The relative value relevance of book values, operating cash flows, EVA and earnings: A South African perspective.

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ABSTRACT

Most investors would want to know what is included in the price of a share and how far accounting data explain the share price. This study uses the most common measures of financial performance to measure what is explained by the share price. Most analyst briefings use these financial performance measures: book value per share, cash flow per share, earnings per share and most recently the market performance measure, the economic value added (EVA) in the share valuations. The objective of the study is to examine the relationship between the above measures of financial performance as presented in financial statements and the share prices and share returns. If there is a relationship, which measure is most closely related to both share prices and share returns? The study uses data obtained from a balanced sample of 87 companies listed on the Johannesburg Stock Exchange (JSE) during the ten-year period (2005-2014). Both the price and the returns models were used to analyse this financial data to find out which accounting measure has the greatest explanatory power on the share prices and share returns (measured by the R-squared or R^2metric). For the price model, share prices 3 months after the financial year-end were used to allow for the release of financial information. Using the price model, earnings have the highest overall R^2 at 56.4%, with book values at 18.4%, EVA at 2.18% and lastly operating cash flows at 1.18%. This effectively means that earnings per share is more value relevant in determining firm value than either book value of equity, EVA and operating cash flows, respectively. Using incremental value relevance, equity book values and earnings explain 65% of the share prices. However, changes in EVA deflated by price have the greatest explanatory power (R^2 at 30%) using the returns model and none of the other measures (earnings and operating cash flows) have a significant relationship with share returns.

Overall the results show that both accounting based (book value of equity and earnings) and market based measures (EVA) are value relevant in determining firm value. The results also show that a consideration of more than one variable in determining firm value is more informative than considering each variable separately. EVA should also be used in determining value as it has shown that it explains some of the share prices and returns.

Key words: *relative value relevance, earnings, equity book values, cash flows, economic value added (EVA), price model, returns model.*

INTRODUCTION

Value relevance is "understood as the ability of financial statement information to capture or summarise information that affects share values and empirically tested as a statistical association between market values and accounting values" (Hellstrom, 2006, p. 325). The debate that led to the statistical testing of the value relevance of accounting information has a long history and it can be traced to two contentious issues. The first issue relates to one of the main objectives of financial reporting. "One of the major objectives in financial reporting is to provide equity investors with information relevant for estimating company value" (Beisland, 2009, p.7). This objective implies that the contents of financial reports should provide investors with information that is useful for establishing firm value. Furthermore, this objective can also be interpreted to mean that active stock investors should be able to rely on financial statements as a tool for determining the value of the firm. This also entails that, for financial information to be value relevant, "accounting numbers must be related to current company value" (Beisland, 2009, p. 9). On the contrary, this also implies that accounting information would not be value relevant if there is no link between accounting numbers and firm value (Beisland, 2009).

The second issue traced, relates to the criticism that financial reporting is more of a ritual that lacks meaning and hence, is of no use to investors. This criticism led accounting researchers to examine the value relevance of financial data. Researchers, especially in the developed countries, and in particular, the United States of America (US) sought to empirically investigate whether financial reporting satisfies one of its fundamental goals- which is to provide information that is relevant and reliable when establishing firm value. Ball and Brown (1968) and Beaver (1968), for example, were among the first researchers to conduct value relevance studies through empirically testing whether financial reporting meets its objective (Beisland, 2009).

The work of Ball and Brown (1968) and Beaver (1968) therefore, pioneered value relevance research as many other researchers followed suit and tested empirically the association between firm value and financial statements. Currently, there is a stream of studies that seek to discuss and test the empirical implications of the claim that financial statements have lost their relevance over time (see, for example, Francis and Schipper, 1999; Bath et al., 2008).

Furthermore, a plethora of value relevant research that spans over decades has also put forward empirical measures to calibrate the value relevance of reported numbers under current reporting systems against the period after the changes were proposed or implemented in order to determine whether the proposed or implemented changes alter the value relevance of accounting information (Francis and Schipper, 1999).

However, of importance to note is that the empirical testing of the association between firm value and financial statements information started as a broad field called the capital market based accounting research (CMBAR) (Beisland, 2009). As explained above, CMBAR research is a broad field that can also be categorised into several subfields (Beisland, 2009). For example, Kothari (2001) divides CMBAR research into fundamental analysis and valuation, tests of market efficiency, and the role of accounting numbers in contracts and the political process. Beaver (1968), who is one of the pioneers of CMBAR research together with Ball and Brown (1968), sub-categorises CMBAR research into market efficiency, Feltham-Ohlson modelling, value relevance, analyst behaviour, and discretionary behaviour (Beisland, 2009).

However, the above categorisations had their own criticisms. For example, Beisland (2009) argued that the categorisation of CMBAR research is based on preference. To support his argument, Beisland (2009) uses value relevance research as an example to justify his claim. In his argument, Beisland (2009, p. 7) argue that, although Beaver (1968) views value relevance as a field on its own, "It is possible to consider value relevance as related to both market efficiency and fundamental analysis and valuation".

Contrary to the above arguments, other researchers such as Francis and Schipper (1999) sought to explain the value relevance of accounting information in terms of how the value relevance of financial statements is interpreted. In their study Francis and Schipper (1999) argued that the value relevance of financial statements can be interpreted in four ways. First, Francis and Schipper (1999) opined that financial statements influence share prices as they capture the intrinsic value of shares towards which share prices drift. Secondly, they argued that financial information is value relevant if it contains variables that are used in the valuation model or helps in predicting those variables (Francis and Schipper, 1999). Their third and fourth interpretations involve the empirical testing of the value relevance of accounting information through examining the association between financial information and either

prices (price model) or share returns (returns model). Although this study uses the both models for analysis, the price model is used as the primary model for analysis while the returns model is used to provide further analysis to the study. The two models are used to examine whether accounting measures such as book values of equity, operating cash flows, EVA and earnings per share are value relevant to equity investors in determining the firm value or explaining stock returns.

A review of related literature shows that existing studies examined the value relevance of various accounting metrics in establishing firm value. The accounting measures used in past studies include measures from statement of financial position and statement of profit or loss and other comprehensive income (Ragab and Omran, 2006). However, despite the several insights that value relevance studies provide to equity investors, accounting researchers and government in terms of informing policy, several limitations have been identified in prior studies.

A review of value relevance studies reveals several limitations. First, a review of literature shows that CMBAR originated in and focuses largely on the US samples (Beisland, 2009) and other developed economies (Hellstrom, 2006). Evidence in Beisland (2009), for example, shows that the bulk of the published value relevance research is still being conducted in the US. There is an appeal or call in past value relevance studies for an examination of the value relevance of accounting information in non-US markets (Ragab and Omran, 2006). A focus on South Africa, which is an emerging economy, is one way of addressing this call.

Previous value relevance studies also focus mostly on the examination of the association between share prices and net income and the book value of equity as the two primary accounting measures. Therefore, there is limited research that examines the association between share prices and the various accounting measures. An examination of the value relevance of a combination of various accounting measures and share prices, especially, in one study allows investors to understand how these measures are linked to firm value, based on the same research design, time frame, and same codes of governance, accounting principles, regulations and location. This could help in providing equity investors with an opportunity to work with the right choice and variety of accounting measures and other competing measures or tools when assessing firm value.

Similarly, US studies in literature found that the value relevance of book value of equity and earnings has decreased over time (e.g. Collins et al. 1999; Francis and Schipper 1999). Hence, there is a need to conduct research using accounting data from earlier years and current period in one study to assess whether the value relevance of accounting information is decreasing, stable or is increasing over time in other non – US countries.

Moreover, most of the developing countries especially in Africa, have limited studies that examine the value relevance of accounting amounts to equity investors. What is of concern in the case of South Africa is that it is; (a) the first country in Africa to have a code of corporate governance of its own, (b) is a country which has rigorous accounting systems and sub systems within it, with various sets of rules and regulations in place, and (c) an extremely liquid and sound stock market and financial system, yet there is very limited research on the value relevance of accounting measures. Since the South African Stock market is the largest and the most liquid market in Africa (Zulu et al., 2017), value relevance studies on South Africa would provide both domestic and foreign equity investors with the relevant tools by which to evaluate share prices when making investment decisions.

Owing to the limitations discussed above, the objective of this study is to examine which of the competing accounting measure(s), that is, book values of equity, earnings, operating cash flows and EVA is (are) value relevant to equity investors when determining share value. The study uses competing value relevant accounting measures to determine which measure(s) has/ (have) an association with share prices using the price and the returns models as analytical tools for the analysis. In pursuit of this objective the current study seeks to answer the following questions:

- Is there an association between earnings and share prices and share returns?
- Is there an association between book values of equity and share prices and share returns?
- Is there an association between operating cash flows and share prices and share returns?
- Is there an association between EVA and share prices and share returns?
- Which accounting metric/measurement is most value relevant than others?

The research uses both the price and return models on data over a 10 year period between 2005 and 2014. Prices used are taken 3 months after the fiscal year end to capture the reaction of the share prices to published financial statements. The research finds that earnings are more value relevant than book values of equity, operating cash flows and EVA using the price models. Pairing the variables increases the explanatory power of the accounting measures. Using the returns model however shows that even though earnings and EVA are statistically significant, the change in earnings and changes in EVA are insignificant in explaining share returns.

The rest of the study is organised as follows. Section 2 presents a review of the literature. Section 3 provides an explanation of the methodology used for this study. Section 4 presents a statistical analysis and discussion of results. Section 5 provides a conclusion and recommendations for future research.

2. LITERATURE REVIEW

2.1 Introduction

Hellstrom (2006) argue that value relevance can be measured based on either the signalling or measurement perspectives. The signalling perspective, is whereby a study is conducted to examine "whether there is a reaction to announcement of accounting information" while the measurement perspective measures "the explicit relationship between market indicators of the value of the company and accounting measures" (Hellstrom, 2006, p. 328). Hellstrom (2006) observed that the measurement perspective is the one that is mostly used in value relevance studies. For this approach, value relevance depends on the valuation framework that models the company's value as a linear function of the accounting information.

The pioneers or first contributors to the measurement perspective of value relevance research are Ball and Brown (1968) who set about researching on the relationship between earnings and share prices. Therefore, the research by Ball and Brown (1968) led to the development of the first major body of theory in accounting (Ball and Brown, 2013). Following Ball and Brown (1968)'s breakthrough research, numerous other researchers on value relevance followed suit. The most prominent of these were the studies by Beaver et al., (1980), Easton and Harris (1991), Kothari and Zimmerman (1995) and Ohslon (1995) which

took into consideration the different dynamics of the relationship between accounting data such as earnings (from the income statement), book values (from the balance sheet) and cash flows (from the cash flow statement) with stock prices. These value relevance studies sought to empirically investigate the value relevance or usefulness of accounting information to stock investors (Beisland, 2009). The main objective was to examine the association between accounting numbers and equity returns (Setiono and Strong, 1998), accounting amounts and equity market prices (Barth et al., 2001) and the significance of the alternative accounting methods (Auer, 1996). An accounting number is argued to be value relevant if it has a predicted and significant association with the equity market prices (Barth 2000, Lo and Lys 2000).

Although the majority of value relevance literature show that the book value of equity and earnings per share are extensively used as the primary measures of value relevance of accounting information in prior studies, other studies used a combination of book value of equity, earnings per share and cash flow from operations and accruals to test the value relevance of accounting information. Similarly, the price and returns models are the two models that have been extensively used in value relevance literature to examine the association between market value and various accounting measures.

2.2. Factors impacting value relevance of accounting information.

There are various arguments proffered in value relevance literature that show that the value relevance of accounting information depends on many factors. First, there is an argument that states that value relevance depends on the type of economy in which the study is being conducted, e.g. transitional economy (i.e. an economy moving from being a centrally planned economy to an open market economy) relative to an open market economy. These studies argue that difference in the value relevance of accounting information exist across countries because of the cross country differences in measurement and disclosure of accounting information (Ali and Hwang, 2000, Hung, 2001, Ball et al., 2003, Hellstrom, 2006).

Furthermore, comparative value relevance studies found that, the value relevance of accounting information in transition economies is different to that from open market economies because of differences in their institutional settings (Hellstrom, 2006). The argument put forward is that, in a centrally planned economy, institutions will have to be

restructured, capital markets will have to be developed and that new accounting regulation will have to be introduced (Hellstrom, 2006). Therefore, during adjustment process, the value relevance of accounting information in a transition economy is argued to be lower relative to the open market economy which already has well developed and well-functioning social institutions, capital markets, and accounting regulation (Hellstrom, 2006). For example, Hellstrom (2006) examined the value relevance of accounting information in the Czech Republic (chosen as the fastest transition economy until 2001) and Sweden (chosen as a benchmark for a well-developed market with well-developed capital market and accounting regulation) for the period 1994 - 2001 and found that the value relevance of accounting information is lower in Czech Republic relative to Sweden throughout the entire period considered. Despite the fact that the value relevance in the Czech Republic was low, Hellstrom (2006) further observed that the value relevance of accounting information in the Czech Republic was increasing over time, i.e. closer to the completion of the transition process. As a result of this finding, Hellstrom (2006) concluded that the finding is consistent with the assumption that the development of well-functioning institutions increases the value relevance of accounting information.

The second argument in prior studies is that value relevance of accounting information depends on the efficiency of the capital market of a country. Contrary to this view, Barth et al.. (2001) argue that since share prices reflect investors' consensus beliefs about the underlying economic values and not necessarily the economic value itself, the resulting inferences relate to the extent to which accounting measures reflect measures that are implicitly assessed by the equity investors. In this context, Barth et al. (2001) argue that market efficiency is not a requirement as long as the interpretation is based solely on the explanatory power of the statistical tests. In addition, they argue further that, the efficiency of the market becomes important as long as the coefficients are interpreted based on the theoretical benchmarks that are derived from the valuation model (Barth et al., 2001). However, Hellstrom (2006) argue that market efficiency has an important implication for value relevance studies conducted in transitional economies as there are doubts that these economies are efficient. This is not a problem for this current study since South Africa has a well-developed and well-functioning social institutions, capital markets, and accounting regulation. Although, some studies on the efficiency of the South African Stock market have

produced mixed results, the majority of the studies have shown that the South African market is efficient on the weak form (Swart and Negash, 2006).

Third, there is an additional argument in value relevance studies that show that the value relevance of accounting information is not solely dependent on accounting regulation but that it is a function of many factors which are external to the accounting environment (Hellstrom, 2006; Bushman and Piotroski, 2006; Barth et al., 2000; 2003; Hung, 2001). The five factors identified in these studies are: the development of the accounting regulation, control mechanisms, business climate, internationalisation and business cycles, economic development and industry structure (Hellstrom, 2006)

In explaining the influence of these factors, Hellstrom (2006) argue that the quality of accounting information laws and regulations is the principal prerequisite of value relevance. The argument is that, since the recognition, measurement and valuation principles determine the information that is presented in the financial statements, which in turn is used for decision making (Hellstrom, 2006), the differences in the principles across countries results in differences in the value relevance of accounting information. Furthermore, the fact that principles are different across countries and also that they are subject to developments, Hellstrom (2006) argued that the tracking of the changes in these principles in a particular country is vital for understanding their effect on the development of value relevance.

Furthermore, there is also an argument that even though the accounting standards are of high quality, the value relevance might be very low if the accounting standards are not be followed (Hellstrom, 2006). In this regard, Hellstrom (2006) argues that the existence of a better control of companies' financial information which is accompanied by a better information disclosure would increase the value relevance of accounting information.

In addition to the above, Hellstrom (2006) argue that internationalisation of the transitional economy through either foreign customers and suppliers, foreign investors entering the capital market or foreign companies establishing themselves in the country should change the informational environment of transitional economies. In this view, the entrance of foreign actors from well developed markets is argued to encourage domestic companies to be more responsive and accountable to a wide range of stakeholders. This is also argued to have a positive effect on the value relevance of accounting information (Hellstrom, 2006).

On the other hand, the value relevance of accounting information, as observed in previous research, has also been found to be dependent on the economic business cycles (Hellstrom, 2006). There is evidence in prior studies that show that investors value companies highly during a boom cycle irrespective of their actual performance and accounting measures (Hellstrom, 2006). In contrast, there is also evidence in past studies that show that actual performance is extremely important during a recession (Hellstrom, 2006). Owing to the extreme importance placed on actual performance during a recession, Hellstrom (2006) reported that during a recession, investors base their decisions on the fundamental analysis of accounting numbers, which in turn, are also argued to affect the association between market and accounting values.

Following the points discussed above, Hellstrom, (2006) argued that value relevance is a function of the abovementioned five factors and that it is not possible to separate the effect of an individual factor from the others when conducting the association tests as specified in the traditional value relevance research. However, Hellstrom (2006) acknowledges that it is possible to indicate whether the individual factors increase or decrease value relevance and under which conditions. Therefore, in support of the importance of the interaction of the five factors discussed above in establishing an association between the market and accounting values, Hellstrom (2006) argue that, for transitional economies, the development of high quality accounting standards is not the only concern because the adoption of international accounting standards does not guarantee high quality of accounting information if the other conditions are not met.

However, the location for this study, that is South Africa, meets the five conditions discussed above in that South Africa is not a transition economy, it is an open market economy, has companies that have a domestic and foreign listing, there are companies which are owned by foreign investors, has a well-developed market and accounting standards and regulation and better control mechanisms in place to monitor company compliance. The only concern is that of business cycles since the period considered for this research covers the periods before and after the 2008 financial crisis.

There is also a stream of literature that argues that the value relevance of accounting information differs based on whether accounting standards are influenced by government or

private sector. For example, Ace and Mora (2002) found that in countries where accounting standards are influenced by the government rather than the private sector, book values are more relevant than earnings in code law countries whereas earnings are more relevant in common law countries. In code law countries, the government influences accounting standards as a measure of dividing profits among stakeholders. In search of proof for that assertion, Ball et al.. (2000) and Clarkson et al.. (2011) examined the value relevance of accounting information after the adoption of IFRS standards and found that there was no change in value relevance of earnings and book values after the adoption of the IFRS standards for both the common law and code law countries in Europe and Australia.

Furthermore, there are also some studies that attributed difference in value relevance of accounting information to the nature of the capital market. For example, Bartov et al. (2005) conducted a study to examine the information content of the US and two other non-Anglo Saxon countries, that is, Germany and Japan. Their hypothesis was based on the fact that the nature of their capital markets determines the role of the accounting information. In their case, the companies in the US raise capital through a public market whereas in Germany and Japan capital is raised privately. As a result of this difference, Bartov et al. (2005) hypothesised that earnings play a much major role in the US where capital is raised in public markets than in Germany and Japan where capital is generally raised privately. They further argued that private owners would require less volatile and conservative accounting which enhances the predictability of earnings (Bartov et al., 2005).

There are also some studies that attributed the differences in the value relevance of accounting information to the type of reporting regimes. For example, Kadri et al. (2009) investigated the value relevance of book values, earnings and operating cash flows for the period before and after the adoption of Financial Reporting Standards (FRS) in Malaysia. They examined the property (investment) sector on the Malaysian main board for the period 2002 to 2007. In their study Kadri et al. (2009) segmented the entire 2002 -2007 period into two segments namely; the before (i.e. 2002 -2005) and after (2006-2007) the adoption of Malaysian Financial Reporting Standards (FRS). For the period between 2002 and 2005 the Malaysian Accounting Standards Board (MASB) regime was responsible for setting standards whereas the FRS are more inclined to the International Financial Reporting Standards (IFRS). The findings in their study show that under MASB, book values and earnings were more value

relevant and that book values exhibited greater value relevance (Kadri et al., 2009). They also identified that adoption of FRS led to the change in perception by investors as book values became more value relevant whereas earnings saw a decrease in value relevance (Kadri et al., 2009).

2.3. Studies on value relevance on various accounting measures.

There are also studies discuss about which accounting measures are value relevant in determining share values. For example, Beisland (2009) argue that cash flows have gained more prominence than earnings as they are the objective component of the firm's earnings. Beisland (2009) argues that earnings are a combination of cash flows and accruals and that the accruals component is affected by accounting conservatism and manipulation. Due to earnings smoothing, (Beisland 2009, p.9.) argued that most investors would say, "when in doubt follow the cash flows" which are difficult to manipulate. Cash flows represent the ultimate return on every investment because whenever investors put their cash they expect to receive cash in return (Beisland, 2009). However, a study by Dechow (1994) found that earnings were strongly associated with stock returns than realised cash flows. Similarly, Subramanyam and Venkachalam (2007) also came to the same conclusions when they found that earnings dominate operating cash flows.

However, other studies found that book values help to explain value relevance of accounting information for firms that are performing poorly or making losses. For example, there is an argument in prior studies that earnings are likely to be less relevant than the book values when a company has negative earnings (Collins et al.,1997). In search of evidence in this regard, Collins, et al.. (1997) in their study, found that book values are more value relevant in loss making years. This is particularly true since most investors would look at the liquidation value of a firm, hence its net assets. Collins et al. (1997) concurred with this finding when they also found that the value relevance of book values was increasing whilst that of earnings was decreasing over the past 40 years. In a similar vein, Brief and Zarowin (1999) argued that book values tend to have higher value relevance as they pick up the slack when earnings are transitory. They further argued that when earnings are transitory, they have low information content, thus, in this context; negative earnings are regarded as an extreme case of transitory earnings (Brief and Zarowin, 1999). Collins et al. (1999) on the other hand, argue that omitting book values induces a negative bias for loss making firms and a positive bias for profit making

firms. However, there is a counter argument that says that book values can be a poor indicator especially in situations where unrecognised assets exists (Collins, et al. (1999).

However, there is also a plethora of value relevance studies that provided findings on the relevance of accounting information without attributing those findings to any factor(s) or differences in the type of market, reporting regimes, etc. These studies provide evidence of the value relevance of accounting information using various accounting metrics and other competing measures. Most of the tests are conducted on the basis of trying to investigate which of the accounting metrics and residual income based measures are closely related to returns and firm values.

Some of these studies build from the conceptual point of view which is followed by tests. For example, Toft and Lueng (2015) found that even the proponents of accounting based measures admit that from a purely conceptual perspective, residual income based performance measures such as EVA are superior because they account for the cost of capital. In their study, Toft and Lueng (2015) put forward several factors that may have caused the weak association between residual income based and accounting based measures. In their assertions, Toft and Lueng (2015) pointed out that weak association is caused by the fact that:

- Stock returns are a change in expectations about a company's future discounted cash flow. There is an ongoing debate over the reliability of EVA under semi efficient markets
- EVA is generally used for internal decision making which is managing the firm specific risk of the company, thus there is a disconnect between the firm specific risk and the systematic risk which is based on CAPM. In this vein, Toft and Lueg (2015) chose to refer to it as a "functional fixation" by analysts and investors who possibly use distorted information to derive values which are not a true reflection of the value of the company
- Many assumptions are used when calculating EVA; investors may calculate different EVAs than those used by managers. For example, Warren Buffet uses the risk free rate as the cost of capital whilst others may use the CAPM.
- Earnings is still a better predictor of cash flows.

- EVA might reflect a truer value but investors concentrate on the signalling effect of earnings.
- The calculation of accounting adjustments might be flawed.
- Investors might have negligible cost of capital. Cross sectional analysis requires constant coefficients which in practice do not hold.
- The theory of the semi strong efficient markets hypothesis might only apply to earnings rather than EVA.

Alternatively, Graham et al. (2006) opined that since accounting performance measures are mandatory for larger and listed companies, they can be easily be interpolated from financial statements hence, providing a favourable ratio between the information gain and their low cost of calculation than EVA. They further argued that it is cumbersome to calculate residual income based performance measures. In their study which is based on interviews with 401 US financial executives on which performance measure they are likely to use, Graham et al. (2006) found that two thirds the financial executives used earnings, 22% used cash flow from operations and less than 3% used EVA. Their study further revealed that EVA has a low uptake among firms as managers may rather not show periods where they destroyed value (Graham et al., 2006).

Further argument presented in favour of the use of earnings by the executives relative to EVA were that:

- Investors need a simple metric
- Earnings and cash flow from operations have the broadest coverage by the media
- Common measure used for earnings calculating earnings per share.

Empirically, Biddle et al. (1997) found no evidence that EVA beat earnings though it did not dominate in information content for firms that adopted EVA. O'Byrne (1999) argued that the ability of EVA to explain stock returns was based on expected EVA performance rather than realised EVA performance.

Additional empirical evidence shows that there is enough evidence to conclude that accounting based measures are superior in explaining stock returns (Toft and Lueng, 2015). For instance, Clinton and Chen (1998) concurred with Biddle et al. (1997) after investigating

nine performance measures using a linear regression model. Their results showed that accounting based performance measures predicted 12.5% to 27.2% of annual stock returns and cash flow based measures predicted 23.2% to 31.3% whilst residual income measures predicted a mere 4% of annual stock returns. Their findings were in line with the findings and recommendations made by Biddle et al. (1997) who advocated for the use of traditional accounting based measures.

Additional evidence in favour of the accounting based measures is also provided by Gee- Jung (2009). Gee-Jung (2009) examined the relative and incremental value relevance of book values, earnings and cash flows using the works of Myers (1997), Ohlson (1995) and Feltham and Ohlson (1995) in the Korean stock market over a ten year period from 1994 to 2005 and found that book values are more value relevant than earnings and cash flows. In the same study, Gee-Jung (2009) found that the combined value relevance of book values and earnings were increasing in Korea for the period 1994 to 2005.

Consistent with the above, Swart and Negash (2006) conducted a study based on 129 firms listed on the Johannesburg Securities Exchange (JSE) for period 1992 to 2003 and found that book values and abnormal earnings showed a significant relationship with share prices. In their study, Swart and Negash (2006) used share prices three months after each company's year-end to allow time for the publication and analysis of financial statements.

Similarly, a study by Holler (2008) provides a further evidence of the superiority of the earnings measure in value relevance studies. Using both market values and abnormal stock returns, Holler (2008) found that earnings outperform Eva and cash flows from operations by 19.4% and 14.4% respectively. In conclusion Holler (2008) revealed that cash flows from operations does not dominate earnings and that the components of EVA only add marginal but not significant information content.

Consistent with Biddle et al. (1997), Chen and Dodd (2001) found that although EVA is significantly associated with annual returns, it has a lower explanatory power (R2 of 0.023) than the traditional accounting measures of residual income with an R^2 of 0.05 and operating income with an R^2 of 0.062.

From an efficient market perspective, Paulo (2002) also argued that there is no need to use the CAPM based performance measures if the market is efficient as it does not make sense to prove superiority empirically. Critiquing Paulo (2002) and arguing in favour of EVA, Chen and Dodd (2002) argued that long term equilibrium is not a static point where assets earn an opportunity cost of capital and that there are no abnormal profits. In their study Chen and Dodd (2002) observed that there is a dramatic reaction by investors when a firm's earnings either beats or miss investor expectations. Hence, they further questioned that if earnings were not important then, how can one explain these reactions? They also observed that the trading volumes increase during earnings announcement periods (Chen and Dodd (2002). On the disengagement between prices and earnings, Chen and Dodd (2002) attribute this to rising accounting conservatism which lets financial statements reflect potential losses earlier rather than gains.

However, some researchers also argued that, management's effectiveness in creating shareholder value can only be measured through the stock price (Bacidore et al., 1997). Based on this perspective, Bacidore et al. (1997) argued that since the stock price is affected by randomness and noise, the use of accounting measures can mislead shareholders. As a result, they opined that, only risk adjusted measures like the residual income model can be used to measure the effectiveness of management (Bacidore et al., 1997). Consistent with Bacidore et al. (1997), Venanzi (2012) found accounting based measures to be misleading as they are subject to manipulation or moral hazard such as non-business related changes in accounting policies, tempering with accounting earnings which may in turn lead to harder and unreliable comparisons among companies. Similarly, Toft and Lueng (2015) argued that, if measured in terms of price alone, accounting based measures could lead to short termism and an over or under investment.

Additionally, Feltham, et al. (2004) argued that it does not make sense that earnings would be more closely associated with stock returns if they do not account for the cost of capital and if influenced by accounting distortions which EVA adjusts for. Feltham et al. (2004) used Biddle et al. (1997) methodology but on different companies, different periods and different markets. Their findings were that EVA is superior in all categories. Consistent with Feltham et al. (2004), Worthington and West (2004) also found EVA to better explain stock returns while

earnings and cash flows were found to possess limited incremental information beyond that contained in EVA.

In a similar vein, Shotter et al. (1998), compared traditional performance metrics and residual income measures and found that EVA had a stronger association with shareholder value than Market Value Added (MVA). Consistent with Shotter et al. (1998), Chari (2009) also found that EVA was superior to all other measures of performance.

Overall, evidence in prior studies seem to provide a mix of results. Since the results are mixed this means that the issue is not settled and cannot be generalised across countries. There is no consistent pattern emerging in the literature hence the need for further research. This has provided strong motivation to look at the South African market to determine if results are consistent with previous studies or if new patterns are emerging.

3. METHODOLOGY

3.1. Introduction

Value relevance studies are used to investigate the empirical association or relationship between stock market values and accounting numbers to assess how useful the accounting numbers are in predicting equity values (Ota, 2003). The most commonly used regression models are the price model and the return model.

The price model examines the relationship between the stock price and accounting measures, for example; book values, EVA, cash flows and earnings whilst the returns model measures the relationship between stock returns and changes in accounting variables. The most frequently used model which forms the basis of most value relevance research studies is the Ohlson (1995) model which has since been refined by Feltham and Ohlson (1995, 1996), Ohlson (1999, 2000).

Regardless of whether one is using the price model or returns model, there has been criticism on model specification. Prior studies argue that it is imperative to make the right model specification when using both the price and return models (see for example, Barth et al., 2001, Kothari, 2001). The notable specification problems associated with both the price model and the returns model are scale effects for the price model and the accounting recognition lag and transitory earnings for the returns model.

Accounting recognition lag in the returns model can be attributed to the difference in the recording period for earnings to accounting principles such as prudence and reliability. For example, Ota (2003) argue that earnings may contain abnormal and other once off items that may not continue. Furthermore, Ota (2003) argued that investors have an abandonment option for loss making firms or units that may be written off, hence, making losses transitory.

The major problem amongst value relevance researchers when dealing with the issues related to model specification for the price model has been differences in their definition of the term scale. Without a clear definition of scale among researchers; it still remains difficult to account for scale. For example, while Barth and Kallapur (1996) and Barth and Clinch (1999) argued that scale is contextual and unobservable, Easton and Sommers (2003) believe that scale is market capitalisation. Easton (1999) argued that since management has control over the number of shares in issue, they can change the number of shares in issue without changing the economic characteristics of the firm. Furthermore, Easton (1999) argued that there are also several other corporate actions that management can do to either increase or reduce the number of shares in issue for example, stock splits, consolidations reverse splits etc. As a result, Easton (1999) concluded that the magnitude of scale of the dependent variable in price level regressions will just reflect the choice of management on the shares in issue. Furthermore, Easton (1999) argued that, from a comparative perspective, larger firms tend to have higher total market values, larger book values and larger income than small firms. Easton (1999, p. 404) argued further that many other variables for the large and small firms will also be large and small respectively such "that the regression of market value on firm attributes will lead to coefficients that may capture no more than scale effects".

Consistent with the above argument, Khanagha (2011) argued that value relevance of accounting information is not the same between small and large firms. Ota (2003) argues that scale effects imply a spurious relationship in a price model that arises from the failure to control for scale effects. Brown et al., (1999) argued that the bias on the estimate of the correlation coefficient if more variables such as size and/ other elements of earnings are included in the regression equation can be removed by calculating these variables based on a per share basis and scaled by the share price. Brown et al. (1999)'s argument is that this removes from the regression scale effects of changes in the number of shares or book value per share.

To deal with accounting recognition lag associated with the returns model, Easton et al. (1992) argued that extending the measurement windows for accounting variables and returns increases the R^2. Francis and Schipper (2001) dealt with the accounting lag problem by using the 15 month long window regressions to calculate the statistical association. However, there is no clear way of dealing with transitory earnings as losses are considered temporary than the abandonment option for loss making firms.

Given the above, there is no one model that is superior to the other, for the purposes of this study, the price model is used as the primary model while the return models is used as further analysis to the study.

3.2. Empirical model

In this study, no single accounting variable is considered to be more value relevant than the other, this follows the research by Biddle et al.. (1997) who took a neutral position. This study follows the research method used by Kwon (2009) who used the generalised version of the Ohlson (1995) model. In addition to the Ohlson (1995) model, this study adds cash flows and EVAs as additional determinants that equity investors could use to help determine firm value. As a result of the above discussion, the regression equations for the price model are presented as below:

The Price Model

$$P_t = \beta_0 + \beta_1 BVPS_t + \varepsilon_t \quad (1)$$

$$P_t = \beta_0 + \beta_2 EPS_t + \varepsilon_t \quad (2)$$

$$P_t = \beta_0 + \beta_3 CFPS_t + \varepsilon_t \quad (3)$$

$$P_t = \beta_0 + \beta_4 EVAPS_t + \varepsilon_t \quad (4)$$

$$P_t = \beta_0 + \beta_2 EPS_t + \beta_1 BVPS_t + \varepsilon_t \quad (5)$$

$$P_t = \beta_0 + \beta_3 CFPS_t + \beta_1 BVPS_t + \varepsilon_t \quad (6)$$

$$P_t = \beta_0 + \beta_4 EVAPS_t + \beta_1 BVPS_t + \varepsilon_t \quad (7)$$

Where;

P_t – represents stock price 3 months after the fiscal year t.

$BVPS_t$ - represents the book value per share of equity at the end of period t.

EPS_t – represents the earnings per share generated in period t.

$CFPS_t$ – represents the operating cash flows per share in period t.

$EVAPS_t$ – represents the economic value added in period t.

ε_t – represents the normally distributed error term.

The returns model

The returns model was developed by Easton and Harris (1991) with refinements by Biddle et al.. (1997) and it has become popular with researchers because it includes both earnings levels and earnings changes as independent variables in explaining the annual market return on a stock. Easton and Harris (1991) only had earnings and change in earnings but the model has been extended to include changes in cash flow and EVA. This model measures what is reflected in changes in value over time. In this study, the analysis is done at three levels. First, the valuation model expresses stock returns as a function of earnings levels and earnings changes, with both variables deflated by the stock prices at the end of the previous year (represented by equation 8 below). Second, the valuation model expresses stock returns as a function of operating cash flow levels and operating cash flow changes with both variables also deflated by the stock prices at the end of the previous year (see equation 9). Lastly, the valuation model expresses stock returns as a function of EVA levels and EVA changes, with both variables deflated by the stock prices at the end of the previous year (see equation 10). The valuation models are presented as follows:

$$R_t = \beta_0 + \beta_1 EPS_t/P_{t-1} + \beta_2(EPS_t - EPS_{t-1})/P_{t-1} + \varepsilon_t \quad (8)$$

$$R_t = \beta_0 + \beta_3 CFPS_t/P_{t-1} + \beta_4(CFPS_t - CFPS_{t-1})/P_{t-1} + \varepsilon_t \quad (9)$$

$$R_t = \beta_0 + \beta_5 EVAPS_t/P_{t-1} + \beta_6(EVAPS_t - EVAPS_{t-1})/P_{t-1} + \varepsilon_t \quad (10)$$

Where;

R_t – represents the annual stock return over a 12 month period ending 3 months after the fiscal year (measured as the change in share price plus dividend per share divided by the share price at the beginning of the fiscal year).

P_{t-1} – represents the stock price 3 months after the fiscal year t-1.

EPS_t – represents the earnings per share in period t.

EPS_{t-1} – represents the earnings per share in period t-1.

$CFPS_t$ – represents the operating cash flows per share in period t.

$CFPS_{t-1}$ – represents the operating cash flows per share in period t-1.

$EVAPS_t$ – represents the economic value added per share in period t.

$EVAPS_{t-1}$ – represents the economic value added per share in period t-1.

ε_t – represents the normally distributed error term.

Earnings refer to the profit before interest, taxes, depreciation and amortisation.

Cash flows are defined as operating cash flows adjusted for all non-current accruals not affecting working capital that is depreciation, amortization, deferred taxes and equity earnings plus net changes in all working capital accounts related to operations.

EVA is a registered trademark of Stern Stewart & Co which is based on the comparison between the profit a company makes and the cost of capital of the firm.

Sample selection and data sources

The data was obtained from the BFA MacGregor database which was accessed through the UCT main library. The sample excludes all financial companies, that is, banking, insurance and property companies which are governed by special legislation which is in addition to the Companies Act. This is in line with Mashayekhi and Bazaz (2008), O'Connell and Cramer (2010) and Pamburai et al. (2015). The sample selection procedure is shown in Table 1.

Table 1: Sample selection procedure

Number of listed companies as at 31 December 2014	357
Less:	
Financial companies	(90)
Companies with missing data	(180)

Total number of companies in the final sample	87

Consistent with Pamburai et al. (2015) companies with missing data over the 10 year period between 2005 and 2014 and those with financial results stated in foreign currencies were also excluded from the sample. Furthermore, the per share data is used in the analysis. In addition, a balanced sample was used in this study. In other words, to be included in the final sample, each company under study was supposed to be listed on the JSE for the entire period under study (i.e. from 2005 to 2014). Any companies that were merged or bought by a foreign entity were excluded.

The study uses a 10 year horizon because studies that were conducted over a longer horizon have shown to increase the return coefficients with R^2 doubling when the period is increased from 5 to 10 years. The advantage for using a longer time horizon is that a longer time frame increases the value relevance as delays between the financial year end and the publication of financial statements becomes less significant. Most researchers use returns/ prices 3 months after the financial year end to allow the market to adjust and digest the results but this 3 month period will represent 2.5% of a 10 year period rather than 25% of a one year period. This current study uses share prices 3 months after the financial year end of each company under consideration/in the sample. Consistent with prior studies on the value relevance of accounting numbers, panel regressions are conducted for this study. Before running the panel regressions, the Hausman test was conducted to specify the models to be used for each test conducted for this study. In other words, the Hausman test was conducted to determine whether the fixed effects model or random effects model or the pooled regression model was appropriate in determining the association between either stock prices or accounting numbers or stock returns and the accounting information. Results from the Hausman tests conducted are present in Table 2 below.

Model specifications

Table 2 : Hausman's test for fixed effects versus random effects

Model	$\chi 2$	Recommendation
M1	0.15	Random effects
M2	112.45***	Fixed effects

M3	33.81***	Fixed effects
M4	0.24	Random effects
M5	144.40***	Fixed effects
M6	0.17	Random effects
M7	2.81	Random effects
M8	72.47***	Fixed effects
M9	0.00	Pooled OLS
M10	6.63**	Fixed effects
*** Significant at 1%, ** significant at 5% and * significant at 10%.		

The results in Table 2 show that the fixed effects model is appropriate for models M2, M3, M5 and M10 while the random effects model is appropriate for models M1, M4, M6, Model 7 and Model 9. However, the Breusch and Pagan test was further conducted on all the models that showed that the Random effects model is appropriate in order to determine whether the random effects model or the pooled regression models should be used instead. The results showed that the random effects model is appropriate for models M1, M4, M6 and Model 7 while the pooled regressions model is appropriate for model M9 only.

4. ANALYSIS AND INTERPRETATION OF RESULTS

Following the models presented above, various tests were run using both the price model and returns model and the findings from the various models are discussed in the subsequent sections below.

4.1. Descriptive statistics

An analysis of Table 3 shows that the mean EVA per share is R 0.0016 with a minimum of -0.0339 and a maximum of R0.099. This is expected as there were other firms with negative EVA. In inflation adjusted terms, there were firms with negative cash flows during the period. The average book value is R0.901 with a minimum of -R53 per share and a maximum of R71 per share. The average return over the period is 21.9% with minimum return of -0.86% and a maximum return of 943%. The mean price per share over the 10 year period is R72.19 with a minimum share price of R0.0303 and a maximum price is R3,410.

Table 3 : **Descriptive statistics of the variables.**

VARIABLES	N	mean	sd	min	max
EVAPS (Rands)	957	0.00169	0.00764	-0.0339	0.0986
CFPS (Rands)	957	4.519	41.45	-1,238	109.2
EPS (Rands)	957	9.654	81.56	0	1,629
SP (Rands)	957	72.19	203.5	0.0303	3,410
Ret (%)	957	0.219	0.603	-0.859	9.430
EPS/P (%)	957	0.0996	0.0901	0	1.030
CFPS/P (%)	957	0.0830	2.883	-88.04	11.71
EVAPS/P (%)	957	8.56e-05	0.00112	-0.00282	0.0331

Note: The values are in Rand amounts (ZAR) and the returns are given as a percentage.

4.2. Correlation matrix

The study uses regression analysis to investigate the relationship between stock prices and financial variables. However, before the performing the regressions analysis, this study conducted a test for multicollinearity using the Pearson correlation matrix. Table 4 presents the correlation matrix for the independent and dependent variables. Multi-collinearity is a problem if the correlation coefficients between independent variables exceed 0.80. Based on the correlation matrix table presented below, the results show that there is no value that is greater than 0.80, which means that there is no problem of collinearity in the data.

Table 4 *:* **Pearson correlation matrix**

	Ret	SP	BVPS	EPS	CFPS	EVAPS	EPS/P	CFPS/P
Ret	1							
SP	0.0298	1						
BVPS	-0.0544*	0.429***	1					
EPS	0.0110	0.751***	0.122***	1				
CFPS	0.000487	0.109***	0.213***	0.0362	1			
EVAPS	0.0429	0.148***	0.154***	0.0644**	0.112***	1		
EPS/P	0.407***	0.213***	-0.0620*	0.375***	-0.0132	0.0521	1	
CFPS/P	0.0979***	-0.00101	0.0102	-0.00170	0.961***	0.00848	0.0147	1
EVAPS/P	0.525***	-0.0174	-0.0389	-0.00684	-0.00130	0.121***	0.0263	0.130***

Evidence of no collinearity between the independent variables allowed this current study to then run the regressions tests as specified in Table 5. The sections that follow present the findings from the various regressions tests that were conducted for this study.

4.3. Regression Results

In this section the regression analysis are presented, to improve the understanding of the relationship between the variables used in the study. The price model and the returns model will be discussed for the different models.

4.3.1 Price model

Based on the nature of the analysis as set out in the methodology section, results for the price model are presented in terms of 7 models. Models 1 to 4, presented in Table 5 show the findings based on the relationship between each of the independent variables separately with share prices 3 months after year end. Therefore, as set out in the equations presented in the methodology section, Model 1 which is based on equation 1, tests the association between book values of equity and price 3 months after year end. The results based on this model show that there is a positive and a statistically significant relationship between book values and share prices at 1% significance level. This implies that book values are value relevant at the 1% level of significance. The overall R^2 for this model is 0.184, which means that book values explain 18.4% of the change in stock prices.

Table 5 : ***Results of the relationship between accounting measures and share prices***

VARIABLES	Model 1	Model 2	Model 3	Model 4
BVPS	2.837***			
	(0.294)			
EPS		1.247***		
		(0.0549)		
CFPS			0.122	
			(0.104)	
EVAPS				3,327***
				(609.7)
Constant	5.939	60.16***	71.64***	66.57***

	(17.10)	(3.209)	(4.019)	(17.84)
Observations	957	957	957	957
Number of CompID	87	87	87	87
R_sq_within	0.0711	0.372	0.00158	0.0316
R_sq_between	0.241	0.756	0.0853	0.0189
R_sq_overall	0.184	0.564	0.0118	0.0218
Chi^2_test	93.41***			29.78***
F_test		515.8***	1.379	

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Model 2 which is based on equation 2, presents the findings on the relationship between earning per share and share prices. The findings from this model show that the relationship between earnings per share and share prices is also positive and statistically significant at 1% significance level. This implies that earnings per share are value relevant when determining firm value. The overall R^2 is 0.564, which means that earnings per share explain 56.4% of the variations in share prices. Model 3 which is based on equation 3, presents the results based on the association between operating cash flows and share prices. The results presented by this model show that there is a positive but an insignificant relationship between operating cash flows and share prices 3 months after year end. This implies that cash flows are not useful to equity investors when determining firm value. Model 4 which is based on equation 4, presents the results on the relationship between EVA and share prices. The results show that there is a positive and a statistically significant relationship between EVA and share prices at 1%. This finding implies that EVA measure is useful to equity investors when estimating firm value. However, the overall R^2 is very small, at 2.18%, which means the EVA explains 2.18% of the change in share prices.

On the basis of Model 1 to 4, it can be envisaged that model 2 has the highest overall R^2 (56.4%), followed by model 1 (18.4%), then model 4 (2.18%) and lastly model 3 (1.18%) respectively. This means that earnings per share is more value relevant in determining firm value than either book value of equity, EVA and operating cash flows respectively. This finding

is consistent with the findings in the studies by Dechow (1994), Subramanyam and Venkachalam (2007), who also found out that earnings are more value relevant than operating cash flows. Furthermore, these findings are consistent with the findings by Swart and Negash (2006) and Holler (2008) who provided further evidence that earning are superior in determining share values compared to operating cash flows and EVA.

However, these findings are inconsistent with those by Collins et al. (1997) and Brief and Zarowin (1999) who found that book values tend to have higher value relevance than earnings especially when firms are making a loss (Collins et al., 1997) or when negative earnings are transitory, that is, a situation where earnings are deemed to have low information content. Furthermore, the results are also inconsistent with those found by Gee- Jung (2009) who found that book values are more value relevant than earnings and operating cash flows.

After conducting an analysis to establish the association between each of the independent variables and share prices 3 months after year end, this study conducted additional analysis in which the book value of equity was paired with each of the other three independent variables separately to examine the association between each pair and share prices. The findings from this analysis are presented by Models 5 to 7 in Table 6.

Table 6*: Results of the incremental value relevance tests*

VARIABLES	Model 5	Model 6	Model 7
BVPS	2.360***	2.821***	2.929***
	(0.284)	(0.295)	(0.290)
EPS	1.209***		
	(0.0531)		
CFPS		0.0890	
		(0.0996)	
EVAPS			3,626***
			(584.0)
Constant	5.408	5.915	-2.335
	(7.278)	(17.19)	(17.21)
Observations	957	957	957
Number of CompID	87	87	87
R_sq_within	0.419	0.0720	0.113
R_sq_between	0.795	0.241	0.230
R_sq_overall	0.656	0.184	0.189
F_test	312.6***		

Chi^2_test	93.98***	134.6***

The findings presented in Model 5 show that both book values of equity and earnings per share have a positive and statistically significant relationship with share prices 3 months after year end at 1% respectively. The overall R^2 has increased drastically to 65.6% compared to the R^2s when each variable was used as a regressor separately as shown by the results shown by Model 1 and 2 respectively (refer to Table 6). This implies that the variation in share prices is explained more when book values of equity are used jointly with the earnings per share in determining firm value. However, the coefficient for the book value of equity is higher than that of earnings per share, meaning to say that the book value of equity contributes more to the change in share prices compared to earnings per share for a 1% change in each of the variables.

Model 6, which pairs book values of equity and operating cash flows shows that the book value of equity still has a positive and a statistically significant association with share prices at 1% whereas operating cash flows are positively but statistically insignificantly related to share prices. This finding is consistent with the findings when these variables were examined separately against share prices. The R^2 for the pair is similar to the one produced when book values were regressed against share prices separately. This is expected because the results in model 3 presented in Table 5 show that operating cash flow provides very little or no explanation to changes in share prices.

Model 7, which pairs book values of equity and EVA shows that both book values of equity and EVA have a positive and statistically significant relationship with share prices at 1%. This finding is also consistent with the individual tests conducted based on book values of equity and EVA separately as shown in Models 1 and 4 presented in Table 5 above. The R^2 for model 7 improved slightly compared to model 6. However, model 5 has the highest R^2 compared to both model 6 and 7. Model 5 has the highest R^2, followed by model 7 and lastly model 6. This means that the use of Book values of equity jointly with earnings per share explains more of the variations in share prices, followed by book values of equity and EVA and lastly book values of equity and operating cash flows. This also means that a joint consideration for booked value of equity and earnings per share is by far superior and more value relevant to

equity investors when determining firm value compared to the other two tests (i.e. model 6 and 7).

4.3.2 The returns model

In addition to the use of price model, further analysis was also conducted using the returns model. The results based on the returns model are presented in Table 7. As shown in Table 7, it can be seen that model 10 has the highest explanatory power (at 30%), followed by Model 9 (18.4%) and lastly Model 8 (13%). However, the explanatory power of Model 9 is insignificant. The findings based on earnings and earnings changes (model 8) show that although the co-efficient of the earnings is positive and significantly associated with share returns, the co-efficient of the earnings change is negative and insignificantly related to share returns. These findings are contrary to the findings in prior studies which show that earnings and earnings changes are significant variables in explaining stock returns (see for example, Lam et al., 2013; Filip and Raffournier, 2010; Collins et al., 1997; Burgstahler and Dichev, 1997).

Table 7. ***Relationship between accounting measures and share returns.***

VARIABLES	Model 8	Model 9	Model 10
CFPS/P		0.00638	
		(0.0193)	
DCFPS/P		0.0106	
		(0.0159)	
EPS/P	3.190***		
	(0.363)		
DEPS/P	-0.270		
	(0.279)		
EVAPS/P			242.9***
			(60.63)
DEVAPS/P			31.59
			(61.74)
Constant	-0.0976**	0.208***	0.185***
	(0.0385)	(0.0454)	(0.0175)
Observations	870	870	870
R-squared		**0.184**	
Number of CompID	87		87
R_sq_within	0.144		0.277
R_sq_between	0.111		0.537
R_sq_overall	**0.130**		**0.300**

F_test	65.55***	21.19***	149.6***

DCFPS/P is calculated as operating cash flows in period t minus operating cash flows in period t-1 divided by price 3 months after fiscal year t-1.

DEPS/P is calculated as EPS in period t minus EPS in period t-1 divided by price 3 months after fiscal year t-1.

DEVAPS/P is calculated as EVA in period t minus EVA in period t-1 divided by price 3 months after fiscal year t-1.

The results shown in Model 9 show that the coefficients for operating cash flows and operating cash flows changes are positive but insignificantly related to share returns. This shows that neither operating cash flows nor operating cash flow changes are useful in explaining share returns. The finding of an insignificant relationship between operating cash flows and share returns is consistent with the findings based on the price model, where operating cash flows were found to be insignificantly related to share prices 3 months after year end. Based on these findings, it can be concluded that operating cash flows are not value relevant irrespective of whether a price model or returns model is used in the analysis.

The findings shown in model 10 show that while EVA has a positive and a statistically significant relationship with share returns, EVA changes are positively but insignificantly related to share returns. Overall the results show that neither earnings changes nor operating cash flows changes and EVA changes are significantly related to share returns. This finding leads to a conclusion that earnings changes, cash flows changes and EVA changes are not useful to equity investors in determining the value of the firm.

5. SUMMARY AND CONCLUSION

The focus of this study is to examine the value relevance of various accounting measures in South Africa using the price model and returns model as models for analysis. Several conclusions have been drawn from its findings. First, the results based on the value relevance of individual accounting measures using the price model show that the

coefficients for all the accounting measures used in this analysis were positive and statistically significant at 1% significant level except that of operating cash flows which is statistically insignificant. For the measures that have statistically significant relationship with firm value, the EVA measure has the highest co-efficient followed by Book value of equity and lastly earnings. However, in terms of the explanatory power, the earnings measure has the highest overall R^2 followed by book values of equity and lastly EVA (this applies to those variables that have a significant relationship with share prices only). This finding shows that the earnings measure is more value relevant to equity investors for share valuation followed by book value of equity and lastly EVA.

However, further analysis was also conducted to examine if value relevance of accounting measures improves if book values of equity is paired with either earnings or operating cash flows or EVA. The findings from this analysis revealed that the pairing of book values of equity and earnings and book values of equity and EVA produced results that show that the coefficients of each variable remained positive and statically significant at 1%. These results were consistent with the tests conducted based on individual measures (unpaired). However, an examination of the overall R^2s shows that the pairing of book values of equity and earnings show the highest R^2 followed by the pairing of book values of equity and EVA and lastly the pairing of book values of equity and operating cash flows. The R^2s based on the pairing are higher than those of the individual measures (unpaired). This shows that accounting measures are more value relevant when they are paired together than when they are used individually in examining firm value. The results are more pronounced especially if book value of equity is paired with the earnings accounting measure.

In addition to examining the relevance of accounting measures based on the price model, further analysis was conducted to test the value relevance of accounting information using the returns model. The results based on this models showed that although earnings and EVA were still statistically significant at 1%, the earnings change and EVA change were statistically insignificant. Consistent with the returns model, operating cash flows and operating cash flows changes were found to be statistically insignificant in explaining changes in share returns.

Overall the results shows that both accounting based (book value of equity and earnings) and market based measures (EVA) are value relevant in determining firm value.

Furthermore, the results show that a consideration of more than one variable in determining firm value is more informative than considering each variable separately. In a similar vein, the results show that instead of considering the commonly used variables in value relevance research such as book value of equity and earnings, consideration should also be given to EVA as this study has shown that it is has information content that could be used to determine firm value.

The study focused on the 10-year period between 2005 to 2014. However, the study can conduct further tests for the period before financial crisis (2005-2007), during (2008 – 2009) and after financial crisis (2010 -2014) as further analysis to establish if there is any consistency in the findings. The study can further be extended to include a longer time frame to see if R^2 doubles again with a change in time horizon from 10 to 15 and 20 years.

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