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Minerals companies' attributes and corporate governance in South Africa

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Abstract

This study analyses the relationship between the attributes of a selected set of the minerals companies and corporate governance in South Africa. This is achieved by comparing the corporate governance rating of companies in the minerals sector to that of the companies in the other sectors of the economy against a set of attributes that comprise the sampled companies' economic activity, size, market performance, financial performance and transparency. The empirical results have shown that autonomous corporate governance as well as the measures of transparency, required disclosure and additional disclosure, of the sampled companies have a statistically significant positive relationship with corporate governance, while the companies' attributes that include the companies' economic activity, size as well as market and financial performance do not have a statistically significant relationship with corporate governance. Consequently, the conclusion is no discernible difference in corporate governance of companies in the minerals sector compared to companies in the other sectors of the economy.

JEL Classification: G20, C13, D22

Keywords: Corporate governance, Minerals companies, Companies' attributes

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Introduction

Corporate governance embraces rights and equitable treatment of shareholders and other stakeholders of the business, integrity and ethical behavior as well as disclosure and transparency of companies, according to the Organisation for Economic Cooperation and Development (OECD), (2023). Corporate scandals, which can occur on evidence of unethical behaviour, negligence or interference by third parties, have adversely impacted many companies, according to the Corporate Finance Institute, (2024a,b). Corporate scandals in South Africa related to inadequate governance and accountability structures involved companies such as Steinhoff, Venda Building Society (VBS) bank, Johannesburg Consolidated Investments (JCI) and Gupta group of companies. Worldwide, corporate scandals involving Enron's accounting fraud in 2001 resulted in one of the largest bankruptcies, while risky business practices at Lehman Brothers contributed to the 2008 Global financial crisis.

The agency theory of corporate governance is used to understand the relationship between the Minerals companies' attributes and corporate governance. Significant contributions to the agency problem include Coase (1937), Jensen and Meckling (1976), and Fama and Jensen (1983a,b).

Jensen (1986). According to the agency theory of corporate governance, the agent represents the principal, inspired by the incentive contracts, which can include share ownership, stock options, or a threat of dismissal, as contend Jensen and Meckling, (1976) and Fama, (1980). Conflicts of interests that are a consequence of the misalignment of preferences between the shareholders and upper management, the principal–agent problems, and misalignment of preferences among shareholders, the principal–principal problems. Other stakeholder relations may also be affected and are coordinated through corporate governance.

Despite a growing interest in sustainable corporate practices and companies' specific attributes, there is neither a consensus on the nature of the relationship between the two phenomena nor how this relationship manifests across institutional contexts. The literature on corporate governance in South Africa includes, Ntim, et al. (2012) and Ntim, et al., (2013), Harvey, et al., (2015), Ioannou and Serafeim, (2017) and Johnson, et al., (2019). The literature on corporate governance worldwide includes Kyere and Ausloos, (2021), Chan, et al., (2014), Liu and Zhang, (2017), Dong, et al., (2017) as well as Herbert and Agwor, (2021). Cross country studies include Bruno and Claessens, (2010) for the United States, Canada, Europe, East Asia and the Pacific as well as Adel, et al., (2019) in the European Union. A stylised fact, based on existing literature, is thus, the existence of no discernible relationship between corporate governance and companies' specific characteristics that include market and financial performance.

This study analyses the relationship between the attributes of a selected set of the Minerals companies and corporate governance in South Africa. This is achieved by comparing the corporate governance rating of companies in the minerals sector to that of the companies in the other sectors of the economy. A sample of companies in the minerals sector is thus augmented with a sample of companies in the other sectors of the economy. The relationship between corporate governance of this population of companies is then analysed against a set of attributes that comprise the sampled companies' economic activity, size, market performance, financial performance and transparency measures using an Analysis of Covariance (ANCOVA). According to Chen (2023), good corporate governance leads to sustainable business success that can benefit all stakeholders, while bad governance can lead to corporate scandals and insolvencies of companies, with devastating effects on all concerned.

The study is organised as follows. Next is methodology and data. Then is the discussion of the empirical results with recommendations. Last is the conclusion.

Methodology and data

The following Analysis of Covariance (ANCOVA) is specified to study the relationship between the attributes of minerals companies and corporate governance in South Africa

$$Y_i = \alpha_i + \beta_i \sum_{j=1}^n X_{ij} + \delta_i \sum_{j=1}^n D_{ij} + \varepsilon_i \quad [1]$$

where Y_i is the continuous dependent variable. X_{ij} is a matrix of independent continuous variables, while D_{ij} is a matrix of independent categorical variables. α_i is the intercept term, β_i and δ_i are the regression coefficients associated with independent continuous and categorical variables. i are vectors that describe the observations of dependent and independent variables, model coefficients and the error term while j are matrices independent continuous and categorical variables. The specified model thus compares the dependent, or response, variable by both factors and continuous independent, or explanatory, variables.

ANCOVA (Analysis of Variance) is an econometric methodology that is used to analyse the relationship between a dependent variable and one or more independent variables while adjusting for the effects of one or more categorical covariates. Analysis of Covariance (ANCOVA) can be considered as a combination of ANOVA (Analysis of Variance) and Regression Analysis, given that it facilitates testing for differences in means while controlling for the effects of other variables. Analysis of Variance (ANOVA) assesses the impact of one or more independent categorical variables on a single, continuous dependent variable. Analysis of Variance (ANOVA) is thus a reduced form of Analysis of Covariance (ANCOVA), which introduces covariates to adjust the model. A detailed discussion on Analysis of Variance (ANOVA) and Analysis of Covariance (ANCOVA) can be found in Gujarati and Porter, (2009).

Y_i , measures the level of corporate governance of the sampled companies, denoted Governance. The independent continuous variables, $\sum_{i=1}^n X_{ij}$, are the company size, market performance, Corporate Social Responsibility (CSR) and transparency measures. The size measure is the market capitalisation of the sampled companies, denoted Market CAP. Market performance measure, denoted Shares TTM, is share price of the company trailing 12 months (TTM), or over a period of one year. Corporate Social Responsibility (CSR), denoted Environment and Social, measure the initiatives on society, environment and economy of the sampled companies. The transparency measures, denoted Disclosure REQ and Disclosure ADD, are required and additional disclose rates. The categorical variables, $\sum_{i=1}^n D_{ij}$, measure economic activity, or the industry, of the sampled companies, denoted Sector.

The data on measures of corporate governance, Corporate Social Responsibility (CSR) and transparency is sourced from Standards & Poors Global's Corporate Sustainability Assessment (CSA) database. The data on company size and market performance are sourced from Yahoo Finance's Financial Data & Stock Exchanges performance dashboard. All the 41 sampled companies are listed on the Johannesburg Securities Exchange (JSE). 15 of the companies are in the minerals sector, while 26 of the companies are in the other sectors and are in Johannesburg Securities Exchange (JSE) top 40 capitalisation weighted index. The minimum condition for inclusion of companies in the sample was that they have comprehensive Corporate Social Assessment (CSA) information and financial information on both Standards & Poors Global database and Yahoo Finance dashboard, respectively.

Companies in the minerals sector include those that produce gold, coal, iron ore, chrome, platinum group metals, copper, nickel, aluminium and diamonds etc. Companies in the other

sectors include those in sectors other than mining, that include financial services, retailing, tobacco, communications, pharmaceuticals, property, property, transport and distribution etc. The independent variable, Sector DM, was transformed to a nominal scale, also known as indicator, binary, dichotomous, discrete, categorical or dummy, to facilitate the Analysis of Variance (ANCOVA) estimation. Dummy variables usually take a binary value, 0 or 1, to indicate the absence or presence of some categorical effect that may be expected to shift the outcome. Sector DM, which measures the company's economic activity, or the industry, was assigned a value of 1 for companies in the mining industry and 0 otherwise, or for companies in the other sectors of the economy other than mining.

The descriptive statistics, presented in Table 1., show a weak positive correlation between the dependent variable, corporate governance, and companies' economic activity and size measures that comprise Sector DM and Market CAP, respectively. The results further show a weak negative correlation between market performance and financial performance measures that comprise Shares TTM as well as ROE and ROA, respectively. The results finally show a strong positive correlation with companies' transparency measures that comprise Disclosure REQ and Disclosure ADD, respectively. The correlation coefficients of Required Disclosure and Additional Disclosure are 0.87362 and 0.76019, respectively. This implies a strong linear relationship between corporate governance and the companies' transparency measures.

Table 1. Descriptive statistics

	Governance	Maximum	Minimum	Mean	Median	Std dev	Skewness	Kurtosis
Governance	1.00000	78.00000	24.00000	51.39024	54.00000	13.58837	0.20752	-0.98977
Sector DM	0.27974	1.00000	0.00000	0.36585	0.00000	0.48765	0.53675	-1.75288
Market CAP	0.15032	150.2200	0.82627	22.55625	7.71000	36.21413	2.08906	3.26146
Shares TTM	-0.25833	0.83390	-0.37210	0.13912	0.09460	0.24239	0.73427	1.00669
ROE	-0.13127	0.48850	-0.52490	0.13284	0.16640	0.16654	-1.17558	4.28164
ROA	-0.23004	0.27640	-0.12640	0.05999	0.05920	0.06197	0.55187	3.22866
Disclosure REQ	0.87362	99.00000	44.00000	79.90244	84.00000	14.75772	-0.72785	-0.43382
Disclosure ADD	0.76019	100.00000	41.000000	73.878049	79.00000	19.59617	-0.22985	-1.48164

Notes: Data is sourced from Standards & Poors Global and Yahoo Finance. Variables are defined in text. Corr is the correlation coefficient, or the degree of association between the variables. Min and Max are the maximum and minimum values, respectively, Std dev is the standard deviation, while Skew is the skewness and Kurtos is kurtosis.

The descriptive statistics further show that the dependent variable, Governance, has a mean value of 51.39024, the maximum value of 78.00000 and the minimum value of 24.00000. The Standards & Poors Global's Corporate Sustainability Assessment (CSA) score, or rating, is between 0 and 100 for least performing to high performing companies, respectively. This means that, on average, the corporate governance rating of companies in the minerals sector and that

of the companies in the other sectors of the economy, is just about the middle point of the Corporate Sustainability Assessment (CSA) score. Sector DM, which measures the companies' economic activity, has the maximum value of 1.00000 and the minimum value of 0.00000 given that it is a dummy variable that takes a binary value, 0 or 1, to indicate the absence or presence of categorical effect for the companies in the minerals sector and those in the other sectors of the economy. Recall that, of the 46 companies, 15 companies are from the minerals sector.

Empirical results

The Analysis of Covariance (ANCOVA) model is estimated to study the relationship between the dependent variable, corporate governance, and independent variables, the companies' attributes that include economic activity, size, market performance, financial performance and transparency. The model statistics, presented in Table 2. show that Residual Standard Error (RSE), or the deviation between the regression function and the data set, is 6.292 with 33 degrees of freedom. The coefficient of determination, which measures the goodness of fit, or the predictive ability of the independent variables, shows that Multiple R Squared is 0.82310, while the Adjusted R Squared is 0.78560. This means that about 82 percent of the variability in corporate governance, is explained by the independent variables that measure the companies' economic activity, size, market performance, financial performance and transparency.

The model statistical significance codes, or p values, where $\Pr(>|t|)$, set at <0.001 '****', <0.010 '***', <0.100 '**'. The intercept term and the independent categorical variables, Disclosure REQ and Disclosure ADD, are statistically significant at 5 percent level of significance. The F statistic rejects the null hypothesis that the joint insignificance of the regression coefficients, hence the regression coefficients of independent categorical variables are jointly statistically significant, or sufficiently explain the variability in the dependent variable, corporate governance. The regression diagnostics, which assess the validity and reliability of the linear regression model's assumptions, show that Studentised Breusch and Pagan (1979) test statistic is 3.96320 with 7 degree of freedom (df) and a p value of 0.78400. The null hypothesis of homoscedasticity is thus accepted, and as such, the residuals are equally spread at 5 percent level of significance.

Goldfeld and Quandt (1965) test statistic is 1.59590 with 13 and 12 degrees of freedom (df) from first and second model and a p value of 0.21310. The null hypothesis of homoscedastic error terms is accepted, and as such, the residuals are equally spread, as with Studentised Breusch and Pagan (1979) test. Variance Inflation Factors (VIFs) show that the Minimum VIF of 1.16700, the Median of 1.87500, the Mean of 2.00700 and the Maximum VIF of 2.68800 for the independent variables in the regression model, hence the conclusion is that there is no severe correlation between the predictor variables. Shapiro and Wilk (1965) test statistic is 0.97068 with a p value of 0.36290. Therefore, the null hypothesis of the normal distribution of errors is accepted. Ramsey's (1969) RESET test statistic is 0.38499 with 2 and 31 degrees of freedom for the restricted and unrestricted model and a p value of 0.68370. The null hypothesis of no model misspecification is accepted, and as such, the regression model is correctly specified.

Table 2. Empirical results

	Estimate	Std Error	t value	Pr(> t)
Intercept	-13.20100	16.52490	-2.02300	0.05120**
Sector DM	0.73344	2.75239	0.26600	0.79150
Market CAP	0.01184	0.02968	0.39900	0.69260
Shares TTM	2.10850	4.97284	0.42400	0.67430
ROE	11.13803	9.14334	1.21800	0.23180
ROA	-35.53996	24.47650	-1.45200	0.15590
Disclosure REQ	0.65225	0.11053	5.90100	0.00000***
Disclosure ADD	0.16647	0.07592	2.19300	0.03550**

Significance codes: Pr(>|t|) <0.001 '***', <0.01 '**', <0.1 '*'

Residual standard error: 6.29200 on 33 degrees of freedom (df)

Multiple R Squared: 0.82310, Adjusted R Squared: 0.78560

F Statistic: 21.94000 on 7 and 33 df, p-value: 1.047e-10

Notes: Data is sourced from Standards & Poors Global and Yahoo Finance. Variables are defined in text. Estimates are the regression coefficients. Std. Errors are the coefficients' standard deviations. t values are individual regression coefficients' t statistics that measure statistical significance. Pr(>|t|) is the p value. R-squared is the coefficient of determination. F statistic is the joint, or overall, regression coefficients' statistical significance.

The autonomous corporate governance rating, measured by the intercept term, is -13.20100 for the sampled companies. This is corporate governance rating of an average sampled company holding the independent variables constant, hence in practical terms, a negative intercept does not make economic sense based on the context of the data being analysed. Disclosure REQ coefficient shows that the corporate governance rating increases by 0.65225 percent when Corporate Sustainability Assessment (CSA) score of Disclosure REQ of the selected set of companies increases by 1 percent. Disclosure ADD coefficient shows that the corporate governance rating increases by 0.16647 percent when the score of Disclosure ADD of the selected set of companies increases by 1 percent. The independent variables that include companies' economic activity, size, market performance and financial performance are not statistically significant at 5 percent level of significance, hence, statistically, there is no meaningful relationship between these set of companies' attributes and corporate governance.

The empirical results have revealed the relationship between corporate governance and the companies' attributes that include economic activity, size, market performance, financial performance and transparency in South Africa. The results have shown that the autonomous corporate governance as well as the measures of transparency, Disclosure REQ and Disclosure ADD, of the sampled companies have a statistically significant positive relationship with corporate governance, while the companies' attributes that include economic activity, size, market

performance and financial performance do not have a statistically significant relationship with corporate governance. The results are consistent with the literature as far as the relationship between corporate governance and companies' specific attributes that include economic activity, size, market performance and financial performance are concerned.

Although the empirical results have shown no statistically relationship between corporate governance and the set of selected companies' attributes, except the companies' transparency measures, required disclosure and additional disclosure, the recommendation is that companies management and government regulators should continue to encourage and endorse of good corporate governance to companies in the minerals sector as well as those in the other sectors of the economy. The recent corporate scandals and the efforts by different institutions, including the Organisation for Economic Cooperation and Development (OECD), (2015), King IV, (2016) report as well as the Johannesburg Securities Exchange (JSE), (2024) memorandum of incorporation, are a testament to upholding good corporate governance and will assist the companies to avert economic crises as well as ensure the companies' sustainability.

Conclusion

This study analysed the relationship between the attributes of a selected set of the minerals companies and corporate governance in South Africa. This was achieved by comparing the corporate governance rating of companies in the minerals sector to that of the companies in the other sectors of the economy. A sample of companies in the minerals sector was thus augmented with a sample of companies in the other sectors of the economy. The relationship between corporate governance of this population of companies was analysed against a set of attributes that comprise the sampled companies' economic activity, size, market performance, financial performance and transparency using an Analysis of Covariance (ANCOVA). The results have shown that the autonomous corporate governance as well as the measures of transparency, required disclosure and additional disclosure, of the sampled companies have a statistically significant positive relationship with corporate governance, while the companies' attributes that include the companies' economic activity, size, market performance and financial performance do not have a statistically significant relationship with corporate governance.

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