The Effect of IFRS Adoption and Corporate Performance: Evidence of South Africa

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Abstract- This study uses different econometric methods in estimating regression models to broaden our understanding of IFRS adoption on corporate performance. We provide evidence on the interactions of analyst following, managerial opportunism and information asymmetry besides macroeconomic factors on corporate performance information. The study leverages a fixed effects panel data set of 49 listed manufacturing and mining firms in South Africa, we show that Breusch-Lagrange Multiplier tests and the test of over-identifying restrictions were used. We used a hand-collected dataset between 2000 and 2015. The regression analysis results show that IFRS adoption had a negative significant impact on ROA, ROE, and MKTBOOK, but revealed a positive effect on earnings per share. In particular, the findings showed that interaction of IFRS and analyst following has a positive impact on returns on an asset but have a negative impact on earnings per share and market-to-book. Also, the interaction of IFRS and information asymmetry, IFRS, and managerial opportunism have a negative impact on the market-to-book and returns on equity. Integrity, government borrowings, and bankruptcy affect earnings per share positively. This study is one of the few to recognize managerial opportunism, analyst following, and information asymmetry as moderation role between IFRS adoption and corporate performance in Sub- Saharan African. The results lend credence to the fact that the interaction of IFRS adoption and information asymmetry impact on performance offer useful insights to policymakers charged with improving the reporting standards in mining and manufacturing companies in South Africa.

Key-words: IFRS adoption, corporate performance proxies, macroeconomic factors, panel data, South Africa

1. Introduction

International Financial Reporting Standards (IFRS) and corporate performance in emerging economies have become a major concern receiving critical attention in academic research due to the interests of shareholders investment into such companies. This has drawn public attention to the growth trajectory mechanisms such as firm expansions, increasing marketplace globalization, assurance of dividend payments, and affirmative influence on share prices. The intended aim of IFRS as a mechanism is to offer room for a greater demand for a corporate performance that requires by investors and other stakeholders in their quest for financial reporting quality [29]. Prior extant literature links firm performance with the international financial reporting standards adoption, which requires all listed firms in South Africa to prepare annual financial statements under IFRS in 2005. Both theoretical and empirical studies support the relationship between the IFRS adoption and corporate performance. Though, their relationships remain far well understood, as the study considers an emerging economy. Extant literature asserts that better quality financial information of IFRS has an inherent higher corporate performance to reduced or avoid information asymmetries among the market participants [2] [24]. Manager's strategic actions and discretional behavior about accounting standards could determine corporate performance [36]. The International Accounting Standards Board (IASB) develops IFRS to achieve expectation of improving financial reporting quality that heightens firm valuation and corporate performance [5]. However, other contradictory arguments about the effect of IFRS on firm performance suggest that IFRS does not provide high-quality accounting information [7], as there is the need to recognize political and institutional environment in which the firms operate as well [6]. So there is growing view whether the IFRS adoption and corporate performance are complementary or substitute approaches. Therefore, this study's empirical focuses on the extent corporate performance of both manufacturing and mining listed firm of South Africa after IFRS adoption. South Africa becomes the first of African countries to adopt IFRS so studies of this nature attract several researchers' attention and also being the largest economy in Africa for investment opportunities, hence the reason for its selection. Despite, after a decade of IFRS adoption in South Africa, there is scanty information about its impact on corporate performance. This paper examines the effect

of IFRS adoption on the corporate performance of South Africa listed manufacturing and mining firms.

The analyses were based on financial statements data from 2001 to 2014 for 49 firms of South Africa listed manufacturing and mining firms. We estimate panel data regressions method to determine the relationships among the IFRS and corporate performance and other control variables as this technique make it possible to detect unobserved heterogeneity that correlates with explanatory variables. Our main results suggest that IFRS adoption has no significant effect on return on assets, return on equity and market-to-book value. We interpret this negative relation as a result of firms finding it expensive to implement efficient new standards. On the other hand, IFRS adoption is found to exhibit a positive statistically significant effect on earnings per share. This study builds on recent advances in the IFRS adoption literature on the corporate performance in relation to firm incentives and economic factors. These results add to our understanding of how IFRS adoption influences the agent-principal relationship of resource accountability between the owners of the business owners and those charged with governance. Failed IFRS implementation undermines quality financial reporting and therefore appears to result in poor firm performance. Our study, therefore, contributes to the growing literature on IFRS adoption and firm performance in the following ways. First, most research on the existing relationship between IFRS adoption and corporate performance focus on European data. This study uses manufacturing and mining industries of South Africa that have capital structure mix in equity and debt and therefore offers a better understanding of this relationship. Second, this study recognizes managerial opportunism, analyst following, and information asymmetry as moderation role between IFRS adoption and firm performance in the South African context. Third, this paper uses both firm-level and macroeconomic factors as controlling variables from a broader perspective to explain the corporate performance as against prior studies. Fourth, this research is first of its kind to allow for longer transition periods (early post-adoption 2006-2009 and late post-adoption 2011- 2014) in IFRS adoption effect on firm performance, as against previous studies [41, 17, 15]. The rest of the paper is been organized as follows. The immediate section reviews relevant literature on the IFRS adoption and firm performance and introduces the research hypotheses. Next is section addresses the method. Section four discusses our empirical results and, section five concludes and proposes areas for future research.

2. Theoretical underpinnings, Literature and hypotheses development

IFRS adoption dwells on two theories. Bonding theory of adoption explains the increasing trend of individual firm's reputation associated with the financial markets [19]. Signaling theory stipulates that firm's commitment to quality financial reporting and disclosures form basis on a signal for IFRS adoption [48]. International Accounting Standards Board (IASB) develops IFRS to be acceptable in the world for developing accounting activities. This promotes accounting rules harmonization. There is an extensive relationship between the quality of IFRS adoption on financial accounting information of listed South African manufacturing and mining companies and improved corporate performance, in relation to return on assets (ROA), return on equity (ROE) and earnings per share (EPS) [9]. Large numbers of accounting quality indicators associated with IFRS adoption by European countries were used by [16, 10]. Findings on IFRS adoption reveal affirmative changes in profitability ratios arising from the increase in the income statement. This re-asserts that the quality of IFRS on financial reporting influences subsequent improved corporate firm performance, as IFRS focus to be more of capital-market-oriented than local standards [21]. IFRS perceives to be best world collection of accounting practices and therefore mitigates moral hazard problems which assure improvement in efficiency of investments in corporate social responsibility (CSR) and influence the future economic performance of firms [37, 14].

2.1. Accounting standard-setting in South Africa

South Africa is both a code and a common-law country with investor protection and insider/market orientation being opened. Establishing of the Accounting Standards Board (ASB) was backed by legislative instruments, whose main aim is to set standards for all spheres of government, accompany by directives and guidelines. Minister of Finance, in collaboration with the Auditor-General, see to implement the new standards and ensure complete compliance with standards. South African Institute of Chartered Accountants (SAICA) is mandated to foresee accounting setting processes. Because ASB is to consider best accounting practices that ensure quality to enhance international capital markets for external financing [32], the International Financial Reporting Standards (IFRS) was adopted in 2005. Under this, listed firms prepare sets of financial statements in complying with IFRS. The new standards were set to follow quality financial reporting, therefore it provides an opportunity to examine the effect of the firm performance and the adoption.

2.2. Hypotheses development

Corporate performance is a major issue that has been gaining a strategic attention by managers into the mainstream financial analysis. For example, the direction of corporate performance has widened growth appeal to the broader society and other stakeholders. Despite the

interest in firm growth arising from corporate performance, empirical evidence in Africa is sparse as compared to earnings quality under IFRS adoption.

2.2.1. Corporate performance and IFRS interaction with information asymmetry

Agency theory heightens information asymmetry between those charged with governance and the owners of the business. Information asymmetry focuses on the disclosure of insider information to benefit managers at the expense of shareholders. IFRS mandatory enjoins the management to disclose all material items as part of the financial statements to avoid distortion of information for decision making. An incentive to swift to IFRS may suggest better economic performance and firm valuation, under reduced information asymmetry. This sort to enhance higher firm performance as there is less interest expense associated with less debt capital used and enhanced information disclosure [38, 12]. IFRS adoption of listed manufacturing and mining firms in South Africa increase information asymmetry which reduces inherent conflict of interest, improving corporate performance. We expect a positive relationship between corporate performance and IFRS interaction with information asymmetry. We set hypothesis that:
Hypothesis 1: Combined effect of IFRS-adopted firms and information asymmetry are positively related to higher corporate performance than firms under pre-adoption period.

2.2.2. Corporate performance and IFRS interaction with analyst following

Both public and private source of information needs by investors are been provided by the financial analysts. This information is an important aid for capital market development [26]. Therefore, financial analysts serve as an intermediary between investors and firms [43]. Investors rely on financial analysts to learn more about a firm and to make investment portfolio decisions. IFRS adoption improves public disclosure and reduces the cost of getting information which tends to increases the number of analysts following firms. Analyst following is used as a proxy for the credibility of firm's information environment [35, 30, and 11]. Corporate performance is a joint function of analyst following and IFRS. In summary, higher combine effect of analyst following and IFRS breeds ground for positive improved corporate performance. The hypothesis is:
Hypothesis 2: Combined effect of IFRS-adopted firms and analyst following is positively associated with higher corporate performance than firms under pre-adoption period.

2.2.3. Corporate performance and IFRS interaction with managerial opportunism

[56] Noted that opportunism is "self-interest seeking with guile". Managerial opportunism is an inevitable consequence of costly information. In the world of no transaction cost, including the cost of determining behavior and actions of stewards (managers), there would be no opportunism. In another direction, the study examines whether the swift to IFRS reduces managerial opportunism. Quality of financial reporting expects under IFRS as the new standards to heighten informative disclosure and promote investor protection mechanisms. We posit that IFRS adoption would lead to lower managerial opportunism [34, 31]. We expect a negative relationship between the corporate performance and interaction terms of IFRS and managerial opportunism. The hypothesis tested is:
Hypothesis 3: Interaction effect of IFRS-adopted firms and managerial opportunism is positively associated with higher corporate performance than firms under pre-adoption period.

2.2.4. Macroeconomic factors and IFRS adoption

Quality of macroeconomic factors under the IFRS adoption has a positive and improves effect on firm's performance [24] (Lowe, 1967). This underlines the score that where macroeconomic factors are high, accounting systems would develop to motivate corporate performance, all things being equal [22]. It is expected that we consider macroeconomic factors under IFRS adoption to improve the corporate performance of firms operating in the country. Based on this argument, we hypothesize that:
Hypothesis 4: Quality macroeconomic factors improve corporate performance under IFRS adoption

3. Research design-Sample and dataset selection

The population for this study is the mining and manufacturing firms listed on JSE. The characteristics of the listed firms enhance the research since they report in a similar format for the study periods. However, sample companies meet the following conditions:

- The companies should have been consistently listed on the JSE for fifteen years prior to the research.
- Companies with unpublished annual reports were omitted.

Applying these standards resulted in a sample of 49 companies (see Table 1). The data used in the empirical analysis were derived from the annual financial statement of the 49 listed companies on JSE during a fourteen- year period, 2001- 2014. Fourteen years were selected because these were appropriate to test before and after adoption. In all, 686 firm-years reports of listed manufacturing and mining companies for the period 2001-2014 were used.

The sample firms are those companies that have consistently published annual reports and showed available information before and after adoption periods. The companies' annual financial data were downloaded from archival databases of INET BFA/IRESS SA, Morningstar, and Anupedia. Table 1 shows that sampled firms represent 75.39% of the total population.

Table 1: sample selection process

		Firm/Year obs. (%)
Initial sample of observations: Manufacturing, Mining	38+27=65	100
Firms with insufficient observations: manufacturing, Mining	(12), (4)	-18.46,-6.15
Final sample	**49**	**75.39**

The study used each firm's control variables because IFRS adoption in South Africa is mandatory for JSE listed companies. There are no firms that use alternative accounting standards in the post-adoption period for comparison. Therefore, standardizing the firm-year observations in both pre and post-adoption periods give credence to any change observed in firm performance may account for the adoption of IFRS. Firm-specific factors are also controlled by using the same requirements. Four separate periods of data were used in the study, namely: the pooled (2001-2014), a pre-adoption (2001-2004), the early post-adoption (2006-2009), and the late post-adoption (2011-2014). These approaches ensure that sample firms have same observations in the pre and post-adoption period [18], with exception of the pooled period. The exclusion of 2005 adoption transition year has been used in studies by [18, 58].

3.2 Measures of corporate performance- The study employs three proxies to evaluate the corporate performance (FP) of manufacturing and mining companies of JSE. The proxies are, return on assets (ROA); return on equity (ROE); earnings per share (EPS); and market-to-book (MTBOOK) value ratio [8, 44]. Among the justifications put forward for selecting these variables include that they are identified by previous scholars as drivers of performance, hence their inclusion as dependent variables [45, 39]. Earnings per share (EPS), ROE and MKBOOK variables are identified as market measure [27] as they are considered as adequate to ascertain the long-term value of the sampled companies' performances. These variables reflect confidence and trust that shareholders are assured of and serve as dependent variables. In order to achieve more robust results of how extensive the IFRS adoption contributes to explain the corporate firm performance of JSE manufacturing and mining, we combine IFRS with moderating factors as managerial opportunism (MO), analyst following (AF), and information asymmetry (IA). In view of the fact that macroeconomic factors within the IFRS adoption have an influence on corporate firm performance, we include them in the estimation model as: exchange rate (FX), government borrowing (GOVB), interest rate (IR), bankruptcy (BR), gross domestic product (GDP), and integrity (INTG). The broad range of measures used in this study is defined and briefly explained in Table 2.

3.3 Control variables- In accordance with previous literature, we include three control variables with the aim of avoiding biased results. Control variables employed include leverage, liquidity, and tangibility. The inclusion of control variables are expected to correlate with performance measures as their exclusion from the tests may bias the coefficients to be estimated. **Leverage (LEV):** Important governance mechanism includes management of debt [46]. Due to the interest and principal payments on debts, managers are compelled to generate cash flow to meet them. It, therefore, calls for credible financial reporting as a manner to monitor debt arrangements. In order to meet such commitments, managers create an incentive to increase earnings. We use the ratio of total debt divided by total assets [57] to calculate leverage (LEV). Lower leverage level is expected under IFRS adoption as full disclosure of information is mandatory, therefore corporate firm performance would be higher [49, 20]. **Liquidity (LQ):** It indicates the ability of the company to meet its short-term obligations when they fall due [23]. Liquidity is heightened if there are fewer costs to convert company's assets into cash quickly. Better corporate performance is achieved under IFRS adoption, especially since the adoption limits managerial accounting manipulations, but has the ability to maintain cashflow for satisfying short-term commitments [25]. **Asset tangibility (TANG):** [3] stipulates that a retain of large investments in tangible assets of firms is associated with smaller costs of financial distress, which in turn impact the optimum performance of the production. This enhances and generates more revenue from sales. Tangibility is computed as the net plant, property, and equipment divided by total assets and measured in percentages. A positive relationship is expected between asset tangibility and firm performance under the IFRS adoption.

3.4 Model specifications and analysis techniques- Since the data was a panel, the pooled ordinary least square regression (POLS), the random effects (RE) and the fixed effects (FE) estimation techniques were employed depending on which is the best. This is to select the best econometric model that can lead to correct inferences arising from coefficient estimates [40]. Therefore, the Breusch-Pagan Lagrange multiplier tests are employed to select between the RE and the POLS regression, and if the RE is chosen as the best option. To test the validity of the instruments, the Sargan test of over-identifying restrictions (Sargan-Hansen statistic) is reported to choose between the RE and the FE. The test of over-identifying restrictions is used since the study controlled for heteroskedasticity automatically by using robust standard errors and hence the Hausman test wouldn't have been appropriate. However, if the POLS is chosen ahead of the RE, the F-test is used to choose between the POLS and the FE. Moreover, in comparing the POLS to FE, the FE is run without the robust standard error option in order to display the F-test result and hence if the test chose the FE model ahead of the POLS, the FE is re-run with the robust standard error option. Thus, in this study, all standard errors were robust catering for any possible heteroskedasticity. Therefore, the empirical models used are as shown in equations 1 and 2, where equation 1 is used for the pooled data of 2001-2014 period, excluding 2005 the adoption year. The data for pooled regression period is denoted by equation 1 as follows:

$$FP_{it} = \propto_0 + \propto_1 tang_{it} + \propto_2 LQ_{it} + \propto_3 lev_{it} + \propto_4 IA_{it} + \propto_5 AF_{it} + \propto_6 MO_{it} + \propto_7 IFRS * IA_{i,t} + \propto_8 IFRS * AF_{it} + \propto_9 IFRS * MO_{i,t} + \propto_{10} INTG_{it} + \propto_{11} IR_{it} + \propto_{12} EX_{it} + \propto_{13} govb_{it} + \propto_{14} BR_{it} + \propto_{15} IFRS_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots EQN\ 1$$

The detail definitions of the variables employed in the equation are given at Table 2. The variables of interest for equation 1 include the joint effects of the IFRS with other variables and contributions of macroeconomic factors.The pre-adoption period of 2001-2004, an early post-adoption period of 2006-2009, and the late post-adoption period of 2011-2014 are surveyed under equation (2) estimation model below. The meanings of variables used are fully defined in Table 2.

$$FP_{i,t} = \propto_0 + \propto_1 tang_{it} + \propto_2 LQ_{it} + \propto_3 lev_{it} + \propto_4 IA_{it} + \propto_5 AF_{it} + \propto_6 MO_{it} + \propto_7 INTG_{it} + \propto_8 IR_{it} + \propto_9 EX_{it} + \propto_{10} govb_{it} + \propto_{11} BR_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots EQN\ 2$$

It must be stressed that all the variables are used in their natural logarithm forms (LN) except IFRS and its interactions with other variables as well as managerial opportunism in the earnings per share model and returns on equity model for the 2006-2009 and 2011-2014 periods/models respectively. Also for the 2006-2009 period, integrity (INTG) is omitted in order to obtain good results. Natural logarithms are done to reduce noise and biases within such data. Further, all analyses in this study were done using STATA 11.2 and 14 versions.

4. Results and discussion-This section tackled the analysis and discussion of results. Thus it covered analysis and discussion of correlation results, as well as multivariate regression results.

Correlation analysis -Table 3: Correlation matrix of selected variables (Obs=636)

variables	-ROA	ROE	MKTBOOK	EPS	TANG	LQ	LEV	IA	AF	INTG	MO	IR	GOVB
ROA	1.0000												
ROE	0.2016	1.0000											
MKTBOOK	-0.1406	0.0412	1.0000										
EPS	-0.0441	0.0005	0.4610	1.0000									
TANG	-0.1166	0.1522	0.2587	0.0425	1.0000								
LQ	0.0358	-0.0005	-0.0710	-0.0906	0.0425	1.0000							
LEV	-0.0839	0.0658	0.1086	-0.0569	0.1660	0.0064	1.0000						
IA	0.0341	0.0234	-0.0411	-0.0157	-0.0238	-0.0159	0.0711	1.0000					
AF	-0.0500	-0.0307	-0.0387	-0.1064	-0.0241	-0.0344	0.0341	-0.0817	1.0000				

INTG	0.0310	0.0306	-0.0693	-0.0663	0.0050	0.0026	-0.0383	-0.0539	0.0545	1.0000			
MO	-0.0064	0.0814	0.0178	-0.0147	-0.0149	-0.1991	0.0180	0.0173	-0.0176	-0.0181	1.0000		
IR	0.0591	-0.0075	-0.0818	-0.1135	0.0099	-0.0876	-0.0776	-0.0892	0.1374	0.1352	-0.0083	1.0000	
GOVB	-0.0588	0.0136	0.0169	0.0122	-0.0041	0.0279	0.0094	-0.0201	0.0654	0.1186	0.0198	-0.3045	1.0000

Correlation analysis

The correlation analysis in Table 3 was done to find out the direction and strength of association among variables used in the study. Thus, a positive sign implies the variables move in the same direction (positively correlated) and a negative sign means the variables move in opposite directions (negatively correlated). Moreover, if the correlation coefficient is closer to 1, it signifies the greater strength of association and if it is closer to zero, it signifies the weaker strength of association. Hence the same variables would have a perfect correlation coefficient (1.0000) as seen in Table 3. The strengths of correlation between variables generally depict a weak form.

Table 5: Multivariate regression results

Variable	Panel A:Pre-IFRS adoption 2001-2004				Panel B: Early Post-IFRS adoption 2006- 2009				Panel C Late Post-IFRS adoption 2011- 2014			
	(RE)	(POLS)	(RE)	(FE)	(RE)	(POLS)	(RE)	(FE)	(RE)	(FE)	(FE)	(RE)
	LNROA	LNROE	LNEPS	LNMKTBOOK	LNROA	LNROE	LNEPS	LNMKTBOOK	LNROA	LNROE	LNEPS	LNMKTBOOK
LNTANG	-0.413	0.354*	-0.215***	0.189	-0.640**	0.265*	0.0296	-0.0701	-0.0286	0.172	0.151	0.362
	(0.272)	(0.184)	(0.079)	(0.307)	(0.322)	(0.134)	(0.0596)	(0.350)	(0.0982)	(0.177)	(0.145)	(0.359)
LNLQ	1.374	0.257	-0.617**	-0.891***	0.747	0.153	0.0427	0.193	-0.337***	0.128	0.186*	-0.0106
	(1.019)	(0.185)	(0.280)	(0.129)	(0.720)	(0.130)	(0.0902)	(0.241)	(0.121)	(0.180)	(0.102)	(0.291)
LNlev	-0.003	0.275	0.026	-0.203	-0.0415	0.0945	0.0420	0.0303	-0.0606	-0.130	-0.0658	-0.0595
	(0.200)	(0.187)	(0.052)	(0.126)	(0.227)	(0.134)	(0.0656)	(0.193)	(0.0902)	(0.100)	(0.0524)	(0.136)
LNIA	0.139	0.135	-0.178***	-0.221***	0.0140	0.0296	-0.0370	0.159*	0.132	0.151**	0.1209**	-0.0595
	(0.169)	(0.087)	(0.068)	(0.075)	(0.0768)	(0.0541)	(0.0221)	(0.0808)	(0.0907)	(0.0726)	(0.0583)	(0.0852)
LNAF	-0.420**	-0.028	-0.020	0.114	-0.159	0.0738	-0.0114	0.116	-0.186**	-0.0848	-0.00215	-0.180*
	(0.200)	(0.122)	(0.0603)	(0.089)	(0.160)	(0.105)	(0.0668)	(0.140)	(0.0865)	(0.109)	(0.0561)	(0.103)
LNMO	-0.0467	0.0915	0.00917	-0.045	-0.1000**	0.0559**		-0.0547	0.0567		0.0669	0.0605
	(0.079)	(0.073)	(0.0271)	(0.049)	(0.0478)	(0.0280)		(0.0547)	(0.0569)		(0.0453)	(0.0612)
LNIN TG	-1.555	1.150**	1.692***	0.198					-0.948	1.250	-1.655	-1.648
	(1.373)	(0.568)	(0.627)	(0.537)					(1.448)	(1.718)	(1.006)	(1.230)
LNIR	0.200	-0.493	-0.459	-0.226	0.231	-0.621	-0.0266	-0.394	1.314	0.0414	1.711	1.890
	(1.235)	(0.805)	(0.564)	(0.571)	(0.537)	(0.436)	(0.148)	(0.459)	(2.440)	(2.053)	(1.219)	(1.807)
LNEX	-0.963	0.462	1.718	0.715	1.602	0.0470	0.387	2.252*	0.611	0.268	-1.618	-1.495
	(2.113)	(1.032)	(1.365)	(0.837)	(1.077)	(0.781)	(0.313)	(1.229)	(0.595)	(1.540)	(1.174)	(1.095)
LNGOVB	0.368	0.604	-0.165	-0.239	-0.454	2.224*	1.791**	-1.153	0.0455	0.0159	-0.0208	-0.0179
	(1.779)	(1.077)	(0.983)	(0.861)	(2.135)	(1.342)	(0.754)	(1.740)	(0.0569)	(0.0430)	(0.0309)	(0.0486)
LNBR	0.373	0.357	-0.920**	0.464	-1.369	1.111*	0.447*	-0.577	-1.318	-0.311	0.106	0.425
	(0.942)	(0.598)	(0.363)	(0.378)	(0.892)	(0.658)	(0.234)	(0.769)	(1.728)	(1.409)	(0.855)	(1.421)
MO							0.0244			-0.318		
							(0.0235)			(0.364)		
_cons	-0.654	-5.292	2.955**	-3.634*	2.030	-12.24**	-5.067*	2.196	2.368	-2.115	6.582	1.013
	(4.536)	(3.460)	(1.455)	(2.114)	(9.132)	(5.787)	(2.696)	(7.024)	(12.30)	(10.69)	(5.142)	(8.239)
N	97	96	104	104	98	98	185	111	94	154	121	121
*R*2 adj. R^2		0.172		0.469		0.156	0.229	0.183		0.189	0.290	
		0.064		0.406		0.059	0.184	0.102		0.126	0.219	
F		1.458		10.52		2.061	6.264	2.838		3.696	2.807	

Standard errors are in parentheses $^{+}$ *p < 0.10,* * *p < 0.1,* ** *p < 0.05,* *** *p < 0.01.*

4.1 Regression results

This section tackled the results of analysis and discussion of the regression models used in attaining the objective of the study (see Tables 4-5). Regarding the 2001-2014 (excluding 2005) period in Table 3, the tests showed the fixed effects model to be the most suitable for all the four dependent performance proxies. Therefore in the returns on assets model (LNROA), even though IFRS was not significant, the interaction of IFRS with analyst following (IFRSAF) had a 5% significant coefficient of 0.0636. Thus, when the interaction of IFRS with analyst following is increased by 1%, returns on asset increased by 0.0636%. Thus, whiles IFRS did not have any significant impact on returns on asset, its interaction with analyst following had a positive significant impact as supported by hypothesis 2.

Regarding the returns on equity model (LNROE), the interaction of IFRS with information asymmetry (IFRSIA) and information asymmetry (LNIA) had 1% significant coefficients of -0.609 and 0.186 respectively. Thus, when the interaction of IFRS with information asymmetry and information asymmetry increased by 1%, returns on equity fell and increased by 0.609% and 0.186% respectively. Therefore, whiles information asymmetry had a positive impact on returns on equity, its interaction with IFRS had a negative impact. In addition, the interaction of IFRS with managerial opportunism (IFRSMO) had a 10% significant negative coefficient of -0.0796. Thus a 1% increase in IFRSMO led to a 0.0796% fall in returns on equity as contrarily to hypothesis 3

Table 4: Results for the pooled regressions (2001-2014 excluding 2005)

VARIABLE	(FE)	(FE)	(FE)	(FE)
	LNROA	LNROE	LNEPS	LNMKT BOOK
LNTANG	0.0179	-0.0566	-0.0405	0.116
	(0.119)	(0.105)	(0.115)	(0.173)
LNLQ	0.382	0.248	-0.0216	-0.166
	(0.534)	(0.240)	(0.183)	(0.175)
LNLEV	0.0529	-0.00176	-0.0598	-0.0300
	(0.0683)	(0.0841)	(0.0581)	(0.0881)
LNIA	0.0783	0.186***	0.0360	0.0508
	(0.121)	(0.0645)	(0.0633)	(0.0675)
LNAF	-0.173	-0.00800	0.193	0.135
	(0.125)	(0.0981)	(0.147)	(0.125)
LNMO	-0.0231	0.0367	0.0268	0.0227
	(0.0417)	(0.0309)	(0.0210)	(0.0284)
IFRSIA	-0.0792	-0.609***	-0.346	-0.177
	(0.384)	(0.223)	(0.232)	(0.243)
IFRSAF	0.0636**	-0.0234	-0.0740**	-0.0654*
	(0.0308)	(0.0248)	(0.0365)	(0.0350)
IFRSMO	-0.0404	-0.0796*	0.00853	-0.0978**
	(0.0720)	(0.0438)	(0.0530)	(0.0423)
LNINTG	-0.632	0.959*	1.805***	0.601
	(0.679)	(0.480)	(0.362)	(0.449)
LNIR	0.0584	-0.376	-0.286	-0.145
	(0.319)	(0.293)	(0.207)	(0.312)
LNEX	0.367	0.464	1.363***	0.698*
	(0.395)	(0.303)	(0.194)	(0.373)
LNgovb	-0.0136	0.00379	-0.000662	0.00724
	(0.00989)	(0.00965)	(0.00507)	(0.00895)
LNBR	-0.0456	0.234	-0.137	-0.0998
	(0.255)	(0.240)	(0.192)	(0.217)
IFRS	-0.353	0.202	1.274***	0.412
	(0.216)	(0.155)	(0.259)	(0.304)
_cons	-0.634	-3.599**	-1.466	-1.815
	(1.261)	(1.477)	(0.895)	(1.209)
N	317	317	365	365
R^2	0.058	0.093	0.443	0.070
adj. R^2	0.011	0.047	0.419	0.030
F	1.635	3.889	10.18	1.410

Standard errors are in parentheses $^{+}$ $p < 0.10$, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

However, IFRS as a variable was found to have no statistically significant impact on returns on equity. Further, the 10% significant coefficient of 0.959 for integrity (LNINTG) implied that a 1% increase in integrity led to a 0.959% increase in returns on equity. Moreover in the earnings per share (LNEPS) model, integrity (LNINTG), Exchange rate (LNEX), the interaction of IFRS with analyst following (IFRSAF) and IFRS had respective coefficients of 1.805, 1.363, -0.0740 and 1.274 that were significant at 1% except the interaction of IFRS with analyst following that was significant at 5% (see Table 4). Thus, one percent increases in the interaction of IFRS with analyst following (IFRSAF), integrity (LNINTG), Exchange rate (LNEX), and IFRS led to 0.0740% fall, 1.805%, 1.363% and 1.274 % increases in earnings per share respectively. Quality macroeconomic factors hypothesis is supported. Therefore, whiles IFRS had a positive impact on earnings per share, its interaction with analyst following had a negative impact. The finding on IFRS concurs with those of Sanyaolu et al. (2017) who revealed a significant impact of IFRS on earnings per share, however, it contradicts those of Ironkwe and Oglekwu (2016) who revealed no significant impact of post-IFRS period on returns on equity and earnings per share and Adeuja (2015) who found no statistically significant difference due to the adoption of IFRS with regard to the performance of banks in Nigeria. In addition, under the market-to-book (LNMKTBOOK) model, IFRS was not significant but its interactions with analyst following (IFRSAF) and managerial opportunism (IFRSMO) had coefficients of -0.0654 and -0.0978 that were significant at 10% and 5% respectively. Therefore, one percent increases in IFRSAF and IFRSMO led to 0.0654% and 0.0978% fall in LNMKTBOOK respectively.

Table 5 depicts combined regression results for pre-adoption, early post-adoption and late post-adoption within four year periods. Table 5 of Panel A shows the results for a pre-IFRS period of 2001-2004 in respect of four performance proxies for POLS, RE and FE estimation models. The tests showed that the POLS technique is the most suitable for the LNROE model, the RE technique to be the most suitable for the LNROA and LNEPS models, and the FE technique to be the most suitable for the LNMKTBOOK model.

Therefore on the returns on asset (LNROA) model, only analyst following (LNAF) was significant and hence a one percent increase in analyst following was found to lead to a -0.420% fall in returns on the asset. Concerning the returns on equity model, one percent increases tangibility and integrity were found to lead to 0.354% and 1.150% increases in returns on equity respectively. Regarding the earnings per share (LNEPS) model, one percent increases tangibility, liquidity, information asymmetry, integrity, and bankruptcy were found to lead to 0.215% fall, 0.617% fall, 0.178% fall, 1.692% increase and 0.920% fall in earnings per share respectively. Last but not the least on the LNMKTBOOK model, one percent increases in liquidity and information asymmetry led to 0.891% and 0.221% fall in the market to book respectively.

Regarding the early post-IFRS adoption period (2006-2009) as shown in Table 5 of Panel B, the RE and the POLS techniques were found to be the most suitable for the LNROA and LNROE models respectively whiles the FE technique was found to be the most suitable for both the LNEPS and LNMKTBOOK models. Therefore in the returns on asset model, managerial opportunism and tangibility had respective coefficients of -0.1000 and -0.640 that were both significant at 5%. Therefore, when managerial opportunism and tangibility are increased by 1%, returns on asset fell by 0.1000% and 0.640% respectively. On the returns on equity model, 1% increases in government borrowing; bankruptcy, tangibility and managerial opportunism were found to lead to 2.244%, 1.111%, 0.265% and 0.0559% increases in returns on equity respectively. In the earnings per share model, bankruptcy and government borrowing were found to lead to 0.447% and 1.791% increases in earnings price per share respectively. Concerning the market to book model, exchange rate and information asymmetry were found to lead to 2.252% and 0.159% increases in the market to book respectively.

Concerning the determinants of firms' performance during the late IFRS adoption period (2011-2014) as shown in Table 5 of Panel C, the RE technique was found to be the most suitable for the LNROA and LNMKTBOOK models whiles the FE technique was found to be the most suitable for the LNROE and LNEPS models. In the returns on asset model, analyst following and liquidity were found to decrease returns on an asset by 0.186% and 0.337% respectively. On returns on equity, it was found that 1% increase in information asymmetry led to a 0.151% increase in returns on equity. On the earnings per share (LNEPS) model, one percent increases in liquidity and information asymmetry were found to lead to 0.186% and 0.120% increases in earnings per share respectively. Last but not the least, analyst following was found to lead to a 0.180% fall in the market to book.

Limitations of this study- First and foremost, the sample selection was limited to only mining and manufacturing

firms with a consistent financial statement published data. The findings on these 49 companies which accounts for 686 firm-year observation after excluding companies with incomplete data. Therefore, the findings may not be generalizable to all companies in South Africa. Second, results could be different if variables used were measured differently in this study. There is a possibility that additional control variables that can impact IFRS adoption decision, were not included.

5. Conclusion

This study investigates the impact of IFRS adoption and economic factors on the performance of mining and manufacturing firms listed on Johannesburg Stock Exchange (JSE), whiles including other regressors. In the wake of global competition, it concludes that information asymmetry has a positive significant impact on returns on equity whiles the interaction of IFRS and information asymmetry had a negative impact. Further, the interaction of IFRS and analyst following can be concluded to have a positive impact on returns on an asset but negative impact on earnings per share and market to book. In addition, the interaction of IFRS with managerial opportunism was found to have a negative impact on the market to book and returns on equity. Also, integrity was found to increase returns on equity and earnings per share. On IFRS, it can be concluded to have no impact on returns on equity, returns on asset and market to book but had a positive significant impact on earnings per share. The study, therefore, concludes that the impact of IFRS on firm performance depends on how performance is measured. It is, therefore, recommended that a cross-country study should be considered for future research.

Acknowledgements

The research has been conducted as part of the National Excellence in Higher Education Program in Hungary (reference number of the contract: 20765-3/2018/FEKUTSTRAT)."

IFRS Foundation Education Initiative and The British Accounting and Finance Association are acknowledged for their conference literature materials.

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Appendix A: Selected listed 49 companies

Listed Manufacturing Companies	
Names	Names
Allied Electronics	Mustek
Aveng	Metair
African Oxygen Ltd	Argent
AECI	Assore
NAMPAK	Astral Food
Arcelor Mittal	Astrapak
SABMiller	AVI
Impala Platinum Holdings Ltd	Barlo World
PPC Limited	Bidvest
Murray & Roberts Holdings Ltd	Sovereign
Sappi Ltd	Crookes
Illovo Sugar Ltd	Distell
Aspen Pharmacare Holdings	Grindrod
Datatec	Beige

Listed Mining companies	
Names	Names
African Rainbow Ltd	Group Five
Drdgold	Growth Point
Oceana	Sentula
AngloGold Ashanti	York timbers
Anglo American Plc	Netcare
BHP Billiton Plc	Basil
Sasol Ltd	Hosken
Reunert	Iliad
Harmony Gold Mining	Jasco
Tongaat	Merafe
Omnia	

Source : JSE Website (2018)

Table 2: Description of variables and sources

Dependent var	Description	source
Return on Equity (LNROE)	Ratio of Net Income to Total Equity i.e. (Net profit/Total equity) in natural logarithm	Economicsdiscussion.net Baker and Martin (2011)
Return on Assets (LNROA)	Ratio of Net Income to Total Assets i.e. (Net profit/Total Assets) in natural logarithm	Economicsdiscussion.net Baker and Martin (2011)

Equity per share (LNEPS)	EPS=Turnover (TUROV)/ total share outstanding (T.SHS) in natural logarithm	Baker and Martin (2011)
Market-to-book (LNMTBOOK)	Market-to-book= book value/market capitalization where; book value= PPE-Depreciation in natural logarithm	Baker and Martin (2011)
Independent var		
Managerial Opportunism (LNMO)	Earnings management measured as discretionary accrual (i.e. residuals from total accrual) in natural logarithm formula: $DA = TA - (\beta_0 + \beta_{1t}\frac{1}{A_{i,t-1}} + \beta_{2t}\frac{\Delta Rev_{i,t}-\Delta Rec_{i,t}}{A_{i,t-1}} + \beta_{3t}\frac{PPE_{i,t}}{A_{i,t-1}})$	Modified Jones Model
Information Asymmetry (LNIA)	Bid-Ask spread using high and Low share prices in natural logarithm	Corwin and Schultz (2010)
Analyst Following (LNAF)	Number of analysts actively tracking and publishing opinion on firm and its stock; i.e. handy collection in natural logarithm	The INET BFA Database
IFRS	Pre-adoption period (2001-2004), early adoption period (2006-2009) and late-adoption period (2011-2014).	Author's Design
Macroeconomic factors	Interest rate (LNIR) (bank rate: the rate at which Central Bank of South Africa lends to the commercial banks) Exchange rate (LNEX) (RAND to dollar rate) Gross Domestic Product (GDP)[GDP at constant price (% change)] Bankruptcy(LNBR) Government borrowing (LNGOVB) (Government net debt as a % of GGP] Integrity (LNINTG) (All variables are in their natural logarithms)	Fred. Stlouisfed.org Federalreserve.org Resbank.co.za/World Development Indicators The Global Economy-South Africa. Worldwide governance indicators
Control variables	Leverage (LNLEV) ratio of total debt to total asset) in natural logarithm Liquidity (LQ): ratio of current asset to current liability in natural logarithm Tangibility (TANG): Ratio of net plant proper equipment to total asset in natural logarithm	Badertscher et al. (2014) Baker and Martin (2011) Breuer et al. (2012)