

Misuse of non-mandatory earnings reporting by companies

Evidence from an emerging economy

Misuse of non-mandatory earnings reporting

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Abstract

Purpose – The purpose of this paper is to examine the possibility of South African companies listed on the Johannesburg Stock Exchange (JSE) using adjusted earnings as a part of an impression expectation management strategy focused on demonstrating how reported earnings measures meeting or beating analysts' earnings forecasts.

Design/methodology/approach – A multiple response analysis approach is used. Earnings adjustments are coded according to a defined typology and assessed for their status as either valid or invalid. The number of occurrences of adjusted earnings measures over a five year period (2010-2014) meeting or beating analyst forecasts is calculated.

Findings – The use of adjusted earnings by JSE listed companies is a common occurrence. There is evidence to suggest that this is used part of an impression expectation management strategy. Most of the adjustments are invalid. When otherwise valid adjustments are used in a particular year, these are frequently repeated, and when adjusted earnings are reported, these normally exceed analysts' forecasts.

Research limitations/implications – The paper is based on a relatively small sample from a single jurisdiction and limited time period. Nevertheless, the findings point to the need to revisit how financial performance is measured and reported, evaluate additional regulation to protect investors and understand in more detail exactly how and why companies use adjusted earnings as an impression expectation management tool.

Originality/value – The paper adds to the limited body of research on performance reporting outside of the USA and Europe. It also examines the use of adjusted earnings in a unique setting where, in addition to IFRS numbers, companies are required to report a mandatory adjusted earnings figure (headline earnings).

Keywords Financial reporting, Earnings, Headline earnings

Paper type Research paper

1. Introduction

Company earnings figures are among the most important financial measures of firm performance (Jerris, 1998; Bhattacharyya *et al.*, 2003). In this paper, we concentrate on earnings reported by South African listed companies. Briefly, these companies are required by the Johannesburg Stock Exchange (JSE) to report earnings determined according to International Financial Reporting Standards (IFRS) (a GAAP measure) as well as "headline



earnings". This makes South Africa unique because it appears to be the only jurisdiction where reporting on IFRS and a "headline" measure of earnings are required (Venter *et al.*, 2014)[1].

Headlines earnings are conceptually similar to pro-forma earnings reported in the USAA in the sense that certain items are excluded from the IFRS-based earnings to arrive at the headline amount (JSE, 2015). The adjustments processed to determine headline earnings are, however, prescribed in a circular issued by the South African Institute of Chartered Accountants (SAICA, 2013). In this way, while headline earnings are an adjusted IFRS-based amount, the calculation of these adjustments is codified in a similar way to IFRS. The reporting of headline earnings is also subject to audit (Venter *et al.*, 2014).

Both GAAP and headline earnings are typically presented as a per share figure and may be either "basic" or "diluted". The aim is to provide current and future providers of capital with a single measure of performance which is easy to use and is comparable among firms and over time (SAICA, 2013). Nevertheless, some have argued that these earnings figures include non-cash, non-recurring or unusual items with the result that they are not an indication of long-term or maintainable cash flows necessary for investment decision-making (Bradshaw and Sloan, 2002). This has led to widespread use of a number of additional non-GAAP earnings figures (Abarbanel and Lehavy, 2007) which claim to provide more useful information to users (Doyle *et al.*, 2013).

These non-GAAP or adjusted earnings have a variety of names including, for example, "normalised", "core", "recurring" or "maintainable" earnings (Wallace, 2002; Bhattacharyaa *et al.*, 2003; Marques, 2010). The prior research has found that these adjusted earnings figures are generally more value-relevant than GAAP earnings (Bradshaw and Sloan, 2002; Bhattacharyaa *et al.*, 2003; Doyle *et al.*, 2013). Non-GAAP earnings are, however, based on management discretion, making them less comparable and subject to manipulation. As a result, regulators and academics question whether or not non-GAAP measures can be used to manipulate investors (Bradshaw and Sloan, 2002; Doyle *et al.*, 2003). This is especially true when considering the significant pressure on managers either to meet or to beat analysts' earnings forecasts and a propensity to use adjusted earnings to manage expectations or alter analysts' impressions of reported earnings (Brown, 2001; Matsumoto, 2002; Burgstahler and Eames, 2006; Cotter *et al.*, 2006; Black *et al.*, 2018). Few studies have, however, dealt with the use of adjusted earnings to manage analyst impressions where, in addition to GAAP earnings included in financial statements, a measure of headline earnings must also be reported. In addition, the extent to which South African companies make use of adjusted earnings, the types of adjustments being made and the possibility that these are used to meet or beat analyst forecast has not been considered. As a result, this paper deals with the following issues:

- To what extent are non-GAAP adjusted earnings used by companies listed on the JSE?
- What types of adjustments are most commonly used by JSE-listed firms to compute their adjusted earnings?
- To what extent are these adjustments valid or invalid using the typology used by Bhattacharyaa *et al.* (2003), Doyle *et al.* (2003), Black and Christensen (2009) and Doyle *et al.* (2013)?
- To what extent are otherwise valid adjustments repeated in multiple reporting periods suggesting that they are more likely to be invalid?
- How often do companies report adjusted earnings which meet or beat analyst forecasts?

This research adds to the existing literature on non-GAAP earnings in general and, to the researchers' knowledge, is the first paper to deal with the possible misuse of earnings disclosures in a South African context. At a practical level, a greater understanding of the nature of adjusted earnings may assist investors in South Africa, particularly because of the number of different earnings figures being used which may confuse unsophisticated users of financial statements (Bhattacharya *et al.*, 2007; Rensburg and Botha, 2014). By identifying possible misuse of adjusted earnings, investors may be better able to identify which earnings figures to rely on. It has already been noted in South Africa that adjusted/non-GAAP earnings pose a problem to users and may obfuscate the underlying performance of firms leading to erroneous investment decisions (Pillay and Pascoe, 2014; van Eck, 2014; Venter *et al.*, 2014). As no new regulations have been proposed in South Africa (unlike the case in the USAA), South African markets are still impacted by adjusted earnings. Finally, the study complements the prior research on the value relevance of headline earnings (Venter *et al.*, 2014).

2. Literature review and derivation of research questions

2.1 Headline earnings

Although earnings determined according to prescribed accounting principles (such as those found in IFRS) provide users of financial statements with useful information, they have been criticized for being of limited use for predicting future earnings potential. For example, the emphasis placed by IFRS on the balance sheet and derivation of incomes and expenses according to changes in net assets has, arguably, limited the valuation properties of earnings measures (Dichev and Tang, 2008). This is compounded by the fact that profits or losses determined under IFRS include non-recurring, unusual or non-cash items which may not be useful for valuation models or may distort the assessment of the amount, timing and certainty of long-term cash flows (Bradshaw and Sloan, 2002). As a result, widespread use of a number of non-GAAP earnings figures (Abarbanel and Lehavy, 2007; Black *et al.*, 2018) which claim to provide more useful information to users (Doyle *et al.*, 2013) has become commonplace. Headline earnings are a good example.

Headline earnings were developed in the UK by the Institute of Investment Management and Research in 1993. The aim was to determine a consistent definition of earnings which could be used for calculating price-earnings ratios (Damant, 2003). Headline earnings are used by the *Financial Times* to assess the performance of UK firms, and in South Africa, companies listed on JSE are required to report headline earnings per share together with earnings per share determined according to IFRS (Venter *et al.*, 2014). As explained by Venter *et al.* (2014, p. 4):

The headline earnings disclosure framework may provide a compromise between the IASB and FASB's balance sheet focus and those who believe that earnings should retain its key valuation properties.

Unlike adjusted earnings reported in other jurisdictions (such as USAA) the adjustments made to IFRS-based earnings to arrive at headline earnings are prescribed and subject to audit (SAICA, 2013). In this way, headline earnings complement IFRS measures of financial performance while eliminating the use of discretionary or subjective adjustments being used to calculate comparable non-GAAP earnings (EY, 2016). As a result, the use of headline earnings should negate the need to report less reliable measures which are typically associated with an effort to obfuscate negative performance and manage impressions about reported earnings (Wallace, 2002; Bhattacharyaa *et al.*, 2003; Marques, 2010). This is especially the case given that South Africa has established codes of corporate governance

and a mature corporate reporting environment designed to protect investors (Rossouw *et al.*, 2002; Maroun *et al.*, 2014). As a result, the following research questions are considered:

RQ1. To what extent are non-GAAP “adjusted” earnings used in South Africa?

RQ2. What types of adjustments are most commonly used by JSE-listed firms in determining their adjusted earnings?

2.2 Manipulation of earnings figures

Stated simply, earnings management involves misrepresenting actual transactions in financial statements either through accrual (Burgstahler and Eames, 2006) or real activities manipulation (Gunny, 2010). Expectations management is normally used before financial information is publically disclosed and involves specific communication from management to analysts in the hope that they will reduce forecast figures if initial estimates are too high (Bartov *et al.*, 2002). Perception or impression management is similar, in the sense that managers seek to influence analysts’ assessments of their firm, but this forms an integral part of how information is disclosed in financial statements and the annual report (Cotter *et al.*, 2006; Doyle *et al.*, 2013; Black *et al.*, 2014; Marques, 2017) [2].

A comprehensive review of the prior literature on earnings management is beyond the scope of this research. What is important for the purpose of this paper is that the pressure to meet or beat analyst forecasts results in an incentive for companies to manage impressions by providing additional insights (whether specific or general) or alternate perspectives on financial performance with the use of a modified or adjusted earnings computation which accompanies IFRS-required disclosures (Cotter *et al.*, 2006; Black and Christensen, 2009; Guillamon-Saorin *et al.*, 2017; Marques, 2017). Whether or not this applies in a South African context remains unclear. On the one hand, the South African capital market is characterized by a relatively smaller number of analysts and a lower profile of analyst forecasts than in the USA or Europe. Consequently, the pressure to manage impressions by using adjusted or non-GAAP earnings reporting may be limited (Venter *et al.*, 2013). On the other hand, the country’s sophisticated codes on corporate governance and levels of investor protection (Rossouw *et al.*, 2002; Maroun *et al.*, 2014) may contribute to an environment where framing performance according to a non-GAAP measures is preferred to direct earnings management (Isidro and Marques, 2015).

2.2.1 Misuse of adjusted earnings. Non-GAAP performance measures are typically unregulated; inherently, more unreliable than codified measures of performance and often published together measures of financial position and performance determined according to the relevant accounting standards. Nevertheless, the prior research shows that, at least, some investors continue to place reliance on non-GAAP earnings (for a review of this literature, Black *et al.*, 2017b). As a result, Black and Christensen (2009), Doyle *et al.* (2013) and Guillamon-Saorin *et al.* (2017) argue that adjusted earnings continue to be used as part of an impression management strategy aimed at improving (at least at face value) the earnings of a firm to meet or beat analyst earnings forecasts[3]. This entails the use of different adjustments to earnings to present a better account of performance than portrayed by the GAAP-determined amounts.

In Bhattacharyaa *et al.* (2003), Doyle *et al.* (2003), Bradshaw and Sloan (2002), Black and Christensen (2009) and Doyle *et al.* (2013), the adjustments made by US firms to calculate their adjusted earnings were classified into different categories to ascertain whether they were “valid” or “invalid”. Valid adjustments are consistent with producing a recurring

earnings figure, while invalid adjustments were more likely opportunistic and suggested manipulation (Bhattacharyaa *et al.*, 2003; Black *et al.*, 2017b). It was found that many of the adjustments made in the USA were invalid and not conducive to producing decision useful adjusted earnings.

Doyle *et al.* (2003, 2013) used high level categories to classify adjustments. These categories were “special item or once off exclusions” or “other adjustments”. A similar approach is followed by Black and Christensen (2009) to group earnings adjustments according to whether or not they are below the line, infrequent or recurring items. “Special items”, “once off exclusions” or “infrequent items” usually consist of merger and acquisition costs, restructuring costs, asset write downs and losses on disposal of assets. “Other adjustments” include amortisation of goodwill[4], share-based compensation costs, research and development costs and legal costs (Black and Christensen, 2009; Doyle *et al.*, 2013).

“Special item or once off exclusion” adjustments are considered valid. They are appropriate adjustments to make in the determination of adjusted earnings because they are not expected to recur (Venter *et al.*, 2013). “Other adjustments” are likely to be invalid. Adjusting for these figures is more likely to suggest manipulation as they are not designed to provide an indication of recurring profits or income-generating potential as is often purported by managers (Black and Christensen, 2009; Black *et al.*, 2018). Further evidence of the existence of a “valid”/ “invalid” distinction arises from the findings of Doyle *et al.* (2003) that most “other adjustments” made in the determination of adjusted earnings were value relevant and their exclusion was not warranted or valid in the determination of adjusted earnings, while Venter *et al.* (2014) found that HEPS adjustments (which are similar to valid adjustments) are largely value irrelevant (validating their exclusion/adjustment).

Bhattacharyaa *et al.* (2003) and Black and Christensen (2009) used the following additional categories to classify adjusted earnings adjustments:

- depreciation and amortisation;
- share-based compensation costs;
- merger and acquisition costs;
- research and development costs;
- gains or losses on asset disposals;
- “Below the line” adjustments (i.e. operating income and expense adjustments);
- adjustments to the number of shares outstanding used in the denominator of the EPS calculation;
- other specific adjustments; and
- indeterminable adjustments where it cannot be determined what type of adjustment was made because of two or more adjustments being grouped together or because of unexplained terminology.

Doyle *et al.* (2003) classified adjustment as “valid”, “invalid” and “other” using comparable categories to those found in Bhattacharyaa *et al.* (2003) and Black and Christensen (2009). All the adjustment categories from Bhattacharyaa *et al.* (2003) can be directly allocated to Doyle *et al.* (2003) except for “tax adjustments”; “other” (any adjustments not classifiable into any of the previous categories) and “indeterminable adjustments”. Using the findings of Phillips *et al.* (2003) – that deferred tax can be a method used by firms to manage their earnings upwards, as well as the recurring nature of tax – tax adjustments can be categorized as “invalid adjustments” (see also Black *et al.*, 2018). The studies grouped “other” and “indeterminable” adjustments separately as, because of limited descriptive

information, it is sometimes not possible to distinguish what category the adjustment fell into.

The various categories described above are summarized into [Table I](#), along with the grouping of each adjustment category as “valid”, “invalid” or “other”:

The above typology simplifies the classification process of whether adjustments are valid or invalid. Nevertheless, accurate classification requires a case-by-case analysis of each adjustment to capture fully the nature of the transaction. A second method used to assess if adjustments are valid or invalid is to identify otherwise valid adjustments which are repeatedly used by firms over a number of years (or other time frames) ([Black et al., 2018](#)).

[Black et al. \(2017a\)](#) find that there is a measure of consistency in non-GAAP reporting over time and that this may add to the comparability of earnings disclosures. Nevertheless, there are concerns that an unregulated approach for determining non-GAAP earnings can result in inconsistent adjustments being made which, over time, incorporate bias and undermine the understandability of performance measures ([EY, 2016](#)). As a result, SEC rules have become more prescriptive on the types of adjustments firms may process to determine adjusted earnings. For example, firms are not allowed to add back any recurring operating expenses and if non-recurring expenses are added back all non-recurring gains must be deducted ([EY, 2016](#)). In addition, the IASB noted that many firms’ bonus and share incentive schemes use adjusted earnings ([Hoogervorst, 2016](#)), which is a further incentive to misuse adjusted earnings from period to period.

To the researcher’s knowledge, only limited information on the extent of use of adjusted earnings in multiple periods is available ([Black et al., 2018](#)). As a result, a normative scale is used. For the purpose of this study, repeated adjustments are considered at two, three, four and five year repeats, with five years providing strong evidence of an adjustment being invalid and two years providing only limited evidence of an invalid adjustment. The following research questions are considered:

RQ3. To what extent are adjustments valid or invalid using the typology developed by [Bhattacharyaa et al. \(2003\)](#), [Doyle et al. \(2003\)](#), [Black and Christensen \(2009\)](#) and [Doyle et al. \(2013\)](#)?

Table I.
Condensed
adjustment
categories and valid,
invalid or other
categorization

<i>Valid adjustments</i>		
1	1	Impairment of assets (Doyle et al., 2003)
2	2	Transaction (merger and acquisition) and restructuring costs (Doyle et al., 2003 ; Black and Christensen, 2009)
3	3	Gains and losses on asset disposals (Bhattacharyaa et al., 2003 ; Doyle et al., 2003)
<i>Invalid adjustments</i>		
4	1	Depreciation and amortization (Bhattacharyaa et al., 2003 ; Black and Christensen, 2009)
5	2	Share-based compensation costs (Doyle et al., 2003 ; Black and Christensen, 2009)
6	3	Operating income and expense adjustments (particularly legal expenses) (Bhattacharyaa et al., 2003)
7	4	Tax adjustments (Phillips et al., 2003 ; Black et al., 2018)
<i>Other and indeterminable</i>		
8	1	Other (Bhattacharyaa et al., 2003 ; Black and Christensen, 2009)
9	2	Indeterminable (Bhattacharyaa et al., 2003 ; Black and Christensen, 2009)

RQ4. To what extent are otherwise valid adjustments repeated successively suggesting that they are more likely to be invalid?

Finally, prior studies have compared accounting earnings and adjusted earnings to analyst forecasts (Bradshaw and Sloan, 2002; Bhattacharyaa *et al.*, 2003; Doyle *et al.*, 2013) and have found that adjusted earnings meet or beat analyst earnings up to twice as often as accounting earnings. This suggests that adjusted earnings can be used to make it appear as if firms meet analyst forecasts. Doyle *et al.* (2013) identified the use of adjusted earnings as a tool used to meet or beat analyst earnings forecasts that is incremental to, but distinct from, earnings management. In this context, this research asks:

RQ5. How often to companies reporting adjusted earnings meet or beat analyst forecasts?

3. Sample

The pre-census population for all five research questions started with the JSE-listed companies which were covered by analyst earnings forecasts obtained from INET BFA (136 firms) for the years 2010-2014 inclusive (680 firm years). From this population, three currently delisted firms were removed because of unavailability of data. All property firms (16 in total) were removed. This left a population of 116 firms (580 firm years). Ten firm years in which firms were not listed were also excluded, leaving a useful population of 570 firm years (termed the “original population” hereafter).

From the original population, all the firm years in which adjusted earnings figures were used were included. This resulted in a census population of 205 firm years used for *RQ1* to *RQ4*. A further census for *RQ5* required each firm year to have a valid analyst earnings forecast for that firm year (as some firms only started to be covered by analysts during the five-year period, while others ceased to be covered by analysts during the period). In all, 14 firm years out of the 205 firm years did not have analyst forecast data for that year and were removed from the population for *RQ5* only. This left 191 firm years for *RQ5*.

4. Method

The period under review was five years from 2010 to 2014. This period was selected to make the research timely, avoid the effects of the 2008 financial crisis on earnings (Andre *et al.*, 2009), ensure the continuity of behavior across several years and to gather sufficient data. The sample is explained in Section 3.

4.1 Data collection

The first step in the data collection process was to access each company’s results on the INET BFA Research Platform. If INET contained no data for a firm year, then it did not necessarily mean that the company did not use adjusted earnings. As a result, the second step in the data collection process involved searching each firm year’s annual report for their earnings per share note, headline earnings reconciliation note and all other earnings reconciliations. This is because non-GAAP earnings must be presented with a reconciliation between GAAP and non-GAAP earnings (Allee *et al.*, 2007; Marques, 2010; JSE, 2015). These notes/reconciliations were reviewed. Adjusted earnings and the types of adjustments were recorded.

The third step involved ensuring that all firm years in which adjusted earnings were used were detected. This was achieved by searching each company’s annual report for the search terms set out in Table II. Any indicators that suggested a firm year used adjusted

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27,1

132

Table II.
Search terms used to
detect evidence of use
of non-GAAP
earnings

Branch term	Tree term
Normalized Adjusted Underlying Core Cash equivalent Earnings EPS Headline earnings Per share HEPS EBIT Earnings EPS Per share Profit EBIT Income	Earnings, EPS, HE, profit, operating, EBIT, per share, income, basic, diluted ...before ...excluding/. . .pre
Other specific searched for terms: non-GAAP, non GAAP, pro-forma, pro forma, recurring, non-recurring, non-recurring, exceptional item, exceptional charge, abnormal item, abnormal charge, significant item, once off, once-off	
Note: It is not possible to search for profit before and income before as this returns too many results	

earnings that contradicted the data already collected in the two previous steps was investigated and adjusted accordingly.

4.1.1 *Types of adjustments (RQ1-4).* The adjustments made by a firm in the determination of adjusted earnings were collected at the same time as the identification of whether or not the firm used adjusted earnings (as described above). Only adjustments which would not have been made in the determination of headline earnings were considered. For this purpose, the researchers did not distinguish between these and other adjustments. This is different from the approach followed by Marques (2006), who differentiates between adjustments to earnings processed by analysts (based on what they feel are non-recurring or unusual items) and those made by managers (which may be indicative of impression management). As touched on in Section 2.1, adjustments to GAAP earnings to arrive at headline earnings are mandatory and codified in reporting guidelines. They are not based on subjective assessments by either analysts or managers on a case-by-case basis (Venter *et al.*, 2014). Reversals of headline earnings adjustments were, however, included as these are not a valid headline earnings adjustment.

Each adjustment was collected individually. In all, 58 unique adjustment categories (based on the adjustment name/description) were noted. Three categories were used to collect adjustments that were vague, inseparable or lacking detail. These were: "other" adjustments, "multiple adjustments in one" and "indeterminable". Where a firm did not disclose a reconciliation table, the full difference between accounting and adjusted earnings was treated as a "multiple adjustments in one" adjustment. The 58 adjustments were then grouped into the condensed valid/invalid adjustment categories outlined by Bhattacharyya *et al.* (2003) and Doyle *et al.* (2003) and Black and Christensen (2009) (Table I, Section 2).

It is important to note that adjustments were categorized based on the description provided in the financial statements explaining that adjustment. This may not truly capture the underlying reality of that transaction although this is consistent with the approach

followed by [Bhattacharyaa et al. \(2003\)](#) and [Doyle et al. \(2003\)](#). A more accurate approach would be to consider the economics of each individual adjustment, but this would be unfeasible and the extent of difference between the two approaches may not be significant. This is an inherent limitation of this research.

Finally, where a firm presented discontinued operations, the adjustments made in total (i.e. continuing and discontinued operations) were considered as it has been found that companies may shift losses to discontinued earnings as a form of earnings management ([Barua et al., 2010](#)). If the company reported in a foreign currency (a currency other than South African Rand), then the foreign currency figure was converted into Rands at the rate used by INET to report earnings for that firm year.

4.1.2 Meeting or beating forecasts (RQ5). The data for RQ5 were analyst EPS forecast figures and actual EPS figures (both accounting and adjusted). The analyst earnings forecast data was obtained directly from INET BFA and consisted of 136 firms. The EPS forecasts reflect the consensus analyst EPS forecasts of six independent brokers that INET BFA collects data from. It is important to note that the analyst earnings forecasts reflect estimates for diluted HEPS. It may not appear as if actual adjusted EPS can be compared to forecasted diluted HEPS, but adjusted earnings are used to mislead investors and are treated as being comparable in company press releases and media articles. These differences are not the focus of the report.

The INET BFA forecast data covers the full period under review (2010-2014). Analyst earnings forecasts are continually updated in response to new information until the release of the firm's results ([Danielson et al., 2010](#)). As a result, the data contains a number of consensus forecast earnings figures for each financial year. The last reported EPS forecast was extracted for each company because the last forecast figure before the release of the actual results is the figure most commonly referred to in the press about whether or not the company met or beat the forecast ([Doyle et al., 2013](#)).

4.2 Design and analysis

There is no prior research dealing with the nature of adjustments being made to per-share measures of performance in the South African capital market. As a result, this study used an exploratory design.

4.2.1 Use of adjusted earnings (RQ1). To determine the extent to which adjusted earnings measures are used in South Africa, the percentage of firm years where adjusted earnings were used out of the original (pre-census) population was calculated. The percentage use of adjusted earnings on a year and individual-firm-basis were also determined and any trends identified.

To better understand the census population of firms and the nature of the firms making use of adjusted earnings in South Africa, the firms were compared based on industry categories. For this purpose, the four Industry Category Benchmark ("ICB") industry codes were used to reflect industry coverage at the different levels of firm categorization. The four levels are: industry, super sector, sector and subsector ([Industry Classification Benchmark, 2015](#)). The results were analyzed by market capitalization. This was done due to prior findings that the use of adjusted earnings is more prevalent in certain industries and among larger firms ([Brown, 2001](#); [Black et al., 2018](#)). This analysis was done on a firm year and firm basis.

4.2.2 What adjustments are used (RQ2)? To determine what type of adjustments are being processed, a multiple response analysis was used. Many adjustment categories could be involved per firm year meaning that the groups of company years are not independent among the categories of adjustment. The nine grouped categories (per [Table I](#) Section 2)

were tested to determine the most frequently used adjustment categories, while individual adjustments within in these nine categories were then examined. Each adjustment category was weighted for that firm year's attributable profit to express each adjustment as a percentage of profit. This increased the comparability of the data across different firms as firms with larger profits may have larger adjustments.

4.2.3 *Valid or invalid adjustments (RQ3 and RQ4)*. The approach was adopted from the [Bhattacharyaa et al. \(2003\)](#), [Doyle et al. \(2003\)](#), [Black and Christensen \(2009\)](#) and [Doyle et al. \(2013\)](#). These studies can be applied in a South African context as the EMH holds in the South African market ([Magnusson and Wydick, 2002](#); [Jefferis and Smith, 2004](#)) and adjusted earnings in South Africa are determined on a similar basis to pro-forma earnings in the USA ([Bhattacharyaa et al., 2003](#); [Venter et al., 2014](#)). The first indicator considered the nature of the adjustments made in the determination of adjusted earnings and classified them as either valid or invalid as per [Table I](#) (Section 2). The second indicator considered the repeated use of adjustments implying that an otherwise valid adjustment is more likely to be invalid.

The grouped data classified as "valid", "invalid" and "other" was measured by the adjustment weighted for each respective firm year's attributable earnings. The adjustment value was standardized by earnings to consider the size effect as well as handle cases where a number of adjustments were made by some firms, while other firms made a single adjustment. Where a firm did not use a valid, invalid or other adjustment, that adjustment category for that firm year was allocated a nil value. The resulting data (in the three category classification) was analyzed using a non-parametric Friedman's ANOVA on a firm year basis after a Kolmogorov–Smirnov and Shapiro–Wilk tests confirmed that the data were not normally distributed.

Otherwise valid adjustments were also evaluated to determine if they were repeated in multiple firm years. The original 58 categories of adjustments were used for this purpose to ensure that repeated adjustments could be more readily identified. All firm years where the same category of valid adjustment was made consecutively from 2010-2014 were identified. The table below shows the number of firms that contributed one to five years of data for the five years of the study ([Table III](#)).

Ten companies contributed only one year of data. Almost half (49.1 per cent, $n = 28$) of the companies contributed five years' data. The number of times in the five (or less) years a firm repeatedly used valid adjustments of the same category was determined and scored according to the number of times the adjustment was repeated over the five years. In addition, the total number of repeated "valid adjustments" where the same adjustment was processed more than three times in a five-year period (two occurrences in the five-year period were deemed incidental) weighted for the total "valid adjustments" was compared to the same measure of the "invalid adjustments" from *RQ2*. This was used to provide a

No. of years of data	Frequency	(%)	Valid (%)	Cumulative (%)
1	10	17.5	17.5	17.5
2	7	12.3	12.3	29.8
3	7	12.3	12.3	42.1
4	5	8.8	8.8	50.9
5	28	49.1	49.1	100.0
Total	57	100.0	100.0	

Table III.
Number of firms
contributing data by
number of years

benchmark for the level of repetition and to assess whether or not valid adjustments were repeated more often than invalid adjustments.

4.2.4 *Meeting or beating forecasts (RQ5)*. The final stage of the data analysis involved computing the number of firms which met or exceeded analyst forecasts. This was done for basic and diluted EPS, diluted HEPS and adjusted earnings (as applicable). Descriptive statistics were used to present the results.

5. Results

5.1 Frequency of reporting adjusted earnings

Of the 570 original (pre-census) population firm years[5], adjusted earnings were used frequently:

- A total of 205 firm years, representing a 35.9 per cent, use of adjusted earnings on a firm year basis out of the original population (570 firm years).
- Out of the 117 unique firms in the population, 57 (48.72 per cent) presented an adjusted earnings figure in at least one year in the five-year period.

Table IV illustrates the spread of firm years using adjusted earnings across the five years of the study. The results indicate that adjusted earnings were used more often in the later years.

These results suggest that adjusted earnings are used by a significant number of firms listed on the JSE. The prevalence is lower than that found in prior international literature. For example, Marques (2010) found that that 68 per cent of S&P500 firms disclosed adjusted earnings measures at least once over a period of 12 quarters. The lower prevalence of use of adjusted earnings in South Africa may be explained by the use of headline earnings as firms are already required to disclose a figure that is seen as being more relevant than accounting earnings (Doyle *et al.*, 2003; Venter *et al.*, 2014)[6].

The summary data representing the top five industries (per ICB level) contributing to the total number of firms using adjusted earnings at each of these levels is set out in Tables V and VI on a firm and firm year basis, respectively.

The results in Tables V and VI show that firms in the financial services industry are the predominant users of adjusted earnings. Other industries frequently using adjusted earnings include retailers and mining/resources firms. These results are consistent with prior international research findings on the prevalence of the use of adjusted earnings across industries (Burgstahler and Eames, 2006; Allee *et al.*, 2007; Black and Christensen, 2009; Black *et al.*, 2018). The technology industry does not feature as significantly as is the case with comparable international findings (Marques, 2010) possibly because of technology shares having a relatively low market contribution (Forrester Research, 2013). As argued by

Table IV.
Frequency of
adjusted earnings
use classified by year
(2010-2014)

Year	Frequency	(%)
<i>Valid</i>		
2010	35	17.1
2011	40	19.5
2012	39	19.0
2013	44	21.5
2014	47	22.9
Total	205	100.0

Doyle *et al.* (2013), high levels of competition in the financial services, retail and resources sectors places pressure on these firms to meet or beat forecasts. In addition, these sectors may be more prone to arguing that their unique operating environments or business models are not adequately explained by IFRS-based performance. The result is an increased propensity for presenting adjusted earnings. The results were, for the most part, consistent between firm (Table V) and firm year (Table VI).

The data were also evaluated in terms of firm market capitalization. Only firm years relating to the 2014 year from the original population (570 firm years) was used, as market capitalization would tend to recur over time and cannot be compared over time in this instance. There were 133 total firms for 2014 of which 47 unique firms used adjusted earnings. These 133 firms' market capitalizations were ranked and grouped into decile categories based on the number of firms in 2014 (i.e. each category contains ± 13 firms). The number of firm years in each decile category where adjusted earnings were used was calculated. The results are set out in Table VII below.

Table V.
Top five industries making up the proportion of firms using adjusted earnings (firm-year-basis in percentages)

Industry	Super sector	Sector	Sub-sector
1 Financials	23.9 Basic resources	14.6 Life insurance	12.2 Life insurance
2 Consumer services	22.2 Insurance	12.2 Mining	11.2 Banks
3 Basic materials	14.6 Retail	11.7 General retailers	8.8 Apparel retailers
4 Consumer goods	11.7 Health care	8.8 Banks	7.3 Health care providers
5 Industrials	10.7 Food and beverage	8.8 Travel and leisure	7.3 Gambling

Table VI.
Top 5 industries making up the proportion of firms using adjusted earnings (firm-basis in percentages)

Industry	Super sector	Sector	Sub-sector
1 Consumer services	21.1 Basic resources	15.8 Mining	12.3 Life insurance
2 Financials	17.5 Industrial goods and services	12.3 General retailers	8.8 Apparel retailers
3 Basic materials	15.8 Retail	12.3 Life insurance	8.8 Banks
4 Industrials	15.8 Food and beverage	8.8 Banks	5.3 Food products
5 Consumer goods	12.3 Health care	8.8 Food Producers	5.3 General mining

Table VII.
Use of adjusted earnings versus market capitalization (on a firm basis)

Market capitalization range (Rm) of pre-census population	No. of firms using adjusted earnings	(%) firms where adjusted earnings were using out of the total no. of firms for 2014
185,278-1,280,843	9	69.2
78,241-170,257	6	46.2
44,564-77,268	5	38.5
33,063-41,083	6	46.2
23,717-31,004	4	30.8
16,648-23,387	4	30.8
10,512-16,443	4	30.8
6,031-10,167	3	23.1
3,394-5,935	3	23.1
553-3,278	3	23.1
Total	47	

The analysis indicates that the use of adjusted earnings is biased towards larger firms. This is consistent with prior research findings (Bradshaw *et al.*, 2012). This may be because of larger firms being exposed to greater analyst scrutiny and being under greater pressure by shareholders to meet or beat analyst forecasts (Brown, 2001).

5.2 Use of valid and invalid adjustments

The results of the multiple response analysis for the nine broad adjustment categories is presented graphically below followed by a discussion about the individual adjustments (from the original 58 adjustment categories) making up the grouped adjustments (Figure 1).

Of 205 firm years, 634 individual categories of adjustments (from the 58 preliminary adjustment categories as discussed in Section 2) were used with an average of 3.12 adjustments per firm year. The “Operating item/below the line item” category was the most common adjustment category. Within this category, frequently used adjustments included:

- fair value adjustments on financial instruments;
- foreign exchange gains and losses;
- employee benefits charges;
- deferred tax charges; and
- treasury share adjustments.

The results suggest that firms see this information as detracting from a true measure of performance. A single performance measure is a key principle of headline earnings (SAICA, 2013). In addition, as most adjusted earnings (for South African firms) are determined by making adjustments to headline earnings, it is possible that firms may view certain additional adjustments to headline earnings as necessary to convey real performance. For example, firms included statements in their annual reports suggesting that adjusted earnings are more valid measures of performance (Naspers Ltd, 2014; Sanlam Ltd, 2014).

The high incidence of adjustments categorised as “transactions and restructuring costs” is likely because of a view that these costs, expensed under IFRS, should have been capitalized to respective assets. An example are transaction costs incurred as part of a business combination which are expensed under the revised IFRS 3 rather than being taken into account in the determination of goodwill.

The “depreciation and amortisation” category was used 32.5 per cent of the time. This category label is misleading as almost all adjustments related to reversals of amortization, particularly the reversal of amortization of intangibles acquired in business combinations.

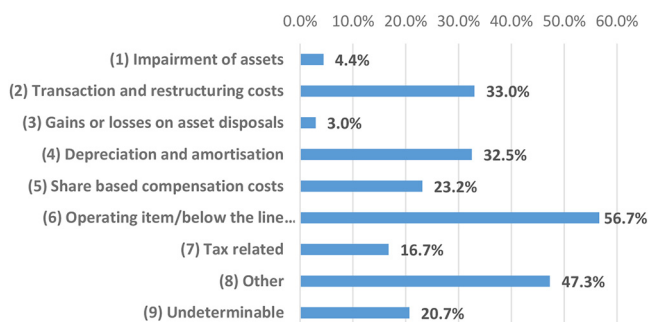


Figure 1.
Relative frequency of
valid and invalid
adjustment categories
(nine categories)

Actual depreciation adjustments referred to differences between depreciation based on assets' fair values as opposed to their cost.

Unfortunately, there were a significant number of "other adjustments" and "indeterminable adjustments". This issue arose mainly because of limited disclosure of adjustments. This raises a concern regarding adequate disclosure of adjusted earnings as found by the prior research (Elliott, 2006; Marques, 2010).

A Friedman's ANOVA was used to determine whether or not companies made use of a statistically significant number of valid or invalid adjustments (Seltman, 2012). This is because the data were not normally distributed. The results from the test are set out below. A 5 per cent level of significance was used (Soni et al., 2015) (Tables VIII-X).

The results show that there is a significant difference ($\chi^2(2) = 8.958$ at the 5 per cent level) between the "valid", "invalid" and "other/indeterminable" adjustments. Invalid adjustments (mean = 0.0769) tended to be more frequent and significant than valid (mean = 0.0204) and other (mean = 0.01140) adjustments. This is consistent with the findings by Bhattacharyaa et al. (2003) and Doyle et al. (2003). The results suggest that South African firms' adjusted earnings do not convey an accurate picture of recurring earnings (assuming the adjustment categories fairly represent this). However, it should be noted that the classification of adjustments was based only on the details found in annual reports. These may not provide a completely accurate account of the nature and purpose of the adjustments. Consequently, although evidence of misuse was found, its extent is difficult to quantify.

5.3 Repeated use of valid adjustments

The repeated use of similar adjustments was analyzed to gather further evidence of possible misuse of adjusted earnings in South Africa. The number of times that adjustments

Table VIII.
Descriptive statistics

	N	Mean	SD	Minimum	Maximum	CV
(1) Valid	205	0.0203	0.0760	-0.2675	0.5860	3.7287
(2) Invalid	205	0.0769	0.6016	-1.633	7.3626	7.8263
(3) Other or undeterminable	205	0.0114	0.2498	-3.209	0.5303	21.9167

Table IX.
Ranks

	Mean rank
(1) Valid	1.88
(2) Invalid	2.15
(3) Other or indeterminable	1.97

Table X.
Test statistics

N	205
Chi-Square ($X^2(2)$)	8.958
df	2
Asymp. Sig.	0.011

classified as “valid” (as they are more likely unusual and/or once-off) were repeated was examined using a repeated measures test. The results from the repeated use of valid adjustments test is set out in Graph 2 below (Figure 2).

The results indicate that mergers and acquisition costs and restructuring costs are most frequently repeated “valid” adjustments. Although per the classification typology used by the prior literature, these adjustments are valid, their repeated use suggests that they may not be once-off or unusual and are, therefore, invalid. It should, however, be pointed out that this finding may be affected by some adjustments being incorrectly classified because of limited details being provided for some of the adjustments used by South African firms.

One finding which supports the result of the repeated measure test is that 46 individual adjustments were repeated (to varying extents) out of a total of 93 supposedly “valid” (i.e. unusual and once-off) individual adjustments. In other words, almost half of all valid adjustments were repeated. However, the number of times the adjustments were repeated needs to be considered. Repeats of the same adjustment (in the five years under review) provides less convincing evidence of misuse than five repetitions of an adjustment. In all, 13 adjustments (out of the total 46 repeated adjustments) were repeated three or more times, while 33 adjustments were repeated less than three times. This suggests that the measure provided weak evidence of misuse. As a result, the researchers considered the number of repeated valid adjustments weighted for the total number of “valid” or “invalid” adjustments. This provides an alternate approach to assess whether valid or invalid adjustments are repeated more often [7].

Using this approach, the valid adjustment categories were repeated 27 times (for 11 adjustment categories) of a total of 99 adjustments (for the full 5 firm years under review). The invalid adjustment categories (excluding the indeterminable categories) were repeated 110 times of a total of 476 adjustments in the five firm year period under review. Weighting the repeats for the total number of adjustments, the ratio for valid adjustments is 0.27 and the ratio for invalid adjustments is 0.23. As this is not a statistical test, inferences cannot be made. However, this base measure implies that repetition is fairly close between the valid and invalid adjustment categories.

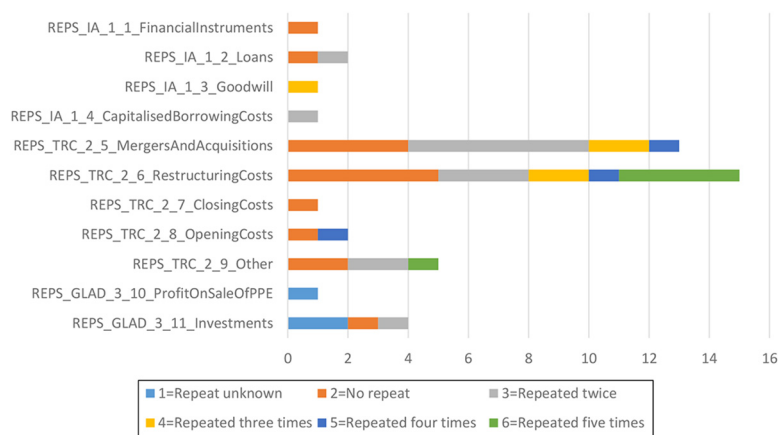


Figure 2.
Repeated use of valid
adjustments (firm
basis)

5.4 Evidence of the use of adjusted earnings to meet or beat forecasts

The percentage of each per share measure (on a firm-year-basis) which either met or exceeded the last analyst forecast for the respective firm year is shown below. The descriptive statistic is provided for three populations. Table XI is based on the original pre-census population of 570 firm years to consider firm years which did not use adjusted earnings. This was, however, limited to 527 firm years as there were only analyst forecasts these years. Table XII uses firm years with adjusted earnings. This totaled 191 firm years. Table XIII is based on firm years which did not use adjusted earnings (i.e. 365 firm years), but this was limited to 335 firm years, as there were only analyst forecasts for these periods. In addition, the results were calculated on a firm-basis for the 2014 year as a reasonableness assessment in the event that certain firms were influencing the results by recurring each firm year.

Table XI.

Proportion of different earnings that met or beat analyst forecasts for the original population pre-census population of 570 firm years, limited to 527 firm years with analyst forecast data

Accounting earnings measure	No. of firm years that met or beat the last analyst diluted HEPS forecast	% firm years where forecast was met or beaten	No. of firms in 2014 that met or beat the last analyst diluted HEPS forecast (out of 110 firms)	% firms in 2014 where forecast was met or beaten (110 firms)
Basic EPS	254	48.2	49	44.5
Diluted EPS	214	40.6	44	40.0
Diluted HEPS	215	40.8	43	39.1
Adjusted earnings	Not relevant for this population			

Table XII.

Proportion of different earnings that met or beat analyst forecasts for the 191 firm years where adjusted earnings were used, excluding the 14 firm years with no analyst forecast data

Accounting earnings measure	No. of firm years that met or beat the last analyst diluted HEPS forecast	% firm years where forecast was met or beaten	No. of firms in 2014 that met or beat the last analyst diluted HEPS forecast (out of 47 firms)	% firms in 2014 where forecast was met or beaten (47 firms)
Basic EPS	87	45.5	19	40.4
Diluted EPS	69	36.1	17	36.2
Diluted HEPS	62	32.5	10	21.3
Adjusted earnings	122	63.9	26	55.3

Table XIII.

Proportion of different earnings that met or beat analyst forecasts for the 365 firm years where adjusted earnings were not used, limited to 335 firm years with analyst forecast data

Accounting earnings measure	No. of firm years that met or beat the last analyst diluted HEPS forecast	% firm years where forecast was met or beaten	No. of firms in 2014 that met or beat the last analyst diluted HEPS forecast (out of 63 firms)	% firms in 2014 where forecast was met or beaten (63 firms)
Basic EPS	167	49.9	29	46.0
Diluted EPS	144	43.0	25	39.7
Diluted HEPS	153	45.7	32	50.8
Adjusted earnings	Not relevant for this population			

The 2014 firm results are, in almost all cases, marginally lower than the firm year results. This is expected as not all firms using adjusted earnings in the five-year period were captured by the 2014 data. Regardless, the results are relatively close to the firm year results and the presence of the same firms in the firm year data does not alter the results significantly. As a result, the remainder of the results discussion will only focus on the firm year results.

The analyst earnings forecasts are for diluted HEPS. As a result, actual HEPS is the most accurate figure to compare to the analyst forecasts to determine whether or not the forecast was exceeded. In the USA, [Doyle et al. \(2013\)](#) find that GAAP earnings meet or exceed the analyst forecast 63.3 per cent of the time and non-GAAP earnings do the same 65.6 per cent of the time. In this study, EPS (and HEPS) (using codified standards) met or exceeded the forecasts 32.5-49.9 per cent of the time depending on the population observed and whether a basic or diluted figure was used. This is below frequencies reported in the USA. Non-GAAP adjusted earnings met or exceeded the forecasts 63.9 per cent of the time which is in line with the American data.

Although not the focus of this report, these findings could suggest that analyst forecasts are less achievable or overly optimistic in South Africa. It could also suggest that firms are not motivated to meet or beat analyst forecasts, as they may not regard analyst forecasts as an important performance measure or feel that the forecasts are unattainable. This view is, however, countered by the emphasis placed by firms on adjusted earnings. They are not simply added to reports but emphasized as the most reflective earning metric. In addition, the instances when adjusted EPS (63.9 per cent) met or exceeded the forecasts suggests non-GAAP earnings are being adjusted in line with international norms. A possible inference is that there may be structural issues with analyst earnings forecasts in South Africa which prevent a reasonable proportion (if international norms are the definition of reasonable) of firms from meeting or beating forecasts. Alternatively, earnings are being adjusted by some firms as part of a process of managing investors' impressions of reported performance, as found by the prior international research ([Marques, 2017](#); [Black et al., 2018](#)). This is seen in the fact that firms which use an adjusted earnings/EPS figure met or beat forecasts (on the basis of diluted HEPS) significantly less often (32.5 per cent) than firms which do not use an adjusted figure (45.7 per cent). In other words, whether or not a firm's accounting earnings meet or beat the forecast is a motivation for firms to use an adjusted figure.

Diluted EPS meets or beats forecasts less often than basic EPS. This suggests that share-based (denominator) adjustments impact EPS figures. This is, however, not relevant in the analysis of adjusted earnings/EPS as most share-based adjustments occur in diluted EPS and HEPS calculations and not in adjusted diluted EPS calculations which are primarily effected by earnings (numerator) adjustments. The smaller difference between the incidence of diluted EPS and diluted HEPS meeting or beating forecasts may suggest that the effects of "diluting" per share earnings for potential shares can have a greater effect on per share earnings than headline earnings adjustments. This, in turn, implies that the impact of headline earnings on per share earnings is less significant than the effects of dilution. This is further supported by the result that the incidences of diluted EPS meeting or beating the forecasts differ only slightly from the incidences of diluted HEPS doing so.

As basic EPS meets or beat analyst forecasts more often than diluted EPS and diluted HEPS, why do firms not simply emphasize basic EPS instead of incorporating an additional earnings measure? The reason could be twofold. First, firms have to present a basic and a diluted EPS figure determined according to IFRS ([IASB, 2003](#)). This may make it obvious to users that diluted EPS is the more useful of the two figures. Adjusted EPS solves this, as it is not usually presented as a basic or diluted figure and, as a result, does not have to consider

diluting adjustments. Second, firms may wish to increase per share measure of earnings possibly to reach the analyst forecast. Emphasizing basic EPS may not be sufficient to make it appear as if the firm met or exceeded the forecast. This reaffirms the view that there is a relationship between the use of adjusted earnings and meeting or beating forecasts.

6. Conclusion

While South Africa reports slightly lower incidents of adjusted earnings being used than some international studies (Marques, 2010; Black *et al.*, 2018), between 35 and 49 per cent of firm years included some type of non-GAAP earnings disclosure. The results also show that these types of disclosures are more likely to be included in the annual reports of large companies and in later years.

A multiple response analysis revealed that, while the adjusted earnings are supposed to be a better measure of real or sustainable performance (Black *et al.*, 2017a), they are normally based on reversing operating items and are, therefore, invalid. There are some valid adjustments but invalid adjustments are used more often. There is also some evidence of otherwise valid adjustments being repeated in more than one reporting period suggesting that these are, in fact, invalid adjustments to earnings. As a result, the study shows that adjusted earnings reported by South African companies meet or exceed the latest analyst forecast more often than IFRS or headline earnings.

These findings have a number of implications. The propensity to use an adjusted earnings figure to meet or beat analysts' forecasts could suggest that these are overly optimistic or that structural issues with the forecasts prevent a reasonable proportion of firms meeting or beating forecasts. It is also possible that the increased use of non-GAAP earnings which exceed forecasts is the result of a mechanical expensing of most non-recurring items being included in the figures [8]. Nevertheless, a propensity to use income increasing adjustments when accounting earnings (measured under IFRS) do not achieve targets points to the use of adjusted earnings as an impression management tool, in line with the prior international research (Marques, 2017; Black *et al.*, 2018).

This is a surprising outcome considering that South Africa is the only jurisdiction where listed companies are required to present a headline measure of performance in addition to a GAAP-based amount (Venter *et al.*, 2014). This is intended to give investors a more comprehensive understanding of performance than only reporting earnings in total (and on a per-share-basis) under IFRS (Pillay and Pascoe, 2014; van Eck, 2014; Venter *et al.*, 2014). Nevertheless, large listed companies continue to make use of non-GAAP disclosures. Taking into account South Africa's mature financial reporting and corporate governance environment (Solomon, 2010), this lends weight to the argument that companies operating jurisdictions which are focused on high quality corporate reporting and investor protection are inclined to make use of adjusted earnings as a strategy for managing impressions (Isidro and Marques, 2015). The findings also call into question the success which codification of alternate earnings measures will have for reducing the use of non-GAAP reporting in an effort to combat misleading reporting on performance. This is especially true given the fact that the South Africa preparer and investor community have a thorough understanding of IFRS and headline earnings and should, therefore, be better placed to identify the limitations of non-GAAP earnings and their possible use as an impression management tool.

From a different perspective, the results suggest that headline earnings may not be a sound measure of performance. The types of adjustment being made to GAAP earnings and the firms using these earnings (with regards to industry and market capitalization) are similar to those in studies conducted in other jurisdictions (see, for example, Doyle *et al.*, 2013; Marques, 2017; Black *et al.*, 2018). This implies that, while headline earnings may have

some relevance, they do not completely address the limitations of conventional measures of financial performance (Venter *et al.*, 2014). As a result, the usefulness of headline earnings needs to be considered in more detail.

These views should, however, be interpreted in the context of this paper's inherent limitations. The method for categorizing adjustments is simplistic and based only on information contained in annual reports. As a result, the precise nature of the adjustments being processed by companies and the extent to which these are used to manage investors' impressions can be debated. In addition, more needs to be done to understand exactly why investors make use of non-GAAP disclosures, the steps which they take to ensure that these are relevant and reliable and how the relationship between companies and individual investors/analysts may affect the choice of adjustments being used to arrive at non-GAAP earnings. This also needs to be informed by a more normative analysis of how performance reporting can be improved and better regulated in the interests of protecting the investors.

Notes

1. For simplicity, we refer to earnings determined in accordance with IFRS as 'GAAP earnings'. Adjusted earnings, determined using any adjustment to IFRS earnings not prescribed by IFRS, are referred to as 'adjusted earnings' or 'non-GAAP earnings'. Headline earnings and determined by adjusting the IFRS earnings for items prescribed by a Circular issued by the South African Institute of Chartered Accountants.
2. Special thanks to one of our reviewers for highlighting this point.
3. This can be aimed at improving the total measure of performance or at reducing volatility in GAAP-based amounts (Black and Christensen, 2009). For the purpose of this paper, no distinction is drawn between these incentives to use non-GAAP earnings as an expectation management tool.
4. Amortisation of goodwill is specific to US GAAP and is not required or permitted by IFRS.
5. The 570 original (pre-census) population firm years excludes 3 currently delisted firms and their respective firm years, 16 property firms and their respective firm years and 10 individual firm years when certain firms were not listed in those years.
6. The lower rate of adjusted earnings being quoted could also be explained by less stringent criteria for defining adjusted earnings in international studies as compared to this study, as well as the increased number of periods under observation.
7. It was not deemed necessary to test invalid adjustments in the same manner as valid adjustments, as they were already deemed invalid. However, for comparative purposes, the higher level test was performed for both valid and invalid adjustments.
8. Many thanks to one of the anonymous reviewers for highlighting this point.

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