

## The Relationship between Sustainability Reports Disclosure Level and Stock Price Crash Risk

### “An Empirical Study on the Egyptian Companies Listed in the S&P EGX ESG”

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#### Abstract:

This study examined the relationship between sustainability reports disclosure level and stock price crash risk, as its main goal is to answer the question “what is the relationship between the disclosure level of sustainability reports dimensions (economic, social, and environmental) and the stock price crash risk?” Using a sample of 20 companies listed in the Egyptian sustainability index S&P EGX ESG from 2017 to 2022. The proposed model and hypotheses were analysed using structural equation modelling. The results indicated that there is a statistically significant negative relationship between the disclosure level of all sustainability reports dimensions (economic, social, and environment) and stock price crash risk, as the increase of the level of disclosure in any sector of sustainability reports (economic, social, and environmental) leads to a decrease in the stock price crash risk for the companies in the study sample.

**Keywords:** Sustainability Reports Disclosure, Stock Price Crash Risk

## 1. Introduction:

International interest in environmental and social issues has recently increased significantly with the aim of achieving sustainable development, especially in light of economic collapses, financial crises and climate change. The concept of sustainability has become a vital and necessary element for all countries around the world. This has prompted governments and financial and regulatory bodies in countries all over the world to demand that companies to disclose non-financial information related to environmental performance, social responsibility and governance, or what is called sustainability disclosure due to its importance in improving transparency, reducing risks, and adding value to the company (Ho, Bai, Lu, & Qin, 2021); (Qureshi, Kirkerud, Theresa, & Ahsan, 2020).

As a result of the decline in confidence in traditional financial reports and the doubts raised about their ability to show the company's true performance and give a complete picture of its all activities, this has led many companies moving towards new methods for preparing annual reports, disclosing sustainability, and providing information about it, whether within the financial reports or from the preparation of independent reports under the name of sustainability reports (Sánchez, Hussain, & Ferrero, 2019); (Castaño, Rodríguez, Ricaurte, & Mejía, 2021). And according to the (Global Reporting Initiative & The Sustainability Accounting Standards Board, 2021), nonfinancial indicators in sustainability reports (ESG) include three main indicators: indicators related to environmental performance, indicators related to society, and indicators related to governance (Grewal, Hauptmann, & Serafeim, 2021).

Movements in the prices of companies' shares in the stock market represent the result of the effects of many factors, some of which are related to traders in the market and the expectations of financial analysts about stock price movements, some of which are related to the company, and some of which are related to the efficiency of the market itself, and since the result of these effects resulting from these factors is reflected in the share price. Studying the various changes that occur in this price has become the focus of many studies for the purpose of predicting the stock price in the future. One aspect of this interest is studying the extent of the possibility of a sudden decline in this price, which is what has been known to be called the Stock Price Crash Risk (Abdel Majeed, 2019).

Some studies (DeFond, Hung, Li, & Li, 2015); (Liu & Zhong, 2018); (Kim, Wang, & Zhang, 2019); (Yildiz & Karan, 2020); (Abdel-Wanis, 2021); (Murata & Hamori, 2021) indicated that a companies' stock price crash risk can be explained as a result of the asymmetry of information among some users of financial statements, especially managers and investors, and the tendency of company managers, for their own interests, to hide bad news for long periods and then reveal it once in the market. Therefore, it is expected the lower the information asymmetry, the lower the management's ability to withhold bad news for long periods, and thus the stock price crash risk decreases. In this context, the study by (Yildiz & Karan, 2020) indicated that disclosing sustainability performance is an indicator of the transparency and ethical behaviour of management, so it has become a must for

companies that wish to reduce the future stock price crash risk to take the lead in disclosing sustainability performance because of its positive effects on narrowing the information gap and the state of uncertainty, thus reducing management's ability to withhold bad news.

**Accordingly, this study will address the relationship between the level of disclosure of sustainability reports and the stock price crash risk (SPCR) by applying it to companies listed on the S&P EGX ESG index of Egyptian Stock Exchange.**

## 2. Theoretical Background:

### Sustainability Reports:

With the increasing international awareness of the importance of disclosing social and environmental information, in December 1983 a decision was issued by the General Assembly of the United Nations to form a special committee to be asked to submit a report on the environment and the proposed strategies to achieve sustainable development, "World Commission for Environment and Development" This committee issued its report in 1987 under the title "Our Common Future" among the highlights of this report are the symptoms and causes of future threats, the concept and requirements of sustainable development, common challenges and proposals to solve them through joint action. This report defines sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (Nations, 1993).

In addition, investors have become increasingly interested in sustainability information, because the impacts that companies have on stakeholders as a result of their activities also represent risks and opportunities for the company itself, including the effects of the company's financial performance and the company's value in the long run. Therefore, sustainability reports have now become an increasing demand for large and listed companies throughout the world (GRI & SASB, 2021). According to the report submitted by KPMG in December 2020 on the survey it conducted on sustainability reports, it was found that 96% of the 250 largest companies in the world issue sustainability reports, as well as 80% of companies from major companies around the world now submit reports on sustainability (KPMG, 2020).

Sustainability reporting has been defined by the (Global Reporting Initiative, (GRI), 2016) as the practice of organizations to disclose their economic, social and environmental impacts and thus their positive or negative contributions towards the goal of sustainable development (GRI, 2016).

The Global Reporting Initiative indicated that the process of disclosing sustainability is a vital step towards achieving a sustainable global economy through the promotion it provides to hold companies accountable for the impacts of their economic, environmental and social activities, and then their positive or negative contribution to achieving sustainability, in addition to enhancing trust and facilitating the sharing of values on which society is built to make it more cohesive, it also allows governments to assess the contribution of companies to economic development and a more comprehensive understanding of the issues that are dealt with (GRI, 2016).

There are three dimensions of sustainable development, and they are the economic dimension, which aims to measure the direct and indirect effects of the organization on the economic conditions of stakeholders, through the proper utilization of resources and directing them in order to achieve sustainable development at the enterprise level, which is subsequently reflected at the national level (Abdel-Fattah, 2019), the environmental dimension, which aims to measure the impact of the internal processes of production on the elements of biodiversity in the environment, the extent to which they maintain these elements from pollution and expiry, and the social dimension that aims to achieve social justice in the distribution of resources, respect for human rights, and the development of cultures and human assets, which is reflected in loyalty and participation in decision-making (Yunis, 2021). In order to achieve these three dimensions, there is an urgent need for companies to disclose sustainability reports.

### **Stock Price Crash Risk:**

Financial markets go through periods of prosperity and collapse from time to time, but the states of collapse are more influential from an economic standpoint. Perhaps the last major global financial crisis is the one that occurred in 2008, which almost affected the economies of most countries in the world, as recently, a new type of risk has appeared, known as stock price crash risk (SPCR) (Habib, Hasan, & Jiang, 2018).

The stock price crash risks are based on the idea that managers (internal parties) tend to store, prevent, or withhold bad or negative news (compared to positive news) from external parties - especially investors - for the longest possible period of time to achieve certain advantages (Zaman, Atawnah, Haseeb, & Irfan, 2021), and since the ability of managers to store bad news is limited, this process of hoarding will not continue forever. Therefore, when the process of hoarding bad news continues, it accumulates over time until it reaches, at a certain moment in time, a decisive point that exceeds the management's ability to store bad news, it is called the Tipping Point, and at this point all the bad news and information is revealed at once in the market, causing the stock price to crash (Cho & Kim, 2020).

Many accounting studies have provided different definitions of the stock price crash risk. (Dang, Lee, Liu, & Zeng, 2018) believe that the company's stock price crash risk indicates a severe collapse in the market value of shares, which leads to a sharp decline in the wealth of shareholders. While, (Cheng, Chiao, Fang, Wang, & Yao, 2019) defined it as the phenomenon in which the company's stock price declines sharply within a short period of time. According to the explanations provided as reasons for the crashes, both (Jeon, 2019); (Zaman, Atawnah, Haseeb, & Irfan, 2021) believe that the risk of a stock price crashes is the risk that occurs due to the tendency of managers to withhold or prevent bad news and information from investors due to their compensation contracts and professional concerns.

The importance of studying and identifying the stock price crash risk for companies stems from the fact that it is the first stage from the beginning of the symptoms of failure, stumbling, and financial collapse of the company. Therefore, interested parties must diagnose this stage very carefully, as determining the stock price crash risk is

important and brings many benefits to other parties, as it is considered an important risk for investors on the one hand, as it affects decision-making, and it is also important for companies, on the other hand, because it affects how the company manages its risks (Dang, Lee, Liu, & Zeng, 2018).

The share price in the stock market represents the basic standard upon which users of financial reports can base their judgment on the company's performance at the present time and what is expected in the future. Accordingly, the decline in the share price in the stock market represents an indication that the evaluation of the stock market, as well as investors dealing in it, for the performance of such companies is considered a weak performance. Conversely, the rise in the share price represents an indication that the company's current and future performance are going well (DeFond, Hung, Li, & Li, 2015).

Agency theory provides an explanation for the stock price crash risk within the framework of the role that the high administrative ability of executive managers can play in reducing the agency conflict between internal parties and external parties. According to (Seliem, 2021) a high administrative reputation contributes to reducing agency costs, as the most reputable managers are keen to achieve the interests of shareholders by choosing the best projects that give the highest positive net present value, which results in an increase in future profits for investors, which eventually reduces the company's stock price crash risk. The high administrative ability of executive managers can also contribute to reducing agency costs through its role in improving the company's information environment, allowing the flow of more information to the financial markets, and introducing investors to the company's investment opportunities, which is reflected in reducing the problem of information asymmetry between the internal and external parties of the company and reducing the agency problem is reflected in avoiding the problem of adverse selection and enhancing the competitiveness of the company and thus reducing the company's stock price crash risk (Habib, Hasan, & Jiang, 2018).

### 3. Research Hypotheses and Conceptual Framework:

#### Sustainability Reports Disclosure and Stock Price Crash Risk:

The interpretation of the relationship between disclosure of sustainability performance and the stock price crash risk depends on two points of view. The first point of view believes that disclosure of sustainability performance provides an indicator of the ethical behaviour of management. Also, in light of the theory of legitimacy, companies tend to disclose sustainability performance to confirm their legitimacy, increase transparency, and help stakeholders to take rational decisions, which will ultimately be reflected in a reduction in the stock price crash risk, while the other point of view expresses its fear of disclosing sustainability performance, as it believes that management may exploit this disclosure as a means or tool to cover up its opportunistic behaviour, its earning management, and its withholding of bad news for long periods, which leads to the possibility of stock price crash risk.

(Jie & Nakajima, 2015); (Aman, 2013) indicated that there is no relationship between disclosure of sustainability performance and the stock price crash risk. While (Kim, Li, & Li, 2014) indicated that there is a direct relationship between disclosure of the company's social responsibility and the stock price crash risk, as management tries to hide its opportunistic behaviour, earning management, and poor performance through excessive disclosure of the company's social responsibility, as management uses this disclosure as a means to hide negative information, which ultimately leads to an increase in the possibility of the stock price crash risk. (Quan & Xiao, 2016) also reached the same conclusion, as it indicated that some companies may opportunistically take disclosure of sustainability performance as a means or tool to hide bad news and opportunistic actions of management, as management may hide information about its implementation of profitable projects that are harmful to the environment, and therefore the company faces greater risks after disclosing its sustainability performance, which leads to an increase in the company's stock price crash risk. While both (Zhang, Xie, & Xu, 2016); (Lee, 2016) noted that socially responsible companies adhere to higher standards of transparency and have less incentive to withhold bad news, which significantly reduces the risk of future stock price crash risk.

Moreover, (Tang & Zhong, 2019) aimed to demonstrate the impact of mandatory sustainability disclosure on the future stock price crash risk around the world. The study concluded that there is an inverse relationship between mandatory disclosure of sustainability performance and the stock price crash risk. On the contrary, (Van der Zahn & Cong, 2019) aimed to analyse the relationship between disclosure of sustainability and the stock price crash risk by applying it to a sample of 436 companies listed in Singapore during the period from 2014 to 2018. The study concluded that there is a direct relationship between disclosure of sustainability performance and the stock price crash risk.

(Yildiz & Karan, 2020) found that companies with a high level of accounting disclosure of sustainability performance will be less vulnerable to the possibility of the stock price crash risk compared to companies that do not disclose sustainability performance, especially in light of climate change at the level of countries around the world and the spread of renewable energy companies, as disclosure of sustainability performance leads to increasing the level of transparency and thus reducing management's desire to hide bad news and carry out opportunistic actions through which it achieves its personal interests at the expense of the interests of other external parties, which ultimately leads to reducing the stock price crash risk.

(Hunjra, Mehmood, & Tayachi, 2020) studied the impact of social responsibility and corporate governance on the stock price crash risk by applying it to a sample of 353 companies in the manufacturing sector in India and Pakistan. The study found that companies with social responsibility and good governance have high ethical standards and annual reports that are less ambiguous and more transparent with a less ability to withhold bad news, which ultimately results in a lower stock price crash risk. While (Murata & Hamori, 2021) aimed to test the relationship between disclosure of ESG sustainability performance and the stock price

crash risk by applying it to a sample consisting of some companies from America, Europe and Japan. The study concluded that there is no statistically significant relationship between disclosure of sustainability performance and the stock price crash risk in the sample.

In light of the above, the research gap is represented by the discrepancy in the results of previous studies and their failure to provide conclusive evidence regarding the impact of sustainability disclosure and the stock price crash risk, as the relationship between the two variables is still a subject of controversy and discussion in the accounting literature in the foreign environment and has not received sufficient attention in the Arab environment in general and the Egyptian environment in particular, in addition to the scarcity of studies in the field of testing the level of sustainability reports disclosure dimensions (economic, social, and environmental) on the stock price crash risk. Therefore the study suggests the following main hypothesis:

**H1. There is a statistically significant relationship between sustainability reports disclosure level and stock price crash risk.**

And it can be divided to the following sub hypotheses:

**H1.1.** There is a statistically significant relationship between the Economic side of sustainability reports disclosure level and stock price crash risk.

**H1.2.** There is a statistically significant relationship between the Environmental side of sustainability reports disclosure level and stock price crash risk.

**H1.3.** There is a statistically significant relationship between the Social side of sustainability reports disclosure level and stock price crash risk.

**H1.4.** There is a statistically significant relationship between the Total sustainability reports disclosure level and stock price crash risk.

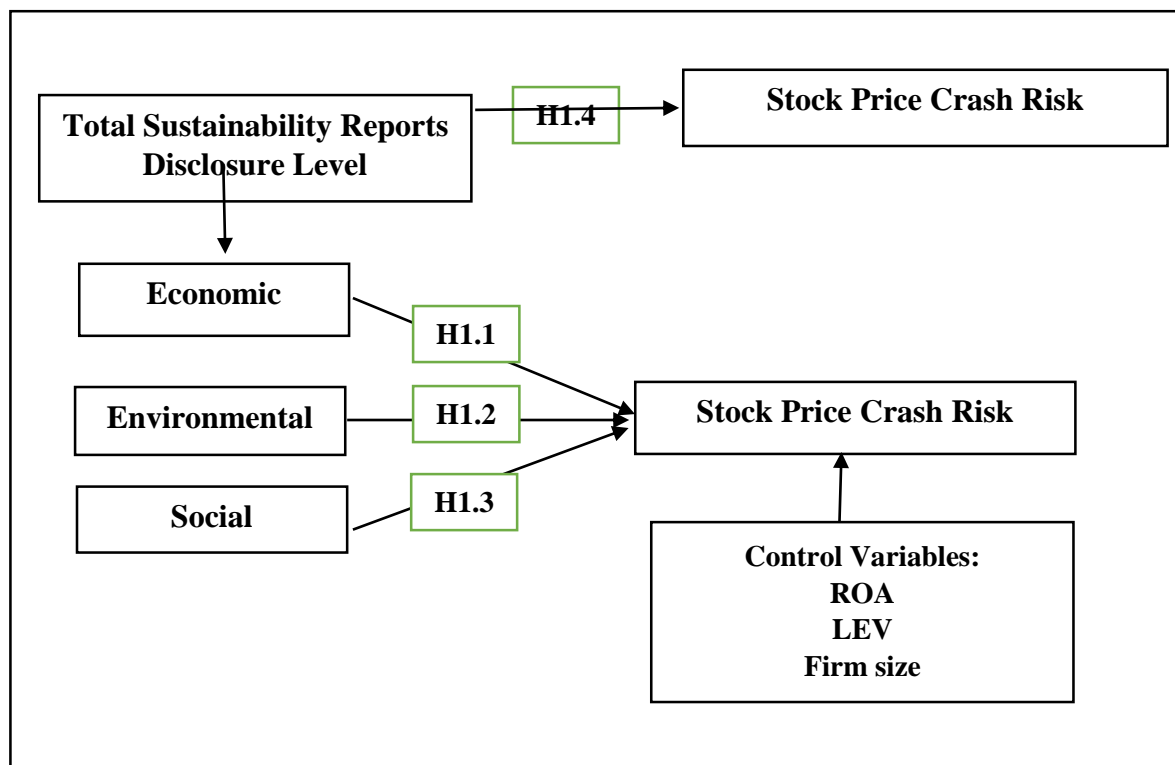


Figure 1 Research Model

#### 4. Research Methodology:

##### 4.1 Sample Selection:

The study population consists of companies listed on the Egyptian Stock Exchange S&P/EGX ESG index, which consists of the 30 best performing companies according to environmental, social responsibility and governance standards. The applied study will be conducted and the relationships between the study variables will be conducted during the period from 2017 to 2022. The researcher has begun in 2017, because it represents the year following the Egyptian Stock Exchange's issuance of the guideline for listed companies' disclosure of sustainability performance, which was issued in 2016, in order to ensure that companies read it, understand it, and act on it. The sample size was determined according to the following controls: That the companies' annual reports be regularly available during the study period, In addition to the availability of sufficient data to calculate the study variables, the company must publish its financial statements in Egyptian pounds, the company's fiscal year ends on 12/31 of each year, also, companies in the banking sectors were excluded due to the different nature of the work of these institutions and the different legal and regulatory requirements to which they are subject. The application of these controls resulted in the selection of a number of 20 companies to represent the study sample with total of 120 observations.



## 4.2 Study Variables:

### Stock Price Crash Risk:

Previous studies presented several methods for measuring the stock price crash risk. These methods depend on stock price returns, as the daily return can be relied upon when measuring risk over periods of less than a year, while the weekly return can be relied upon when measuring risk over a period of an entire fiscal year (Dang, Lee, Liu, & Zeng, 2018), and since the current study relies on annual financial statements, the study will use weekly returns when measuring the stock price crash risk.

**The first step** in measuring the stock price crash risk is to conduct a regression equation for the expanded market model, which expresses the relationship of the weekly stock return for each of the sample companies during the study period to the actual weekly market returns. Given the non-uniformity of the trading volume on the shares of different companies, the regression equation model is included previous observations and subsequent observations of the return on the market index for the week under study (Habib, Hasan, & Jiang, 2018), based on data for the Egyptian Stock Exchange index during the study period, as follows: (Jeon, 2019); (Hunjra, Mehmood, & Tayachi, 2020); (Abdel-Wanis, 2021); (Zaman, Atawnah, Haseeb, & Irfan, 2021); (Kong, Shi, & Zhang, 2021); (Zeng, 2021)

$$R_{i,w} = \alpha_i + \beta_1 R_{m,w-2} + \beta_2 R_{m,w-1} + \beta_3 R_{m,w} + \beta_4 R_{m,w+1} + \beta_5 R_{m,w+2} + \epsilon_{i,w} \quad (1)$$

**Where:**

**$R_{i,w}$ :** The return on the stock of company  $i$  in week  $w$ , calculated on the basis of the value of growth in the stock price

**$R_{m,w-2}$ :** The average weekly market return for the week before the previous one.

**$R_{m,w-1}$ :** Average weekly market return the previous week.

**$R_{m,w}$ :** Average weekly market return for the current week.

**$R_{m,w+1}$ :** The average weekly market return for the following week.

**$R_{m,w+2}$ :** The average weekly market return for the week after the next.

**$\epsilon_{i,w}$ :** Standard error.

**While the second step** in measuring the stock price crash risk is to determine the weekly return for each company individually by calculating the natural logarithm of the standard error coefficient  $\epsilon_{i,w}$  in the previous equation plus one, given that the standard error coefficient in equation (1) is highly skewed. Therefore, it is transformed into a symmetric distribution as follows:

$$R_{i,w} = \text{Log}(1 + \epsilon_{i,w}) \quad (2)$$

**In the third step**, the stock price crash risk is measured using one of the methods used by the accounting literature in this field, which is: the probability method that the weekly abnormal returns of the stock will be negative, the negative skewness coefficient method for the weekly abnormal returns of the stock, and the down-to-up volatility method. . The current research relied on the Down-to-Up Volatility (DUVOL) method, as it is one of the most common methods used in previous studies (Dai, Lu, & Qi, 2019); (Tang & Zhong, 2019); (Harmadji, Subroto, Saraswati, & Prihatiningtias, 2020); (Abdel-Wanis, 2021);

(Murata & Hamori, 2021); (He, Ren, & Tafer, 2021); (Wongchoti, Tian, Hao, Ding, & Zhou, 2021). This measure is based on dividing the weekly returns per share for each company over the time period of the study into two groups. The first group is the low group and represents the group of observations that fell below the average returns calculated for the time period under study. The second group is the high group and represents the group of observations that rose above that average, then the standard deviation is calculated for each group separately, and the value of the volatility measure from down to up is the natural logarithm of the ratio of the standard deviation of the sum of low observations to the standard deviation of the sum of high observations, through the following equation: (Zaman, Atawnah, Haseeb, & Irfan, 2021)

$$\text{DUVOL} = \text{Log} \frac{(N_u - 1) \sum_{\text{Down}} R_{i,w}^2}{(N_d - 1) \sum_{\text{Up}} R_{i,w}^2} \quad (3)$$

**Where:**

**Nu:** The number of weekly views of the high group during year t.

**Nd:** Number of weekly views for the low group during year t.

$\sum_{\text{Down}} R^2_{i,w}$  : Number of weeks of low weekly returns for company i.

$\sum_{\text{Up}} R^2_{i,w}$  : Number of weeks of high weekly returns for company i.

A high value of this measure indicates a high stock price crash risk and vice versa.

**Sustainability Reports Disclosure:**

The methodology of the current study is based on measuring the level of disclosure of sustainability reports through the sustainability disclosure items (economic, environmental, social) included in the Egyptian guideline for listed companies' disclosure of sustainability performance, which includes 45 indicators of sustainability objectives (4 indicators for the economic dimension, 12 indicators for the environmental dimension, 30 indicators of the social dimension). This was based on the content analysis method of the annual reports of companies listed in the S&P EGX ESG index of the Egyptian Stock Exchange in the period from 2017 to 2022. Therefore, the level of sustainability disclosure is measured through the use of a binary indicator that gives a value of (1) if the company discloses the item and a value of (0) otherwise. Then the level of disclosure of sustainability performance is measured as follows:

$$\text{SRD} = \text{AD/TD}$$

Where CSR refers to the total level of disclosure of all sustainability items, while AD refers to the number of items that the company has already disclosed, while TD refers to the total number of items included in the index (46 items) (Nguyen, 2018).

**Control Variables:**

**Firm Size (F size):**

This variable is measured by the natural logarithm of the company's total assets at the end of the year (Obaydin, Zurbruegg, Hossain, Adhikari, & Elnahas, 2021). Many studies have addressed the relationship between company size and the stock price crash risk, but they differed regarding the nature of this relationship, as Hutton et al. (2009) indicated that there is

a positive relationship between the size of the company and the stock price crash risk, meaning that the larger the size of the company, the greater the stock price crash risk. This is due to the fact that large-sized companies have increased credit risks and are therefore more vulnerable to bankruptcy and the collapse of their stock prices, while other studies (Zhu, 2016); (Dang, Lee, Liu, & Zeng, 2018); Li et al., 2020) indicated a negative relationship.

#### **Return on Total Assets (ROA):**

This variable is measured by dividing the net income after taxes and interest by the company's total assets at the end of the year (Li, Xiang, Liu, & Cai, 2020). Some studies (DeFond, Hung, Li, & Li, 2015); (Zhu, 2016); (Dang, Lee, Liu, & Zeng, 2018) have found that there is a positive relationship between the rate of return on assets and the stock price crash risk, while a number of studies (Hutton, J., & Tehranian, 2009); (Kim, Wang, & Zhang, 2019) found that the relationship is negative.

#### **Leverage (LEV):**

The studies of (Hutton, J., & Tehranian, 2009); (El Guindy & Trabelsi, 2020) indicated that there is a positive relationship between financial leverage and the stock price crash risk, as companies with a high degree of financial leverage have a high probability of bankruptcy and inability to pay compared to other companies with a low degree of financial leverage, and the financial leverage ratio is one of the motives for management to engage in earnings management practices for the purpose of fulfilling the terms of debt and debt agreements, which is reflected in stock prices, as it may lead to an increase in the company's stock price crash risk. While, (Zhu, 2016); (Dang, Lee, Liu, & Zeng, 2018); (Habib, Hasan, & Jiang, 2018) indicated that one possible explanation for this result is that companies with a high degree of financial leverage are devalued by investors, which makes the stock price crash risk less likely to happen, and also investors give less value to companies with high financial leverage than they do which makes them less interested in monitoring the stock prices of these companies in the future.

#### **4.3 Study Models:**

To test the main hypothesis of the research, H1, which states: **“There is a statistically significant relationship between the level of disclosure of sustainability reports and stock price crash risk”**. The regression equations of the research can be divided as follow:

$$\text{DUVOL} = \beta_0 + \beta_1 \text{SRD (Eco.)} + \beta_2 \text{Size} + \beta_3 \text{Lev} + \beta_4 \text{ROA} + \varepsilon \quad (\text{H1.1})$$

$$\text{DUVOL} = \beta_0 + \beta_1 \text{SRD (Env.)} + \beta_2 \text{Size} + \beta_3 \text{Lev} + \beta_4 \text{ROA} + \varepsilon \quad (\text{H1.2})$$

$$\text{DUVOL} = \beta_0 + \beta_1 \text{SRD (Soc.)} + \beta_2 \text{Size} + \beta_3 \text{Lev} + \beta_4 \text{ROA} + \varepsilon \quad (\text{H1.3})$$

$$\text{DUVOL} = \beta_0 + \beta_1 \text{TSRD} + \beta_2 \text{Size} + \beta_3 \text{Lev} + \beta_4 \text{ROA} + \varepsilon \quad (\text{H1.4})$$

#### **4.4 Results and Discussion:**

**Table 1**  
**Normality Tests**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SRD (Eco.)	.230	120	.000	.900	120	.000
SRD (Env.)	.230	120	.000	.900	120	.000
SRD (Soc.)	.115	120	.001	.965	120	.003
TSRD	.151	120	.000	.941	120	.000
DUVOL	.117	120	.000	.894	120	.000
Size	.143	120	.000	.930	120	.000
Lev	.079	120	.061	.969	120	.007
ROA	.164	120	.000	.849	120	.000

a. Lilliefors Significance Correction

According to the above results, it is clear that all P Value lower than 5%, but in fact these results indicate there is no normality problems because of the although the significance of all values, because of the central limit theory ensure that large samples ( $N > 50$ ) supposed to be follow a normal distribution, so the researcher concludes that all the data is normally distributed so it is valid for conducting the regression tests.

**Table 2**  
**Descriptive statistics (N=120)**

	N	Minimum	Maximum	Mean	Std. Deviation
SRD (Eco.)	120	0.17	1.00	0.73	0.22
SRD (Env.)	120	0.17	1.00	0.73	0.22
SRD (Soc.)	120	0.07	0.77	0.46	0.18
TSRD	120	0.13	0.92	0.64	0.19
DUVOL	120	-0.21	0.33	0.13	0.15
Size	120	7.20	11.21	9.64	0.91
Lev	120	0.06	0.84	0.49	0.20
ROA	120	-0.18	0.63	0.09	0.11
Valid N (listwise)	120				

According to the above results, it is obvious that the mean of the independent variables which are related to the sustainability reports disclosure are 0.73, 0.73, 0.46 and 0.64 respectively for Economic, Environmental, Social and total sustainability disclosure. This result indicates that high level of sustainability disclosure level for all observations

which are inserted in the study sample and this result close to its counterparts in the previous studies (See: (Uwuigbe, et al., 2018); (Supriyadi & Roziq, 2019). On the other hand, the crash risk is the dependent variable of the research and the DUVOL as measure of it, is high because the mean of this variable equal 0.13 and this value close to its counterparts in the previous studies (See: (Harmadji, Subroto, Saraswati, & Prihatiningtias, 2020); (Butar & Murniati, 2021), besides this result in the positive side of the sample barriers for the minimum and maximum values of my sample (-0.21 : 0.33), this result indicates the high level of crash risk in the sample, so the importance of analyzing this variable in the Egyptian environment is very clear.

**Assessing the correlation coefficients among variables' dimensions:**

In this study, Pearson's r correlation among variables' dimensions can be shown in table (3).

**Table 3**  
**Pearson correlation Matrix (N=120)**

	CSR (Eco.)	CSR (Env.)	CSR (Soc.)	TCSR	DUVOL	Size	Lev	ROA
CSR (Eco.)	1							
CSR (Env.)	.836**	1						
CSR (Soc.)	.785**	.785**	1					
TCSR	.982**	.982**	.888**	1				
DUVOL	-.207*	-.207*	-.198*	-.214*	1			
Size	-.102	-.102	-.095	-.104	-.055	1		
Lev	-.051	-.051	-.023	-.045	-.021	.115	1	
ROA	.221*	.221*	.095	.193*	-.071	-.061	-.517**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The results included in this table ensure a positive significant relationship among all dimensions of sustainability disclosure (Economic, Environmental and Social), and the correlation among them are high where (R ranged between 0.785: 0.982) and these value ensure the multicollinearity problems among the independent variables, so it is important to separate the hypothesis model test for the first hypothesis into sub models for avoiding this problem.

Moreover, the above matrix ensure a significant negative relationship between the dimensions of sustainability reports disclosure (Economic, Environmental and Social) and the stock price crash risk.

### **Assessing the models and hypotheses testing:**

#### **Testing H1 (the effect of sustainability disclosure level on the crash risk):**

The results below indicate to the significance of the model in interpreting the changes in the dependent variable crash risk measured by DUVOL where (F = 4.558; 4.558; 4.542 & 4.676) respectively with P-Value < 0.05. Furthermore, the maximum value of VIF for all variables equal (1.441; 1.441; 1.381 & 1.422) respectively which are less than 10 that means there is no multicollinearity.

Moreover, the Adjusted R Square is equal 5.10%, 5.10%, 5.10% & 5.50% respectively which means that sustainability disclosure level for its all dimensions (i.e. Economic, Environmental and Social) and the other control variables explain 5.10%, 5.10%, 5.10% & 5.50% from the change of crash risk measured by DUVOL. This result motivates further research in exploring more variables that may affect the dependent variable crash risk measured by DUVOL.

From Panel (A), it is obvious that Economic side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL (where T-Stat. = -2.172 >2; Sig. = 0.032 < 0.05). Additionally, there is no significant effect for any control variables on the crash risk measured by DUVOL. These results mean that increasing the Economic side of sustainability disclosure level leads to a decrease on the crash risk measured by DUVOL. Therefore, the researcher can accept the first sub hypothesis in the alternative form as follow: *Economic side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL.*

The results of Panel (B), It is obvious that Environmental side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL (where T-Stat. = -2.172 >2; Sig. = 0.032 < 0.05). Additionally, there is no significant effect for any control variables on the crash risk measured by DUVOL. These results mean that increasing the Environmental side of sustainability disclosure level leads to a decrease on the crash risk measured by DUVOL. Therefore, the researcher can accept the second sub hypothesis in the alternative form as follow: *Environmental side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL.*

The results of Panel (C) revealed that Social side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL (where T-Stat. = -2.158

$>2$ ; Sig. = 0.033 < 0.05). Additionally, there is no significant effect for any control variables on the crash risk measured by DUVOL. These results mean that increasing the Social side of sustainability disclosure level leads to a decrease on the crash risk measured by DUVOL. Therefore, the researcher can accept the third sub hypothesis in the alternative form as follow: *Social side of sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL.*

The results of Panel (D) showed that total sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL (where T-Stat. = -2.277  $>2$ ; Sig. = 0.025 < 0.05). Additionally, there is no significant effect for any control variables on the crash risk measured by DUVOL. These results mean that increasing the total sustainability disclosure level lead to a decrease on the crash risk measured by DUVOL. Therefore, the researcher can accept the fourth sub hypothesis in the alternative form as follow: *Total sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL.*

Based on the results of panels (A, B, C, D), the researcher can accept the first hypothesis of this study on the alternative form as follow: H1, *sustainability disclosure level has a significant negative effect on the crash risk measured by DUVOL*

**Table No. (4): Regression analysis for testing the effect of sustainability disclosure level on the crash risk (H1)**

Dependent Variable : DUVOL												
	Panel A			Panel B			Panel C			Panel D		
	Coef.	T	Sig.	Coef.	T	Sig.	Coef.	T	Sig.	Coef.	T	Sig.
Cons.	0.382	2.375	0.019	0.382	2.375	0.019	0.362	2.290	0.024	0.387	2.413	0.017
SRD (Eco.)	-0.142	-2.172	0.032	---	---	---	---	---	---	---	---	---
SRD (Env.)	---	---	---	-0.142	-2.172	0.032	---	---	---	---	---	---
SRD (Soc.)	---	---	---	---	---	---	-0.169	-2.158	0.033	---	---	---
TCSR	---	---	---	---	---	---	---	---	---	-0.165	-2.277	0.025
Size	-0.012	-0.796	0.428	-0.012	-0.796	0.428	-0.012	-0.783	0.435	-0.012	-0.814	0.417
Lev	-0.041	-0.500	0.618	-0.041	-0.500	0.618	-0.049	-0.600	0.550	-0.042	-0.515	0.607
ROA	-0.080	-0.533	0.595	-0.080	-0.533	0.595	-0.123	-0.841	0.402	-0.086	-0.584	0.561
N	120			120			120			120		
F-value	4.558			4.558			4.542			4.676		
VIF (MAX)	1.441			1.441			1.381			1.422		
R2	5.10%			5.10%			5.10%			5.50%		



## 5- Conclusion:

The disclosure level of all sustainability reports dimensions (economic, environmental, and social) has a negative effect on the stock price crash risk, which means the higher the disclosure level of any sustainability reports dimension (economic, environmental, or social), the lower the stock price crash risk and vice versa.

The study results are very relevant for investors and public companies on the Egyptian stock exchange, because it provides confirmation to investors that the disclosure of any dimension of sustainability reports can lead to a decrease in the future risk of the company's stock crashes. This can affect investor considerations in making decisions to invest by evaluating their portfolio based on corporate social, economic and environmental responsibility activities. As the disclosure of the Sustainability Reports increases, managers are restricted from manipulating stock prices by stockpiling bad news to increase short-term earnings. This must be considered by Egyptian regulators and investors to improve corporate governance. The results show that the disclosure of sustainability reports can complement internal governance, which can be promoted by bringing changes to existing financial market regulations. Empirical evidence from this research will improve the reliability, transparency and quality of disclosure information in sustainability reports.

Limitations of this study are: The results of statistical calculations for the coefficient of determination ( $R^2$ ) are small, so there are many other factors that are influential and are outside the existing regression model.

Suggestions that can be given to further researchers are to add variables that have not been examined in this study, such as Cost of Capital, religion, culture, as well as adding moderation variables and other mediating variables that can be the novelty of further research. Further studies can also be carried out to prove whether the signals captured from the sustainability report disclosure information are in line with the company's future performance. It is also possible to carry out further research to explore whether the level of disclosure of sustainability reports actually contribute more empirically to sustainable development, this is a problem that goes beyond current research.

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