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The Impact of Climate Change Risk Disclosure on Financial Reports Transparency: The Moderating Role of Institutional Investors

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ABSTRACT:

This research explores the impact of climate change risk disclosure on financial reports transparency, with a specific focus on the moderating role of institutional investors. Climate change has emerged as one of the most pressing challenges facing the global economy, and its potential ramifications for businesses are substantial., As a result, there has been an increasing demand for companies to disclose information about their climate-related risks and opportunities. This study examines whether and how this disclosure affects financial reports transparency, and the extent to which institutional investors influence this relation-ship using a sample of 108 Egyptian companies during the period ending in 2022.

KEYWORDS: Climate Change Risk Disclosure, Financial Reports Transparency, Institutional Investors

Introduction

Climate change has become a topic of significant concern, with its potential impacts on various aspects of society. One critical area affected by climate change is the financial sector, where the risks associated with climate-related events present substantial challenges to businesses [1]. In response to these challenges, there has been a growing emphasis on climate change risk disclosure, as investors and stakeholders seek greater transparency in assessing the exposure and resilience of companies [2].

The effectiveness of the financial markets depends on fast and accurate information about enterprises' exposure to risks, particularly climate change risk. Climate change presents significant risks for economic sectors and all companies' activities. It also creates opportunities for companies focused on climate-change adaptation [3]. Due to connected global value chains, businesses may be exposed to these risks and possibilities either directly or through other parties like suppliers and consumers outside of their core operations [4].

Climate change risks are becoming more and more relevant and significant. For wise investment choices as well as the proper pricing of these risks and the possibilities they present, high-quality data on enterprises' exposure to climate risk is essential [5]. Furthermore, climate change being seen as a threat to the financial system more and more, regulatory attempts to safeguard financial stability may depend on accurate disclosure of climate risks [6].

Global climate change has been a top worry for business and government authorities. Reporting on it may limit some businesses, which may limit economic growth; yet, scientists now agree that people are the primary cause of global warming and that climate change is mostly to blame [7].

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companies are expected to have an important role in migrating industry toward practices that don't cause climate change; therefore, Companies must discuss climate change risks related information and measures with concerned stakeholders and external users. Many studies [7-10] showed that companies that voluntarily disclose climate change information can constrain their behavior and reduce agency costs.

Additionally, Voluntary disclosure can assist companies to concentrate on their goal of maximizing profits. but, the ways by which voluntary disclosure impact on a company has scarcely been investigated [11].

Disclosure of climate risk may cause changes in company's financial transparency. Numerous studies have shown that a corporation will be less able to manipulate earnings if it discloses more about climate change in its CSR reports [3-1112].

However, several researches present evidence that managers tend to use information disclosure to obtain certain objectives, for example to hide misconduct, promote their careers, and to improve the company's reputation. As a result, despite they claim to be publishing information about climate change, they may falsify the company's financial accruals data to present a specific outcome. Meanwhile, external stakeholders are convinced by misleading information and accept what the business's management tell them in reports because they believe that the information the company provides is real and transparent [13-15].

However, many believe that investors are not sufficiently informed about the information associated with climate change risks.consequently, Initiatives have been launched to encourage increased reporting about these risks due to the perceived shortcomings. Examples of such initiatives include the International Sustainability Standards Board (ISSB)which present [Draft] IFRS S2 Climate-Related Disclosure.The Exposure Draft was developed in response to calls from users of general purpose financial reporting for more consistent, complete, comparable and verifiable information, including consistent metrics and standardized qualitative disclosures, to help them assess how climate-related matters and the associated risks and opportunities affect company's financial position performance; timing and certainty of the company's future cash flows over short and long and the company's strategy, these initiatives reflect a belief that the importance of climate risk information and how it is valuable and necessary for investment decision-making [16].

The fact that many corporations choose not to voluntarily disclose shows that there are opposing factors. Although disclosure may have advantages, such as increasing stock liquidity, reducing cost of capital, or improving the pricing of risks, disclosure may also impose unjustified costs on a firm, as noted in reviews by [17] for financial information and [18] for nonfinancial information.

Although disclosure may be advantageous,. A company can face unnecessary expenses as a result of disclosure. For instance, in the context of climate change, disclosure of climate-related risks could reveal confidential information about a company's future business plans. Furthermore, [19] demonestrate that the pricing of financial information may be impacted by required disclosure of non-financial information.

Finally, the lack of understanding of the mechanism of how climate risk disclosure affects financial transparency, along with the debate about the relationship between financial transparency and institutional investors, motivated us to conduct this research and review the related literature and theoretical analysis.

Literature Review and Hypotheses Development

The literature on climate change risk disclosure has primarily focused on its impact on investor decision-making and firm valuation. However, limited attention has been paid to the potential influence of climate change risk disclosure on financial reports transparency. transparency is crucial for investors to make informed decisions and assess the financial health and sustainability of companies. Therefore, understanding the relationship between climate change risk disclosure and financial reports transparency is essential.

2.1 Climate Change Risk Disclosure

Climate change refers to long-term changes in temperatures and weather patterns. These changes may be natural, such as shifts in the solar cycle. However, since the 1800s, human activities have been the main reason of climate change, primarily due to use fossil fuels like coal, oil, and gas as noted by the United nation [20].

Climate change has become an important subject in recent years. Its consequences have been documented and several scholars, have suggested solutions and action plans for decreasing its impacts on the global economy and mitigating changes in temperatures and weather [21].

Disclosure of climate change risk has become an essential practice for organizations, as it helps stakeholders understand the potential impact of climate change on their operations [22]. The disclosure involves providing detailed information on the financial and non-financial risks that organizations face due to climate change, as well as their strategies to mitigate these risks [23]. This information allows investors, customers, employees, and regulators to assess the resilience and sustainability of organizations in the face of climate change [20]. Several reporting frameworks and guidelines have been developed to assist organizations in disclosing climate change risk effectively [24].

The changes that have occurred in the economies of countries around the world and the subsequent changes in social and environmental conditions have forced many professional, governmental and academic parties and bodies to strive towards achieving quality in accounting disclosure and providing users of financial reports with information related to climate changes, the negative and positive effects of which are reflected on the environment and the necessity of disclosing those climate changes. And its effects on the financial aspects of companies [25].

Climate change poses various risks to businesses, including physical, regulatory, reputational, and litigation risks. These risks can significantly impact financial performance, resilience, and long-term viability [26]. Through climate change risk disclosure, businesses can proactively assess and manage these risks, aiding strategic planning and adaptation efforts [27]. By disclosing climate-related risks, organizations provide stakeholders with valuable information to make informed decisions, including investors, lenders, insurers, customers, and employees [28]. Furthermore, climate change risk disclosure promotes transparency, accountability, and corporate responsibility, supporting sustainable business practices and the global transition to a low-carbon economy [15].

The benefits of climate change risk disclosure are numerous. Firstly, it enables better risk management and decision-making by providing organizations with a comprehensive understanding of their exposure to climate-related risks [29]. This knowledge allows businesses to develop effective risk mitigation strategies, ensuring their continued operation and competitiveness in a changing world [27]. Additionally, climate change risk disclosure can enhance investor confidence and facilitate access to capital, as investors increasingly consider environmental, social, and governance (ESG) factors in their investment decisions [12]. By disclosing climate-related risks, businesses show their commitment to sustainability, attracting socially responsible investors [20]. Furthermore, climate change risk disclosure can create opportunities for innovation and growth as organizations adapt and capitalize on emerging trends and technologies, such as renewable energy and sustainable solutions [3].

Despite its benefits, climate change risk disclosure faces challenges. One major challenge is the uncertainty and complexity associated with climate change impacts. Predicting the specific effects of climate change on individual businesses and sectors is difficult due to the complexity of climate science and the wide range of potential outcomes [23]. Additionally, the long-term nature of climate change poses challenges for traditional financial reporting frameworks, which typically focus on short-term performance. Organizations need robust methodologies and metrics to accurately assess and disclose climate-related risks [30]. Another challenge is the lack of standardized frameworks and guidelines for climate change risk disclosure [14].

As the consequences of climate change have been identified as an important problem, climate change reporting is urgent for corporations to make sure they disclose useful and sufficient information about climate-related risks which could affect the corporation and how they are dealing with these climate-related risks [23].

In this regard, the climate change reporting framework presented by the United Nations Framework Convention on Climate Change (UNFCCC) has made it easier for companies to report climate-related risk information in their financial reports [21]. This, has helped investors and capital markets around the world to take action in supporting the mitigation and adaptations to climate change risk by providing climate-related information disclosed in financial statements [23].

Furthermore, in 2015, the Paris Agreement addressed climate change, and aiming to stimulate efforts to combate climate change, and increasing awareness and disclosure by companies about the impacts of activities on climate changes .The agreement calls for periodic reports explaining gas emissions and the measures taken to mitigate them. Additionaly,it introduced a set of Legislation related to climate change includes imposing additional costs on energy and resource sources used by companies, as well as explained some of the financial risks they may cause climate changes, such as environmental disturbances on supply and production chains, and how companies take them into account those risks and manage them effectively [120-25].

In March 2022, the International Sustainability Standards Board (ISSB) published Exposure Draft IFRS S2 *Climate-related Disclosures*, integrating and building on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and incorporating industry-based disclosure requirements derived from SASB Standard which intended to facilitate the provision of comparable information for allover world markets. These requirements are designed to enable users of financial reporting to evaluate company's' exposure to and management of climate-related risks and opportunities, to facilitate capital allocation and stewardship decisions [16]

The Exposure Draft would require corporation to provide information that help users of general-purpose financial reporting to understand [16]:

- Governance: the governance processes, and procedures corporation uses to monitor and manage climate-related risks and opportunities.
- Strategy: corporations are required to evaluate the real and potential impacts of climate related risks and opportunities on their businesses and financial plane.
- Risk management: corporations must describe the procedures they have put in place to recognize, evaluate, and manage risks associated to climate change.
- Metrics and targets: the metrics and targets used to manage and evaluate a corporation's performance in relation to climate-related risks and opportunities.

From the previous presentation, it is clear that disclosing climate changes is important for companies.

2.2 Climate Risk Disclosure and Financial Transparency

The disclosure of climate risk and the transparency of financial reports are crucial in today's business environment. Because of the frequency and severity of climate-related events on the rise, such as extreme weather and natural disasters, companies must proactively manage the risks associated with climate change [10] by including information about these risks in their financial reports, businesses can provide investors and stakeholders with important data to make well-informed decisions [15].

Regarding financial transparency, define "earnings opacity" as the percentage of earnings in financial report that are actual but hidden or invisible [31]. According to [32] , accounting information

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transparency is the percentage of corporate behavior which perceive by investors by means of information disclosure or the degree of reflection to a real economic surplus, Some researchers also defines accruals as earnings quality [3334], auditing quality [35] or earnings management [36].

There are various obstacles to accounting for climate change in financial reporting, including the variety of reports and standards used by different organizations, making comparisons difficult. It is challenging to assess potential financial consequences on company performance, identify risks associated to climate change, and effectively manage those risks since information and performance evaluation of climate change also influences the quality of the information provided [37].

Regarding the connection between climate risk disclosure and financial transparency, no defintive conclusion has been reached. According to an ethical theory [38], firm executives who disclose climate risk are more likely to be honest and reliable, follow higher moral standards and norms of behavior, and to do so. As a result, they are less likely to try to manipulate earnings reports [33]. which mean that climate Risk disclosure is associated with high earnings quality. In other words, managers who are more willing to climate Risk disclosure (throughCSR Reports) are less likely to manipulate real management activities through accruals reports . As a result, the company will have more financial transparency [18].

However, managers will often conceal a company's misbehavior by the way they report voluntary information as climate risks [14].

In light of this, Prior, the assumption that information sharing is equal to the preservation of a company's reputation, offering the business a cover and "bold confidence" to manipulate earnings. business may deceive external stakeholders into believing that its disclosures are transparent and accurate while concealing its actual financial position [39].

The relationship between climate risk disclosure and financial transparency is multifaceted, influencing various aspects of how companies communicate their exposure to climate-related risks. When companies disclose climate risks, investors gain valuable insights into risk management strategies, enabling them to evaluate the sustainability of businesses and make informed investment decisions. [16,3234,35,]. Additionally, effective disclosure enhances the transparency of financial reports, demonstrating the integration of risk management with business strategies and financial performance. The increasing stringency of environmental regulations and sustainability disclosure requirements puts pressure on companies to provide accurate and comprehensive information. Climate risks can impact financing strategies and capital costs, influencing how investors and credit entities assess a company[23,25,36]. Institutional investors, driven by a growing interest in sustainability, play a significant role in encouraging companies to disclose climate risks. This, in turn, affects investor and creditor decision-making processes, influencing the financial standing and reputation of companies. Enhanced disclosure enables a better assessment of the future impact of climate risks on financial performance and the long-term sustainability of the company [38,33].

However, climate risk disclosure and financial reports transparency come with challenges. Companies may face uncertainties when assessing and quantifying climate risks, as predicting the exact impacts of climate change can be complex [15]. Additionally, disclosing sensitive information about climate risks may expose companies to reputational and legal risks [30]. Overcoming these challenges requires robust risk assessment methodologies, clear reporting frameworks, and collaboration among stakeholders [24].

The results of relationship between climate risk disclosure and financial transparency are conflicting due to the differences in sample and research methods.

Considering the mediating effect of financial transparency, we are propose a First hypothesis:

BOLETÍN DE LITERATURA ORAL, 11 (2024), PP. 344-359

H1: There is a significant relationship between climate change Risk disclosure and financial reports transparency.

2.3 Climate Risk Disclosure and Institutional Investors

The isclosure of climate risk is distinct from financial disclosure as it often targets a boarder audience, is multifaceted, challenging to quantify in monetary terms, challenging to compare and standardize, and has advantages that extend beyond a corporation [18]. For some categories of institutional investors, these factors have a greater impact on the need for information on climate risk. Institutional investors play a crucial role in influencing companies' disclosures and practices [22]. Their large holdings and expertise give them significant influence and bargaining power with regard to climate change risk disclosure [28]. Institutional investors, such as pension funds and asset managers, are increasingly recognizing the importance of climate-related risks and are incorporating these considerations into their investment strategies [40].

As a result, we identify three categories of investors with a strong attention for climate risk disclosure:

The first group includes institutional ownership from countries with stewardship codes that provide principles for institutional investors concerning their portfolio firms [41]. Stewardship codes pertained to the oversight role of institutions to create long-term value for their clients or beneficiaries, aiming to promote corporate sustainability [42]. Investors subject to stewardship codes should consequently have a higher propensity to demand climate risk disclosure from portfolio firms. Stewardship codes are intended to encourage company sustainability and relate to the institutions' oversight role in generating long-term value for its customers or beneficiaries [43]. Therefore, portfolio companies should expect more disclosure of climate risk from investors who are subject to stewardship codes.

The second group's definition includes disclosure demand based on environmental norms in an institutional investor's home country. In the framework for institutional influences on economic activity, the most fundamental are social norms and culture [44].Similarly, when discussing the link between economic and culture outcomes, they are defined as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation” [45].

Further, the investors from countries with high environmental norms actively contribute to the enhancement of firms' ESG policies (environment, social and governance). Therefors, we expect that demand for climate risk disclosure can stem from whether investors are based in countries with more climate-conscious norms [46].So, social norms and culture are considered to be the most basic institutional impacts on economic activity, and we belive that demand for climate risk disclosure can originate from whether investors are based in countries with more climate-change norms.

The third ownership category is consist of universal owners, who are based on the theory that because they are exposed to externality risks, they demand more information and may benefit from the disclosure of climate risk [47].

Accordingly, increased responsibility of businesses due to climate risk disclosure may lead to a decrease in emissions and the associated adverse externalities on other businesses or society and enhance the accountability of companies [47]. Since universal owners are long-term investors who own significant portions of the economy and are thus exposed to climate externalities, these advantages probably mean the most to them. As a result, it would be predicted that companies with higher levels of universal ownership would see a rise in the need for climate risk disclosure [18]. The demand and supply of climate risk disclosure should be based on the associated costs and benefits, for general disclosure and CSR disclosure [19]. Since the disclosure advantages aren't fully utilized by businesses, they would not be equally beneficial to all investors, even if the disclosure costs should be taken into account by firms and their investors [13], that is, in their supply and demand of the information. and one potential cost can happen because the climate risk disclosure may reveal confidential information about a firm's strategy to its competitors [27].

ISSN: 2173-0695

These disclosure-related expenses can be substantial and that revealing such proprietary information, which would be accessible to competitors, "could be particularly burdensome”[48]. The demand for such disclosure by climate-conscious institutions is lower when competitive pressures are greater since proprietary disclosure costs are expected to be higher for enterprises operating in more competitive marketplaces [26]. Some investors may benefit from climate-specific disclosure because it may put more pressure on companies to cut their reported carbon emissions, which has been shown to reduce the negative externalities that companies create on other companies and the environment in general [49-51]. This externality benefit suggests that companies in high-emission industries should face more disclosure demands from organizations concerned about the environment.

institutional investors have the ability to play a crucial role in promoting the disclosure of climate risk since their pressure is seen as the most effective financial tool for reducing enterprises' exposure to climate risk. This pressure may also apply to the disclosure of climate risk [52].

The relationship between climate risk disclosure and institutional investors is pivotal in sustainable investing and responsible corporate governance. Institutional investors, such as pension funds and mutual funds, exhibit a growing interest in integrating environmental, social, and governance (ESG) factors, with climate risk disclosure being a crucial aspect of the environmental dimension of ESG. These investors, known for their long-term perspective, are concerned about the potential financial impacts of climate change on their investments. Climate risk disclosure is considered in their risk management and due diligence processes, with a focus on transparency regarding how companies identify, assess, and manage climate-related risks. [44,45].

Institutional investors wield influence over corporate behavior, encouraging companies to disclose climate risks and adopt sustainable practices to attract investments. Some engage in shareholder activism, using their voting power to advocate for improved corporate practices, including enhanced climate risk disclosure. Standardized reporting frameworks, like those by the Task Force on Climate-related Financial Disclosures (TCFD), facilitate communication between companies and institutional investors on climate risks [48,50,51].

Changes in regulatory requirements regarding climate risk disclosure can significantly impact institutional investors' behavior, driving them to seek more comprehensive information. Additionally, institutional investors face pressure from their stakeholders to incorporate sustainability considerations into investment decisions, influencing their expectations from invested companies. ESG criteria, including climate risk, are integrated into investment analysis, favoring companies with transparent and comprehensive disclosure. Institutional investors recognize that effective climate risk management contributes to long-term business resilience and financial performance, considering climate risk disclosure as an indicator of a company's commitment to sustainability and risk mitigation. [27,43].

In this study, we generate and evaluate hypotheses about institutional investors' preferences for disclosures of climate risk. Due to the complex nature of this sort of disclosure, preferences for climate risk disclosures are different from those for standard corporate disclosure.

H2: There is a significant relationship between climate change Risk disclosure and Institutional investors.

2.4 Climate Risk Disclosure, Institutional Investors, and Financial Transparency

Institutional investors are starting to play a significant role in governance and supervision especially continuous development and improvement of global capital markets [53]. Institutional investors have an edge over minority investors in terms of information, capital and greater shareholdings. Therefore, they have the ability to engage in company governance [2].

Institutional investors play a moderating role in the relationship between climate risk disclosure and financial reports transparency. As the world faces increasing concerns about climate change, the need

BOLETÍN DE LITERATURA ORAL, 11 (2024), PP. 344-359

for comprehensive and accurate information regarding the financial implications of climate risk becomes more apparent [54]. Institutional investors, with their substantial financial resources and focus on long-term value creation, have the ability to influence companies to disclose relevant climate-related information in their financial reports [55]. This transparency is important as it allows investors to make informed decisions about the allocation of their capital, taking into consideration the potential risks and opportunities associated with climate change [30].

By engaging with companies and advocating for increased climate risk disclosure, institutional investors can help improve financial reports transparency. They can encourage companies to adopt more standardized reporting frameworks, such as the Task Force on Climate-related Financial Disclosures (TCFD), which provide clear guidelines on how to disclose climate-related risks and opportunities [21]. By doing so, institutional investors improve comparability and consistency in climate risk disclosure, enabling investors to better assess the financial implications of climate change across different companies and sectors [47].

Furthermore, institutional investors can use their influence to drive the integration of climate risk considerations into companies' overall business strategy and risk management frameworks [56]. They can advocate for the inclusion of climate-related metrics and targets in executive remuneration packages, ensuring that management is incentivized to address climate risk in a meaningful [46]. By exerting their influence through shareholder resolutions, engagement with company boards, and proxy voting, institutional investors can effectively promote climate risk disclosure as a material factor in investment decision-making [2].

Moreover, institutional investors can offer resources and expertise to companies, assisting them in assessing and mitigating climate-related risks. Through engagement and dialogue, they can help companies understand the financial implications of climate change and identify appropriate response strategies [22]. This collaborative approach not only enhances the quality of climate risk disclosure but also strengthens companies' resilience and long-term value creation potential [40].

The interïcate relationship among climate risk disclosure, institutional investors, and financial transparency is a dynamic interplay that significantly influences corporate practices and investor priorities. Climate risk disclosure enhances overall transparency by providing insight into a company's approach to identifying and managing climate-related risks, aiding in informed financial reporting. Institutional investors, acting as stewards of capital, engage with companies to influence disclosure practices and encourage robust climate risk management, aligning with their emphasis on sustainable investing and responsible practices [56,57].

The financial impact of climate risks is assessed by institutional investors during their evaluation of investment opportunities, with effective disclosure supporting thorough risk assessments. Companies transparent in their climate risk disclosure are more likely to align with institutional investment criteria. Climate risk disclosure serves as a market differentiator, potentially providing competitive advantages to companies that proactively disclose risks and demonstrate effective management. [35,48,57]

Institutional investors, sensitive to reputational risks tied to climate-related controversies, value comprehensive disclosure as a means of reputational risk management. Compliance with regulatory requirements and adherence to reporting standards, such as the TCFD guidelines, serve as benchmarks for evaluating the quality of climate risk disclosure. Regulatory changes prompt institutional investors to seek detailed and standardized information from companies to comply with evolving reporting obligations [63,64].

Institutional investors engaging in shareholder activism may propose resolutions related to climate risk disclosure, leveraging their voting influence to impact corporate practices and enhance disclosure standards. The integration of ESG criteria, including climate-related factors, into institutional investors' decision-making processes shapes their expectations for the quality of climate risk

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BOLETÍN DE LITERATURA ORAL, 11 (2024), PP. 344-359

disclosure. Overall, this intricate relationship reflects a mutual influence between corporate practices, investor priorities, and financial transparency. [62,54,55]

In conclusion, institutional investors play a crucial moderating role in the relationship between climate risk disclosure and financial reports transparency. Their active engagement, advocacy for standardized reporting frameworks, integration of climate risk considerations, and provision of resources and expertise to companies are instrumental in driving meaningful and comprehensive climate risk disclosure. By doing so, they contribute to a more informed investment landscape, where the financial implications of climate change are thoroughly understood and appropriately factored into investment decisions. Based on above we develop the third hypothesis.

H3: There is a significant impact of institutional investors on the relationship between climate change Risk disclosure and financial reports transparency.

Research Design and Methodology

3.1 **Data Collection and Sample Selection Database**

In the context of decision No. 196 of Egyptian Financial Regulatory Authority in 2022 amended by decision No. (107&108) the companies obligated to apply the climate change disclosure index are the companies that are listed in the stock market and works in the non-financial institutions sector. According to these decisions, companies are required to apply this disclosure index a mandatorily manner after the end of conciliation period, starting from the financial reports ending in 2022. Companies are obliged to disclose climate changes and industrial practices that negatively affect the environment in general . The number of industrial companies obliged to disclose climate change risks was 108, which recorded 108 observations in the financial year ended 2022. The collection of applied study data has relied on Internet sites where financial reports and governance reports for Egyptian listed companies are available.

These sites include: http://www.mubasher.info/EGX/listed-companies www.egx.com.eg http://www.hcestox.com/companies.aspx

3.2 Measurement of Variables

The independent variable of the present research is the disclosure of climate change risk, which can be measured through the disclosure index in accordance with Decision No. 196 of Egyptian Financial Regulatory Authority (2022) amending its Decision No. 108, as amended by Decision No. 107 of 2021, regarding controls on disclosure by non- financial companies of environmental and community practices and governance related to sustainability and the financial effects of climate change. This index contains two parts :the first containing performance indicators for environmental, social and governance disclosures on sustainability (ESG).The second part includs four performance indicators for environmental disclosures about the financial impacts of climate change **(TCFD**).Each indicator consists of a total of 10 pointsand can be illustrated by the following table (the study relies on this part) :

Table 1. Climate change disclosure index according to Egyptian Financial Regulatory Authority:

Governance		
Climate change governance	1-controls and procedures a board of directors uses to monitor and manage climate-related risks and opportunities.	1
	2-procedures a board of directors uses to Assessment of climate-related risks and opportunities.	1
Strategy		
Environmental processes, control and risk reduction	1-Determining climate-related risks and opportunities that could enhance, threaten or change an entity’s business strategy over the short, medium and long term.	1
	2-Including climate related risks and opportunities in the company’s strategy and financial planning.	1
	3- The company’s annual investment in infrastructure related to resisting climate change, adaptive capacity, and development products.	1

Risk management		
Climate Change Risks	1- the particular approach developed by the company to identifying and assessment of climate-related risks and opportunities.	1
	2- how climate-related risks and opportunities are managed by the company.	1
	3- how the company integrate climate-related risks into its comprehensive risk management strategy.	1
Metrices and targets		
Carbon and greenhouse gas emissions	1- The company's measures to assess climate-related risks and opportunities in line with its strategy and risk management process.	1
	2- how the company disclose total CO2 emissions?	1
Total		**10**

Therefore, this research implemented a scoring methodology based on the counts of scores that the sample companies may have achieved during the development of content analysis technique. The scoring methodology assessed the level of climate change risk disclosure by assigning a score of (1) for "disclose" and a score of (0) for "not disclose" for each indicator resulting in scores for each company. In the end, the number of scores for disclosing any indicators in the index will be divided by the maximum score that can be achieved, which is (10).

The moderating variable of the current study is institutional investor , defined as a financial institution (e.g. banks, investment funds, insurance companies, financial services companies, etc.), that invests on behalf of others by holding shares in many companies [54]. it can be measured by the ratio of shares held by institutional investors to the total shares held by the company [57].

The independent variable represented here by transparency of financial reporting and can be measured using an alternative scale: the prior three-year moving sum from the absolute value of discretionary accruals according to Modified Jones Model. This model was used for the first time in [58] to estimate the absolute value of discretionary accruals for the research sample. In the same context, the transparency of financial reports is measured by the following steps:

The first step: Estimation of the constant value (β0) and regression coefficients (β 1&β2).) in the following regression equation:

$$(TAC_{i,t}/TAS_{i,t-1}) = \beta 0(1/TAS_{i,t-1}) + \beta 1(\Delta REV_{i,t}/TAS_{i,t-1}) + \beta 2(PPE_{i,t}/TAS_{i,t-1}) + \mathcal{E}_{i,t} \qquad (1)$$

Where:

$TAC_{i,t}$: Total accrual at the company i year t is the difference between earnings and cash flow originating from operating cash flow activities divided by total assets in the company i year t.
$TAS_{i,t-1}$: Total assets in the company i year t-1.
$\Delta REV_{i,t}$: Change in revenue for corporation i (revenues in year t less revenues in year t–1).
$PPE_{i,t}$: The gross value of fix assets divided by total assets in the company i in year t.
$(\beta_1\&\beta_2)$: The parameter estimates for company.

The second step: Determine the discretionary accruals

$$DiscAc_{it}\ (TAC_{i,t} / TAS_{i,t-1}) = \beta_0(1/TAS_{i,t-1}) + \beta_1(\Delta REV_{i,t}/TAS_{i,t-1} - \Delta REC_{i,t}/TAS_{i,t-1}) - \beta_2(PPE_{i,t}/TAS_{i,t-1})(2)$$

Where:
$DiscAc_{i,t}$: the discretionary accruals of the i company at year (t).
$\Delta REC_{i,t}$: change in accounting receivables of company I at year (t).

The third step: determining (AbsV(DiscAcit) the absolute value of discretionary accruals for company i at year (t) (3)

The fourth step: Measuring the level of transparency of financial reports of sample companies, which is the moving sum of three periods of the absolute value of discretionary accruals at the end of the period, as follows:

$$FRTrans_{i,t} = AbsV(DiscAc_{i,t}) + AbsV(DiscAc_{i,t-1}) + AbsV(DiscAc_{i,t-2}) \qquad (4)$$

Where:

FRTrans $_{i,t}$: Financial Reporting Transparency of company I at year (t).
AbsV(DiscAc$_{i,t-1}$*)*: the absolute value of discretionary accruals for company i at previous year (t-1).
AbsV(DiscAc$_{i,t-2}$*)* : the absolute value of discretionary accruals for company i at year (t-2)

In order to reduce measurement error and reduce the subjective factor, the study convert the measurement of absolute value of discretionary accruals into an indicator variable. When companies' accruals are higher than the annual average of the sample, the Financial Transparency is 1; otherwise is 0.

The variables in this study that may have a substantial impact on the relationship
between Climate Change Risk Disclosure and Transparency Financial Reports: the moderating Role of institutional Investors were firm size (F Size), Reurn on Assets (ROA), Reurn on Equity (ROE), Firm leverage (FLEV), Audit size (A Size), Environmintal, Social, and Governance index for Egypt (ESGR), Cash Flow (CF). Firm size (FSize) is measured as the natural logarithm of total assets. Reurn on Assets (ROA) is the measure of profitability, Return on Equity (ROE) is the measure of profitability. It is the Percentage between the earnings before taxes and total Eqity. Firm leverage (FLEV) is measured by the ratio of total debt divided by total assets. Audit size (A Size) is measured through a dummy variable ,which is equal to 1 if the company audited by big 4 and zero if not. Finally, Environmintal, Social, and Governance index for Egypt (ESGR) A dummy variable that takes the value 1 if the company is included in the ESG index during the sample period and zero otherwise, Cash Flow (CF) represnts total cash flow.

3.3. Estimation Method and Models

This study uses the multiple regression models in order to examine the over all Level of climate change risk disclosure among the study sample and its impact on transparency of financial reports in the light of institutional investors as a moderating role. Equations (1) used to study the impact of climate change risk disclosure on transparency of financial reports. In the same time, Equation (2) will indicate the impact of institutional investors on climate change risk disclosure on, finally equation 3 used to study significant impact of the relationship between institutional investors and climate change Risk disclosure on financial reports transparency.

This study uses all 3 equations for the (115) samples with (115) total observations collected. To examine the impact of climate change risk disclosure on transparency of financial reports: moderating role of institutional investors., this study will employ the multiple regression models as follows:

$$FRTRANSi,t = \beta_0 + \beta_1\ ECCD\ INDEX_{i,t} + \beta_2\ FSIZE_{i,t} + \beta_3\ ROA_{i,t} + \beta_4\ ROE_{i,t} + \beta_5\ FLEV_{i,t} + \beta_6\ ASIZE_{i,t} + \beta 7ESGR_{i,t} + \beta_8\ CF_{i,t} + \sum i,t \qquad (1)$$

$$ECCD\ INDEX_{i,t} = \beta_0 + \beta_1\ INV_{i,t} + \beta_2\ FSIZE_{i,t} + \beta_3\ ROA_{i,t} + \beta_4\ ROE_{i,t} + \beta_5\ FLEV_{i,t} + \beta_6\ ASIZE_{i,t} + \beta_7\ ESGR_{i,t} + \beta_8\ CF_{i,t} + \sum i,t \qquad (2)$$

$$INVi,t= \beta_0 + \beta_1\ (ECCD\ INDEX * FRTRANS)_{i,t} + \beta_2\ FSIZE_{i,t} + \beta_3\ ROA_{i,t} + \beta_4\ ROE_{i,t} + \beta_5\ FLEV_{i,t} + \beta_6\ ASIZE_{i,t} + \beta_7\ ESGR_{i,t} + \beta_8\ CF_{i,t} + \sum i,t \qquad (3)$$

where FRTRANS represents the Financial Reports Transparency , ECCD represents The Egyptian Climate Change Disclosure, FSIZE represents firm size, FLEV represents firm leverage, ROE represents return on Equity, ASIZE represents Audit size, ESGR represents environmental, social and governance disclosures on sustainability (S&P EGX ESG), CF represents total Cash Flow. The symbol $\beta 0$ denotes the constant value, and the symbol $\sum$ indicates the error term.

Analysis and Results

4.1 Descriptive Statistics

Table 2 presents descriptive statistics for several variables. egyptian climate change risk disclosure index (ECCD INDEX) averages 5.672 and goes as maximum 8.829, while the minimum value 3.813, This finding suggests that the level of climate change risk disclosure is relatively high in genaral and has sufficient attention in egypt. The large difference in climate disclosure could be attributed to the kind of companies industry. The heavy-pollution industry can attract investors, who pressured to pay more attention to disclose climate risk and improve it [15]. and financial transparency (FTRANS) averages 0.6147 with a small standard deviation. This result indicates that financial transparency doesn't vare among our sample, which is consistent with the results of the study by [23-30-37].

It suggests that climate change risk disclosure enhances transparency of financial reports, this is due to the commitment to apply the egyptian indictor. institutional investors as the mediator variable in current study , with a mean (0.185) and maximum value 0.316 Which confirms that institutional investors have a role in the disclosure level of climate change, which effect the transparency of financial reports. The present study overlook the role of control variales (firm size, return on asset, return on equity, company leverage, audit size, cash flow, and finally environmental social governance rank) which vary among our sample.

4.2 Correlation analysis

Table 3 Correlation analysis results are shown in Table 3. In terms of climate change risk disclosure is significantly positive with the transparency of financial reports, institutional investors, return on assets, firm size, cash flow, environmental, social and governance rank, audit size and return on equity, which is consistent with the first hypothesis.

On the other hand, In terms of transparency of financial reports is significantly positive with the institutional investors, return on assets, firm size, cash flow, environmental, social and governance rank, audit size and return on equity which is consistent with the second hypothesis.

As to the mediating effect, the results suggest that institutional investors is significantly positive with the relationship between climate change risk disclosure and financial report transparency which is consistent with the third hypothesis, Above all, the mediating effect of institutional investors is existing in our sample.

4.3 Regression analysis

Table 4 represented the result of regression analysis for the models of the study. colume 1 show that The value of significance level for climate change risks disclosure with the transparency of financial reports is less than (0.05), Therefore, it has a significant effect, as it becomes clear to us that the sign of the regression coefficient ($\boldsymbol{\beta}$) for each of them is positive, which proves the validity of the first hypothesis, and this means that there is a positive, statistically significant correlation between disclosure of climate change risks (the independent variable) and the transparency of financial reports (the dependent variable).), consistent with the results of the study [15-23-30-37-50] which confirm that companies who disclose climate risk are more likely to be honest and reliable, has moral standards and norms of behavior, As a result, they are less likely to manipulate earnings reports.these companies protect their reputation and enhance the understanding and oversight of the company for external stakeholders.

The value of the R- Sqare was (0.613). This value indicates that the independent variable in the model, climate change disclosure, explains (61.3) of the change in the dependant variable, financial reports transparency.

colume 2 show that The value of significance level for climate change risks disclosure with the institutional invesors is less than (0.05), Therefore, it has a significant effect, as it becomes clear to us that the sign of the regression coefficient ($\boldsymbol{\beta}$) for each of them is positive, which proves the validity of the second hypothesis, and this means that there is a positive, statistically significant correlation between disclosure of climate change risks (the independent variable) and institutional invesors (the moderating variable).), consistent with the results of the study [59-60], which confirm that institutional investors have the ability to play a crucial role in promoting the disclosure of climate risk since their pressure is seen as the most effective financial tool for reducing enterprises' exposure to climate risk. This pressure may also apply to the disclosure of climate change risk.

ISSN: 2173-0695

The value of the R- Sqare was (0.592). This value indicates that the independent variable in the model, climate change disclosure, explains (59.2) of the change in the moderating variable, institutional invesors.

colume (3) show that The value of significance level for institutional invesors with the relationship between climate change risk disclosure and financial reports transparency is less than (0.05), Therefore, it has a significant effect, as it becomes clear to us that the sign of the regression coefficient ($\boldsymbol{\beta}$) for each of them is positive, which proves the validity of the third hypothesis, and this means that there is a positive, statistically significant correlation between institutional invesors (moderating variable) and the relationship between climate change risk disclosure and financial reports transparency (the ependent variable).), consistent with the results of the study [54-55-60-61], which confirm that Institutional investors, with their substantial financial resources and focus on long-term value creation, have the ability to pressure on companies to disclose related climate information in their financial reports. This transparency is important as it allows investors to make informed decisions about the allocation of their capital, taking into consideration the potential risks and opportunities associated with climate change.

The value of the R- Sqare was (0.741). This value indicates that the moderating variable in the model, institutional investors, explains (74.1) of the change in the dependent variable, the relationship between climate change risk disclosure and financial reports transparency.

Table 2. Descriptive statistic

Variable	**Mean**	**Std. Dev**	**Min**	**Max**
ECCD INDEX	5.672	1.439	3.813	8.829
FRTRANS	0.6147	0.49051	0.000	1.000
INV	0.185	0.309	0.000	0.316
FSIZE	6.012	0.841	4.106	0.723
ROA	0.187	0.014	0.129	0.260
ROE	0.210	0.037	0.151	0.281
FLEV	0.481	0.016	0.295	0.705
ASIZE	0.692	0.025	0.000	1.000
ESGR	0.614	0.478	0.000	1.000
CF	2.8962	5.130	42547281	243461173

Table 3. Correlation analysis of variables

Variable	**ECCDINDEX**	**FRTRANS**	**INV**	**ROA**	**FSIZE**	**FLEV**	**CF**	**ESGR**	**ASIZE**	**ROE**
ECCDINDEX	1.000									
FRTRANS	0.171**	1.000								
INV	0.376**	0.095**	1.000							
ROA	0.063*	0.129*	0.085**	1.000						
FSIZE	0.086*	0.512	0.164	0.073	1.000					
FLEV	-0.292	-0.315	-0.135	-0.059	-0.483**	1.000				
CF	0.169**	0.297*	0.131	0.152*	0.76*	-0.318	1.000			
ESGR	0.187**	0.214**	0.175**	0.305*	0.482*	-0.239	0.146*	1.000		
ASIZE	0.153*	0.309**	0.143*	0.106	0.087**	0.025	0.064*	0.019**	1.000	
ROE	0.758*	0.021	0.042	0.18*	0.073*	-	0.306	0.078	0.291	1.00

ISSN: 2173-0695

			**	*		0.179 *	*			0
*Note: ** Correlation is significant at the p = 0.05, * Correlation is significant at the p = 0.01 level. Data are rounded off to the fourth decimal.*										

Table 4. Variable regression analysis

Variable	**Model (1)**	**Model (2)**	**Model (3)**
	FRTRANS	**ECCD INDEX**	**INV**
ECCDINDEX	3.051**	--	--
	3.046	--	--
FRTRANS	--	--	--
	--	--	--
INV	--	3.824**	--
	--	2.950	--
FRTRANS * ECCDINDEX	--	--	2.028
	--	--	1.64
ROA	0.521*	3.850*	0.213**
	0.613	4.591	0.027
FSIZE	0.072*	0.407	0.319
	0.069**	0.653**	0.073
FLEV	-0.811	-0.219	-0.361
	-1.734	0.184	1.295
CF	0.305*	0.237*	1.237
	0.841	0.305	3.281
ESGR	0.164**	0.641**	0.135**
	2.017	0.312	0.621
ASIZE	0.313**	0.513**	0.418*
	2.501	0.493	0.821
ROE	0.479*	0.074*	0.928**
	1.148	0.082	1.067
R- Sqare	0.613	0.592	0.741
Observation	**108**	**108**	**108**
Note: ** Correlation is significant at the p = **0**.05**.** * Correlation is significant at the p = **0**.01 **level.** Data are rounded off to the fourth decimal.			

Conclusions and Recommendations

The study examines the impact of climate change risk disclosure on financial reports transparency, with a specific focus on the moderating role of institutional investors. this study applied on 108 Egyptian listed companies which obligated by decision No. 196 of Egyptian financial regularity Authority 2022 amended by decision No. (107&108).The findings of descriptive statistics for several variables suggest that the level of climate change risk disclosure is relatively high in general and has sufficient attention in Egypt , the results indicate that financial transparency hasn't relative differences among our sample and confirms that institutional investors have a role in the disclosure level of climate change, which effect the transparency of financial reports .

We find that climate change risk disclosure has positive significantly relationship with the transparency of financial reports, institutional investors, return on assets, firm size, cash flow, environmental, social and governance rank, audit size and return on equity, which prove the first hypothesis. Also, transparency of financial reports has significantly positive relationship with the institutional investors, return on assets, firm size, cash flow, environmental, social and governance rank, audit size and return on equity which prove the second hypothesis.

As to the mediating role, the results emphasis that institutional investors has a significantly positive relationship with climate change risk disclosure and financial reports transparency which prove the third hypothesis.

Regression analysis results for the study's models demonstrate a positive, statistically significant correlation between the disclosure of climate change risks (the independent variable) and the transparency of financial reports (the dependent variable). This supporting evidence suggests that companies that disclose climate risk are more likely to be morally upright, trustworthy, and to uphold moral standards. Consequently, they are less likely to falsify earnings reports.These businesses safeguard their brand while improving external stakeholders' comprehension and supervision of the business..

Additionally, The results indicate the independent variable of disclosure of climate change risk and the moderating variable of institutional investors have a positive, statistically significant correlation., which attest to the power of institutional investors to have significant influence on the disclosure of climate risk, given that their pressure is regarded as the most potent financial instrument available for mitigating the sensetivity of businesses to climate risk.

Overall, The results also indicate that the association between climate change risk disclosure and financial reports transparency (the dependent variable) and institutional investors (the moderating variable) has a positive, statistically significant correlation., which attest to the ability of institutional investors to exert pressure on businesses to include relevant climate information in their financial reports due to their significant financial resources and emphasis on long-term value development because it enables investors to make well-informed decisions on the allocation of firm resources, taking into account the possible risks and opportunities linked with climate change.

Finally, the Egyptian companies should carefully identify the specific climate risks to which their business is subject. They should develop actions, create planes, and strategies to reduce risks related to climate change. Reports and disclosures of these acts must to be made in order to keep stakeholders accountable. In the current context of sustainability targets, detailed disclosure of mitigation strategies is important as it provides greater security for investors, governments, and the society. there for, the Egyptian companies should lead by example and make greater investments in climate risk disclosure

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