The information content of mandatory and discretionary non-GAAP earnings

Wessel M. Badenhorst and Rieka von Well
Department of Accounting, Faculty of Economic and Management Sciences, University of Pretoria, Pretoria, South Africa

Received 19 July 2022
Revised 4 October 2022
11 February 2023
Accepted 12 February 2023

Abstract

Purpose – This paper aims to investigate the pricing of discretionary earnings in South Africa. This is a unique setting, as South African listed firms also report mandatory non-GAAP earnings ("headline earnings").

Design/methodology/approach – Results are based on multivariate regression analyses for South African firms that report from 2010 to 2019.

Findings – Findings show that the value-relevance of discretionary earnings exceeds that of both GAAP earnings and headline earnings. In addition, placement of discretionary earnings reconciliations communicates information about the decision-usefulness of earnings.

Originality/value – Discretionary earnings remain the most value-relevant earnings measure, despite the divergent decision-useful characteristics offered by headline earnings and GAAP earnings. Therefore, the most decision-useful earnings reflect unique industry or firm characteristics rather than the assurance arising from regulation.

Keywords Earnings, non-GAAP, Value-relevance, Discretionary, Headline

Paper type Research paper

1. Introduction

Around the globe, firms increasingly choose to disclose non-GAAP earnings in addition to GAAP earnings (Marques, 2017; Black *et al.*, 2018). Furthermore, firms exercise wide discretion when calculating non-GAAP earnings, as regulators do not limit adjustments (Young, 2014). However, firms listed on the Johannesburg Stock Exchange (JSE) in South Africa are uniquely required to disclose a non-GAAP earnings measure ("headline earnings") for which both the form and content are prescribed (Venter *et al.*, 2014; Howard *et al.*, 2019). Therefore, these firms disclose two mandatory earnings measures, which are regulated and audited (Venter *et al.*, 2014). In addition, some South African firms also disclose unregulated earnings numbers (Howard *et al.*, 2019), so that three earnings measures are distinguished in this paper:

(1) *GAAP earnings*, which represent earnings calculated in accordance with International Financial Reporting Standards (IFRS);

The authors are grateful to Tom Scott, the Editor, and two anonymous reviewers for helpful comments and suggestions.

Pacific Accounting Review
Vol. 35 No. 3, 2023
pp. 451-476
Emerald Publishing Limited
0114-0582
DOI 10.1108/PAR-07-2022-0102

(2) *Headline earnings*, which represent a mandatory and audited non-GAAP earnings measure, calculated in accordance with JSE regulations; and

(3) *Discretionary earnings*, which represent a voluntary and unaudited non-GAAP earnings measure, calculated according to the discretion of the firm.

The disclosure of discretionary earnings in an environment where two audited earnings measures are available presents a conundrum. The findings of Ribeiro *et al.* (2019) suggest that firms choose to disclose discretionary earnings that have greater predictive power and are more persistent, smooth and value-relevant than GAAP earnings [1]. However, headline earnings already have greater predictive power, persistence and smoothness compared to GAAP earnings (Stainbank and Harrod, 2007; Venter *et al.*, 2014). In addition, Venter *et al.* (2014) find that headline earnings are more value-relevant than GAAP earnings. Therefore, headline earnings exhibit all the characteristics that create the demand for discretionary earnings and, as an audited measure, do so with higher reporting quality (Lennox and Pittman, 2011; Ball *et al.*, 2012). Moreover, there is substantial evidence that discretionary earnings are frequently used to manage investor perceptions (Rainsbury *et al.*, 2015), sometimes with the intention to mislead investors (Brown *et al.*, 2012; Marques, 2017). In combination, this suggests that investors should prefer headline earnings.

Nevertheless, discretionary earnings would not be disclosed if such information were not needed (Ribeiro *et al.*, 2019). Possibly, unregulated discretionary earnings allow management to communicate value-relevant information that is unique to a particular firm or industry. On the other hand, the need for discretionary earnings might arise from reasons unrelated to investor demand, such as management compensation (Kyung *et al.*, 2019). Prior research only offers limited insight about whether the need for discretionary earnings that compete with headline earnings arises from investor demand.

Although Venter *et al.* (2014) find that headline earnings are more value-relevant than GAAP earnings, they do not investigate discretionary earnings. Howard *et al.* (2019) provide some evidence about the prevalence of discretionary earnings in South Africa and conclude that discretionary earnings may be deliberately calculated to beat analysts' forecasts. By contrast, Mey and Lamprecht (2021) conclude that management's intent in this setting is to disclose discretionary earnings for informational purposes. However, neither of the latter studies investigate the value-relevance of discretionary earnings directly. The objective of our paper is, therefore, to directly investigate the value-relevance of discretionary earnings in a unique setting, where it competes not only with GAAP earnings but also with headline earnings.

Our results are based on a sample of listed South African firms that report from 2010 to 2019. We contribute to the literature by showing that the value-relevance of discretionary earnings exceeds the value-relevance of both GAAP and headline earnings. Moreover, in contrast to Venter *et al.* (2014), we find that headline earnings are only more value-relevant than GAAP earnings when firms (outside the real estate industry) would choose to report discretionary earnings of their own accord. We also show that placing a discretionary earnings reconciliation ahead of financial statements in a results announcement is associated with lower value-relevance of GAAP earnings and discretionary earnings. Prior research finds that an earnings reconciliation increases the value-relevance of discretionary earnings (Zhang and Zheng, 2011) and that firms with lower value-relevance of GAAP earnings place information about discretionary earnings closer to the top of results announcements (Bowen *et al.*, 2005). Our results add to these findings by investigating the placement of a specific element of discretionary earnings information and imply that firms choose to emphasise the discretionary earnings reconciliation when their earnings are relatively less value-relevant.

Our findings imply continued investor demand for discretionary earnings (which are unregulated) even when two regulated competitors are available. In view of proposals to increase disclosure requirements around management performance measures outside financial statements (International Accounting Standards Board [IASB], 2019), our conclusions are likely to be of interest to regulators. Preparers of financial statements will also be interested in this paper, as it reveals that discretionary earnings enrich the information environment of a firm, even when both GAAP earnings and headline earnings are disclosed. Finally, investors will be interested in knowing that the placement of a discretionary earnings reconciliation provides information about management's view of the decision-usefulness of a firm's earnings.

Section 2 contains background, a literature review and the hypotheses development. This is followed by a discussion of the research methodology and sample selection in Section 3. Detailed findings are reported in Sections 4 and 5 thereafter. Section 6 summarises and concludes the paper.

2. Background, literature review and hypotheses development

There is substantial evidence that the disclosure of discretionary earnings is increasing globally (Coulton *et al.*, 2016; Marques, 2017; Black *et al.*, 2018) [2]. Earnings are the primary output of the accounting system (Dichev, 2008), and regulators and standard-setters are publicly concerned that discretionary earnings may be opportunistically manipulated (Marques, 2017). However, most researchers find that discretionary earnings are value-relevant, reflecting demand for such measures (Ribeiro *et al.*, 2019). Indeed, the purpose of proposals to increase GAAP earnings disaggregation is to enable investors to calculate their own earnings measures (Black *et al.*, 2021).

Therefore, rather than prohibiting the disclosure of discretionary earnings, the focus has been on its regulation. In the USA, the SEC issued Regulation G to govern all public communication (i.e. within and outside financial statements) of discretionary earnings. Despite a current project to strengthen requirements around the use of management performance measures (discretionary earnings) outside IFRS financial statements (International Accounting Standards Board [IASB], 2019), countries outside the USA currently regulate only the disclosure of discretionary earnings within financial statements (Young, 2014; Rainsbury *et al.*, 2015). However, a common characteristic of all extant and proposed regulations is a mandatory reconciliation of discretionary earnings to a corresponding GAAP earnings measure (Young, 2014; Marques, 2017; International Accounting Standards Board [IASB], 2019). More importantly, regulations stop short of limiting permittable adjustments (Marques, 2017).

In this context, South Africa is unique, as JSE-listed firms are required to disclose headline earnings in addition to GAAP earnings (Venter *et al.*, 2014; Howard *et al.*, 2019). Not only are headline earnings unique as a mandatory non-GAAP earnings measure, adjustments are prescribed and deviations are not permitted (Venter *et al.*, 2014; Howard *et al.*, 2019). These prescriptions ensure that headline earnings, unlike discretionary earnings, are audited and are consistently determined over time and between firms (Venter *et al.*, 2014). Since its introduction, headline earnings are regarded as the main earnings measure in South Africa (Matshoba, 2022; Reuters, 2022). Nevertheless, many South African firms report three earnings measures, namely, GAAP earnings, headline earnings and discretionary earnings (Howard *et al.*, 2019). The disclosure of discretionary earnings in a context where headline earnings are available is puzzling for several reasons.

Firstly, prior research identifies impression management as a key motivator to calculate and disclose discretionary earnings in a way that ensures that analysts' forecasts are met

(Black *et al.*, 2018; Coulton *et al.*, 2016). In this context, the relatively low analyst following and analyst profiles in South Africa reduce the impression management pressure compared to other markets (Venter *et al.*, 2013; Howard *et al.*, 2019). By extension, this should also reduce the likelihood that firms disclose discretionary earnings.

Secondly, Ribeiro *et al.* (2019) identify that the demand for discretionary earnings arises from a need for earnings with greater predictive power, persistence, smoothness and value-relevance than GAAP earnings. They conclude that the combination of discretionary earnings and GAAP earnings better satisfies different aspects of the financial reporting objectives around valuation and stewardship than GAAP earnings alone. However, headline earnings already exhibit greater predictive power, persistence, smoothness and value-relevance than GAAP earnings (Venter *et al.*, 2014; Stainbank and Harrod, 2007). Consequently, there is a strong argument that the combined disclosure of headline earnings and GAAP earnings should be sufficient to meet the various aspects of the different financial reporting objectives.

Thirdly, prior research finds that discretionary earnings are frequently disclosed for opportunistic reasons. For example, several researchers conclude that discretionary earnings are used to manage investor perceptions (Bowen *et al.*, 2005; Rainsbury *et al.*, 2015) and could be used to intentionally mislead investors (Brown *et al.*, 2012; Marques, 2017). Furthermore, prior research reveals that discretionary adjustments to earnings frequently undermine predictive power and persistence. For example, there is evidence that non-recurring gains are less likely to be excluded from discretionary earnings than non-recurring losses (Choi *et al.*, 2007; Baumker *et al.*, 2014) and that firms frequently disclose recurring expenses (with predictive power) as being non-recurring (Doyle *et al.*, 2003; Cready *et al.*, 2010). By contrast, headline earnings are audited and disclosed in accordance with prescriptive rules, which removes management's discretion in the calculation of the amount (Venter *et al.*, 2014) and improves its reporting quality (Lennox and Pittman, 2011; Ball *et al.*, 2012). Therefore, despite having decision-useful characteristics similar to those of discretionary earnings, the quality of headline earnings is less likely to be undermined by opportunistic management decisions. It is, therefore, not immediately apparent that investors would view discretionary earnings as decision-useful in this context.

Interestingly, Howard *et al.* (2019) still find that many South African firms not only disclose discretionary earnings but that, in line with global trends, the disclosure thereof is increasing over time. They also provide some evidence that South African firms opportunistically report discretionary earnings that beat analysts' forecasts for GAAP earnings and headline earnings. By contrast, Mey and Lamprecht (2021) find that South African firms disclose discretionary earnings for informational, rather than opportunistic purposes, implying that firms use discretionary earnings to communicate value-relevant information that is unique to the firm or industry. However, neither study directly considers the value-relevance of discretionary earnings, which is problematic, as the validity of a discretionary earnings measure depends on the context and objective of the end user (Howard *et al.*, 2019).

While Venter *et al.* (2014) directly investigate the value-relevance of headline earnings, which they find exceeds that of GAAP earnings, they do not consider discretionary earnings. Moreover, headline earnings exhibit the decision-useful characteristics of discretionary earnings, but regulation and audit reduce the risk that these characteristics could be undermined. This means that international evidence on the value-relevance of discretionary earnings does not necessarily translate to the South African context. Therefore, a direct investigation of the value-relevance of discretionary earnings in South Africa is warranted, and the first hypothesis for this study is (stated in null form):

H1a. There is no difference in the value-relevance of discretionary earnings and headline earnings.

H1b. There is no difference in the value-relevance of discretionary earnings and GAAP earnings.

There is evidence that the credibility of discretionary earnings is boosted by the disclosure of a detailed reconciliation (Zhang and Zheng, 2011; Mey and Lamprecht, 2021). In the case of a South African firm that reports discretionary earnings, IAS 33.73 (International Accounting Standards Board [IASB], 2014) would require an earnings reconciliation to be disclosed in the notes to the financial statements whenever the earnings number is not based on a financial statement line item. However, the accounting standard does not determine where the earnings reconciliation should be placed within results announcements. Bowen *et al.* (2005) find that firms with lower GAAP earnings value-relevance tend to emphasise discretionary earnings information by placing the information closer to the top of results announcements. However, their study does not consider the impact of the placement of the earnings reconciliation itself. If firms know that the earnings reconciliation enhances the credibility of discretionary earnings, they would arguably seek to emphasise this information by placing the information closer to the top of the results announcement. As an impression management tool, placement of the earnings reconciliation would be more likely to be used when the discretionary earnings measure itself is not particularly decision-useful. By contrast, it might also be that, in an environment where investors are conditioned to search for the headline earnings reconciliation, the placement of discretionary earnings reconciliations is irrelevant. Therefore, the second hypothesis for this study is (stated in null form):

H2. The placement of the discretionary earnings reconciliation is not associated with the value-relevance of any earnings measure.

3. Research methodology, sample selection and data

3.1 Research model

The basis for our investigations is a simplified Ohlson (1995) model, which is frequently used in value-relevance research (Barth *et al.*, 2001; Venter *et al.*, 2014). The baseline value-relevance model for our investigations is, therefore, the following (firm and time subscripts are suppressed):

$$MV = \alpha + \beta_1 BV + \beta_2 EARN + \varepsilon \quad (1)$$

where MV is market value of equity, specified three months after the reporting date to allow for information dissemination (Veith and Werner, 2014) [3]; BV is book value of equity; and $EARN$ is alternatively specified as GAAP earnings, headline earnings and discretionary earnings.

We expand the baseline model to investigate the *incremental* value-relevance of headline earnings and discretionary earnings by modelling the adjustments to $EARN$ separately, expressed as follows (firm and time subscripts are suppressed):

$$MV = \alpha + \beta_1 BV + \beta_2 EARN + \beta_3 ADJUST + \beta_4 NEG + \varepsilon \quad (2)$$

$ADJUST$ in model (2) represents the amount to be added or subtracted when moving from one earnings measure to the next. We follow prior research (Venter *et al.*, 2014; Rainsbury

et al., 2015), and code *ADJUST* so that headline earnings (discretionary earnings) plus *ADJUST* add up to GAAP earnings (headline earnings). *ADJUST* is coded in this manner so that the underlying assumption of the baseline model is that it contains all value-relevant earnings information. As a result, when *ADJUST* is significant, it suggests that there is a more value-relevant earnings measure available, while a lack of significance implies that the most value-relevant earnings measure has been identified. Moreover, should the coefficients of *EARN* and *ADJUST* differ, this implies that separate disclosure of these earnings components provides useful information to investors.

Loss-making firms are priced differently from profit-making firms (Hayn, 1995) and prior research controls for the difference between loss-making and profit-making firms in several ways. In this respect, we follow the approach of papers such as Badenhorst *et al.* (2015) and Rainsbury *et al.* (2015), and control for loss-making firms by including an indicator variable (*NEG*) in model (2), set to one if GAAP earnings is negative and zero otherwise [4].

The specification of model (2) provides insight into the pricing of the different earnings components. However, this does not reveal which earnings measure offers superior information content on a summative basis. In other words, to determine which earnings measure provides the best measure of the performance of the firm without reference to the other available earnings measures, an additional test is needed. Therefore, we also investigate the *relative* value-relevance of different earnings measures by following Venter *et al.* (2014) and use a Vuong (1989) test to compare model fit when *ADJUST* is omitted from model (2).

Finally, to investigate the information content of the placement of the discretionary earnings reconciliation, we respecify model (1) as follows:

$$MV = \alpha + \beta_1 BV + \beta_2 EARN + \beta_3 NEG + \beta_4 RECON + \beta_5 RECON{*}EARN + \varepsilon \quad (3)$$

where all variables, apart from *RECON,* are specified as defined earlier. *RECON* is an indicator variable set to one if a detailed reconciliation of discretionary earnings is placed before the financial statements in the results announcement on SENS (the regulatory news service of the JSE in South Africa) [5]. When a detailed reconciliation is provided after the financial statements in the results announcement or is omitted, *RECON* is set to zero. Although it is possible that a detailed earnings reconciliation is provided elsewhere by the company (e.g. in the annual report or results presentation), the results announcement is the first document released to the public and impression management through the placement of the earnings reconciliation is most likely to take place there. The variable of interest from this model is the interaction between *RECON* and *EARN*, which reflects the impact of the placement of the earnings reconciliation on the value-relevance of each earnings measure.

3.2 Scaling, outliers and fixed effects

All variables, apart from indicator variables, are scaled by number of shares outstanding, which reliably compensates for scale effects in financial data (Barth and Clinch, 2009; Aledo Martinez *et al.*, 2020). The result of scaling by the number of shares outstanding is that the continuous variables are effectively amounts per share. Following prior research (Choi *et al.*, 2007; Barton *et al.*, 2010; Venter *et al.*, 2014), we trim observations at the 1% and 99% levels to reduce the impact of outliers, using *MV*, *BV* and all three *EARN* specification variables (GAAP earnings, headline earnings and discretionary earnings) [6]. The differences between earnings measures are only calculated after outliers have been removed. Finally, all models include firm and year fixed effects, while test statistics in regressions are based on robust standard errors clustered by firm and year (Petersen, 2009; Cameron *et al.*, 2011).

3.3 Sample selection and data

The initial sample consists of all dead and live tickers on the JSE in South Africa per the Refinitiv database with reports between 1 January 2010 and 31 December 2019 [7]. Recession events confound value-relevance results (Kane *et al.*, 2015). Therefore, the sample selection period specifically avoids both the global financial crisis of 2007 to 2008 (Badenhorst and Ferreira, 2016) and the global pandemic that started during 2020 (Isba *et al.*, 2020). Data for book value of equity and GAAP earnings are obtained from the database in South African rand (ZAR). The remaining data is hand-collected from publicly available results announcements. Following Howard *et al.* (2019), where the reporting currency is not ZAR, hand-collected data is converted using the database exchange rate.

The sample reconciliation in Panel A of Table 1 shows that the trimmed sample of firms that report both GAAP earnings and headline earnings consists of 2,604 firm-years (406 unique firms). We detect discretionary earnings by scanning results announcements, supported by a text search for specific terms associated with discretionary earnings, namely, "core", "normal", "adjusted", "underlying" and "distributable". Consistent with Howard *et al.* (2019), we use earnings from total operations. We exclude firms that disclose a percentage change in a discretionary earnings measure but do not disclose the absolute number (in total or per share) in the current and previous year.

Some companies disclose multiple discretionary earnings measures. In these instances, we follow Rainsbury *et al.* (2015) and aim to identify a discretionary earnings measure that is intended to be compared to GAAP earnings. We give precedence to discretionary earnings measures that are placed closest to the top of the results announcement (typically in the highlights section) and, simultaneously, to discretionary earnings measures expressed on a per share basis. If multiple discretionary earnings measures meet both criteria, we give precedence to those measures which adjust headline earnings rather than GAAP earnings. Finally, in instances when multiple discretionary earnings measures remain after applying the above criteria, we select the most adjusted measure [8]. After following the aforementioned process and trimming outliers, we detect 846 firm-years (185 unique firms) with discretionary earnings disclosures [9].

4. Descriptive statistics and univariate investigations

4.1 Sample distribution

Panel B of Table 1 displays the sample distribution per industry. The first two columns show that no individual industry represents more than 10% of the full sample, although the combined weight of the two real estate industries is around 12%. For firms that report discretionary earnings, the two real estate industries are more dominant (around 27% of the sample), but no other industry weight is more than 10%. The dominance of the real estate industry is further considered in later investigations.

The final column of Panel B reflects, within each industry, the proportion of firms that report discretionary earnings and shows that, overall, around a third of sample firms report discretionary earnings. This column offers some additional insight as it shows that the propensity to report discretionary earnings differs markedly between industries. The industries with the highest proportion of discretionary earnings are life insurers (98%) and real estate investment trusts (REITs) (92%). Indeed, if all financial services industries (banks, financial services, life insurance and non-life insurance) are considered collectively, they report discretionary earnings around 43% of the time. This offers an indication that the decision-usefulness of GAAP earnings may be suboptimal for these industries.

The sample distribution per year is contained in Panel C of Table 1. It is slightly weighted towards earlier years due to the declining number of JSE-listed firms (Van der

Panel A: Sample reconciliation

Description	No. of firm-years	No. of unique firms
Initial sample from the database	2,974	425
Data items not available on the database	(12)	(1)
Trading suspended during the sample period[a]	(49)	(4)
Steinhoff International Holdings NV[b]	(9)	(1)
Firm not listed for the full sample year[c]	(126)	(6)
Data not available for hand-collection[d]	(23)	(3)
Preliminary sample with GAAP earnings and headline earnings	*2,755*	*410*
Trim outliers at the 1% and 99% levels	(151)	(4)
Final sample with GAAP earnings and headline earnings	*2,604*	*406*

Panel B: Sample distribution per industry

	Total firm-years		Firm-years with discretionary earnings		Discretionary earnings as a proportion of total
Industry	Count	%	Count	%	%
Alternative Energy	3	0.1	0	0.0	0.0
Automobiles and Parts	17	0.7	0	0.0	0.0
Banks	61	2.3	33	3.9	54.1
Beverages	20	0.8	12	1.4	60.0
Chemicals	60	2.3	5	0.6	8.3
Construction and Materials	199	7.6	35	4.1	17.6
Education	21	0.8	9	1.1	42.9
Electricity	4	0.1	0	0.0	0.0
Electronic and Electrical Equipment	49	1.9	2	0.2	4.1
Financial Services	230	8.8	74	8.8	32.2
Fixed Line Telecommunications	60	2.3	30	3.6	50.0
Food Producers	134	5.1	19	2.2	14.2
Food and Drug Retailers	46	1.8	5	0.6	10.9
Forestry and Paper	21	0.8	12	1.4	57.1
General Industrials	120	4.6	38	4.5	31.7
General Retailers	156	6.0	38	4.5	24.4
Health Care Equipment and Services	41	1.6	29	3.4	70.7
Household Goods and Home Construction	5	0.2	0	0.0	0.0
Industrial Engineering	34	1.3	2	0.2	5.9
Industrial Metals and Mining	57	2.2	13	1.5	22.8
Industrial Transportation	83	3.2	26	3.1	31.3
Leisure Goods	14	0.5	1	0.1	7.1
Life Insurance	51	2.0	50	5.9	98.0
Media	44	1.7	3	0.4	6.8
Mining	241	9.3	41	4.9	17.0
Nonlife Insurance	31	1.2	2	0.2	6.5
Oil and Gas Producers	14	0.5	0	0.0	0.0
Personal Goods	12	0.5	0	0.0	0.0
Pharmaceuticals and Biotechnology	34	1.3	19	2.2	55.9
Real Estate Investment Trusts	239	9.2	220	26.0	92.1
Real Estate Investment and Services	76	2.9	11	1.3	14.5
Software and Computer Services	156	6.0	45	5.3	28.8
Support Services	137	5.3	27	3.2	19.7
Technology Hardware and Equipment	34	1.3	9	1.1	26.5
Travel and Leisure	100	3.8	36	4.3	36.0
Total	*2,604*	*100.0*	*846*	*100.0*	*32.5*

Table 1. Sample characteristics (table by authors)

(*continued*)

Panel C: Sample distribution per year

	Total firm-years		Firm-years with discretionary earnings		Discretionary earnings as a proportion of total
Year	Count	%	Count	%	%
2010	293	11.3	66	7.8	22.5
2011	285	10.9	65	7.7	22.8
2012	281	10.8	68	8.0	24.2
2013	264	10.1	70	8.3	26.5
2014	256	9.8	79	9.3	30.9
2015	245	9.4	91	10.8	37.1
2016	248	9.5	99	11.7	39.9
2017	249	9.6	104	12.3	41.8
2018	244	9.4	103	12.2	42.2
2019	239	9.2	101	11.9	42.3
Total	*2 604*	*100.0*	*846*	*100.0*	*32.5*

Panel D: Sample distribution by firm size

	Total firm-years		Firm-years with discretionary earnings		Discretionary earnings as a proportion of total
Decile	Count	%	Count	%	%
1 – smallest unscaled market capitalisation	239	9.2	3	0.4	1.3
2	262	10.1	11	1.3	4.2
3	269	10.3	21	2.5	7.8
4	271	10.4	63	7.4	23.2
5	270	10.4	84	9.9	31.1
6	268	10.3	116	13.7	43.3
7	266	10.2	145	17.1	54.5
8	269	10.3	103	12.2	38.3
9	256	9.8	147	17.4	57.4
10 – largest unscaled market capitalisation	234	9.0	153	18.1	65.4
Total	*2 604*	*100.0*	*846*	*100.0*	*32.5*

Notes: [a]These firms are excluded from the sample, as market values no longer reflect investors' reactions to accounting information when trading in a firm's shares is suspended. [b]Steinhoff International Holdings NV represents a major corporate fraud in South Africa. As the accounting data on the database has been replaced with the restated financial statement data, the historic market value no longer reflects investors' reactions to the accounting information. [c]Where a firm has not been listed for a full sample year, the database adjusts the reported numbers to annual results for that year. This adjustment is not possible for hand-collected earnings data, and therefore, these observations are excluded from the sample. [d]Historic results announcements are sometimes not retained by data providers so that hand-collection of the required data items is not possible

Table 1.

Merwe and Bernard, 2021). Consistent with prior research (Black *et al.*, 2018; Howard *et al.*, 2019), discretionary earnings are more prominent in later sample years. As Howard *et al.* (2019) restrict their sample to firms with analyst forecasts, we have a higher number of firms for the common sample years. Furthermore, their study also excludes real estate firms, which results in a greater proportion of discretionary earnings reported in our study. When real estate firms are excluded, an untabulated analysis reflects very similar proportions for the common sample years. When sample firms are sorted by market capitalisation, Panel D of Table 1 shows that the bottom three deciles report discretionary earnings less than 10% of the time. However, the proportion for all the other deciles is above 20% and increases

steadily through the deciles, indicating relatively widespread use of discretionary earnings by medium and large firms. This analysis agrees with prior research findings that larger firms are more likely to report discretionary earnings (Black *et al.*, 2018; Howard *et al.*, 2019).

4.2 Nature of earnings adjustments

Headline earnings adjustments are prescribed in a circular issued by the South African Institute of Chartered Accountants (South African Institute of Chartered Accountants [SAICA], 2019), which is regularly updated for changes in IFRS. Moreover, each circular contains the superseded rules so that historical requirements remain publicly available. Broadly speaking, the objective of headline earnings is to reflect a measure of a firm's operating results to assist in the calculation of meaningful and comparable price/earnings ratios (South African Institute of Chartered Accountants [SAICA], 2019). Items excluded from headline earnings include, among others, impairment losses (and reversals thereof) on non-financial assets, profits or losses made on the sale of non-financial assets and fair value adjustments on investment property (South African Institute of Chartered Accountants [SAICA], 2019). Panel A of Table 2 categorises the adjustments made by sample firms in terms of the headline earnings circular. Notably, profits or losses on the sale of various assets have the highest frequency among adjustments, followed by impairment losses and reversals.

In contrast to headline earnings, the adjustments made for discretionary earnings are not regulated. Panel B of Table 2 reflects the frequency of some categories of earnings adjustments when sample firms choose to report discretionary earnings. Some of the more frequent adjustments include removing fair value adjustments on financial instruments (which are included in headline earnings) and removing straight-line lease income/expense on operating leases. However, given the nature of discretionary earnings, it is unsurprising that uncategorised "other adjustments", which are frequently company-specific in nature, exhibit the highest frequency (48.7% of firm-years).

4.3 Frequency and descriptions of discretionary earnings

In combination, the first three lines in Panel C of Table 2 show that, having reported discretionary earnings once, more than half of sample firms continue with the practice. By contrast, only 15% of sample firms, representing 3% of sample firm-years, report discretionary earnings only once during the sample period. This suggests that reporting discretionary earnings reflects a continuing practice for most firms rather than an *ad hoc* decision. Panel D of the same table contains an analysis of the terms used to describe discretionary earnings. This analysis reaffirms the dominance of headline earnings in South Africa, as 48% of discretionary earnings measures reflect some adjustment of that number. The dividend-focused discretionary earnings measures relate almost entirely to the real estate industry and represent 27% of firm-years.

4.4 Univariate investigation results

Univariate investigation results are displayed in Table 3 for the full sample (Panel C) and for firm-years where discretionary earnings were reported (Panel D). In both instances, all the earnings measures are significantly correlated with market value of equity at the 1% level. Notably, the correlation with market value of equity is stronger for headline earnings and discretionary earnings compared to GAAP earnings. However, we rely on the results of the multivariate investigations for inferences, which are discussed in the next section.

Adjustments made from GAAP earnings to headline earnings	For all 2,604 sample firm-years		For 846 firm-years with discretionary earnings	
	Count	%	Count	%
Panel A: Frequency of headline earnings adjustments				
Profit or loss on sale of non-financial assets	2,132	81.9	589	69.6
Impairment/reversal of impairment of non-financial assets other than goodwill	1,104	42.4	404	47.8
Profit or loss on sale of subsidiaries, associates and joint ventures	589	22.6	265	31.3
Fair value adjustments on investment property	461	17.7	263	31.1
Financial instrument adjustments (e.g. recycling of reserves)	426	16.4	176	20.8
Impairment of goodwill	389	14.9	145	17.1
Business combination adjustments (e.g. gains on bargain purchase)	343	13.2	182	21.5
Share of adjustments made by associates and joint ventures	280	10.8	153	18.1
Assets classified as held for sale adjustments (e.g. remeasurement)	234	9.0	75	8.9
Impairment/reversal of impairment of subsidiaries, associates and joint ventures	184	7.1	84	9.9
Adjustments specific to the real estate industry (linked debentures)	109	4.2	86	10.2
Recycling of foreign currency translation reserve	109	4.2	39	4.6
Other adjustments	176	6.8	86	10.2

Panel B: Frequency of discretionary earnings adjustments

Adjustments made from headline earnings to discretionary earnings	For 846 firm-years with discretionary earnings	
	Count	%
Fair value adjustments on financial instruments	268	31.7
Costs of restructuring and corporate actions	221	26.1
Straight-line income/expense on operating leases	211	24.9
Consequences from business combinations other than transaction costs that were expensed (e.g. amortisation of intangible assets not previously recognised by the acquiree)	184	21.7
Fair value adjustments on items other than financial instruments (e.g. biological assets)	179	21.2
Share-based payment expense	151	17.8
Adjustments specific to the real estate industry (e.g. antecedent dividends, dividend income accrued after reporting date)	146	17.3
Transaction costs arising from business combinations that were expensed	135	16.0
Reversing/adjusting consolidation (e.g. removing consolidated investment funds)	95	11.2
Imputed interest on financial instruments	80	9.5
Working capital adjustments	66	7.8
Profit or loss on sale of financial instruments	64	7.6
Special tax items (e.g. recognition of previously unrecognised deferred tax assets)	63	7.4
Costs and resolutions of litigation	48	5.7
Other adjustments (frequently company-specific or not detailed)	412	48.7

(*continued*)

Table 2. Frequency analysis of headline earnings and discretionary earnings (table by authors)

Panel C: Frequency of reporting discretionary earnings per sample firm

	Firm-years		Unique firms	
Frequency	Count	%	Count	%
All years included in sample	473	55.9	77	41.6
Every year since first reported	131	15.5	27	14.6
Every year until reporting of discretionary earnings ceased	44	5.2	10	5.4
More than once in one consecutive period within the sample period	57	6.7	16	8.7
Multiple years, not necessarily consecutive	113	13.4	27	14.6
Only once	28	3.3	28	15.1
Total firm-years/unique firms with discretionary earnings	*846*	*100.0*	*185*	*100.0*

Panel D: Terms used to describe discretionary earnings

	Firm-years	
Description includes...	Count	%
Dividend/distributable earnings	*228*	*27.0*
EPRA earnings	6	0.7
Distributable earnings	218	25.8
Other	4	0.5
Earnings	*213*	*25.2*
Adjusted	17	2.0
Cash	2	0.2
Core	24	2.8
Excluding...	13	1.5
Normalised	96	11.4
Underlying	19	2.3
Combination of the above	6	0.7
Other	36	4.3
Headline earnings	*405*	*47.8*
Adjusted	115	13.6
Cash	1	0.1
Core	57	6.7
Excluding...	34	4.0
Normalised	160	18.9
Underlying	0	0.0
Combination of the above	5	0.6
Other	33	3.9
Total firm-years with discretionary earnings	*846*	*100.0*

Notes: Panel D shows the terms that firms use to describe discretionary earnings. "Excluding..." indicates an earnings number which is described by referring to specific items that have been excluded, for example, "Earnings excluding share-based payment expense". "Combination of the above" indicates an earnings number which is described by referring to a combination of other terms, for example, "Core adjusted headline earnings"

Table 2.

5. Results of multivariate investigations

5.1 Incremental value-relevance

Findings for incremental value-relevance of the different earnings measures are presented in Table 4, where the variables are coded starting with headline earnings or discretionary earnings each time. The result is that headline earnings or discretionary earnings plus the adjustment(s) add up to GAAP earnings. For regressions where all sample firms are included, we set discretionary earnings to equal headline earnings (the *COMB* variable) where discretionary earnings are not reported for a specific firm-year. This effectively

Panel A: Full sample: descriptive statistics for unscaled variables

Variables	Mean	Median	Standard deviation	Minimum	Maximum
MV	14,926,290.870	2,013,715.900	37,242,972.830	2,540.000	416,340,378.000
BV	7,358,805.920	1,471,284.000	17,186,201.310	−39,100.000	171,229,000.000
GAAP	953,419.560	129,077.500	2,901,072.100	−5,371,757.000	36,566,000.000
HEAD	960,904.510	139,091.500	2,694,137.130	−2,589,000.000	28,207,000.000
COMB	1,006,033.410	155,888.000	2,753,396.530	−2,589,000.000	28,207,000.000
NEG	0.175	0.000	0.379	0.000	1.000
RECON	0.111	0.000	0.314	0.000	1.000
N	2,604				

Variables	Mean	Median	Standard deviation	Minimum	Maximum
Panel B: Firms that report discretionary earnings: descriptive statistics for unscaled variables					
MV	27,543,972.680	7,653,965.340	48,232,948.440	58,872.000	380,715,608.000
BV	14,687,050.220	5,170,500.000	24,793,987.950	45,299.000	219,910,000.000
GAAP	1,878,606.690	515,814.500	3,881,068.770	−5,371,757.000	36,566,000.000
HEAD	1,839,922.200	523,024.830	3,515,905.920	−1,409,000.000	27,887,000.000
DISC	1,993,049.190	577,287.750	3,670,052.640	−1,436,900.000	27,894,000.000
NEG	0.096	0.000	0.294	0.000	1.000
RECON	0.340	0.000	0.474	0.000	1.000
N	846				

Panel C: Full sample: univariate correlations for scaled variables

Variables	MV	BV	GAAP	HEAD
MV		***0.755	***0.811	***0.857
		(<0.001)	(<0.001)	(<0.001)
BV	***0.902		***0.711	***0.817
	(<0.001)		(<0.001)	(<0.001)
GAAP	***0.825	***0.756		***0.949
	(<0.001)	(<0.001)		(<0.001)
HEAD	***0.833	***0.814	***0.924	
	(<0.001)	(<0.001)	(<0.001)	
N	2,604			

Panel D: Firms that report discretionary earnings: univariate correlations for scaled variables

Variables	MV	BV	GAAP	HEAD	DISC
MV		***0.656	***0.727	***0.761	***0.798
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
BV	***0.834		***0.781	***0.851	***0.878
	(<0.001)		(<0.001)	(<0.001)	(<0.001)
GAAP	***0.802	***0.747		***0.941	***0.909
	(<0.001)	(<0.001)		(<0.001)	(<0.001)
HEAD	***0.859	***0.792	***0.909		***0.976
	(<0.001)	(<0.001)	(<0.001)		(<0.001)
DISC	***0.910	***0.832	***0.854	***0.939	
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	
N	846				

Notes: *MV* is the cum dividend market value of equity, three months after the reporting date; *BV* is the book value of equity; *GAAP* is GAAP earnings; *HEAD* is headline earnings; *DISC* is discretionary earnings; *COMB* is discretionary earnings if reported and headline earnings if not; *NEG* is an indicator variable set to one if *GAAP* is negative and zero otherwise; *RECON* is an indicator variable set to one if a detailed reconciliation of discretionary earnings is placed ahead of the financial statements in the results announcement and zero otherwise. All unscaled variables are reported in thousands of South African rand (ZAR), while scaled variables are scaled by number of shares outstanding. Pearson (Spearman) correlations are reported above (below) the diagonal in Panels C and D. Two-tailed *p*-values are reported in brackets. ***denotes significance at the 1% level

Table 3.
Descriptive statistics (table by authors)

Table 4.
Incremental value-relevance (table by authors)

Panel A: Full sample

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)			No discretionary earnings (Dependent = MV)
Variables	M1	M2	M3	M4	M5	M6	M7
BV	0.265	0.172	0.169	0.300	0.215	0.207	*0.364
	(0.287)	(0.483)	(0.488)	(0.282)	(0.426)	(0.439)	(0.053)
HEAD	***6.625			***6.381			***5.828
	(<0.001)			(<0.001)			(<0.001)
COMB		***7.639	***7.660		***7.215	***7.250	
		(<0.001)	(<0.001)		(<0.001)	(<0.001)	
ADJ_HEAD	0.776	0.631		1.013	0.785		***1.604
	(0.321)	(0.359)		(0.327)	(0.414)		(0.001)
ADJ_COMB		−1.177			−2.105		
		(0.614)			(0.384)		
ADJ_COMB_TOT			0.346			0.391	
			(0.652)			(0.702)	
NEG	**2.767	**2.922	**2.748	2.268	2.216	2.042	1.550
	(0.040)	(0.013)	(0.016)	(0.155)	(0.114)	(0.160)	(0.194)
Fixed effects:							
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	2604	2604	2604	2304	2304	2304	1770
Within R^2	32.0%	36.3%	36.2%	30.4%	34.0%	33.7%	34.8%
HEAD = ADJ_HEAD	***5.389			***3.727			***3.533
	(<0.001)			(<0.001)			(<0.001)
COMB = ADJ_HEAD		***6.549			***4.463		
		(<0.001)			(<0.001)		
COMB = ADJ_COMB		***3.489			***3.442		
		(<0.001)			(0.001)		
ADJ_HEAD = ADJ_COMB		0.772			1.165		
		(0.440)			(0.244)		
COMB = ADJ_COMB_TOT			***6.256			***4.430	
			(<0.001)			(<0.001)	

(*continued*)

Table 4.

Panel B: Firms that report discretionary earnings

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)			Real estate (Dependent = MV)		
Variables	M8	M9	M10	M11	M12	M13	M14	M15	M16
BV	0.255	−0.074	−0.088	0.333	−0.083	−0.089	**0.340	***0.425	**0.474
	(0.342)	(0.800)	(0.762)	(0.361)	(0.814)	(0.803)	(0.020)	(0.006)	(0.011)
HEAD	***5.566			***5.079			**4.282		
	(<0.001)			(<0.001)			(0.014)		
DISC		***8.451	***8.516		***7.843	***7.898		2.321	−0.576
		(<0.001)	(<0.001)		(<0.001)	(<0.001)		(0.309)	(0.667)
ADJ_HEAD	*1.423	**1.225		***0.470	0.144		0.841	0.774	
	(0.078)	(0.013)		(0.002)	(0.357)		(0.386)	(0.415)	
ADJ_DISC		−1.556			−3.185			**4.185	
		(0.500)			(0.110)			(0.012)	
ADJ_DISC_TOT			0.415			−0.022			1.438
			(0.641)			(0.942)			(0.202)
NEG	4.645	*5.015	3.739	−2.266	−1.881	−0.956	*3.970	3.594	4.129
	(0.215)	(0.082)	(0.216)	(0.678)	(0.707)	(0.841)	(0.099)	(0.126)	(0.138)
Fixed effects:									
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	846	846	846	622	622	622	223	223	223
Within R^2	24.3%	33.5%	32.8%	20.6%	28.3%	27.4%	54.5%	55.2%	48.9%
HEAD = ADJ_HEAD	***3.247			***4.926			**2.311		
	(0.001)			(<0.001)			(0.022)		
DISC = ADJ_HEAD		***4.991			***5.613			0.702	
		(<0.001)			(<0.001)			(0.483)	
DISC = ADJ_DISC		***3.423			***4.269			0.674	
		(0.001)			(<0.001)			(0.501)	
ADJ_HEAD = ADJ_DISC		1.266			*1.847			**2.277	
		(0.206)			(0.065)			(0.024)	
DISC = ADJ_DISC_TOT			***4.669			***5.980			1.235
			(<0.001)			(<0.001)			(0.218)

Notes: [a]Following prior research (Venter *et al.*, 2014), subsamples are selected from the main sample before trimming (2,755 observations in Table 1) and are individually trimmed thereafter. The result is that the sum of observations for the subsamples does not always add up exactly to the number of observations in the main sample. Results are from estimating model (2). The dependent variable is *MV,* the cum dividend market value of equity, three months after the reporting date; *BV* is the book value of equity; *HEAD* is headline earnings; *DISC* is discretionary earnings; *COMB* is discretionary earnings if reported, and headline earnings if not; *ADJ_HEAD* = GAAP earnings – *HEAD*; *ADJ_DISC (ADJ_COMB)* = *HEAD* – *DISC(COMB); ADJ_DISC_TOT (ADJ_COMB_TOT)* = GAAP earnings – *DISC (COMB)*; *NEG* is an indicator variable set to one if GAAP earnings are negative and zero otherwise. All variables, other than indicator variables, are scaled by number of shares outstanding. Two-tailed *p*-values based on robust standard errors clustered by firm and year (Petersen, 2009; Cameron *et al.*, 2011) are reported in brackets. An adjustment is made for individual variables where the variance-covariance matrix is not positive-semidefinite. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively

reflects an assumption that firms that choose not to report discretionary earnings view either GAAP earnings or headline earnings as the most decision-useful measure of their performance. In Panel A, Columns M1 to M6, all the earnings adjustment variables are insignificant. This suggests that headline earnings do not exclude any value-relevant information that is present in GAAP earnings. More importantly, it also implies that discretionary earnings do not exclude any value-relevant information that is present in either of the other earnings measures. The separate disclosure of the adjustments appears to convey valuable information to investors as the coefficients of the various earnings measures and earnings adjustments differ significantly at the 1% level.

However, when we separately consider firms that do not report discretionary earnings (Column M7 of Panel A), *ADJ_HEAD* is significant ($p = 0.001$). This suggests that headline earnings for these firms exclude value-relevant information which is reported within GAAP earnings. If GAAP earnings include all value-relevant information for these firms, it would explain why they do not choose to disclose discretionary earnings. However, separately disclosing the headline earnings adjustments still contains valuable information, as the coefficient of *ADJ_HEAD* differs significantly from that of *HEAD* ($p < 0.001$).

In Panel B, results are presented when we limit the sample to those firms that report discretionary earnings. Outside the real estate subsample, *ADJ_HEAD* is significant when headline earnings represent the base earnings number (Columns M8 and M11). This implies that headline earnings exclude value-relevant information (reported within GAAP earnings) for these firms. Nevertheless, these firms report discretionary earnings for which the adjustment to GAAP earnings (*ADJ_DISC_TOT*) is insignificant (Columns M10 and M13). By implication, discretionary earnings do not exclude value-relevant information that is reported within GAAP earnings. When we separate the total discretionary earnings adjustment into *ADJ_HEAD* and *ADJ_DISC* components (Columns M9 and M12), *ADJ_DISC* remains insignificant, and we conclude that discretionary earnings also do not exclude value-relevant information reported within headline earnings. However, there is some evidence that the separate disclosure provides valuable information to investors, as the coefficients of *ADJ_HEAD* and *ADJ_DISC* differ significantly in Column M12 ($p = 0.065$).

For real estate firms, discretionary earnings are not value-relevant (*DISC* is insignificant in Columns M15 and M16) and there is some suggestion that discretionary earnings exclude value-relevant information that is contained within headline earnings, with *ADJ_DISC* being significant in Column M15 ($p = 0.012$). This could reflect the fact that discretionary earnings for this industry are frequently focused on calculating the amount that can be paid out as a dividend.

However, while the above results provide some insight, it is uncertain which earnings measure provides the best summative measure of performance (i.e. independent of the other earnings measures). For this, we rely on tests of relative value-relevance, discussed in the next subsection.

5.2 Relative value-relevance

To assess relative value-relevance, we compare model fit using a Vuong (1989) test [10]. Again, we set discretionary earnings to equal headline earnings (the *COMB* variable), where discretionary earnings are not reported for a specific firm-year. The Vuong (1989) tests in Panel A of Table 5 reveal in Column M2, consistent with Venter *et al.* (2014), that headline earnings are more value-relevant than GAAP earnings ($p = 0.005$). Discretionary earnings (*COMB*) are more value-relevant than both GAAP earnings ($p < 0.001$) and headline

Table 5. Relative value-relevance (table by authors)

Panel A: Full sample

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)			No discretionary earnings (Dependent = MV)	
Variables	M1	M2	M3	M4	M5	M6	M7	M8
BV	**0.486	0.264	0.169	**0.527	0.292	0.205	***0.527	*0.349
	(0.021)	(0.295)	(0.491)	(0.025)	(0.293)	(0.443)	(0.006)	(0.060)
GAAP	***4.371			***4.451			***4.238	
	(<0.001)			(<0.001)			(<0.001)	
HEAD		***6.602			***6.378			***5.878
		(<0.001)			(<0.001)			(0.001)
COMB			***7.648			***7.250		
			(<0.001)			(<0.001)		
NEG	***4.483	*1.864	**2.314	**3.689	1.216	1.606	*1.909	0.450
	(0.006)	(0.060)	(0.046)	(0.020)	(0.307)	(0.227)	(0.074)	(0.677)
Fixed effects:								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	2 604	2 604	2 604	2 304	2 304	2 304	1 770	1 770
Within R^2	25.5%	31.8%	36.1%	25.7%	30.1%	33.6%	31.0%	33.9%
Vuong test:								
– vs M1		***–2.843	***–4.129		**–2.109	***–3.134		–1.114
		(0.005)	(<0.001)		(0.035)	(0.002)		(0.265)
– vs M2			**–2.115			*–1.959		
			(0.035)			(0.050)		

Panel B: Firms that report discretionary earnings

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)			Real estate (Dependent = MV)		
Variables	M9	M10	M11	M12	M13	M14	M15	M16	M17
BV	*0.471	0.255	–0.086	**0.853	0.351	–0.089	**0.382	***0.359	***0.599
	(0.074)	(0.359)	(0.769)	(0.040)	(0.335)	(0.802)	(0.027)	(0.009)	(0.001)
GAAP	***3.823			1.560			1.517		
	(<0.001)			(0.194)			(0.180)		

(*continued*)

Table 5.

HEAD		***5.553			***4.993			**4.495	
		(0.001)			(0.001)			(0.024)	
DISC			***8.509			***7.900			**−3.236
			(<0.001)			(<0.001)			(0.048)
NEG	8.062	1.149	2.583	−6.652	−3.363	−0.902	4.541	2.214	0.407
	(0.117)	(0.774)	(0.486)	(0.450)	(0.523)	(0.860)	(0.128)	(0.210)	(0.801)
Fixed effects:									
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	846	846	846	622	622	622	223	223	223
Within R^2	21.4%	23.7%	32.7%	15.2%	20.4%	27.4%	48.0%	52.0%	39.6%
Vuong test:									
− vs M1		−0.963	***−2.634		*−1.737	***−2.678		−0.741	1.033
		(0.336)	(0.009)		(0.083)	(0.008)		(0.460)	(0.303)
− vs M2			**−2.104			**−1.995			1.573
			(0.036)			(0.046)			(0.117)

Notes: [a]Following prior research (Venter *et al.*, 2014), subsamples are selected from the main sample before trimming (2,755 observations in Table 1) and are individually trimmed thereafter. The result is that the sum of observations for the subsamples does not always add up exactly to the number of observations in the main sample. Results are from estimating model (2) with *ADJUST* omitted. The dependent variable is *MV,* the cum dividend market value of equity, three months after the reporting date; *BV* is the book value of equity; *GAAP* is GAAP earnings; *HEAD* is headline earnings; *DISC* is discretionary earnings; *COMB* is discretionary earnings if reported and headline earnings if not; *NEG* is an indicator variable set to one if *GAAP* is negative and zero otherwise. All variables, other than indicator variables, are scaled by number of shares outstanding. Two-tailed *p*-values based on robust standard errors clustered by firm and year (Petersen, 2009; Cameron *et al.*, 2011) are reported in brackets. An adjustment is made for individual variables where the variance-covariance matrix is not positive-semidefinite. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively. The Vuong test (Vuong, 1989) is directional so that a negative test statistic indicates that the second model is superior to the first

earnings (p = 0.035), as indicated in Column M3, even though only around a third of firm-years include discretionary earnings (cf. Table 1).

Panel A also shows that results are qualitatively similar when we exclude real estate firms (Columns M4 to M6). However, the final columns of this panel (M7 and M8) show that when we exclude firms that report discretionary earnings from the sample, headline earnings do not offer an improvement in value-relevance compared to GAAP earnings (p = 0.265). This is expected, given that the incremental value-relevance tests show that headline earnings exclude value-relevant information for firms that do not report discretionary earnings. Results (untabulated) are qualitatively unchanged if we simultaneously exclude real estate firms (p = 0.279). By implication, GAAP earnings are a superior measure of firm performance (compared to headline earnings) for this subsample of firms.

In Panel B of Table 5, we limit the sample to firms that report discretionary earnings. For these firms, headline earnings still do not offer an improvement in value-relevance over GAAP earnings in Column M10 (p = 0.336). However, discretionary earnings are significantly more value-relevant than both GAAP earnings (p = 0.009) and headline earnings (p = 0.036) in Column M11. In combination with earlier results, this suggests that firms report discretionary earnings only when GAAP earnings and headline earnings are suboptimal measures of firm performance. We also consider results where real estate firms are excluded from the sample and results in Column M13 show that headline earnings outperform GAAP earnings (p = 0.083). Moreover, discretionary earnings continue to be more value-relevant than both GAAP and headline earnings at the 5% level or better, as indicated in Column M14. We also separately consider the real estate industry in Columns M15 to M17 and find no significant difference in value-relevance between the different earnings measures at conventional levels. Overall, these results, therefore, suggest that, outside the real estate industry, discretionary earnings represent the optimal summative performance measure.

5.3 Evaluation of coefficients

Earnings coefficients in the preceding regressions are generally significant, positive and greater than one, which is in line with theoretical predictions for variables that represent unrecognised assets (Barth *et al.*, 2001; Aledo Martinez *et al.*, 2020). The exception is the real estate industry, where some earnings coefficients are negative or insignificant. A possible explanation is that book values are more important than earnings in an asset-driven industry. In the case of discretionary earnings for the real estate industry, these earnings tend to relate closely to the expected distribution. As REITs are legally required to pay out the majority of their earnings, their distributions are priced as a decrease in cash (Hill *et al.*, 2012), which explains the negative sign of discretionary earnings in Panel B of Table 5.

In the case of book value of equity, the coefficient is often lower than its theoretical level of one (Aledo Martinez *et al.*, 2020) and insignificant whenever headline earnings or discretionary earnings elements are included. Possibly, the adjustments to arrive at headline or discretionary earnings overlap with information contained within book value of equity. Notably, Rainsbury *et al.* (2015) also find insignificant book values when they investigate the value-relevance of discretionary earnings in New Zealand. A second possibility is that fixed effects fully capture the variance within book values (Kallapur and Kwan, 2004) and excluding firm fixed effects results in significance for book values in some of our models. However, coefficients can also differ from theoretical expectations due to the inherent measurement error in accounting data (Barth, 1991, 1994) or sample-specific reasons. Therefore, we conclude that a full investigation of the reasons behind the reported coefficients are beyond the scope of this paper.

5.4 Placement of discretionary earnings reconciliation

Table 6 contains results around the placement of discretionary earnings reconciliations [11]. In Panel A, discretionary earnings are set as equal to headline earnings (the *COMB* variable), where discretionary earnings are not reported. Apart from real estate firms, the interaction between *RECON* and discretionary earnings is generally negative and significant, as reflected in Panels A and B. In Panel B, the interaction between *RECON* and GAAP earnings is also negative and significant for firms that report discretionary earnings [12]. Therefore, we conclude that placing discretionary earnings reconciliations ahead of the financial statements in results announcements is significantly associated with lower value-relevance for GAAP earnings and discretionary earnings.

Therefore, where earnings are less decision-useful overall, firms attempt to use available tools to boost the credibility of discretionary earnings. Firms are aware that the presence of an earnings reconciliation increases the value-relevance of discretionary earnings (Zhang and Zheng, 2011). While Bowen *et al.* (2005) also find that earlier placement of discretionary earnings information is associated with lower GAAP earnings value-relevance, we are the first to our knowledge to present this finding specifically for the earnings reconciliation. Moreover, we add to their findings by showing that firms are more likely to use available tools to boost the credibility of discretionary earnings when their earnings are less value-relevant than those of other firms [13].

5.5 Fixed effects and clustering

A Hausman test detects a preference for a fixed effects model (Onali *et al.*, 2017) and preceding models include firm and year fixed effects, with standard errors clustered by firm and year (Petersen, 2009; Cameron *et al.*, 2011). However, Conley *et al.* (2018) suggest that clustering by industry controls for industry shocks that correlate across years and deHaan (2021) argues that industry fixed effects reduce the risk of Type I errors (as industry correlates with both the dependent and independent variables while remaining constant within the firm and year fixed effects groups).

Therefore, we rerun all regressions where industry fixed effects are added to the model and standard errors are clustered by firm, year and industry. Although small differences are noted, inferences remain qualitatively unchanged, apart from the results for reconciliation placement. Here, we detect an increased number of instances where placing the discretionary earnings reconciliation closer to the top of the results announcement is significantly associated with lower earnings value-relevance, including instances where this finding holds for headline earnings.

6. Summary and conclusion

This paper contributes to the existing literature by directly investigating the value-relevance of discretionary earnings in a unique environment where headline earnings already exhibit the characteristics which make discretionary earnings decision-useful. We conclude that discretionary earnings remain the most value-relevant earnings measure, implying that the most decision-useful earnings reflect unique industry or firm characteristics. The value of regulating the content of discretionary earnings is, therefore, surpassed by other considerations. This is an important finding in a context where increasing use of discretionary earnings has led to greater interest in the regulation thereof (Black *et al.*, 2018; Howard *et al.*, 2019). Finally, our investigations also suggest that firms use the placement of earnings reconciliations to boost the credibility of discretionary earnings when their earnings value-relevance is comparatively low. The placement of the

Table 6. Placement of reconciliation of discretionary earnings (table by authors)

Panel A: Full sample

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)		
Variables	M1	M2	M3	M4	M5	M6
BV	**0.514	0.287	0.198	**0.561	0.319	0.237
	(0.014)	(0.255)	(0.421)	(0.018)	(0.255)	(0.380)
GAAP	***4.471			***4.558		
	(<0.001)			(<0.001)		
HEAD		***6.689			***6.454	
		(<0.001)			(<0.001)	
COMB			***7.819			***7.395
			(<0.001)			(<0.001)
RECON	2.060	1.893	1.292	2.676	2.061	1.297
	(0.522)	(0.435)	(0.606)	(0.442)	(0.418)	(0.622)
RECON*GAAP	−1.138			−1.374		
	(0.208)			(0.155)		
RECON*HEAD		−0.918			*−1.048	
		(0.127)			(0.090)	
RECON*COMB			*−1.226			*−1.305
			(0.062)			(0.059)
NEG	***4.390	*1.844	**2.340	***3.501	1.141	1.583
	(0.007)	(0.067)	(0.047)	(0.025)	(0.348)	(0.243)
Fixed effects:						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	2 604	2 604	2 604	2 304	2 304	2 304
Within R^2	26.0%	32.1%	36.7%	26.3%	30.5%	34.3%

Panel B: Firms that report discretionary earnings

	All firms (Dependent = MV)			Excluding real estate (Dependent = MV)			Real estate (Dependent = MV)		
Variables	M7	M8	M9	M10	M11	M12	M13	M14	M15
BV	*0.444	0.247	−0.105	*0.686	0.383	−0.567	**0.383	**0.351	***0.597
	(0.097)	(0.386)	(0.720)	(0.079)	(0.335)	(0.877)	(0.030)	(0.011)	(0.001)
GAAP	***4.273			***4.110			1.565		
	(<0.001)			(<0.001)			(0.173)		

(*continued*)

Table 6.

HEAD		***5.667			***5.943			**4.738	
		(0.002)			(0.003)			(0.024)	
DISC			***9.466			***9.538			*–3.184
			(<0.001)			(<0.001)			(0.067)
RECON	1.568	1.041	3.481	**7.437	5.516	7.441	1.390	2.281	0.343
	(0.671)	(0.790)	(0.408)	(0.021)	(0.331)	(0.273)	(0.402)	(0.372)	(0.928)
RECON*GAAP	*–1.517			***–3.574			**–1.428		
	(0.086)			(<0.001)			(0.014)		
RECON*HEAD		–1.648			–2.961			–3.460	
		(0.175)			(0.106)			(0.154)	
RECON*DISC			*–2.937			*–4.130			–1.297
			(0.062)			(0.062)			(0.616)
NEG	*8.215	0.967	2.652	–0.272	–2.940	0.241	4.521	2.098	0.239
	(0.093)	(0.801)	(0.432)	(0.961)	(0.524)	(0.952)	(0.141)	(0.220)	(0.869)
Fixed effects:									
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N[a]	846	846	846	622	622	622	223	223	223
Within R^2	22.2%	24.5%	34.9%	20.5%	22.3%	31.1%	48.9%	53.2%	40.1%

Notes: [a]Following prior research (Venter *et al.*, 2014), subsamples are selected from the main sample before trimming (2,755 observations in Table 1) and are individually trimmed thereafter. The result is that the sum of observations for the subsamples does not always add up exactly to the number of observations in the main sample. Results are from estimating model (3). The dependent variable is *MV,* the cum dividend market value of equity, three months after the reporting date; *BV* is the book value of equity; *GAAP* is GAAP earnings; *HEAD* is headline earnings; *DISC* is discretionary earnings; *COMB* is discretionary earnings if reported and headline earnings if not; *RECON* is an indicator variable set to one if a detailed reconciliation of discretionary earnings is placed ahead of the financial statements in the results announcement and zero otherwise; *NEG* is an indicator variable set to one if GAAP earnings are negative and zero otherwise. All variables, other than indicator variables, are scaled by number of shares outstanding. Two-tailed *p*-values based on robust standard errors clustered by firm and year (Petersen, 2009; Cameron *et al.*, 2011) are reported in brackets. An adjustment is made for individual variables where the variance-covariance matrix is not positive-semidefinite. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively

discretionary earnings reconciliation, therefore, communicates management's view of the decision-usefulness of a firm's earnings.

The prior literature on non-GAAP information is vast, and the value-relevance of discretionary earnings is only one aspect thereof (Coulton *et al.*, 2016; Marques, 2017). Therefore, it is not possible to address all relevant aspects in a single paper. For example, future research might want to consider if firms that are required to report headline earnings choose to report discretionary earnings for the same reasons that firms in other countries do. Furthermore, it is unclear whether discretionary earnings offer superior *long-term* predictive power compared to headline earnings. These and other questions we leave for future research.

Notably, the nature of our research question requires the unique context of South Africa, and therefore findings may be country-specific or reflect characteristics particular to our sample. Finally, we use only one source where companies may choose to report discretionary earnings, namely, results announcements. Findings may be affected if additional management communications (e.g. results presentations) were to be included in the analyses.

Notes

1. Information is value-relevant if it reflects a predicted association with market value of equity (Barth *et al.*, 2001). It is a measure of the decision-usefulness of the information.
2. A full review of the discretionary earnings literature is beyond the scope of this paper, but several comprehensive reviews are available, including Coulton *et al.* (2016), Marques (2017) and Black *et al.* (2018).
3. We use cum dividend market value, calculated by adjusting market value at reporting date with a firm-specific total return index to control for dividends and corporate actions.
4. There are other ways in prior research to control for the impact of loss-making firms. However, our relative value-relevance investigations use a Vuong (1989) test, which is robust to the potential impact of our research design choice on inferences.
5. We code both numerical reconciliations and detailed descriptions of adjustments as a reconciliation.
6. Following Venter *et al.* (2014), when our analyses require stratification, we first stratify the preliminary sample (2,755 observations in Table 1) before trimming each subsample. The result of this is that the sum of observations for the subsamples does not always add up exactly to the total observations of the main sample.
7. The Refinitiv database is the iteration of Datastream/Worldscope at the time of writing.
8. Practically, this frequently means selecting the discretionary earnings measure at the bottom of the earnings reconciliation. For example, a firm might reconcile headline earnings to "normalised headline earnings" as a subtotal and then provide further adjustments to arrive at "core normalised headline earnings". For the purposes of our study, we capture "core normalised headline earnings" as the discretionary earnings measure.
9. Applying the selection criteria also ensures that most of the discretionary earnings measures are after tax (for example, earnings before interest, tax, depreciation and amortisation is typically not expressed per share and therefore discarded). As a result, only 17 firm-years with discretionary earnings that are not after-tax numbers are included in the sample of 846 firm-years. As unique characteristics of the real estate industry arguably mean that their discretionary earnings measures are pre-tax numbers (e.g. real estate investment trusts often do not pay income tax), analyses consider the impact of excluding this industry.

10. The Vuong (1989) test statistic is directional so that a negative sign reflects improvement of the second model over the first.
11. The sample stratification that is omitted (firm-years where no discretionary earnings were reported) is not relevant to this analysis.
12. No earnings reconciliation is present in the results announcement for 28 firm-years. When excluding these firm-years, reconciliation placement no longer reflects lower GAAP earnings value-relevance for model M10 in Table 6. However, all other inferences remain qualitatively unchanged.
13. Prior research offers limited insight into the factors which simultaneously impact earnings value-relevance and emphasis of discretionary earnings (Bowen *et al.*, 2005). Therefore, it is possible that reconciliation placement (emphasis) is a proxy for an underlying factor which explains lower earnings value-relevance.

References

Aledo Martinez, J., Garcia Lara, J.M., Gonzalez Perez, M.T. and Grambovas, C.A. (2020), "An empirical assessment of proposed solutions for resolving scale problems in value relevance accounting research", *Accounting and Finance*, Vol. 60 No. 4, pp. 3905-3933.

Badenhorst, W.M. and Ferreira, P.H. (2016), "The financial crisis and the value-relevance of recognised deferred tax assets", *Australian Accounting Review*, Vol. 26 No. 3, pp. 291-300.

Badenhorst, W.M., Brümmer, L.M. and de Wet, J.H.V. (2015), "The value-relevance of disclosed summarised financial information of listed associates", *Journal of International Accounting, Auditing and Taxation*, Vol. 24, pp. 1-12.

Ball, R., Jayaraman, S. and Shivakumar, L. (2012), "Audited financial reporting and voluntary disclosure as complements: a test of the confirmation hypothesis", *Journal of Accounting and Economics*, Vol. 53 Nos 1/2, pp. 136-166.

Barth, M.E. (1991), "Relative measurement errors among alternative pension asset and liability measures", *Accounting Review*, Vol. 66 No. 3, pp. 433-463.

Barth, M.E. (1994), "Fair value accounting: Evidence from investment securities and the market valuation of banks", *Accounting Review*, Vol. 69 No. 1, pp. 1-25.

Barth, M.E. and Clinch, G. (2009), "Scale effects in capital markets-based accounting research", *Journal of Business Finance and Accounting*, Vol. 36 Nos 3/4, pp. 253-288.

Barth, M.E., Beaver, W.H. and Landsman, W.R. (2001), "The relevance of the value relevance literature for financial accounting standard setting: another view", *Journal of Accounting and Economics*, Vol. 31 Nos 1/3, pp. 77-104.

Barton, J., Hansen, T.B. and Pownall, G. (2010), "Which performance measures do investors around the world value the most – and why?", *The Accounting Review*, Vol. 85 No. 3, pp. 753-789.

Baumker, M., Biggs, P., McVay, S. and Pierce, J. (2014), "The disclosure of non-GAAP earnings following regulation G: an analysis of transitory gains", *Accounting Horizons*, Vol. 28 No. 1, pp. 77-92.

Black, D.E., Christensen, T.E., Ciesielski, J.T. and Whipple, B.C. (2018), "Non-GAAP reporting: evidence from academia and current practice", *Journal of Business Finance and Accounting*, Vol. 45 Nos 3/4, pp. 259-294.

Black, D.E., Christensen, T.E., Ciesielski, J.T. and Whipple, B.C. (2021), "Non-GAAP earnings: a consistency and comparability crisis?", *Contemporary Accounting Research*, Vol. 38 No. 3, pp. 1712-1747.

Bowen, R.M., Davis, A.K. and Matsumoto, D.A. (2005), "Emphasis on pro forma versus GAAP earnings in quarterly press releases: determinants, SEC intervention, and market reactions", *The Accounting Review*, Vol. 80 No. 4, pp. 1011-1038.

Brown, N., Christensen, T., Elliott, W. and Mergenthaler, R. (2012), "Investor sentiment and pro forma earnings disclosures", *Journal of Accounting Research*, Vol. 50 No. 1, pp. 1-40.

Cameron, A.C., Gelbach, J.B. and Miller, D.L. (2011), "Robust inference with multiway clustering", *Journal of Business and Economic Statistics*, Vol. 29 No. 2, pp. 238-249.

Choi, Y.S., Lin, S., Walker, M. and Young, S. (2007), "Disagreement over the persistence of earnings components: evidence on the properties of management-specific adjustments to GAAP earnings", *Review of Accounting Studies*, Vol. 12 No. 4, pp. 595-622.

Conley, T., Gonçalves, S. and Hansen, C. (2018), "Inference with dependent data in accounting and finance applications", *Journal of Accounting Research*, Vol. 56 No. 4, pp. 1139-1203.

Coulton, J., Ribeiro, A., Shan, Y. and Taylor, S. (2016), "The rise and rise of non-GAAP disclosure: a survey of Australian practice and its implications", *Chartered Accountants Australia and New Zealand And Center for International Finance and Regulation*.

Cready, W., Lopez, T.J. and Sisneros, C.A. (2010), "The persistence and market valuation of recurring nonrecurring items", *The Accounting Review*, Vol. 85 No. 5, pp. 1577-1615.

deHaan, E. (2021), "Using and interpreting fixed effects models", available at SSRN 3699777, (accessed 5 March 2022).

Dichev, I.D. (2008), "On the balance sheet-based model of financial reporting", *Accounting Horizons*, Vol. 22 No. 4, pp. 453-470.

Doyle, J.T., Lundholm, R.J. and Soliman, M.T. (2003), "The predictive value of expenses excluded from pro forma earnings", *Review of Accounting Studies*, Vol. 8 Nos 2/3, pp. 145-174.

Hayn, C. (1995), "The information content of losses", *Journal of Accounting and Economics*, Vol. 20 No. 2, pp. 125-153.

Hill, M.D., Kelly, G.W. and Hardin, W.G. (2012), "Market value of REIT liquidity", *The Journal of Real Estate Finance and Economics*, Vol. 45 No. 2, pp. 383-401.

Howard, M., Maroun, W. and Garnett, R. (2019), "Misuse of non-mandatory earnings reporting by companies: Evidence from an emerging economy", *Meditari Accountancy Research*, Vol. 27 No. 1, pp. 125-146.

International Accounting Standards Board (IASB) (2014), *IAS 33, Earnings per Share (Amended)*, IFRS Foundation, London.

International Accounting Standards Board (IASB) (2019), *Exposure Draft ED/2019/7, General Presentation and Disclosures*, IFRS Foundation, London.

Isba, R., Edge, R., Jenner, R., Broughton, E., Francis, N. and Butler, J. (2020), "Where have all the children gone? Decreases in paediatric emergency department attendances at the start of the COVID-19 pandemic of 2020", *Archives of Disease in Childhood*, Vol. 105 No. 7, pp. 704-704.

Kallapur, S. and Kwan, S.Y. (2004), "The value relevance and reliability of brand assets recognized by UK firms", *The Accounting Review*, Vol. 79 No. 1, pp. 151-172.

Kane, G.D., Leece, R.D., Richardson, F.M. and Velury, U. (2015), "The impact of recession on the value-relevance of accounting information", *Australian Accounting Review*, Vol. 25 No. 2, pp. 185-191.

Kyung, H., Lee, H. and Marquardt, C. (2019), "The effect of voluntary clawback adoption on non-GAAP reporting", *Journal of Accounting and Economics*, Vol. 67 No. 1, pp. 175-201.

Lennox, C.S. and Pittman, J.A. (2011), "Voluntary audits versus mandatory audits", *The Accounting Review*, Vol. 86 No. 5, pp. 1655-1678.

Marques, A. (2017), "Non-GAAP earnings: international overview and suggestions for future research", *Meditari Accountancy Research*, Vol. 25 No. 3, pp. 318-335.

Matshoba, A. (2022), "Clicks reports 26% rise in half-year profits", available at: www.moneyweb.co.za/news/companies-and-deals/clicks-reports-26-rise-in-half-year-profits/ (accessed 30 June 2022).

Mey, M.T. and Lamprecht, C. (2021), "The association between EBITDA reconciliation quality and opportunistic disclosure", *South African Journal of Accounting Research*, Vol. 35 No. 2, pp. 87-110.

Ohlson, J. (1995), "Earnings, book values and dividends in security valuation", *Contemporary Accounting Research*, Spring, Vol. 11 No. 2, pp. 661-687.

Onali, E., Ginesti, G. and Vasilakis, C. (2017), "How should we estimate value-relevance models? Insights from European data", *The British Accounting Review*, Vol. 49 No. 5, pp. 460-473.

Petersen, M.A. (2009), "Estimating standard errors in finance panel data sets: comparing approaches", *Review of Financial Studies*, Vol. 22 No. 1, pp. 435-480.

Rainsbury, L., Hart, C. and Buranavityawut, N. (2015), "GAAP-adjusted earnings disclosures by New Zealand companies", *Pacific Accounting Review*, Vol. 27 No. 3, pp. 329-352.

Reuters (2022), "South Africa's capitec profit surges 84% as COVID woes ease", available at: www.reuters.com/world/africa/safricas-capitec-profit-surges-84-covid-woes-ease-2022-04-12/

Ribeiro, A., Shan, Y. and Taylor, S. (2019), "Non-GAAP earnings and the earnings quality trade-off", *Abacus*, Vol. 55 No. 1, pp. 6-41.

South African Institute of Chartered Accountants (SAICA) (2019), *Circular 1/2019, Headline Earnings*, SAICA, Johannesburg.

Stainbank, L. and Harrod, K. (2007), "Headline earnings per share: financial managers' perceptions and actual disclosure practices in South Africa", *Meditari Accountancy Research*, Vol. 15 No. 1, pp. 91-113.

Van der Merwe, N. and Bernard, S. (2021), "Our take on the 'shrinking' JSE", available at: www.allangray.co.za/latest-insights/local-investing/our-take-on-the-shrinking-jse/ (accessed 30 June 2022).

Veith, S. and Werner, J.R. (2014), "Comparative value-relevance studies: country differences versus specification effects", *The International Journal of Accounting*, Vol. 49 No. 3, pp. 301-330.

Venter, E.R., Cahan, S.F. and Emanuel, D. (2013), "Mandatory earnings disaggregation and the persistence and pricing of earnings components", *The International Journal of Accounting*, Vol. 48 No. 1, pp. 26-53.

Venter, E.R., Emanuel, D. and Cahan, S.F. (2014), "The value relevance of mandatory non-GAAP earnings", *Abacus*, Vol. 50 No. 1, pp., pp. 1-24.

Vuong, Q.H. (1989), "Likelihood ratio tests for model selection and non-nested hypotheses", *Econometrica*, Vol. 57 No. 2, pp. 307-333.

Young, S. (2014), "The drivers, consequences and policy implications of non-GAAP earnings reporting", *Accounting and Business Research*, Vol. 44 No. 4, pp. 444-465.

Zhang, H. and Zheng, L. (2011), "The valuation impact of reconciling pro forma earnings to GAAP earnings", *Journal of Accounting and Economics*, Vol. 51 Nos 1/2, pp. 186-202.

Corresponding author
Wessel M. Badenhorst can be contacted at: wessel.badenhorst@up.ac.za