corporate Environmental, Social, and Governance (ESG) practices, specifically focusing on ESG reporting. SWFs place a high importance on these practices, particularly those from wealthy oil-producing nations. These funds play a crucial role in managing the wealth generated by their countries to reduce reliance on fossil fuels, given their finite nature. As a result, SWFs are likely to diversify their portfolios across various sectors, prioritizing sustainability and ESG principles. Their policies are therefore expected to uphold ESG factors in their investment practices. Consistently, Chen et al. (2022) found that Chinese firms performing well in their ESG practices to have higher likelihood to draw SWF investment, which highlights the emphasis SWFs place on ESG practices. This research specifically aims to explore whether management decisions relating to ESG reporting practices are affected by the ownership of SWF.

The role of financial sustainability is also investigated in this research in relation to its moderating effect on the relationship between SWF ownership and ESG reporting. The strong financial position of firms driven by their financial sustainability is expected to allow SWFs to pressure firms they own to allocate more resources for ESG initiatives. However, when firms are lacking effective financial sustainability, SWFs are expected to prioritize preserving capital and short-term performance, which is likely to influence firms' ESG activities. Hence, effective financial sustainability is expected to be necessary for SWFs to push the firms they own to achieve their ESG objectives.

The impact on ESG reporting is investigated by focusing on Saudi Arabia's SWF, Public Investment Fund (PIF), and the firms listed on the Saudi Stock Exchange. The Saudi case offers an ideal economic context for this research due to its oil-rich economy, diversification plans, and emerging market dynamics. PIF, the main Saudi SWF, is actively influencing the Saudi economy, with a clear objective focusing on advancing Saudi Arabia's future economy away from oil, as outlined in its Vision 2030. This vision outlines its plans into transitioning to a more diversified and sustainable economy with PIF listed as one of the main tools to achieve this target. Given the relatively early stage of ESG practices in many Saudi companies, PIF is expected to provide valuable resources, guidance, and strategic direction to help these firms improve their ESG practices. Such role is therefore projected to aid in fostering a sustainable local business environment that aligns with global best practices in ESG. While PIF is likely to target global firms with robust ESG practices, its domestic investments focus is anticipated to be on building the capacity for such activities in the

local economy and supporting sectors that are essential for the country's sustainable growth. Such setting provides an ideal setting to achieve the objective of this study.

To evaluate the influence of SWF on the ESG landscape, particularly for organizations prioritizing financial sustainability, this study utilizes a sample encompassing all non-financial firms listed on the primary-market of the Saudi Stock Exchange for the period spanning from 2016 to 2023. The findings show that SWF's ownership encourages more robust ESG disclosure among Saudi companies. Furthermore, financial sustainability has also been found to positively moderate the relationship between SWF ownership and ESG disclosures. This finding provides support for the second hypothesis, stating that financial sustainability moderates the positive association between Sovereign Wealth Fund ownership and ESG disclosures. To ensure robustness, GMM and 2SLS are used to tackle the endogeneity issues, and the results remain consistent.

This study contributes to the current literature on sovereign wealth funds and firms' financial sustainability in several ways. First, it is the first study, to the best of our knowledge, to empirically examine the impact of the SWF on firm-level ESG reporting. By focusing on PIF, a prominent global sovereign wealth fund, this study provides novel insights into the specific mechanisms through which SWFs can influence corporate sustainability practices, offering insights that differ from those in other studies (Boshnak, 2021; Habbash, 2016). Given PIF's role as Saudi Arabia's leader in the economic transformation away from fossil fuels, the results provide unique insights into the broader dynamics between institutional ownership and corporate responsibility. Second, unlike previous research. e.g., (Chen et al., 2022; Liang & Renneboog, 2020) that concentrate on how firms ESG practices impact SWF investments, this study contributes to the literature by providing evidence showing the influence of SWF ownership on ESG reporting practices. Thus, this research leads to a thorough understanding of the complex relationship between SWFs and ESG practices. Third, this study incorporates the moderating effects of financial sustainability and the COVID-19 pandemic to further explain the relationship between SWF ownership and corporate ESG reporting. These findings offer valuable insights into how some economic conditions can influence the impact of SWF ownership on sustainability reporting practices.

The remaining of this article is organized as follows: Sections 2 and 3 provide an overview of the theoretical background, related literature, and hypotheses development. Sections 4 and 5 describe methodology, model selection and data collection. Sections 6 and 7 present findings, discussion, and additional analyses. Section 8 concludes, summarizes key results, implications, and limitations.

Theoretical background

This study uses agency and stakeholder theories for explaining the relationship between ownership structure and ESG reporting. These theories have been utilized by prior literature to explore this connection (Dakhli, 2021; Doshi et al., 2024; Qasem et al., 2022). Jensen and Meckling (1976) argue that agency theory discusses the conflict of interest between agents and principals (managers and owners) which often viewed as the firm's ownership structure. Highly dispersed ownership with

high free float shares can worsen agency problems due to their wide information need, motivating managers to disclose information to improve conflicts and prove alignment with shareholder interests (Govindan et al., 2021). Governmental ownership can mitigate agency issues by monitoring firms and pressuring management to emphasize ESG disclosures. Consequently, firms' non-profit objectives are assured to be met, which contributes to enhancing the firm's reputations (Liu et al., 2022; Oh et al., 2011).

On the other hand, stakeholder theory argues that firms must perceive all the interests of all stakeholders, not just maximizing shareholder value (Freeman, 1984). This means that firms should maintain a positive relationship with key stakeholders to preserve and strengthen corporate legitimacy (Sahasranamam et al., 2019). ESG practices and disclosure have become an essential tool to meet stakeholder interests (Velte, 2016). Based on the above arguments, this study propose that the level of sovereign wealth fund ownership is correlated with a greater likelihood of firms disclosing their ESG activities.

Literature review and Hypothesis development

Sovereign wealth funds unique ownership

Sovereign wealth funds (SWFs) play a crucial role in the capital markets. However, their impact on financial markets have surged rapidly in recent years. According to Klein et al. (2024) and Global SWF. (2024), SWFs assets increase by 51% over the past five years, which equal to around \$11.2 trillion in assets for the year ending in 2023. The environment friendly investment reached \$26.1 billion in the year 2023 and nearly half of these investments are coming from SWFs owned by Arabian Gulf States. This trend indicates a strategic shift in these oil producing countries toward green assets such as those in renewable energy and electric vehicles. Their strategies are now directed toward injecting revenues made from fossil fuels into their SWFs to mitigate the risk associated with oil dependency.

Saudi Arabia's Public Investment Fund (PIF) stands as one of the world's largest sovereign wealth funds (SWFs) and a key driver of economic transformation. The PIF is founded in 1971 to serve as the Saudi government's investment arm, which has been identified as the economic powerhouse and one of the fastest-growing SWFs globally. By the end of 2023, its assets under management reached \$765 billion, with plans to triple this amount in alignment with Saudi Arabia's Vision 2030. PIF's investment portfolio includes diverse industries, with a strong emphasis on sustainable and environmentally friendly projects, in support of the Saudi government's target to achieve net-zero carbon emissions by 2060. Notable initiatives like the futuristic city of NEOM underscore PIF's pivotal role in advancing economic diversification and sustainability.

Oil-rich countries consider sovereign wealth funds (SWFs) as an effective tool for managing the income volatility stemming from fluctuations in oil prices. These funds can offer a stable revenue source and support long-term strategic investments, helping to protect economies from the so-called Dutch Disease, where over-reliance on oil negatively impacts other sectors (Gilson & Milhaupt, 2011). SWFs typically have dual objectives: adopting economic development and generating financial returns. Drezner (2008) suggests that having dual mandate could

arise challenges since balancing both goals may be difficult. However, as government-owned entities, SWFs can be particularly well-suited for driving economic growth, especially when government policies fall short of stimulating activity and the private sector is unprepared to address significant economic and strategic challenges. Moreover, government owners often have far greater financial capacity than private institutions, and in many developed countries, they can leverage implicit guarantees to borrow extensively and secure debt for state-owned enterprises (Borisova & Megginson, 2011). According to Borisova et al. (2012), governments also have the authority to implement regulations that influence corporate practices and enjoy broader access to resources, often owning firms for purposes that extend beyond mere wealth maximization.

Sovereign Wealth Funds (SWFs) and ESG disclosures

SWFs' influence on firms' disclosures might cause concern due to their state ownership. State ownership can introduce uncertainties for both the sovereign wealth fund and its portfolio firms, a phenomenon often referred to as the "SWF discount" (Bortolotti et al., 2015). Many SWFs focus on implementing Environmental, Social, and Governance (ESG) aspects into their investment strategies. Liang and Renneboog (2020) reveal that most of the SWFs with high levels of transparency effectively disclose their ESG policies, showing their commitment to consider ESG in their investment decisions. Their findings also reveal that SWFs consider both historical and recent ESG performance when acquiring equity in publicly listed firms. Consistently, Chen et al. (2022) found that Chinese firms with effective and strong ESG records are more likely to attract SWF investors.

Moreover, SWF ownership might encourage owned firms to embrace ESG-focused practices because of its status as a state-owned entities. Sovereign Wealth Funds (SWFs) are uniquely positioned to drive corporate sustainability by leveraging their government backing to encourage social, environmental, and sustainability objectives. SWFs fiduciary responsibilities and their substantial ownership empower them to act as active monitors aiming to curb managerial opportunism and foster sustainable practices. Consistently, Dewenter et al. (2010) reported that SWFs are active investors and that the majority of their firms' events indicate SWF monitoring influence. This suggests that SWFs can exercise significant influence over their investee firms, potentially encouraging ESG-focused initiatives through activism or other means. Liu et al. (2022) argue that state-owned enterprises with mixed ownership incorporating both state and institutional investors can generate various advantages, including increased sales, profitability, investment, and improved operational efficiency. These factors enable firms to raise capital, ease fiscal pressures on the government, and secure political backing (Megginson & Fotak, 2015). Moreover, Liang and Renneboog (2020) suggest that SWF ownership fosters a more sustainable business environment and helps target firms mitigate ESG-related risks, which leads to boosting their overall reputation and long-term viability. In the same context, Qasem et al. (2022) finds a positive relationship between governmental ownership and ESG disclosure using sample from 206 Saudi-listed firms over a decade (2010-2019). Based on the arguments above, the following hypothesis is proposed as follows:

H1: Sovereign Wealth Funds (SWF) positively impact ESG disclosures.

Financial Sustainability, Sovereign Wealth Funds (SWFs), and ESG disclosures

Firms with higher financial sustainability are more likely to prioritize environmental and social initiatives, ensuring their sustainability objectives. According to resource-based view theory (Wernerfelt, 1984), a strong financial position can facilitate the development of key organizational capabilities, such as effective governance structures, risk management systems, and innovative problem-solving abilities, which are crucial for successful ESG implementation. Lupu et al. (2022) argue that financial healthy firms are better equipped to assign resources toward comprehensive ESG initiatives. Due to this capability, firms can produce high-quality disclosures that demonstrate their commitment to effective ESG practices.

Firms with strong financial sustainability are ideally positioned to access capital that enables them to allocate the necessary resources to implement ESG initiatives (Junaedi, 2024). In other words, the robust financial position of these firms enables SWFs to drive the companies they own to achieving their ESG goals. SWF ownership will therefore encourage firms to disclose their ESG practices. As SWFs prioritize ESG factors in their investment decisions (Bortolotti et al., 2023), the expectation for high-quality disclosures increase, which is moderated further by financial sustainability. Based on these findings, the following hypothesis is proposed:

H2: Financial sustainability moderates the positive association between Sovereign Wealth Fund ownership and ESG disclosures.

Methodology

Sample selection

The relationship between sovereign wealth funds and ESG disclosure is examined in this research to show the impact of sovereign wealth funds on ESG practices, especially for organizations prioritizing financial sustainability. Due to data availability, the sample includes all non-financial firms listed on the main market of the Saudi Stock Exchange from 2016 to 2023. Financial institutions are excluded from the analysis due to their distinct regulatory environments and financial reporting practices. Firms with incomplete data or outlying values are excluded from the final sample, which consists of 274 firm-year observations from 38 companies. All data have been obtained from Bloomberg database and the official data portal of the Saudi stock exchange. Variables description are available in table 1.

Variables measurements

Independent variable

Following Farag et al. (2022), SWF is measured by the percentage of ownership the Saudi wealth fund (PIF) holds in a firm at the end of the year. Data for this variable is collected from the official data portal of the Saudi Stock Exchange.

Dependent variable

This study uses Bloomberg's database to measure the extent of ESG disclosures in Saudi firms. The ESG disclosures is represented by a score, which assigns ratings ranging from 0 to 100 based on the extent of a company's ESG disclosures. This score reflects the total amount of information a company discloses about its ESG initiatives, policies, and performance. Consistent with previous research e.g., (Baldini et al., 2018; Chebbi, 2023), the three subcomponents of ESG (environmental, social, and governance) are also used individually to provide further insights into the relationship between ESG and SWF ownership.

Moderating variable

The Sustainable Growth Rate (SGR) is used as a proxy for firms' financial sustainability as it serves as an indicator of a company's financial health and stability. According to Lockwood and Prombutr (2010), SGR reflects investor confidence in a company's ability to maintain stable operations. High SGR indicates that investors perceive the firm as capable of generating steady profits and reinvesting them for future growth with less reliance on external funding. Moreover, Amouzesh et al. (2011) explain that the use of SGR allows for key operational factors like asset efficiency and profit margin to be integrated with key financial factors such as retention ratio and capital structure. Following previous research (El Madbouly, 2022; Ellili, 2024; Hartono & Utami, 2016; Sunardi, 2021), the Higgins (1977) model is used to calculate SGR. This model calculates SGR by multiplying a company's return on equity with its retention ratio. While other approaches exist for assessing sustainable growth, the Higgins (1977) model has been widely used due to its simplicity and effectiveness (Mukherjee & Sen, 2022).

Control variables

To examine the relationship between SWF ownership and ESG disclosure, this study controls for various company-specific factors that may influence this relationship. Specifically, following previous literature e.g., (Baldini et al., 2018; Li & Wu, 2020), we control for firms' size, market risk, leverage, financial performance, and firm age. For clarity and ease of reference, definitions for all control variables are provided in Table 1.

Table 1: Variables' Description

Variable	Description	Source
ESG (Environmental, Social, and Governance)	The Bloomberg ESG score assigns a rating to companies based on the extent of their environmental, social, and governance disclosures.	Bloomberg
ENV (Environmental)	The extent of a firm's environmental impact disclosures	Bloomberg
SOC (Social)	The extent of a firm's disclosures regarding social impact	Bloomberg
GOV (Governance)	The extent of a firm's disclosures regarding governance impact	Bloomberg
SWF	The percentage of shares held by public investment fund	Official portal- Saudi Stock Exchange
FSUSTAINABILITY	ROE multiplied by retention ratio	Bloomberg
SIZE	The logarithm of total assets	Bloomberg
BETA	Stock price volatility divided by market index volatility	Bloomberg
LEV	Ratio of total debt to total assets	Bloomberg
ROA	Net profit scaled by total assets	Bloomberg
AGE	Years in operation (logarithmic)	Bloomberg

Model Specifications

To examine the impact of SWF on the ESG score and explore the role of financial sustainability as a moderating factor in this relationship, as illustrated in Figure 1, this study uses a panel data approach with the focus on Pooled Ordinary Least Square (OLS) with robust standard error to control for heteroscedasticity. To validate the appropriation of our chosen method, this paper also applied number of tests including the Breusch-Pagan Lagrange multiplier (LM) and the Hausman tests to compare between OLS, random effects (RE), and fixed effects (FE). Furthermore, the regression of the model

$$ESG_t = a_0 + a_1 SWF_{i,t} + a_2 SIZE_{i,t} + a_3 BETA_{i,t} + a_4 LEV_{i,t} + a_5 ROA_{i,t} + a_6 AGE_{i,t} + YEARDUMMY + \mu_t \quad (1)$$

The second hypothesis (H2) requires incorporating a moderator for financial sustainability (*FSUSTAINABILITY*) and its interaction term as presented in Equation (2). The coefficient (a_3) of the interaction term

$$ESG_t = a_0 + a_1 SWF_{i,t} + a_2 FSUSTAINABILITY_{i,t} + a_3 SWF_{i,t} * FSUSTAINABILITY_{i,t} + a_4 SIZE_{i,t} + a_5 BETA_{i,t} + a_6 LEV_{i,t} + a_7 ROA_{i,t} + a_8 AGE_{i,t} + YEARDUMMY + \mu_t \quad (2)$$

Table 1 provides descriptions of the variables used in equations (1) and (2), with i and t representing the company and the time period, respectively. The term (*YEARDUMMY*) refers to time-specific effects that apply to all organizations and vary depending on the time period. To minimize the impact of outliers on the analysis, Winsorization is applied to all continuous variables in the dataset at the 1st and 99th percentiles.

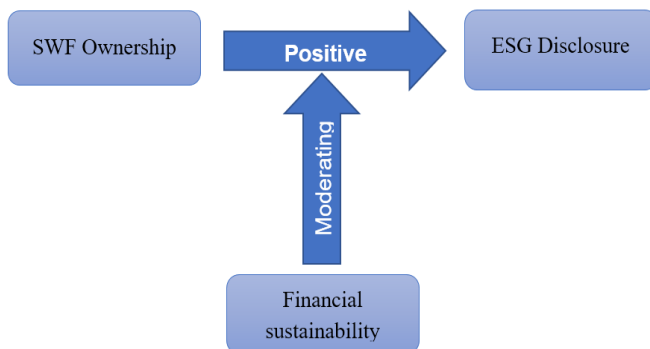


Figure 1: Conceptual Model for the influence of SWF ownership on ESG disclosure, and the impact of financial sustainability on this relationship.

Results, analysis, and discussions

Univariate analysis and bivariate correlation

Table 2 provides an overview of the key variables used in

Table 2: Summary of Statistical Information.

Variables	N	Mean	STD	Min	Max
ESG	274	21.7624	11.8059	3.2921	61.3419
ENV	206	16.1283	16.2990	0.3322	67.1097
SOC	227	18.1535	12.6124	0.1269	61.6667
GOV	233	50.0735	16.0022	0.3911	87.3570
SWF	274	24.8121	20.1142	5.4000	70
SIZE	274	10.7211	0.6478	9.2800	12.3000
BETA	274	0.9176	0.3117	0.0442	1.4455
LEV	274	23.8407	20.0566	0	80.9272
AGE	274	1.4656	0.2864	0.6989	1.9637
FSUSTAINABILITY	274	4.5979	5.3891	0	32.2000

In Table 3, the correlation matrix illustrates that the variables SWF and ESG possess positive and insignificant correlation coefficients. Furthermore, the correlation coefficients among the variables in the analysis give some

has been run using different classification of control variables, including firms specific variables and year dummies to test the sensitivity of the results. We further re-estimate the model utilizing Two-Stage Least Squares (2SLS) and the Generalized methods of moments (GMM) to control for endogeneity problems (i.e., reverse causality and omitted variables bias).

This study employs two statistical models to test the research hypotheses. The first model, Equation (1), focuses on the direct impact of SWF (independent variable) on ESG disclosure (dependent variable) to test the first hypothesis (H1) as in the following:

(*SWF*FSUSTAINABILITY*) is used to assess how financial sustainability influences the direct relationship between Sovereign Wealth Funds and ESG disclosures as in the following model:

this analysis. These include SWF ownership levels (SWF's ownership), ESG components and firm-specific characteristics. The analysis reveals an average SWF ownership of 24.81% with a standard deviation of 20.11%. This aligns with the findings of Qasem et al. (2022) who report a close average government ownership (23.991%) in their study.

The voluntary nature of ESG disclosure in Saudi Arabia may possibly be a contributing factor in the low average score of ESG. For the means of individual ESG components, ENV is 16.12%, SOC is 18.15%, and GOV is 50.07%. Given the weighted average nature of this metric and the observed range within the sample (0.33% to 67.10%), it's possible that companies are not strategically allocating sufficient resources towards operational ESG practices. These findings are consistent with prior research on the Saudi market (Aladwey & Alsudays, 2023; Chebbi, 2023).

The analysis also reveals that the average financial sustainability (*FSUSTAINABILITY*) for Saudi companies in the sample is 4.59%. This metric indicates that financial sustainability is relatively low in this sample. Hence, the average SGR suggests that most Saudi companies included in the sample could get maximum growth rate equivalent to 4.59% without relying on external funding. In contrast, companies in other countries, such as Malaysia, show an average SGR of 6.7% for firms listed on the FTSE Bursa (Mat Nor et al., 2020). Additionally, a study by Elliti (2024) found that the average sustainable growth rate for non-financial firms in the GCC region is 5.85%.

reassurance that multicollinearity is not existing since none of the coefficients exceed the cutoff value of 0.70. The variance inflation factor (VIF) was also calculated to further address concerns about multicollinearity. Thus,

the above results give some confidence that the research

findings do not have multicollinearity problems.

Table 3: Matrix of Correlations.

Variables	ESG	SWF	FSUSTAINABILITY	SIZE	ROA	LEV	BETA	AGE
ESG	1							
SWF	0.0274	1						
FSUSTAINABILITY	0.1430**	-0.1183*	1					
SIZE	0.2321***	-0.1325**	0.2551***	1				
ROA	0.1554**	0.0474	0.1655**	-0.0647	1			
LEV	0.0973	0.0607	-0.2950***	-0.3389***	-0.2811***	1		
BETA	0.0887	-0.1216	-0.1768***	0.1248*	-0.0673	0.1439**	1	
AGE	0.1488**	-0.1240*	0.2241***	0.2241***	0.1760***	-0.2416***	-0.0773	1

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

Figure 2 depicts a potential positive correlation between SWF ownership and ESG scores. This proposes a trend

where firms with higher SWF ownership tend to engage in more ESG practices.

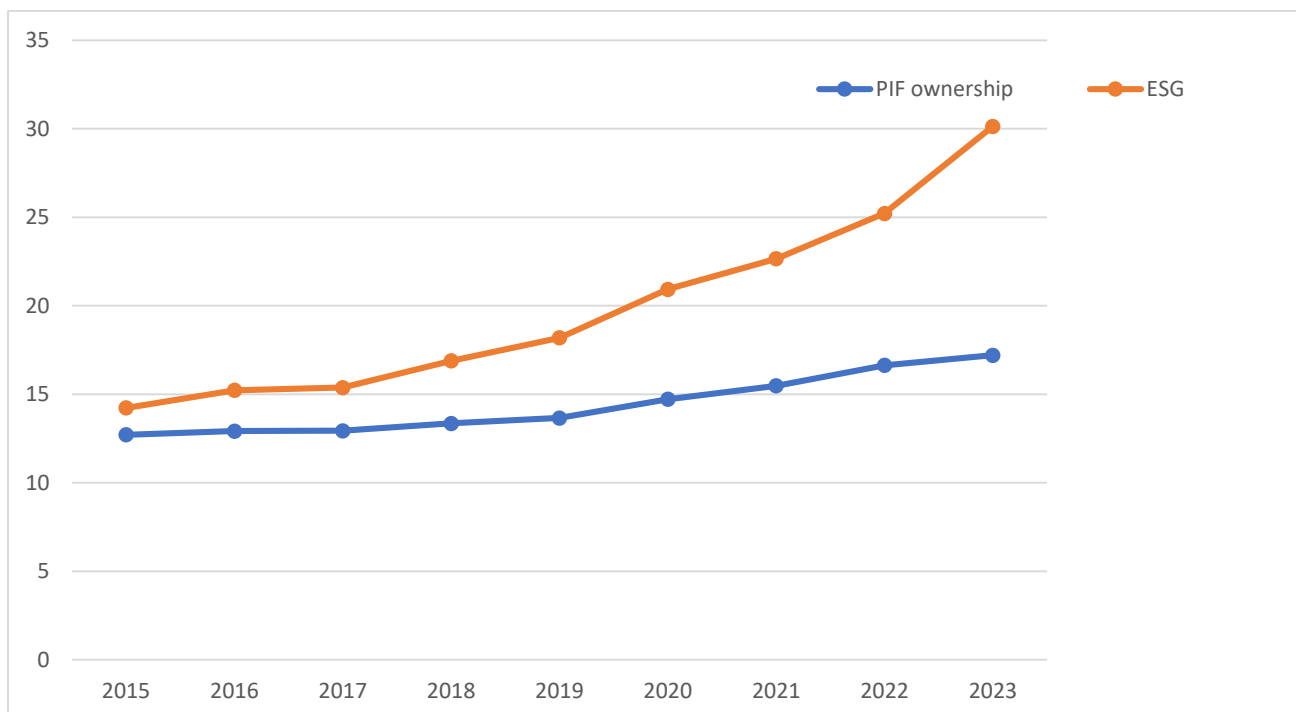


Figure 2: Evolution of SWF ownership and ESG disclosures

Results and discussion

The impact of SWF on ESG disclosures

The direct impact of Sovereign Wealth Fund (SWF) ownership, specifically the Public Investment Fund (PIF) of Saudi Arabia, on ESG disclosure practices of listed Saudi companies is thoroughly investigated in this section. The analysis detailed in Table 4 shows the results of OLS regression model (Equation 1) with robust standard errors. The results indicate a positive and statistically significant relationship between SWF ownership and ESG activities, supporting the first hypothesis (H1). This means that companies with a higher percentage of ownership by SWF tend to disclose more about their (ESG) practices. The coefficient (SWF) is statistically significant at the 5% level, indicating strong evidence to suggest that SWF's ownership encourages more robust ESG disclosure among Saudi companies.

The positive association found between SWF ownership and ESG disclosures can be attributed to two factors. First, long-term investors such as SWFs recognize the benefits associated with ESG practices and see their potential over extended periods of time. As investor horizon plays a crucial role in ESG practices (Starks et al., 2017), the long-term investment horizon of SWFs

positions them well to see future benefits for ESG related activities. Second, as SWFs are owned by their founding states, they are generally viewed as government entities and therefore face high pressure from stakeholders to ensure their investment strategies align with broader societal issues including ESG practices. Boubaker et al. (2017) support this perspective and report a positive relationship between long-term investment and Corporate Social Responsibility. These two factors justify the connection between SWFs and ESG practices by explaining that this relationship is influenced by the long-term investment perspective of SWFs as well as the pressure on SWFs to address stakeholder expectations. Nonetheless, Sovereign Wealth Funds might encounter a conflict between their financial objectives and their economic development goals. Hence, some companies owned by SWFs could be pressured toward a dual-focused strategy aiming to address both objectives. This idea is supported by Riedl and Smeets (2017) and Hartzmark and Sussman (2019) who reported that some investors with environmental and social consciousness, including potentially SWFs, might be willing to accept lower financial returns to achieve ESG objectives. This could consequently lead to potential struggle for SWFs in aligning their financial objectives with their ESG impact.

As shown in Table 4, firm-specific factors also have an impact on ESG disclosures. Specifically, large companies are more likely to adopt sustainable practices, which could be attributed to their sufficient resources and higher public visibility. On the other hand, the age of a company fails to show statistically significant impact on ESG. Moreover, firms with higher leverage enhance ESG reporting, as evidenced by highly significant coefficient, potentially to manage risks and enhance their public image. Companies with strong financial performance show greater commitment to ESG reporting as evidenced by highly significant coefficient. A high significant association between market risk (BETA) and ESG reporting was also found. Overall, these results show that various characteristics specific to firms have an influence on ESG practices.

Table 4: The impact of SWF ownership on ESG disclosures

VARIABLES	Pooled OLS with robust standard errors
SWF	0.105** (3.05)
SIZE	2.698*** (6.53)
BETA	1.111*** (0.68)
LEV	0.1881*** (5.21)
ROA	0.469*** (4.74)
AGE	1.340 (0.50)
CONSTANT	-61.169*** (-5.23)
Year_FE	YES
Observations	274
F_statistic	11.95***
Adjusted R ²	0.3369

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

The moderating effect of financial sustainability on Sovereign Wealth Fund and ESG disclosure association

The findings demonstrate that financial sustainability, measured by the sustainable growth rate (SGR), positively impacts ESG disclosure among Saudi firms. As shown in Table 5, the results reveal a statistically significant positive coefficient for financial sustainability (FSUSTAINABILITY), indicating that a firm's commitment to long-term financial health significantly enhances its ESG score. Furthermore, the interaction term between financial sustainability and SWF ownership is also statistically significant and positive. This result supports the second hypothesis (H2), which suggests that a firm's financial sustainability has a positive moderating influence on the association between SWF ownership and ESG activities. Therefore, SWF ownership, when combined with a strong financial foundation, leads to more sustainable and responsible corporate activities. In other words, when a firm exhibits consistent financial sustainability and strong long-term performance derived from financial health and stability, PIF ownership in Saudi listed companies can have a greater impact on the companies' ESG disclosure practices. The impact of strong long-term performance aligns with sovereign wealth funds' long-term investment strategies (Bartolacci et al., 2019). Additionally, sustainable financial success boosts companies' credibility with stakeholders. Hence, SWF ownership in such firms signals the company's commitment to ESG principles, leading to an improved ESG disclosure environment.

This finding aligns with the growing trend of strategically investing in ESG initiatives. ESG practices have become essential for forward-looking companies, and in today's business environment, adopting them can help earn investors' trust, which may ultimately align with their financial goals. According to Qureshi et al. (2019), commitment to ESG practices goes beyond being a passing trend; it is a strategic approach designed to build a strong reputation and gain the trust of stakeholders. Moreover, international policy changes have increased awareness of ESG issues, and financially sustainable firms are better positioned to achieve these objectives.

Table 5: The role of financial sustainability on the association between SWF and ESG

VARIABLES	Pooled OLS with robust standard errors
SWF	0.017 (0.31)
FSUSTAINABILITY	0.413*** (3.29)
SWF*FSUSTAINABILITY	0.064** (2.00)
SIZE	5.362*** (3.54)
BETA	0.781 (0.45)
LEV	-0.014 (-0.22)
ROA	0.177 (0.89)
AGE	-0.041 (-0.01)
CONSTANT	-45.934** (-2.79)
Year_FE	YES
Observations	274
F_statistic	12.83***
Adjusted R ²	0.4857

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

Additional analysis

The impact of SWF on components (environmental, social and governance disclosures) on ESG disclosure.

The analysis shown in Table 6 reveals the impact of SWF ownership on ESG disclosure components (environmental, social and governance disclosure). Specifically, SWF was found to be positively significant in its relationship with environmental disclosures (ENG). This means that firms with a higher percentage of SWF ownership disclose more information about their environmental practices. This suggests that SWF's ownership may play a crucial role towards greater transparency and accountability in environmental practices. Significant and positive coefficients were found for SWF ownership for its association with social (SOC) and governance (GOV) ESG components at 5% and 10% levels, respectively. This shows that SWF can exert pressure on firms' ESG practices into consideration to align with SWF strategies regarding societal expectations and sustainable development. Previous results reaffirm that by engaging closely with the companies in its portfolio, SWF can promote the adoption of sustainable practices, social responsibility, and strong governance structures within these organizations. This is consistent with SWF the Sovereign Wealth Fund of Saudi Arabia Green Finance Framework designed in response to global effort to fight climate change with specific goals addressing reducing carbon emissions.

Table 6: The impact of SWF on components on ESG disclosure

VARIABLES	ENV	SOC	GOV
SWF	0.156*** (4.09)	0.040** (2.04)	0.104* (1.94)
SIZE	2.867*** (4.26)	1.936*** (4.01)	2.149** (2.31)
BETA	-1.501 (-0.54)	0.180 (0.11)	4.635 (1.60)
LEV	0.260*** (4.03)	-0.017 (-0.24)	-0.006 (-0.09)
ROA	0.320 (1.48)	-0.180 (-1.36)	0.610*** (2.69)
AGE	-6.313 (-1.30)	-4.353* (-1.69)	0.093 (0.02)
CONSTANT	-56.659** (-2.75)	-33.663** (-2.53)	-19.741 (-0.86)
Year_FE	Yes	Yes	Yes
Observation	206	227	233
F_statistic	6.17***	16.66***	10.64***
Adjusted R ²	0.1413	0.4418	0.2631

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

The moderating role of COVID-19 on SWF_ESG association

This section delves deeper into the relationship between SWF and ESG reporting by investigating COVID-19 pandemic effect on ESG and the moderating role of COVID-19 pandemic on the relationship between SWF and ESG reporting. The findings show that the pandemic has significantly undermined ESG practices, as evidenced by the negative and statistically significant coefficient (COVID) in [Table 7](#) at the level of 1%. This health crisis severely disrupted firms in their operations, posing severe threats to their survival ([Adams & Abhayawansa, 2022](#)) and it showed the vulnerability of business and their communities while revealing disparities in the proper response between developing and developed countries ([Al Amosh & Khatib, 2023](#)). Such disruptions to companies' operations are likely to be responsible for the drop in ESG reporting practices and highlights the need for companies to improve their governance practices, particularly in the areas of risk management and crisis response.

The results also exhibit the role of COVID-19 pandemic as a moderator on the relationship between SWF ownership and ESG reporting practices. The interaction term SWF*COVID is found to be statistically significant with a negative sign indicating that SWF ownership impact on ESG activities can be further influenced by enormous crises. In other words, when a firm approaches a major obstacle such as Covid-19, SWF ownership is less likely to influence ESG disclosure practices. This finding could be attributed to companies typically prioritizing survival over ESG practices during a crisis, a shift that SWF managers likely understand, leading to reduced pressure on ESG activities. Furthermore, SWFs may be more tolerant toward ESG disclosure activities due to difficulties companies face in collecting data during the pandemic. Hence, such crisis can shift stakeholder priorities toward short-term financial performance, which could lead SWFs to temporarily downplay ESG concerns.

Table 7: The moderating role of Covid-19 on SWF_ESG association

VARIABLES	Fixed Effects
SWF	0.0631 (1.17)
COVID	-16.5906*** (-6.80)
SWF*COVID	-0.1103* (-1.76)
SIZE	2.7769*** (6.32)
BETA	1.2098 (0.70)
LEV	0.1922*** (4.99)
ROA	0.4945*** (4.82)
AGE	1.3416 (0.44)
CONSTANT	-47.3416*** (-3.68)
Year_FE	YES
Observation	274
F_statistic	10.90***
Adjusted R ²	0.3206

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

Check of Robustness: Endogeneity Test

Our main baseline analysis shows that SWF ownership has positive impact on ESG reporting practices in Saudi listed companies. Such result is prone to the potential of endogeneity bias due to omitted variables and a reverse relationship (ESG disclosure might attract PIF investment). To address such issues, two-stage least squares (2SLS) and Generalized Method of Moments (GMM) estimation techniques are used. One-year lagged PIF ownership is used as an instrument for the 2SLS. As shown in [Table 8](#), the results from both 2SLS and GMM estimations support the positive association between SWF ownership and ESG disclosure. The AR (1) and AR (2) tests validate the models, indicating the presence of first-order autocorrelation in the errors and the absence of second-order autocorrelation in the residuals.

Table 8: Tracking endogeneity

Variables	Two step GMM	2SLS (Second stage)
ESG _{t-1}	0.9848*** (3.14)	
SWF	0.1190** (2.06)	0.0964** (1.96)
SIZE	1.3107** (2.6184)	8.0961 (6.90)
BETA	-0.2426 (-0.1738)	-1.6282 (-0.74)
LEV	0.1165** (2.52)	0.2473*** (5.48)
ROA	1.5921** (2.53)	0.4808*** (3.56)
AGE	3.9130*** (3.0779)	3.8718 (1.07)
CONSTANT	-33.8240** (-16.07)	-78.6392*** (-5.36)
Observations	236	236
AR(1) test (p-value)	-2.23**	—
AR(2) test (p-value)	-1.43	—
Hansen-J test of over-identification (p-value)	3.94 (0.140)	—
Year_FE	Yes	Yes

Note: The number of asterisks indicates the level of statistical significance: one for 10%, two for 5%, and three for 1%

Conclusion

The impact of Sovereign Wealth Fund (SWF) ownership on corporate ESG reporting is explored in this research. By using a sample of Saudi listed companies from 2016 to 2023, this study tests whether SWF ownership influences both aggregated and disaggregated ESG disclosures. The findings show that SWFs' ownership positively influence ESG disclosure reported by Saudi companies. The moderating role of financial sustainability is also examined and the findings reveal that it amplifies the positive association between SWF ownership and ESG reporting practices. This means that financially sound firms are more sensitive to SWF-driven ESG initiatives. Moreover, the findings show that COVID-19 pandemic has a moderating effect on the relationship between SWF ownership and ESG reporting practices. These results are explained by agency and stakeholder theories.

This research provides valuable insights for policymakers and other stakeholders. Policymakers can amend the corporate governance guidance regarding institutional and governmental ownership to reflect SWF influence on ESG practices. Stakeholders may start to pay more attention to both SWF ownership and firm's financial health to be considered as key factors that improve firm outcomes. Furthermore, potential investors with the interest of ESG might observe SWF ownership as an attractive indicator for their investment decision. The presence of SWF ownership also positions firms for long-term success, making it an ideal approach for promoting economic development.

While this research delivers valuable contribution to the literature, it's essential to acknowledge its limitations. The focus on Saudi Arabia warrants further exploration of the generalizability of the findings. Additionally, future research could delve deeper into the specific ESG practices prioritized by SWFs and their effectiveness in driving sustainable change. Furthermore, investigating the direction of causality between SWF investment and ESG improvement is crucial. Does SWF investment push companies to improve ESG disclosure and performance, or do SWFs primarily select companies already committed to ESG? A Difference-in-Difference (DiD) analysis, using the date of SWF investment as a critical point to compare pre- and post-investment ESG trends, could shed light on this question. Finally, exploring the potential for non-linear relationships between SWF ownership and ESG rankings is another promising area for future research. Our study assumed a linear relationship, but it's reasonable to investigate the possibility of having a curvilinear relationship between SWF ownership and ESG practices.

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