



## The association between Corporate Social Responsibility and Earnings Quality: Evidence from Extractive Industry

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### ABSTRACT

Building on the ethical theory to solve the research questions, we examine the relationship between Corporate Social Responsibility Disclosure (CSRSD) and Earnings Quality (EQ). Using 368 firm-year observations covering the 2010-2017 period. In so doing, we applied content analysis to assess the CSRSD dimensions, and we applied discretionary accruals as a proxy of EQ activity. Based on panel data regression, we find a significant and negative relationship between CSRSD and EQ in Mozambican extractive industry. Empirical evidence also shows that the influence of positive CSRSD indicator (CSRSD strengths scores) is much stronger than that negative CSRSD indicator (CSRSD concerns scores) in reducing earnings quality. These findings are consistent with the idea that the opportunistic managers use CSRSD to reach their particular interest, suggesting that the managers are using CSRSD as a strategic device to engage in earnings management (poorer earnings quality). The results are robust to alternative proxy measures of CSRSD and earnings quality.

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### La asociación entre las Actividades de Responsabilidad Social Corporativa y la calidad de los ingresos: evidencia de la industria extractiva

### RESUMEN

Con base en la teoría ética para resolver las cuestiones de investigación, examinamos la relación entre Divulgación de Responsabilidad Social Corporativa (CSRSD) y la Calidad de los Ingresos (EQ). Usando 368 observaciones de año base cubriendo el período 2010-2017. Al hacer esto, aplicamos el análisis de contenido para evaluar las dimensiones de la CSRSD y aplicamos acrecimientos discrecionales como proxy de la actividad de EQ. Con base en la regresión de datos en panel, encontramos una relación significativa y negativa entre el CSRSD y el EQ en la industria extractiva de Mozambique. La evidencia empírica también muestra que la influencia del indicador positivo de CSRSD (puntuaciones de fuerza CSRSD) es mucho más fuerte que el indicador negativo de CSRSD (CSRSD se refiere a las puntuaciones) en la reducción de la calidad de ingresos. Estas constataciones son consistentes con la idea de que los gerentes oportunistas utilizan la actividad de RSCD para alcanzar su interés particular, sugiriendo que los gerentes están usando el CSRSD como un dispositivo estratégico para involucrarse en la gestión de resultados (peor EQ). Los resultados son robustos a medidas alternativas de proxy del CSRSD y la EQ. Industria extractiva.

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## Introduction

The purpose of this study is to investigate the relationship between Corporate Social Responsibility Disclosure (CSR) and Earnings Quality (EQ) of the extractive industry. Specifically, the study examines whether socially responsible firm's behavior differs from other firms in their financial reporting.

According to Hoffman (1986), Corporate Social Responsibility (CSR) is observed as for how a company takes account of its environmental and the social effects of its operations. For Choi et al. (2013), CSR can be observed as a key aspect in the success and survival of a company. Companies may demonstrate ethical commitment via philanthropic contributions or using resources and expertise to benefit society, for instance reducing waste, caring for the environment and employing minorities (Hoffman, 1986); Moser and Martin, (2012). Following Castelo and Lima (2006), the study only considers the ethics and moral aspect of CSR such as the satisfaction of human resource, the relationship with the local community, environmental protection and the product. Ethical companies will reveal integrity by being socially responsible, sincere, honest and trustworthy. Bozzolan et al. (2015), argue that the society demands that the actions of public entities be sustainable, efficient and transparent in its management. Socially responsible firms are likely to constrain earnings management, reduce the financial risk and win the corporate reputation providing to investors more transparent and reliable financial information according to the ethical and moral hypothesis. Lev et al. (2010), argue that firms may conduct CSR activities when pretends to increase sales and promote a good reputation in society. For Pyo and Lee (2013), managers can have two motivation to practice CSR (opportunistic or integrity). For opportunistic motivation, companies who engage in voluntary CSR actions may have lower earnings' quality. But, for the integrity motivations companies who engage in voluntary CSR can have an exemplary conduct providing ethics on the financial statement. Zang (2012), argue that CSR-behaved firms care about their capability to deliver more value to stakeholders, they might be less likely to become involved in earnings management activity.

In this study, we bring to light the unexplored relationship between CSR and EQ. In particular, we address two research questions: (a) Does the link between CSR and EQ differs for firms with CSR practice? And, (b) how does CSR affect EQ? These questions gain a better understanding of how CSR policy affects EQ. In the literature, several theories explain the link between CSR and EQ (ethical theory, agency theory or neo-classical theory, legitimacy theory, "trade-off theory", Supply and demand theory, Stakeholder theory, and others). In this study, we applied the ethical theory to solve the research questions, because in our point of view this theory better explains the link between these two variables.

While few prior study has documented a positive (negative) impact of CSR on EQ (Prior et al., 2008); Hong & Andersen, 2011; Kim et al., 2012; Scholtens & Kang, 2013; Martinez-Ferrero et al., 2015; Muttakin et al., 2015; Bozzolan et al., 2015; Gil et al., 2016; Martinez-Ferrero et al., 2016; Alsaadi et al., 2017; Timbate and Park, 2018; Li and Xia, 2018, these prior studies focuses almost exclusively on CSR index, without considering that both positive and negative indicators of CSR appear to provide information that reduces earnings management activity and increase earnings quality. The interpretation of positive and negative indicators can be different for each investor, to avoid losing useful information about CSR. To this end, we disaggregate the CSR index

into strength (positive) and concerns (negative) categories and, adjust industry and year of effects.

In the nutshell, all these prior studies employ the U.S., European, and the Asian data, particularly for the developed and emerging economies. But evidence from the underdeveloped economies remains rare, while our study explores a new setting based on an underdeveloped country. However, the previous findings cannot be generalized to different contexts, and in concordance, with Porta and Kramer (2006), the location of the company is one of the most important condition to understand the company CSR behavior.

However, this study is different from the previous studies, addressing the unexplored issues linking the CSR and EQ firstly. Secondly, our study employs two separate measurements of earnings management from one used by Gil et al. (2016), more specifically, we apply Dechow et al. (1995) and Kothari et al. (2005) models. Thirdly, we used three different measures of CSR score (the positive and negative indicators of CSR score and the aggregation of both CSR). Fourthly, this study is a novelty about the extractive sector. The extractive sector was chosen as the subject of this study since we assume that the activities in this sector directly affect the ethical, social, and environmental issues and eventually may influence EQ. In the scientific scope, our study makes a great contribution to the literature, expanding the existing accounting and financial literature on CSR and EQ field, particularly assessing an unexplored link between voluntary CSR and EQ, for countries that have a short tradition in the CSR activity and disclosure, showing that the ethical and moral behavior can drive the firm philosophy. Also, we show the critical role of both positive and negative indicator of CSR, which has been overlooked in previous studies. Furtherance to the above, very few studies have examined the relationship between CSR and EQ in sub-Saharan African countries, including Mozambique, is almost non-existent, so the results of this study will help to understand the current environment of CSR in this region of Africa.

Our empirical analyses consist of all the extractive firms operating in Mozambique according to the National Institute of Statistics (INE-Mozambique), from the year 2010 to 2017. We used a content analysis technique to evaluate the dimensions of CSR extracted from the annual reports, firms CSR report, as well as data extracted from the respective firms' website (Branco and Rodrigues, 2006) and we applied discretionary accruals as a proxy of EQ activity, specifically by the Dechow et al. (1995) and Kothari et al. (2005) models. The Mozambican setting is of particular interest due to the following reason: To the best of our knowledge, empirical studies that examined the impact of CSR on EQ in sub-Saharan African countries, including Mozambique, is almost non-existent. Furthermore, according to Siueia and Wang (2017), Mozambique has gone through hidden public debt crisis during the years of 2015-2017, making Mozambique unfavourable place to invest and exclusive among underdeveloped countries particularly, different among the international extractive sector, this offers an attractive setting to give further consideration to the link between CSR and EQ.

Our regression shows that CSR is significantly and positively associated with earnings management, implying that firms with a CSR policy are most likely to be involved in earnings management (poorer earnings quality). One significant finding is that the influence of positive CSR score is much stronger than that of negative CSR score in rising earnings management (reducing EQ). These results hold true after the robust check.

The rest of this paper is structured as follows. Section 2 discusses the literature and develops hypotheses. Section 3 explains the relevant research design. Section 4 reviews the main results and finally, Section 5 concludes.

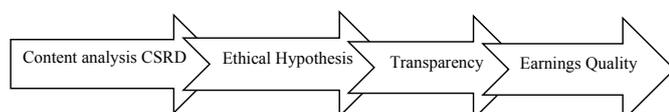
## Literature Review and Hypothesis

Although there are numerous definitions of Corporate Social Responsibility (CSR) in the accounting literature, the definition offered by Carroll (1979), is uncontested and widely accepted. According to Carroll (1979, p 289), socially responsible companies must operate in four distinct areas, such as economic, ethical, legal, and philanthropic. The lower level of definitions requires companies to act with the minimum of business ethics. But, the higher level includes sustainability, suggesting that companies should be proactive. Likewise, the uncontested and widely accepted definition of earnings management offered by Healy & Wahlen (1999). For Healy & Wahlen (1999, pp 368), “earnings management occurs whenever managers use judgment in financial reporting and in structuring transactions to change financial report to mislead some stakeholders about the company’s financial performance or influence contractual outcomes that depend on informed accounting practices”. Following previous research in accounting literature, Earnings Quality (EQ) is the opposite of earnings management (Barth et al., 2008).

However, the link between CSR and EQ are mixed; we can find a positive link, a negative link and neutral link between these two variables. Nevertheless, the positive and negative links seem to prevail in the literature. Also, we can found several theories that explain these link. In this study, we applied ethical theory to solve the questions, because in our point of view this theory better explains the positive link between these two variables. For Carroll (1979, p. 289), the ethical theory implies that a socially responsible company must accept the ethical obligation, adhering to the highest behavior standard, being trustworthy and honest in their business process. Kim et al., 2012, argue that firms with a high CSR score are less likely to manage earnings through discretionary accruals; however, CSR firms are more likely to maintain transparency in their financial report and provide a great EQ. Gil et al. (2016) argue that the manager to satisfy earnings targets will involve either income-decreasing accruals or income-increasing accruals, therefore the magnitude of absolute discretionary accruals is employed to assess the degree of earnings management, so the magnitude of absolute discretionary accruals is applied to assess the degree of earnings management (and EQ). Given the impending challenges of the extractive sector, firms must do the activities that are on a positive plane to ensure that society develops and meet their expectations, for this they need to actively engage in CSR activity and disclosure. In this context, we are focused on the positive link between CSR and EQ.

To develop our hypotheses about the relationship between CSR and EQ, we relied on previous studies, both theoretical and empirical evidence. As the previous studies document, this relationship depends on three links, as shown in figure 1.

**Figure 1**  
Link between CSR and EQ.



Despite the increasing number of studies that shows there is a link between CSR and financial performance; however, to the best of our knowledge, there are few prior studies concerning the link between CSR and EQ. Recently, the researches of Timbate and Park, 2018; Li and Xia, 2018; Alsaadi et al., 2017; Martnez-Ferrero et al., 2016; Gil et al., 2016; Martinez-Ferrero et al., 2015; Kim et al., 2012; Hong and Andersen, 2011; concluded that CSR is positively associated with EQ and firms, which would support the ideas that firms with a higher degree of CSR and practices are less to engage in earnings management and provide a higher level of EQ.

Highlighting publications of some authors, that links positively CSR and EQ. More recently Li and Xia (2018); using Chinese data from the year 2008 examined the relationship between the level of CSR and EQ, they found a positive link between these both variables, suggesting that firms with a great level of CSR tend to provide higher EQ. Similarly, Alsaadi et al. (2017); find that socially responsible firms are less likely to engage in earnings management (great EQ) using a data set from 10 European countries over the period of 2003 to 2013. Along the same line Gil et al., 2016, note that a greater engagement in CSR activity signals EQ and managers are trying to satisfy all the firms’ stakeholders, using a data set from Spanish companies. Another viewpoint of research, the associate negative link between CSR and EQ (Muttakin et al., 2015; Prior et al., 2008), concluded that managers are using CSR activity and report as opportunistic incentive to cover up company misconduct. Supporting this viewpoint Martinez-Ferrero et al. (2015), argue that managers might engage in CSR activity and disclosure to compensate for poor EQ. Other studies, for example, the study of Kim et al., 2012; argue that managers might engage in CSR activity and disclosure to mask the earnings management activity. Hence, according to Hong and Andersen (2011) more socially responsible company has higher quality accruals and fewer earnings management behavior. This suggested a positive association between CSR and EQ, so we expected that firms conducting CSR will enhance its EQ. This leads to the following hypothesis:

**H1: CSR disclosure increases earnings quality in firms.**

## Research design

### Country background

The Republic of Mozambique is an African country situated in the southeastern region of the African continent. Since the beginning of the last decade, Mozambique has been discovering several mineral resources leading the extractive industry to constitute one of the main driving forces for Foreign Direct Investment. In 2014, the Mozambican Government approved CSR Policy for the Extractive Industries and Mineral Resources (Resolution No. 21/2014). Nevertheless, Mozambican society has raised several questions about the role of large multinational firms in relation to CSR in these firms, mainly in the socioeconomic and environmental area; however, few researchers argue that in recent years, these multinational firms has been a failure complying with these contracts (CIP, 2012; Langa and Massingue, 2014). On the other hand, on April 2015 it was learned that the Mozambican government hidden from the investors’ loans, consequently the appetite for doing business in Mozambique has fallen dramatically (Siueia and Wang, 2017), make Mozambique bad place to invest and exclusive among under-developed country particularly, different among another in-

ternational extractive sector.

### Data and Sample

Our initial sample consists of all the extractive firms operating in Mozambique according to the National Institute of Statistics (INE–Mozambique), over the period from 2010–2017. From the initial sample of 478 firm-year observation, we excluded data from before 2010 due to the small number of voluntary CSRD available for those years. The financial reporting data was downloaded from the company's website and it was supplemented with data extracted from the INE–Mozambique website and Mozambique Stock Exchange (BVM) website. The final sample consists of 368 firm-years, after excluding firms with missing mandatory data for our analysis and, we delete observations in the bottom and the top 1% of standard deviations in each tail to minimize the effect of the outliers in the regressions.

### Variables Explanation

#### Dependent variable

We use the Abs\_DAC as earnings management because it includes either income-decreasing accruals or income-increasing accruals. If the result is in line with the ethical and moral hypothesis, a negative relationship between the variables Abs\_DAC and CSRD is expected: the higher value of Abs\_DAC, the lower quality of earnings.

#### Independent Variable

We use CSR\_Fall as the independent variable. In addition and robustness tests, we use CSR\_FST, CSR\_FCO, and CSR\_Fin. Where all the variables are defined in Table 2.

#### Control Variables

Following the prior study, we added several control variables that could affect CSRD and financial reporting behavior (Li and Xia, 2018; Timbate and Park, 2018; Alsaadi et al., 2017; 8 Gil et al., 2016; Muttakin et al., 2015; Kim et al., 2012). First, we control leverage (Lev) an indicator of the firm's financial structure. Second, we control firm size (Size). Third, we control for firm performance (ROA). Fourth, we control Big4 as a proxy for the quality of auditing. Fifth, we control growth firms. Finally, we include the year and industry dummies to control industry's effects on EQ. All the variables are defined in Table 2.

### Estimation Methods

#### Corporate Social Responsibility Disclosure (CSRD)

Several studies used different methods to assess CSR. In line with Branco and Rodrigues (2006), we applied the content analysis method to select and sort firms into CSR-firms and non-CSR firms. Thus, we counted and used the total number of sentences provided for each firm within each category of social information for both the coding and measurement elements, under the content analysis method. More specifically, in this study, we obtained the CSRD from the firm annual reports over the eight years of our study and their websites. First, the level of corporate social disclosure ( $CSR\_Score$ ) = Number of sentences related to environmental

information + Number of sentences related to local community information + Number of sentences related to employee relations + Number of sentences related to products information. Based on these 4 categories companies were scored from 0-4 deepened on how many categories they disclosed in their annual reports. For each requirement, a score of one and zero points was given to the annual report. Branco and Rodrigues (2006) argue that it is a better way to classify the companies. According to Van Staden & Hooks (2007), firms utilize various media to make CSRD, so we supplement the information searching the firms' websites to distinguish firms which have issued CSR activity in their reports. If the disclosure item seems to be many times or in two or more reports, it was only treated only once. Firms were regarded as disclosing firms if there was CSR report on their website and non-disclosing firms otherwise. CSR reports through their website as a stand-alone document for Jun of 2016 and October of 2016 to March of 2017. This variable is labeled  $CSR\_Web$  and is coded as 1 for disclosing firms and 0 otherwise.

#### Earnings Quality

Following previous research in accounting literature, earnings quality is the opposite of earnings management (Barth et al., 2008). According to previous studies discretionary accruals is a proxy for the EQ, we defined discretionary accruals (abnormal) as total accruals minus estimated normal accruals (non-discretionary), where the estimated normal accruals are derived from a number of discretionary accruals (Dechow et al., 1995; Kothari et al., 2005). Gil et al. (2016) argue that the manager to satisfy earnings targets will involve either income-decreasing accruals or income-increasing accruals, therefore the magnitude of absolute discretionary accruals is employed to assess the degree of earnings management. Hence, the lower magnitude of absolute discretionary accruals corresponds to a lesser level of earnings management, or higher EQ, and vice-versa.

$$DAC = TA_{i,t} - NDAC_{i,t} \quad (1)$$

Where all the variables are defined in Table 2.

To compute the accrual component we use the following equations:

$$TA_{i,t} = (\Delta TCA_{i,t} \Delta cash_{i,t}) - (\Delta TCL_{i,t} \Delta LTD_{i,t}) Dep_{i,t} \quad (2)$$

Where all the variables are defined in Table 2.

Additional, we follow both the cross-sectional modified Jones (1991) model as suggested by Dechow et al. (1995), and the performance-matches discretionary accruals model suggested by Kothari et al. (2005) to compute the non-discretionary component of total accruals (TA) as shown in equation 3 and equation 4.

$$\frac{TA_{i,t}}{AS_{i,t-1}} = \lambda_0 + \lambda_1 \frac{1}{AS_{i,t-1}} + \lambda_2 \frac{\Delta Rev_{i,t} - AR_{i,t}}{AS_{i,t-1}} + \lambda_3 \frac{PPE_{i,t}}{AS_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

**Table 1**  
CSR D category and subcategory

Environment Protection	Community involvement	Employee relationship	Product
Environmental policy	Creating job opportunities	Recruitment policies	Research & development
Environmental management	Support for education	Employment of women	Introduced new product
Lending and investment policy	Support for public healthcare	Student Recruitment/Training	Product quality
Recycling activities practices	Support for arts, culture, and sport	Employee evaluation/training	Customer satisfaction
Sustainability	Humanitarianism	Employee health & safety	Safety
Conservation Resources/energy		Employee recreation & sport	

$$\frac{TA_{i,t}}{AS_{i,t-1}} = \lambda_0 + \lambda_1 \frac{1}{AS_{i,t-1}} + \lambda_2 \frac{\Delta Rev_{i,t} - AR_{i,t}}{AS_{i,t-1}} + \lambda_3 \frac{PPE_{i,t}}{AS_{i,t-1}} + \lambda_2 ROA_{i,t-1} + \epsilon_{i,t} \tag{4}$$

Where all the variables are defined in Table 2.

Using the coefficient in equation 3 and equation 4 we estimated the equation 5 and equation 6 by regressing financial statement values for each firm in the industry:

$$\frac{NDAC_{i,t}}{AS_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{AS_{i,t-1}} + \beta_2 \frac{\Delta Rev_{i,t} - AR_{i,t}}{AS_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{AS_{i,t-1}} + \epsilon_{i,t} \tag{5}$$

$$\frac{NDAC_{i,t}}{AS_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{AS_{i,t-1}} + \beta_2 \frac{\Delta Rev_{i,t} - AR_{i,t}}{AS_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{AS_{i,t-1}} + \beta_2 ROA_{i,t-1} + \epsilon_{i,t} \tag{6}$$

Where all the variables have already been defined.

Finally, we compute discretionary accruals (DAC), our equation (1)

*Basic Model*

Consistent with the prior studies (Li and Xia, 2018; Alsaadi et al., 2017; Gil et al., 2016; Muttakin et al., 2015), the basic model was estimated through panel data regressions applying a fixed effect. We detected multicollinearity among our variables applying the Variance Inflation Factor (VIF). Furthermore, we used the Durbin-Wu-Hausman test to avoid endogeneity problem, we also carried out a 2SLS regression to validate the interpretation of the results.

$$Abs\_DAC_{i,t} = \lambda_0 + \lambda_1 CSR\_Fall_{i,t} + \sum_{k=1}^N \beta_k * X_{i,t} + \epsilon_t \tag{7}$$

Where all the variables are defined in Table 2; X<sub>i,t</sub> representing a series of control variable (see Table 2).

We test if CSR D oriented firms are positively related with earnings quality (H<sub>1</sub>) by substituting the variable CSR\_Fall with the variable CSR\_FST and CSR\_FCO in the model, respectively. To conduct the additional test, we substitute the CSR\_Fall score with the CSR\_Fin in the model. Where all the variables are defined in Table 2.

**Results and Discussion**

*Statistics and Correlation Matrix*

Table 3 summarizes the descriptive statistics and the correlation matrix of the main variables in interest for the object of the study. We can observe that the mean value of CSR\_Fall is 4.984. These results represent a variation in the corporate social responsibility behaves. Also, concerning earnings quality aspects the mean value of absolute discretionary accruals (Abs\_DAC) moves around 0.049. In term of the correlation matrix, we can observe a positive and significant correlation coefficient between absolute discretionary accruals (Abs\_DAC) and the ratio of the three measures of CSR D (CSR\_Fall, CSR\_FST, and CSR\_FCO), overall, the results suggest that our sample firms with low CSR D are more likely to engage in earnings management consequently poorer EQ. Correlations between Abs\_DAC and other control variables are consistent with previous studies. All correlations among independent variables are within acceptable limits and showing that the multicollinearity does not appear to be a problem in both models.

*Regression Result*

Table 4, presents the results after applying the regression model, the first 2 columns; display the estimations for equations using Dechow et al. (1995) (model 1) and, the last 2 columns displays estimations for equations using Kothari et al. (2005) (model 2). This model studies the effects of the CSR D on EQ behave. We can observe that the coefficient <sub>1</sub> for all three different measure of CSR D is positively associated with all measure of earnings management at the conventional level (p < 5% or better). In the nutshell, our model overall is statistically significant (P-value < 0.05) and the highest Adj. R-squared equal 31.7%; indicating the strength and explanatory of our model. This outcomes, likewise displayed the maximum VIF - variance inflation factor as 2.239, implying that the multicollinearity does not appear to be a problem; similarly, both models did not show the endogeneity problems, the autocorrelation problem neither, even the problems of heteroscedasticity because we applied the respective statistics to solve it.

Particular, in a Panel A, we find that the coefficient on CSR\_Fall<sub>i,t</sub> variable (i.e., the sum of positive and negative category of CSR D) is significantly positive linked to both measure of earnings management (<sub>1</sub> = 0.049, t-stat = 3.128, and <sub>1</sub> = 0.053, t-stat = 4.492 respectively). This result suggests that CSR D firms manage earnings more through discretionary accruals (poorer earnings quality). Specifically, this result is inconsistent which the ethical hypothesis which expects a negative relationship between CSR D and earnings management. Also, the finding provides strong evidence for the effect of CSR D in rising earnings management. Jointly, these

**Table 2**  
Variable definition

Abs_DAC	The absolute value of discretionary accruals in year $t$ , scaled by lagged total assets computed using the Dechow et al. (1995) (model 1) or Kothari et al. (2005) (model 2)
DAC	denote discretionary accruals for firm $i$ in period $t$
TA <sub><math>i,t</math></sub>	Total Accruals for firm $i$ in period $t$
NDAC <sub><math>i,t</math></sub>	Denote non-discretionary accrual for firm $i$ in period $t$
$\Delta$ TCA <sub><math>i,t</math></sub>	Change in Total Current Assets between year $t$ and in year $t-1$
$\Delta$ Cash <sub><math>i,t</math></sub>	Change in cash and cash equivalents between year $t$ and in year $t-1$
$\Delta$ TCL <sub><math>i,t</math></sub>	Change in Total Current Liabilities between year $t$ and in year $t-1$
$\Delta$ LTD <sub><math>i,t</math></sub>	Change in Long-Term Debt included in Current Liabilities between year $t$ and in year $t-1$
Dep <sub><math>i,t</math></sub>	Depreciation and Amortization Expenses
AS <sub><math>i,t</math></sub>	The total assets in year $t-1$
$\Delta$ Rev <sub><math>i,t</math></sub>	The change in revenues between year $t$ and in year $t-1$
$\Delta$ AR <sub><math>i,t</math></sub>	The changes in accounts receivable between year $t$ and in year $t-1$
PPE	The level of gross property, plant, and equipment scaled by lagged total assets ( $AS_{t-1}$ ) to avoid problems of heteroscedasticity
CSR_Fall	Is a dummy variable that equals 1 if the firm is classified as a socially responsible firm and zero otherwise
CSR_FST	Denote positive index of CSR disclosure
CSR_FCO	Denote negative index of CSR disclosure
CSR_Find	Represents the overall individual category of CSR activities. (CSR_F1 = environmental; CSR_F2 = community; CSR_F3 = employee and CSR_F4 = Product)
Lev	Is long-term debt scaled by total asset
Size	Is the natural logarithm of total assets in year $t$
ROA	Is a return on assets in year $t-1$
Big4	Is a dummy variable that equals 1 if the firm is audited by Big4 and zero otherwise
Growth	The changes in sales between year $t$ and in year $t-1$

**Table 3**  
Statistics and Correlation matrix

Variable	Mean	Min	Max	Std Dev.	DM	KM	CSR_Fall	CSR_FST	CSR_FCO	Lev	Size	ROA	Big4	Growth	CSR_F1	CSR_F2	CSR_F3	CSR_F4	
DM	0.04	0.000	0.13																
	9	1	6	0.153	1.000														
KM	0.04	0.000	0.13																
	8	2	9	0.181		1.000													
CSR_Fall	4.98		5.01																
	4	3.927	7	1.992	0.049*	0.046*	1.000												
CSR_FST	2.74		3.00																
	6	1.099	5	0.968	0.041**	0.042**	0.049**	1.000											
CSR_FCO	2.32		2.42																
	4	0.637	5	1.932	0.037**	0.041**	0.044**	0.098**	1.000										
Lev	0.36		0.37																
	9	0.018	4	0.186	0.027**	0.031**	0.031**	0.008	0.014**	1.000									
Size	4.99		-																
	8	2	6	1.013	-0.055**	0.059**	-0.601**	-0.052**	-0.058	-0.142	1.000								
ROA	0.02		0.19																
	1	-0.762	9	1.071	-0.048**	-0.061	0.018*	-0.047	-0.043	0.088**	*	1.000							
Big4	0.52		0.60																
	4	0.297	8	1.016	-0.051**	0.051**	0.043*	0.055	0.043*	-0.063	0.046*	0.041	1.000						
Growth	0.07		0.09																
	6	0.019	9	1.029	-0.049**	0.048**	0.061**	-0.405**	-0.399**	0.307*	*	0.042*	-0.051	1.000					
CSR_F1	2.00		1.99																
	4	1.001	1	0.982	-0.058*	0.061**	0.213*	0.451	0.437*	-0.059**	0.043*	*	-0.017	0.199	1.000				
CSR_F2	1.07		1.85																
	5	0.021	3	1.041	0.294	0.301	0.282*	0.401*	0.312*	0.334	0.313	0.408*	0.311	0.201	-0.297	1.000			
CSR_F3	1.01		1.02																
	9	0.056	7	0.981	0.295*	0.311*	0.225*	0.447*	0.301*	-0.092*	0.302*	-0.269	0.301	*	0.407	0.221*	1.000		
CSR_F4	0.97		1.01																
	4	0.048	1	0.196	-0.327	-0.329	-0.401	-0.418	-0.420	-0.411	-0.299	-0.304	0.416	0.409	-0.288	-0.427	0.422	1.000	

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

findings do not lend support to our alternate hypothesis H<sub>1</sub>. These findings are consistent with the results of Muttakin et al. (2015) and Prior et al. (2008), who argue that the managers are using CSR activity and report as opportunistic incentive to cover up company misconduct.

**Table 4**  
CSR and Earnings Management

Panel A: Baseline results (Model 3.0)				
Variables	Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.314	5.871**	0.301	4.820**
CSR_Fall	0.049	3.128**	0.053	4.492**
Lev	0.042	3.134*	0.046	3.511*
Size	-0.004	-2.013**	-0.003	-2.066**
ROA	-0.006	-3.086**	-0.007	-2.094**
Big4	-0.003	-1.016	-0.011	-1.171
Growth	-0.002	-1.011***	-0.004	-2.085**
Industry and Year effect	Include		Include	
Adj R square	0.317		0.331	
Max VIF	2.239		2.198	
N	368		368	

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

Panel B: Baseline results (Model 3.1)				
Variables	Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.215	5.873**	0.221	4.889**
CSR_FST	0.049	4.022**	0.048	4.011**
Lev	0.041	3.028*	0.043	3.527*
Size	-0.020	-1.933**	-0.003	-2.452**
ROA	-0.009	-1.994**	-0.009	-0.962**
Big4	-0.012	-2.001	-0.008	-1.283
Growth	-0.003	-1.017**	-0.002	-1.204**
Industry and Year effect	Include		Include	
Adj R square	0.304		0.311	
Max VIF	2.011		2.033	
N	368		368	

Panel C: Baseline results (Model 3.2)				
Variables	Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.214	5.548**	0.217	4.879**
CSR_FCO	0.048	3.957**	0.052	4.017**
Lev	0.043	3.253*	0.042	4.084*
Size	-0.019	-1.558**	-0.018	-1.559**
ROA	-0.012	-1.219**	-0.011	-1.304**
Big4	-0.013	-1.201	-0.014	-1.128
Growth	-0.004	-1.009**	-0.004	-1.020**
Industry and Year effect	Include		Include	
Adj R square	0.301		0.313	
Max VIF	2.073		2.099	
N	368		368	

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

Following the prior study, we added several control variables that could affect CSR and financial reporting behavior. First, it can be observed that the coefficient <sub>2</sub> on leverage is positive and statistically significant (p < 5% or better) for both the model 1 and model 2 ( = 0.042, t-stat = 3.134 and = 0.046, t-stat = 3.511), suggesting that absolute discretionary accruals are increasing in leverage. Consistent with prior studies by (Li and Xia, 2018; Gil et al., 2016; Muttakin et al., 2015) who argue that earnings choice has been found to be associated with debt covenant violation. So, managers can increase earnings to avoid debt covenants violations. Our findings are consistent with the prior researchers (Li and Xia, 2018; Gil et al., 2016; Muttakin et al., 2015; Kim et al., 2012).

Furthermore, we control the effects of firm size. As can

be observed the coefficient <sub>3</sub> on Size<sub>i,t</sub> variable is significantly negative (p < 5% or better) for both the model 1 and model 2 ( <sub>1</sub> = -0.004, t-stat = -2.013 and = -0.003, t-stat = -2.066) imply that the firm's sizes have an important impact on earnings quality. More specifically, these findings imply that large firms manage earnings less. Therefore, we control the firm performance. It can be observed that the coefficient <sub>4</sub> on ROA<sub>i,t</sub> variable is negative and significant for both the model 1 and model 2 ( = -0.006, t-stat = -3.086 and, = -0.007, t-stat = -2.094), suggesting that the firms have the incentive to practice earnings management (poorer EQ), because the profitability is not high enough to satisfy managers and investors (Skinner and Sloan, 2002). In term of our control variable Big4, it can be observed that the coefficient <sub>5</sub> on Big4<sub>i,t</sub> variable is negative but not statistically significant (p > 10%) for the model 1 and model 2, respectively, and is inconsistent with the idea that auditing provides a constraint for earnings management practice (Li and Xia, 2018; Timbata and Park, 2018). Thus, we do not have enough evidence that firms audited well-established audit firm's (Big4) engages less in earnings management compared to the firms audited by the smaller auditors (non-Big4). We, also, control growth through absolute discretionary accruals. It can be observed that the coefficient <sub>6</sub> on Growth<sub>i,t</sub> variable is negative and significant, as expected.

Interestingly, in Panel B, we find a positive link between strength (CSR\_FST) and earnings management at the conventional level ( <sub>1</sub> = 0.049 and t-stat = 4.022 and, <sub>1</sub> = 0.048, t-stat = 4.011 respectively). In Panel C, we find that concern (CSR\_FCO) is positively associated with all measure of earnings management ( <sub>1</sub> = 0.048, t-stat = 3.957 and, <sub>1</sub> = 0.052, t-stat = 4.017 respectively). These results strongly suggest that both positive and negative indicator of CSR plays a significant role in rising earnings management (poorer EQ).

Regarding control variables, as observed in Panel B and C, the results are similar to those documented in Panel A.

*Additional analyses*

We carried out two additional analyses to address possible alternative justifications for our results. First, we re-run our model applying each category of voluntary CSR (i.e., environment, community, employee relations, and product) as metrics of total CSR score. As can be observed in Table 5, two positive indicators of CSR, specifically, CSR\_F1 (the environmental) and CSR\_F2 (the relationship with the local community) are positively related with earnings management at the conventional level ( <sub>1</sub> = 0.039, <sub>1</sub> = 0.035 and, <sub>1</sub> = 0.031, <sub>1</sub> = 0.022 respectively) suggesting that the firms use this two elements of social responsibility behavior as tools to engage earnings, it means that the CSR firms disclosure less in local community relations and the environmental activities.

For negative indicators of CSR, we observed one puzzling result on the CSR\_F3 variable, which is negatively significant (p < 5% or better). Implying that the employment relationship is negatively related to earnings management. In contrast, it can be observed that for the CSR\_F4 variable (Products) is insignificantly negative related to earnings management, at the conventional level. The findings suggest that this CSR element does not affect the earnings management activity. Jointly, our findings suggest that earnings management activity is being driven especially by the community and the environmental categories.

Additionally, we investigate whether a positive indicator of CSR (CSR\_FST) differs from a negative indicator of CSR

**Table 5**  
Additional check: Each CSRD category and earnings management

Variables	Model 1		Model 2		Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.046	4.356**	0.041	3.312**	0.047	4.382**	0.033	3.243**
CSR_F1	0.039	3.967**	0.035	3.005**				
CSR_F2					0.031	3.874**	0.022	3.164**
CSR_F3								
CSR_F4								
Lev	0.038	4.169*	0.036	4.013*	0.033	4.062*	0.035	4.022*
Size	-0.006	-4.387**	-0.058	-5.423**	-0.006	-4.447**	-0.058	-4.028**
ROA	-0.017	-1.987*	-0.015	-1.856*	-0.014	-1.952*	-0.015	-1.197*
Big4	-0.013	-1.075	-0.021	-1.069	-0.014	-1.058	-0.014	-1.071
<b>Growth</b>	-0.002	-1.983*	-0.002	-1.982	-0.002	-1.982*	-0.002	-1.982
Industry and Year effect	Include		Include		Include		Include	
Prob. (F-Statistic)	0.0000		0.0000		0.0000		0.0000	
Adj_R square	0.423		0.431		0.428		0.431	
Max VIF	2.244		2.279		2.283		2.296	
n	368		368		368		368	

Variables	Model 1		Model 2		Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.042	4.217**	0.039	3.022**	0.043	4.043**	0.032	3.027**
CSR_F1								
CSR_F2								
CSR_F3	-0.043	-4.015**	-0.041	-3.018**				
CSR_F4					-0.048	-4.016	-0.068	-4.017
Lev	0.038	4.079*	0.039	4.015*	0.036	4.166*	0.039	4.184*
Size	-0.006	-5.003**	-0.052	-5.013**	-0.041	-4.431*	-0.051	-4.173**
ROA	-0.192	-0.201*	-0.015	-0.164*	-0.017	-0.2001*	-0.197	-0.194*
Big4	-0.021	-1.069	-0.019	-1.083	-0.016	-1.072	-0.019	-1.071
<b>Growth</b>	-0.002	-1.983*	-0.002	-1.982	-0.002	-1.983*	-0.002	-1.984
Industry and Year effect	Include		Include		Include		Include	
Prob. (F-Statistic)	0.0000		0.0000		0.0000		0.0000	
Adj_R square	0.302		0.351		0.332		0.333	
Max VIF	2.394		2.381		2.397		2.383	
n	368		368		368		368	

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

(CSR\_FCO) in rising earnings quality. Therefore, we construct a nested model with CSR\_FCO and CSR\_FST variables in the same regression. As can be seen from Table 6, the coefficient of CSR\_FST is positive and significant for all measure of earnings management ( $\beta_1 = 0.051$  and  $\beta_1 = 0.053$ ,  $p < 5\%$  or better). However, the coefficient of CSR\_FCO is negative and insignificant at the conventional level for both models ( $\beta_1 = 0.026$  and  $\beta_1 = 0.043$ ,  $p > 10\%$ ). Likewise, we find that the difference in the two coefficients (CSR\_FST vs CSR\_FCO) is positive and significant (F-test 27.13). This result suggests that a positive indicator of CSR is more impactful in terms of its effect on earnings management (poorer EQ) than a negative indicator.

These findings are consistent with hypothesis H<sub>1</sub>, still providing poorer earnings quality, after the inclusion of the positive and negative indicators of CSR in the same model which and jointly do not support the hypotheses H<sub>1</sub> too.

### Instrumental variables (2SLS) regression analysis

Following previous studies (Scholtens and Kang, 2013; Bozzolan et al., 2015), to avoid endogeneity problem we carried our 2SLS regression to validate the interpretation of the results. The findings show that the coefficient of CSR\_FST still positive and significant at the conventional level ( $\beta_1 = 1.081$  and  $\beta_1 = 1.094$ ,  $P < 5\%$  or better), even after accounting for endogeneity. This finding implies that endogeneity does not appear to be a problem in our model. Similarly, we carried out the F-test across the two models and obtained 31.84 which is above the conventional level (minimum of 10). Likewise, we rejected the null hypothesis ( $p < 0.000$ ).

**Table 6**  
Additional check: the positive and negative indicator of CSR

Variables	Model 1		Model 2	
	Coeffi.	t-stat.	Coeffi.	t-stat.
Intercept	0.227	5.431**	0.219	4.436**
CSR_FST	0.051	4.185**	0.053	4.071**
CSR_FCO	-0.026	-5.564	-0.043	-5.447
Lev	0.042	3.026*	0.044	4.011*
Size	-0.021	-1.779**	-0.021	-1.825**
ROA	-0.009	-1.973**	-0.009	-1.972**
Big4	-0.014	-1.071	-0.016	-1.304
<b>Growth</b>	-0.003	-1.017**	-0.003	-1.211**
Year effect	Include		Include	
Industry effect	Include		Include	
F-value	27.13**		24.12**	
Adj R square	0.341		0.362	
Max VIF	2.105		2.097	
N	368		368	

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

### Conclusion

We examine the relationship between CSR and EQ using the Mozambican extractive industry as a sample covering the period from 2010 to 2017.

We found that there is a negative and statistically significant effect of voluntary CSR on EQ (poor earnings quality), these results are robust when using each main component of CSR as well as alternative CSR, also we found that positive indicator of CSR is more impactful in terms of its effect on earnings management than negative indicator of CSR. This finding indicates that Mozambican hidden public debt crisis and, the level of development of the country play an important role in ensuring managers' opportunism behavior or misconduct behavior. These results hold true after the ro-

**Table 7**  
Endogeneity test using 2SLS regression

Variables	Model 1		Model 2	
	1st Stage	2nd Stage	1st Stage	2nd Stage
Intercept	-0.145** (-5.368)	0.472** (6.286)	-0.149 (-5.368)	5.081** (6.967)
CSR_FST		1.081** (5.449)		1.094** (5.625)
Instrumental Variables				
Industry Mean CSR	0.4121 (3.356)	0.4121 (3.356)	0.4121 (3.356)	0.4121 (3.356)
All main variables specification	Include	Include	Include	Include
Year effect	Include	Include	Include	Include
Industry effect	Include	Include	Include	Include
Robust	Yes	Yes	Yes	Yes
n				
Post - estimations Test for Instrumental Variables				
Predictive power partial R2				
Robust F-test		30.842		30.842
p-value		0.000		0.000
Under-identification test				
Kleiberge - paap rk LM statistic		28.921		28.921
p-value		0.000		0.000
Endogeneity test				
Durbin-Wu-Hausman test		64.962		64.962
Chi-sq(1) p-value		0.000		0.000
N				

All the variables are defined in Table 2. \*, \*\* and \*\*\* donate statistical significance at 10%, 5% and 1% level (two-tail).

bust check. These results are inconsistent with the ethical and moral hypothesis, but consistent with the idea that the opportunistic managers use CSR activity to reach their particular interest. Also, this finding is in contrast with the expectation that CSR policy companies are less likely to engage in earnings management activity. These results can be explained by the fact that Mozambique is an underdeveloped country and the pressure from stakeholders is not so strong, suggesting that the degree of development of a country is key fundamental to explain the link between CSR and EQ. Our results are in agreement with the study of (Prior et al., 2008; Choi et al., 2013; Muttakin et al., 2015). However, the results are inconsistent with the study of (Kim et al., 2012; Martinez-Ferrero et al., 2015; Gil et al., 2016; Alsaadi et al., 2017; Timbate and Park, 2018).

In practical terms, the evidence from the study can help the regulators, and investors to understand firms' business practices in the underdeveloped country, particularly in Mozambique. Likewise, we believe that these results have a significant implication for investors, managers, other stakeholders showing that CSR firms can be less committed to EQ. In this case, stakeholders, regulators, and investors should demand a greater level of transparency, both in the CSR and in the financial report, to avoid earnings management practice and increasing the EQ.

This study is subject to at least two limitations: first, the fact that the research covered Mozambican hidden public debt crisis period may be if the sample were composed of a different period of study, the result could be more interesting. Second, our result may not be applicable to countries that have a long tradition in the CSR practice and disclosure.

An important observation, in the Mozambican scenario, we believe that this article is the first, of the kind, to study the relationship between CSR and EQ in the extractive sector because in our literature review there was scanty evidence about the subject. The outcome of this study suggests the use of different models to explore the same issue in future studies and expand the period of analysis. On another hand, make a comparative study between countries with different institutional arrangements or regulations using content analysis.

## Conflict of interests

The authors declare no conflict of interests.

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