CORPORATE SOCIAL RESPONSIBILITY AND FIRM RISK: EGYPT'S CASE

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Abstract

Studies amongst developed countries have extensively investigated the link between corporate social responsibility (CSR) and financial performance. However, due to lack of research in the Middle East, especially in Egypt, the association between CSR and firm risk remains much less understood (Nguyen & Nguyen, 2015). Therefore, this paper is one of the very few studies that investigate the impact of CSR on firm risk amongst developing countries. A sample of 31 Egyptian listed companies was examined over four years, from 2011 to 2015. We test the impact of CSR on firm risk using fixed and random effects estimation models. We use operating leverage, financial leverage and the beta coefficient of the sample companies' stocks as a proxy for the companies' risk. Identified control variables are firm size, market-to-book value, return on equity, return on assets, and firm age. Other variables are used to control for corporate governance, board characteristics and audit committee characteristics. The results show that CSR affects operating risk, yet it does not have a significant impact on financial or market risks in Egypt, which in turn emphasizes that CSR in developing countries differs in characteristics from that in developed countries (Vo & Arato, 2020).

Keywords: Corporate Social Responsibility (CSR), Firm Risk, Operating Leverage, Financial Leverage, Firm Beta, Egypt

Authors' individual contribution: Conceptualization — D.H. and R.S.; Methodology — D.H. and R.S.; Formal Analysis — R.S.; Investigation — D.H.; Writing — Original Draft — D.H. and R.S.; Writing — Revision & Editing — D.H. and R.S.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Based on the World Business Council for Sustainable Development (2002), corporate social responsibility (CSR) refers to a firm's commitment and moral behaviour towards its stakeholders and core business operations, which should also be integrated with both environmental and social values. There have been many previous studies, amongst developed countries, that have deeply investigated the link between CSR and financial performance. However, the association between CSR and firm risk remains less understood (Nguyen & Nguyen, 2015). Accordingly, the question of whether the use of company resources to address social issues will affect firm risk remains unanswered. In addition, a review of empirical evidence highlights discrepancies in methodologies and inconsistencies of results across studies worldwide (Harjoto & Laksmana, 2018). From the developing countries' perspective, very few studies focused on the relationship between CSR and firm risk (Aboud & Diab, 2018; Akrout & Ben Othman, 2016). Jamali and Sidani's (2012) review of CSR within the Middle East and North Africa (MENA) region concluded that it had failed to receive "systematic attention". More broadly, many authors have highlighted the differences between CSR in the developing world context and the traditional western-based approach (Barkemeyer, 2007; Dobers & Halme, 2009; Jamali, 2014; Vo & Arato, 2020). In addition, other authors have stressed that African markets have become politically unstable (Aboud & Diab, 2019), thus gaining special interest, especially with their idiosyncrasies in terms of cultural specificity and

political volatility, which in turn affects CSR practices and implementation. Therefore, building on the lack of adequate research and the nature of Egypt as a developing African country existing in the Middle East region, it is natural to expect CSR in Egyptian companies to hold its own individual flavours, connotations, contextual understanding and practices.

The last 10 years in Egypt have witnessed a change in CSR. Several corporations have increased their involvement in CSR activities, yet very few have issued a CSR or sustainability report (Hegazy, 2018). In this context, this paper is considered one of the first studies to investigate the impact of corporate social responsibility on firm risk within developing countries, such as Egypt. The aim of this study is to investigate the association of CSR with a firm's main risk types: financial, operational and market. Given the growing interest in CSR in Egypt and the limited contextualized research on the topic, this paper is considered a seminal contribution to literature.

A sample of 31 Egyptian listed companies was examined for four years from 2011 to 2015. During this time, there was an intense political and revolutionary change within the Egyptian context, so findings support the growing literature on the benefits of economic, social and governance disclosures, along with the company rankings with regard to these areas (Aboud & Diab, 2019).

The firms have been selected from the Standard and Poor's/Egypt Stock Exchange Economic Social and Governance Index — S&P/ESG index (independent variable). The index is designed to track the performance of the top 100 listed companies on the Egyptian Stock Exchange and shows which companies demonstrate leadership in environmental, social and corporate governance (ESG). Since the updated Egyptian corporate governance was issued in 2016, which emphasizes the importance of the board of directors' role and the disclosure of material non-financial information and the maintenance of consistency, there is an unavailability of rankings data in the S&P/ESG index. As a result, the authors chose to use the S&P/ESG index rankings from 2011–2015.

We test the impact of CSR, indicated by the CSR listed scores, on firm risk. We use operating and financial leverage, as well as the beta coefficient of the sample companies' stocks as a proxy for listed companies' risk (dependent variables). Identified control variables are firm size, market-to-book value, return on equity, return on assets ratios, and firm age. Other variables are used to control for corporate governance, board characteristics and audit committee characteristics are the size of the board, number of board meetings, audit committee size, number of audit committee meetings, and free float percentage to control for ownership structure.

Fixed and random effects models were used to conduct panel data analysis. Baltagi (2005) confirms that the fixed effects model is appropriate for focusing on a specific set of *N* firms, which is the case for the operating leverage and financial leverage models. Moreover, using random effects and applying Hausman tests of heterogeneity to estimate our models confirms the use of fixed effects estimation for both the financial and operating leverage models. However, the use of random effects estimation mode is supported by conducting the Hausman test on the beta coefficient model.

The remainder of this paper is divided into sections. Section 2 reviews the theoretical background and starts by investigating the link between corporate social responsibility and the stakeholder theory. It then looks at corporate social responsibility against a firm's risk, both internationally and in Egypt, thus articulating the hypothesis linking CSR and risk. Section 3 describes the data and methodology used for the paper. Section 4 presents the diagnostic tests utilized in the analysis while Section 5 provides a description of the sample and presents the Stata results. Finally, Section 6 concludes the findings.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Corporate social responsibility and stakeholder theory

The stakeholder's theory and its emphasis on the role of different stakeholders, in terms of value creation, bridges the gap that exists in the shareholder's theory approach (Grant, 1991; Kotter & Heskett, 1992; Donaldson & Preston, 1995; Drucker, Dyson, Handy, Saffo, & Senge, 1997, The Citizen Corporation section; Delves, 2003). The shareholder's maximization value leads to short-term profitability decisions rather than long-term ones, thus causing economic stability or insecurity. However, according to the stakeholder's theory, the requirements of several stakeholders must be met and as, a result, the responsibilities of companies and managers are multiplied (Freeman, 1984; Weeler, Colbert, & Freeman, 2003; Freeman & Velamuri, 2006). Management can increase a company's efficiency and create value only by addressing and balancing the claims of multiple stakeholders. Consequently, CSR is regarded as a strategic tool that satisfies stakeholder's expectations.

In this context, Freeman adopted an instrumental approach to the stakeholder theory. This approach does not set the stakeholder theory and shareholder theory against each other. Thus, companies' primary stakeholders are chosen on the grounds of their potential role in jeopardizing the firm's survival (Post, Preston, & Sachs, 2002; Phillips, 2003; Husted & Salazar, 2006).

To conclude, there is no intrinsic opposition between the shareholder theory and the stakeholder theory concerning CSR issues, value creation and company performance. Both, in fact, can be considered a tool to increase the firm's performance (financial, operational, social, etc.) and finally, to create value (Fiori, di Donato, & Izzo, 2015).

2.2. Corporate social responsibility and firm risk: International studies

As per the stakeholder theory (Donaldson & Preston, 1995; Jones, 1995), CSR reduces firm risk. Godfrey (2005), Pitoska, Giannakis, and Sdraka (2018) add

that CSR practices provide firms with downside protection that is equivalent to an insurance contract through generating relational capital with stakeholders. Velte (2020) additionally argues that CSR reporting to a broad range of stakeholders safeguards them in positive earnings management, and it can reduce the risk of losing stakeholders' trust, which means they are less likely to inflict severe sanctions in the case of a crisis. Furthermore, consumers become less likely to evade the firm's products. Efficient CSR decreases a firm's exposure and makes it more resilient to a prospective downturn. In addition, high-CSR firms (i.e., more responsible firms) are expected to be less affected than their competitors in case of any negative incidents, such as environmental disasters.

CSR is a source of goodwill that mitigates negative stakeholder assessments (Sen, Bhattacharya, & Korschun, 2006). Additionally, greater customer loyalty helps firms to absorb external shocks and gives them time to adjust their operations if needed. Moreover, CSR can improve employees' attitudes toward the firm, thus encouraging them to stay loyal to the company and stick by them, in case of financial difficulty (Melo, 2012).

Emmanuel, Carvalhal da Silva, and Avila (2012) mention that in Brazilian companies, the ones who disclose social information outperform the ones who do not. Moreover, financial performance is positively related to social investments. Carvalhal da Silva and Tavares (2013) confirm Emmanuel et al.'s (2012) findings amongst Brazilian companies since their results indicate that firms listed in the Corporate Sustainability Index (ISE) of BM&FBOVESPA have a higher price-to-book when compared to companies not listed on ISE. The study highlights that companies leaving ISE show negative abnormal returns while firms entering ISE show positive ones.

In addition, Spicer (1978) suggests that environmental responsibility decreases the risk of accidental pollution. The study provides evidence that firms with good pollution control records are less exposed to costly sanctions. Focusing on studies using ESG ratings as a proxy for CSR, a stream of research specifically reported a positive impact on corporate performance. Subramaniam, Samuel, and Mahenthiran (2014) indicate that the greater the CSR disclosure levels, the higher the liquidity of the company specifically in terms of the price impact. Peiris and Evans (2010) support that ESG factors impact corporate social performance. Devalle, Fiandrino, and Cantino (2017) suggest that ESG performance affects the credit ratings of Italian and Spanish public firms. Arayssi and Jizi (2019) disclose a significant relationship of corporate governance adoption on financial performance indicators in the MENA region listed companies. Dao Binh and Nguyen Tra's (2020) findings are that a higher corporate governance index and board independence significantly increases firm performance. In this context, Crifo and Rebérioux (2016) highlight that governance factors are major determinants of CSR policies and extra-financial performance.

On the other hand, in the past few years, there has been increasing evidence of the negative relationship between CSR and firm risk. Luo and Bhattacharya (2009) find that CSR is associated with lower idiosyncratic risk. Oikonomou, Brooks, and Pavelin (2012) find a negative relationship between CSR strengths and systematic risk but detects a positive relationship between CSR concerns and systematic risk. Salama, Anderson, and Toms (2011) conclude that in the UK, there is a significant negative association between community and environmental responsibility (CER) and systematic risk.

Sharfman and Fernando (2008) find that improved environmental risk management is associated with a lower cost of capital and, in particular, a lower cost of equity. El Ghoul, Guedhami, Kwok, and Mishra (2011) confirm these results using KLD data. In the same context, Attig, El Ghoul, Guedhami, and Suh (2013) associate good CSR with higher credit ratings. These studies highlight investors' confidence that firms with high CSR indicate a lower risk.

An alternative viewpoint is that investment in CSR diverts valuable corporate resources, which could be used in other useful projects (Barnea & Rubin, 2010). CSR activities may decrease the firm's competitiveness, thus exposing it to more external shocks. In other words, CSR can translate into a greater risk to shareholders, which makes corporate failure more likely.

Cespa and Cestone (2007) use the agency theory to argue that managers are liable to use CSR activities in order to secure support from local communities and politicians. CSR is likely to aggravate managerial barriers by discouraging hostile takeovers. Thus, given the negative association with firm's performance, firms adopting CSR practices can be perceived to be riskier. In this context, Vance (1975), Aupperle, Carrol, and Hatfield (1985), Ullman (1985), Choi, Kwak, and Choe (2010) state a negative relationship between CSR and firm performance due to firms' inconsistent objectives of different stakeholders resulting in the inefficient use of resources and successive decline of financial performance. De Villiers and van Staden (2011), Dhaliwal, Li, Tsang, and Yang (2011), Fatemi, Glaum, and Kaiser (2018) find that ESG disclosures decrease the firm valuation. Brammer, Brooks, and Pavelin (2006) found that firms with higher social performance scores achieve lower returns, whereas firms with a low CSP score of zero outperformed the market. Mǎnescu (2011) studied the impact of ESG factors on risk-adjusted stock returns and found that only community relations had a positive effect. Moreover, a negative impact of human rights and product safety indicators on risk-adjusted stock returns was found to be due to mispricing.

Other studies, such as Horváthová (2010), McWilliams and Seigel (2000), Plumlee, Brown, Hayes, and Marshall (2015) and Soana (2011), find no clear evidence of a significant relationship between corporate social performance and corporate financial performance. For example, Limkriangkrai, Koh, and Durand (2017) found no significant difference in risk-adjusted returns for portfolios based on ESG ratings. Firmansyah and Triastie (2020) find that corporate social responsibility disclosures and risk disclosures do not affect investment efficiency. Both studies indicate the possibility of a significant relationship that can exist between both in some contexts, especially as risk indicators are also proxies of corporate financial performance.

2.3. Corporate social responsibility and firm risk: Egypt's studies

Generally, there is a lack of research examining the practices of CSR and its effect on firm performance in the MENA region (Basuony, Elseidi, & Mohamed, 2014). Most studies done in the Egyptian context investigated the relationship between CSR and firm performance without using a proxy for risk. For example, Hafez (2016) proved that CSR has a significant negative effect on firm value and a positive effect on a firm's financial performance in Egypt, measured by return on assets (ROA) and return on equity (ROE). Other studies concentrated on studying the impact of CSR on financial performance in Egyptian Banks (Hafez, 2016). Various empirical studies were more concerned with the CSR disclosures, such as Hanafi (2006), Rizk, Dixon, and Woodhead (2008), and Salama (2009). Only one study by Hussainey, El Sayed, and Abdel Razik (2011) attempted to examine the potential factors affecting CSR disclosure practice in Egyptian companies.

Eldomiaty, Soliman, Fikri, and Anis (2016) showed that corporate governance and corporate social responsibility among Egyptian listed firms for fiscal years 2007–2010 are positively related to the financial performance of firms in terms of sales turnover and customer loyalty. Aboud and Diab (2018) documented that ESG practices have a favourable impact on firm value in the Egyptian context and specifically after the revolution period, as per the study by Aboud and Diab (2019). Accordingly, the study is motivated primarily by an apparent gap in prior research.

Therefore, we examine the impact of adopting CSR on Egyptian listed companies' risk using the following hypothesis based on the above-mentioned arguments. In order to provide an understanding of the association of CSR, the risk is classified into the main types: financial, operational, and market risks. Thus, the main hypothesis (in a variation of the null hypothesis and alternative hypotheses) is presented below:

H_0 (null hypothesis): CSR is not associated with firm risk among Egyptian listed firms.

H1: CSR is positively associated with firm risk among Egyptian listed firms.

H2: CSR is negatively associated with firm risk among Egyptian listed firms.

3. DATA AND METHODOLOGY

3.1. Data and sample selection

This section summarizes our data collection method and variable selection. The data for the study consists of 31 companies, who are listed in the Standard and Poor's/Egypt Stock Exchange Economic Social and Governance Index (independent variable) from 2011 to 2015. Our sample is composed mostly of non-financial firms, except for 8 firms, which are financial companies that operate in the financial sector under double governance standards. Two firms were excluded from the analysis due to insufficient data. All the listed firms, financial and non-financial, are ranked based on the same unified criteria set by the S&P/EGX ESG index (despite the financial companies being under a double governance standard). As all companies are ranked with equal criteria, they are both included in the selected sample for this study. To gain the maximum possible observations, pooled cross-section and time-series data are used. The relationship between CSR and firm risk in this study is regressed and analysed using fixed and random effects model. We utilize Stata to run our models.

In this study, we measure risk using three variables: financial leverage, operating leverage and beta coefficient of the sample companies' stocks. Financial leverage and operating leverage are measured by the book values (Harjoto, 2017; Mandelker & Rhee, 1984). Moreover, market risk is measured by the firm beta coefficient. CSR ranks are extracted from the CSR index to proxy for CSR performance in the Egyptian Stock Exchange market. Following previous studies (Nadarajah, Ali, Liu, & Huang, 2018; Harjoto, 2017; Oikonomou, Brooks, & Pavelin, 2012), we control for firm size, measured by the natural log of total assets, firm age, market-to-book value, profitability measured by ROA and ROE, and ownership structure (concentration). Other corporate governance variables included in our analysis are the size of the board, number of board meetings, audit committee size, and number of audit committee meetings.

3.2. Methodology

This study conducts panel data analysis using fixed and random effects model. Based on Baltagi (2005), the fixed effects model is most suitable for focusing on a specific set of *N* firms, which is the case for the operating leverage and financial leverage models. Moreover, estimating our models using random effects and applying Hausman tests of heterogeneity confirms the use of fixed effects estimation for both the financial and operating leverage models. On the contrary, conducting the Hausman test on the beta coefficient model supports the use of the random effects estimation model.

The main purpose of this paper is to examine the impact of CSR on firm risk. In order to assess the relationship between CSR and firm risk, the following general model can be written as:

$$FR = f(CSR, CV) \qquad (1)$$

As shown in equation (1), firm risk (*FR*) is measured as a function of *CSR* as well as firm and risk performance control variables (*CV*).

Generally, our panel regression model is represented as follows:

$$y_{it} = \alpha_0 + \beta' x_{it} + \varepsilon_{it} \qquad (2)$$

where, *y* represents the dependent variable (*FR*) for firm *i* (signifying the cross-section dimension by $i = 1,… N$) and period *t* (signifying the time dimension from 1 to 4); *β′* is the estimated vector of parameters associated with the vector of explanatory variables (x_{it}). Finally, the error term is represented by ε_{it}.

The empirical model for firm *i* in period *t* can be specifically written as represented in equation (3), based on the research hypotheses formulated in the previous section:

$$y = \alpha_0 + \alpha_1 CSR + \alpha_2 FirmSize + \alpha_3 MBV +$$
$$\alpha_4 ROE + \alpha_5 ROA + \alpha_6 AGE + \alpha_7 BOD +$$
$$\alpha_8 NUMBODM + \alpha_9 AuditCOM + \quad (3)$$
$$\alpha_{10} NUMACOMM + \alpha_{11} FreeFloat + \varepsilon$$

where, y represents firm risk measured by operating leverage (OL), financial leverage (FL), and beta coefficient (β) of the sample companies' stocks to proxy for listed companies' market risk. *CSR* represents the corporate social responsibility ranks for each firm, *FirmSize* is measured by the log of total assets (TA), and *MBV* is the market-to-book value. The *ROE* is return on equity measured by net income over total equity, while *ROA* is return on assets which is the net income over total assets. *AGE* is firm age, *BOD* is the board size, *NUMBODM* is the number of board meetings, *AuditCOM* is the size of the audit committee, *NUMACOMM* is the number of audit committee meetings, and *FreeFloat* is the percentage of free shares outstanding in a firm.

Three models are employed to examine the impact of CSR on financial risk measured by financial leverage, operational risk measured by operational leverage, and market risk measured by firm beta. Following Lee and Cho (2016) and Elkelish and Hassan (2015), generalized least squares (GLS) regression is utilized to estimate the parameters of the empirical models. Based on the assumption that regression parameters do not vary across several cross-sectional units (Habbash, Salama, Dixon, & Hussainey, 2010), we use GLS panel data regression to strengthen the reliability of the coefficient estimates. Diagnostic tests, namely: normality, multicollinearity, heteroskedasticity, autocorrelation and endogeneity tests, are conducted and presented in the following section.

4. DIAGNOSTIC TESTS

4.1. Normality test

Parametric tests are valid only if the errors are normally distributed (Ayyangar, 2007). The data is tested for normality using the Shapiro-Wilks test to ensure that the estimator is unbiased. The results of the Shapiro-Wilks reveal an insignificant chi^2 (p-value = 0.41) for Model 2, the operating leverage model, indicating that the null hypothesis cannot be rejected. The other two models, Model 1 (financial leverage) and Model 3 (beta coefficient) reveal a p-value of 0.00 indicating that the data is non-normal.

4.2. Multicollinearity test

Multicollinearity was tested to identify the correlation of the independent variables in the model to ensure that the standard errors of the coefficient estimators are not inflated. Inflated coefficient estimators lead to large confidence intervals for coefficients and a very small t-statistic (Berry & Feldman, 1985). VIF statistics were used to test for multicollinearity in the three models, as shown in Table 1 below. All variables mean values came out lower than the threshold value of 10, indicating no signs of multicollinearity problem (Gujarati, 2009).

Table 1. Multicollinearity test — VIF statistics

Variable	VIF	1/VIF
IDROE	5.99	0.16682
IDROA	5.67	0.176318
IDFirmAge	1.85	0.54
IDLnFirmSize	1.64	0.608336
IDAuditCommitteeMeetings	1.56	0.640032
IDNoofBoardMeetings	1.55	0.644026
IDOwnershipStructurefreefli	1.4	0.711917
IDBoardSize	1.35	0.739176
IDAuditCommitteeSize	1.21	0.82749
IDMBVRatio	1.2	0.833299
IDCSRRank	1.15	0.872789
Mean VIF	2.24	

4.3. Heteroskedasticity and autocorrelation tests

The Breusch-Pagan/Cook-Weisberg test is used to assess the null hypothesis if the error variances are all equal. The Durbin-Watson test examines autocorrelation in order to testify whether errors associated with a certain observation are correlated with the errors of any other observation. Table 2 below reveals that data for the three models signalling heteroskedasticity issues for Model 1, financial leverage, whereas Models 2 and 3 reveal a homogeneous data set. The Durbin-Watson d-statistic indicates that the residuals in Model 1 are autocorrelated, while the residuals are not autocorrelated in Models 2 and 3. Additionally, a linearity test was conducted coercing the need to employ the GLS estimation technique, given non-linear data.

Table 2. Results for heteroscedasticity and autocorrelation tests

	Breusch-Pagan test χ^2 [p-value]	Durbin-Watson test
Financial leverage	44.79[a]	1.127
Operating leverage	2.10	1.998
Beta	1.01	2.054

Notes: [a] denotes statistical significance at the 1% level, Breusch-Pagan test for heteroskedasticity, Durbin-Watson d-statistic for autocorrelation.

4.4. Hausman test

The Hausman test was employed to decide whether the fixed or random effects model will best be used for our three models to provide more precise results. This test is used to evaluate the significance level between estimators, in the case of fixed effect or random effect models. The test reveals that fixed effects best suit Models 1 and 2, financial and operating leverage models, respectively. However, Model 3 testing for beta coefficient should employ random effects.

5. RESULTS AND DISCUSSION

Analysis of data starts with the descriptive statistics of all the dependent and independent variables employed in this research. Table 3 below reports the number of observations (Obs.), mean, standard deviation, minimum and maximum values for each variable for the 31 listed companies. The number of observations is 124. As can be noted from the table, the financial institutions included in our sample

are mostly heterogeneous. CSR ranks range from 0 to 30, given a mean of 11 for the ranking score of the listed firms, indicating that our sample contains firms with very weak and strong CSR. The firm size of our selected sample ranges from a minimum of 12.26 to a maximum of 19, whereas the market-to-book value shows a wide range given the lowest figure equals 0.03 and the highest figure equals 12.45. The profitability of the selected sample shows an average ROE of 4.87% and ROA of 2.77% yet displaying a considerable variation in profits where some firms reveal substantial losses and others report high profitability. Similarly, Table 3 reflects that the sample is heterogeneous in terms of board size, audit committee size, number of board and audit committee meetings conducted per firm, as well as the ownership structure.

Table 3. Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
D1Financial LEV	124	99.80	128.78	0.08	641.20
D2Operating LEV	124	3.48	1.46	1.00	6.00
D3Beta	124	0.99	0.20	0.37	1.58
IDCSRRank	124	11.34	10.14	0.00	30.00
IDLnFirmSize	124	15.54	1.58	12.26	19.00
IDMBVRatio	124	1.33	1.69	0.03	12.45
IDROE	124	4.87	15.62	-84.86	40.60
IDROA	124	2.77	8.17	-50.81	33.73
IDFirmAge	124	28.19	13.85	5.00	61.00
IDBoardSize	124	9.52	3.18	3.00	17.00
IDNoofBoardMEET	124	7.59	3.55	2.00	18.00
IDAuditComSIZE	124	3.35	0.89	2.00	9.00
IDAuditComMEET	124	4.48	2.06	1.00	16.00
IDOwnershiSTRUCT	124	39.09	19.28	0.10	94.60

The adjusted R squared of the regression models are 42.7%, 56.7%, and 9.2% for Model 1, 2 and 3, respectively. This indicates a good fit for the financial leverage and operating leverage models. Table 4 presents the results of the GLS panel data regression. The estimation methods show that CSR is not associated with risk amongst the Egyptian listed firms except for operational risk measured by operating leverage which resembles the studies of Tarek (2019), McWilliams and Seigel (2000), Plumlee et al. (2015) and Soana (2011).

Having an insignificant relationship between CSR and financial risk and market risk (beta) is in line with Vo and Arato (2020), who emphasize that CSR in developing countries differs in characteristics from that in developed countries. This sheds the light on an implementation problem amongst Egyptian firms in general. Specifically, the limited number of financial institutions that were ranked among the top CSR listed companies in the studied period (2011–2015). This in turn stresses the implementation problem amongst Egyptian financial institutions, despite having double governance regulation.

On the other hand, the results are the first to show that CSR implementation decreases firms operating leverage in the Egyptian Stock Exchange. In this context, these results signal that Egyptian regulators should encourage the adoption of CSR practices amongst the Egyptian listed firms, by communicating that it leads to lower operational risk. Such findings are surprisingly similar to Harjoto (2017) who investigated this relationship amongst U.S. firms (developed market), thus are

considered to be very promising, especially for an emerging market, such as the Egyptian one. Other variables that affect operating leverage are firm size and market-to-book ratio, where the latter is measured by dividing the market value of equity by its book value. Greater market-to-book ratio indicates greater risk suggesting higher tangible assets as opposed to lower fixed assets.

Table 4. CSR and firm risk in the Egyptian market

Variable	Model 1 Financial leverage	Model 2 Operating leverage	Model 3 Beta coeff.
IDCSRRank	-0.417 (-0.780)	**-0.091***** (**-8.520**)	-0.002 (-1.360)
IDLnFirmSize	**125.080***** (5.610)	**0.941**** (**2.120**)	0.003 (0.250)
IDMBVRatio	6.128 (0.800)	**0.281*** (**1.850**)	0.014 (1.360)
IDROE	**-4.008***** (-3.460)	-0.019 (-0.830)	0.001 (0.240)
IDROA	**4.590**** (2.380)	0.043 (1.120)	**-0.011**** (-2.500)
IDFirmAge	(omitted)	(omitted)	-0.002 (-1.580)
IDBoardSize	-8.023 (-1.590)	0.036 (0.360)	**-0.010*** (-1.830)
IDNoofBoardMeetings	2.432 (1.000)	0.052 (1.080)	0.002 (0.340)
IDAuditCommitteeSize	-1.408 (-0.200)	-0.165 (-1.200)	-0.017 (-0.890)
IDAuditCommitteeMeetings	-3.342 (-1.180)	0.083 (1.480)	0.006 (0.620)
IDOwnershipStructurefreefli	0.589 (1.510)	-0.005 (-0.590)	0.001 (0.990)
Constant	**-1785.94***** (-5.120)	-10.891 (-1.570)	**1.118***** (5.250)
Rho	0.954	0.762	0.000

*Notes: The table presents the estimates of the three panel regression models. The t-statistics (reported in parentheses) are based on robust standard errors, which are adjusted for heteroskedasticity and within-firm clustering. * denotes significance at the 0.10 level. ** denotes significance at the 0.05 level. *** denotes significance at the 0.01 level.*

Moreover, the analysis shows that firm size is highly associated with financial risk (Model 1), and profitability measures are also associated with financial risk, which is similar to Ezeoha (2008) in Nigeria. Larger firms are expected to efficiently capitalize their economies of scale resulting in a lower degree of operating leverage. Moreover, larger firms tend to have lower default risk and have more access to lower borrowing costs, which explains the effect of firm size on financial leverage. ROE is negatively associated with financial leverage whereas ROA is positively correlated. Model 3, the beta coefficient, is the weakest among our three models based on the adjusted R squared. The results show that the ROA and board size affect firm beta.

6. CONCLUSION

This study examined the impact of corporate social responsibility on firm's risk, represented by financial leverage, operating leverage, and market risk. The paper presented a summary of relevant studies and elaborated on the lack of studies on the Egyptian market, hence identifying the research gap. We used the GLS model to run the regression analysis. The results revealed that CSR has an impact only on operating leverage and showed no impact on financial and market risk. Therefore, we

accept our alternative hypothesis (*H1*) and reject the null hypothesis (H_0). The results are like the ones of Tarek (2019), who also found a significant relationship between adopting CSR activities and firm performance in the Egyptian context. Thus, highlighting the lack of investor awareness about the importance of CSR in Egypt. However, our results also show a negative association between the listed companies' CSR rankings and operational leverage which resembles the studies of Hafez (2016) and Aboud and Diab (2019) among Egyptian listed companies indicating that there is a favourable impact of CSR practices on firm performance. Accordingly, these results have implications for regulators and investors in the Egyptian Stock Market. The authors believe that the relatively updated S&P/EGX ESG index, based on the updated Egyptian corporate governance code in 2016, provides a way to enhance ESG rankings in Egypt. It also emphasizes that investors can evaluate companies based on the ESG indicators. Moreover, by linking CSR practices to risk indicators, specifically with corporate performance in general, investors can possess a leading role in inducing firms to enhance their transparency and disclosure practices and, as a result, enhancing their reporting standards. In addition, the results of the present study provide insights for policymakers regarding the usefulness of the index. Accordingly, the authors highly recommend regulators and policymakers to re-initiate and annually disclose the ESG rankings on the Egyptian Stock Exchange website to investors as was done in the past starting from 2016. The main limitation of the study was only being able to use the ESG rankings till the year 2015, which limited the number of sample companies and the number of observations in the study. This is mainly due to updating the ranking criteria based on the new corporate governance code published in 2016, thus leading to the unavailability of the ESG rankings from the year 2017. Moreover, 2011 witnessed political instability in Egypt, so the stock market performance greatly affected the data availability for the period under study.

Finally, this paper sheds the light on the importance of continually disclosing ESG rankings for Egyptian listed companies. Disclosure of CSR practices to Egyptian stakeholders enhances their awareness; therefore, it puts pressure on low-ranked companies to improve their CSR practices. The paper also highlights a problem that may exist in the implementation of CSR practices among financial and non-financial listed firms in an emerging capital market such as the Egyptian one. In this context, regulators are advised to ensure that CSR practices and double governance standards are effectively implemented by the financial listed firms in Egypt. In addition, this study can be the first step towards a series of future studies that can use more recent CSR rankings to continue investigating the association between Egyptian CSR rankings and listed companies' risk in specific and financial performance in general. If a significant positive relationship keeps prevailing, then this can be a prominent incentive for low ranked firms to improve their CSR practices, which consequently aids regulators and policymakers in enforcing CSR practices in an emerging capital market, such as the Egyptian one, thus reaping its desirable benefits.

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