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Informational content of cash dividends and retained earnings: evidence from South Africa

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Abstract: Net profit for the year can either be distributed as dividends or be retained by the firm. We examine informational content of both channels of conveying value to shareholders of Johannesburg Stock Exchange-listed companies between 2010 and 2017. Motivated by conflicting dividend policy theories and respective empirical findings, the study is aimed at proffering empirical evidence that assists equity investors' investment decisions. Using an autoregressive distributed lag model in system GMM with panel data, both cash dividends and retained earnings exhibited a positive association with market capitalisation but, in both cases, the association lacks statistical significance. This means that both variables do not have information that explicates firm value variations. To forecast firm value, equity investors should therefore not rely on models anchored on either cash dividends or retained earnings. By extension, company executives are advised to avoid making dividend policy changes with the aim of positively influencing firm value. A novel contribution of this study is that investors are not worried about how value created is conveyed to them because they can still enjoy it in either form. We conclude that payment or non-payment of dividends neither creates nor destroys firm value.

Keywords: information content; cash dividends; retained earnings; market capitalisation; South Africa.

JEL codes: C23, G15, M49.

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1 Introduction

Investment management entails taking risks and getting a commensurate return for the risks taken. This study focuses on part of the return side of the risk-return trade-off theory (cash dividends) using a dataset of companies quoted on the Johannesburg Stock Exchange (JSE) for the time spanning from 2010 to 2017. The study is motivated by the apparent opposing viewpoints of the dividend irrelevance theory versus the bird-in-the-hand theory. The dividend irrelevance theory says dividends do not matter because if investors are in need of cash, they can always dispose their shares for cash. The tax preference theory seemingly supports this view by saying that investors would rather have capital gains than cash dividends because dividends generally attract higher tax rates than capital gains. Empirical evidence by Rees and Valentincic (2013) supports the narrative that cash dividends have no information that explains firm value. All this cast doubt on the appropriateness of firm valuation models that rely on cash dividends, like the well-known dividend discount model. On the contrary, Gordon (1963) and Lintner (1962) posit that dividends are informative and investors consider companies' dividend policies when making their equity investment decisions. This thread is also supported by empirical evidence from Bouteska and Regaieg (2017). These counterviews motivated this investigation and the study makes an inquiry into the issue from a value relevance perspective. The main problem to an equity investor arising from such contrasting views centres on which side of the divide to follow. Should they believe those who say dividends are informative and invest based on a company's dividend payment history, or believe those who say dividends are irrelevant and invest based on other fundamentals? Further to these opposing viewpoints, companies quoted on the JSE predominantly paid cash dividends during the study period. For all the 400 firm-year

combinations studied between 2010 and 2017, 82% of the combinations paid a cash dividend. This shows companies' high appetite for dividend payments. Considering this high percentage of cash dividend payments, a question that arises is this: does a cash dividend payment possess information that impacts company value on the JSE? One can naively hypothesise that companies prefer paying cash dividends because that positively impacts their market values. If this is correct, then an equity investor can simply target to buy stocks in firms that consistently declare cash dividends since cash dividend payments have information that explicates firm value. This study investigates if dividends are indeed a guiding light to equity investors.

Cash dividends represent a return on investment (the return can also take another form, i.e., capital gains). When a firm makes net profits at the close of its trading year, the profits can either be given to shareholders as dividends, or kept in the firm. These variables represent how value created during the year is handled by a firm: it can either be distributed to shareholders or retained for future redeployment by the firm. Although retained income is not the sole source of financing for a firm's future growth, it is integral to a firm when it wants to exploit profitable opportunities in the absence of debt and new capital injection by the owners. This is because retained earnings are already at a firm's disposal and can be utilised relatively quickly as opposed to debt and new capital injection by shareholders, which take time to be realised. Retained earnings can therefore be viewed as a hint by firm executives to the market in respect of the firm's future fortunes. Nevertheless, if a firm makes a loss during a particular financial year, this reduces cumulative retained earnings. In this respect, retained earnings provide the first line of defence against a harsh operating environment by absorbing losses. For this reason, retained earnings can be reasonably expected to explain firm value. Conversely, cash dividends signify the immediate and direct reward to shareholders of the firm. The other form of reward comes as capital gains when share prices rise. This, however, is not guaranteed because share prices can fall at any time, resulting in a loss of value. Cash dividends do not suffer from this problem once they are paid (the bird-in-the-hand). Resultantly, these two variables capture the movement of value created by a firm during a particular financial year.

This study is intended to uncover the nature of the relationship between company value (measured by market capitalisation) and the value created during a particular year (cash dividends and retained earnings). The research also interrogates the applicability of dividend theories on the JSE. Findings from this investigation inform equity investors in South Africa regarding the appropriateness of firm valuation models that are anchored on cash dividends as well as retained earnings. This analysis should also provide guidance to company executives to know the implications of their dividend policies regarding how investors value their companies. For instance, if dividends are informative and positively associated with company value, company executives can prioritise dividend payments (by having higher pay-out ratios) than capital gains as that would increase firm value and maximise shareholder value. On the contrary, informativeness of retained earnings should also mean that firm managers can have high retention ratios as a way of maximising firm value. While previous studies have looked at either dividends (Willows et al., 2020) or retained earnings (Ball et al., 2017) separately, this study extends frontiers by determining the informativeness of both the payment or non-payment of dividends and retained earnings in the same study. A novel contribution of this study centres on its use

of dynamic models and System GMM estimators, something that has rarely been done in previous studies. Extant literature largely employs static models and OLS estimators.

The following section surveys extant literature, followed by a conceptual framework of the study. Methodology and methods is the subject of the next section, which will then be followed by the study's findings. A discussion of findings, recommendations, contributions of the study and the conclusion round off this paper.

2 Literature survey

A survey of relevant literature covers both dividend theories and empirical literature that dwells on the informational content of cash dividends and retained income.

2.1 *Dividend policy theories*

Dividend policy issues have received a fair share of attention from theorists. There are theories that support, as well as those that are against, the informational content of cash dividend payments. The respective theories are reviewed below.

Leading the line of argument that says dividends are sub-optimal is the Miller and Modigliani (1961) dividend irrelevance theory. Miller and Modigliani (hereafter MM) postulated that the choice of declaring or not declaring dividends does not influence a company's value. The intuition behind MM's postulation is that firms that pay relatively more dividends give their stockholders less in terms of share price increases and, at the same time, they have to offer the same return to stockholders as compared to those that pay less dividends. Barring differences in dividend and capital gains tax rates, stockholders have to be indifferent on whether to receive their money as dividends or as capital gains. In the real world, the fact that taxation rates on dividends exceed those on capital gains helps prop up the proposition by another school of thought that says investors actually do not like dividends. Nevertheless, firms continue to pay dividends and this is a motivation to study this issue in the current investigation.

Countering the dividend irrelevancy theory is the 'bird-in-the-hand theory', which MM termed 'bird-in-the-hand fallacy'. This theory advocates for the informativeness of cash dividends. The basis of that argument is that dividends are safe and certain, while price appreciation is risky because share prices can fall at any time. This is particularly so in a bear market in an economic downturn, where price movements have less to do with individual firm performance, but they are largely a function of market-wide negative sentiment. The counter-argument by MM is that the choice is between a guaranteed amount of cash dividends today and a guaranteed amount of price increase (of an almost equal amount) today. Anchored on the assumptions made, it means that investors should therefore be indifferent. Investors' indifference was however questioned by some empiricists who said investors are actually averse to dividend payments, ostensibly due to the tax burden concomitant with dividends (Litzenberger and Ramaswamy, 1979).

Picking up from the last statement above, tax disadvantages associated with dividend payments should actually cause investors to loathe dividends. According to the tax preference theory, firms are therefore forced to keep dividend payments as low as possible to avoid a backlash from the market (in the form of share disposals), which will lower firm value. This means that a rise in the amount of cash dividends paid will lower a company's value, implying a negative nexus between dividends paid and company value.

Closely related to this theory is the clientele effect which says that a firm attracts investors who are inclined to its dividend payment pattern (investors will come to a firm's habitat) such that any changes to the pattern will trigger a response from investors.

Dividends' informational content is additionally buoyed by the signalling hypothesis. The hypothesis posits that a change in dividend policy by a firm is a pointer given to all stakeholders by firm management. In other words, it is management's way of communicating with the market concerning the state of a company's cash flows in years to come. This is quite key considering information asymmetry amongst insiders (company executives) and outsiders (equity holders). The insiders, in this particular case, will be implicitly telling the outsiders that either future cash flows are good (increased dividend), or they are bad (reduction in dividends). However, the danger with this notion is that a reduction in dividends can be a strategic move by management in light of profitable opportunities that lie ahead, and management will therefore want to retain more income to enable the firm to exploit the anticipated future opportunities. It is therefore the duty of every analyst and investor to decipher the motive behind each dividend policy change.

The agency theory views firm managers as agents of the firm's shareholders (owners). Agency conundrum exists between executives and stockholders concerning the use of retained earnings by the agents. Specifically, managers may enjoy too much perquisites, using retained income, at the expense of shareholders. Furthermore, they may also sub-optimally invest the retained earnings, again, to the detriment of the shareholders. These two possibilities involve agency costs. Dividend payments provide an avenue for management to reduce the agency costs through payment of higher dividends. Higher dividends mean that the amount left at management's discretion is much lower, which lowers agency costs. In a related matter, management will then be compelled to approach the market in order to raise funds for expansion projects, and capital providers will closely monitor how management uses the borrowed funds, which reduces agency costs and ultimately, benefits shareholders.

2.2 Empirical literature on informational content of dividends

Ngoc and Cuong (2021) adopted an event study approach to investigate the impact of dividend policy on share prices in Vietnam. The study period spanned from 2008 to 2015. Besides estimating abnormal returns around dividend announcement dates, the study also used panel data regression to quantify the long-run impact of dividend policy. Results showed that the payment of dividends is value relevant. In another recent study, Willows et al. (2020) investigated the effect of dividend pay-outs on future earnings in South Africa. This study differs from Ngoc and Cuong (2021) in that it uses future earnings as the dependent variable as opposed to stock prices. Willows et al. (2020, p.569) found out that dividends have information content, and concluded that "dividend payout decisions are seen by investors as a predictor for future value growth and, as such, management should be aware of their associated dividend distribution decisions". Conflicting results were found by Der et al. (2018) when they compared value relevance of book value, earnings and dividends for financial and non-financial firms in Ghana. For non-financial firms, dividends only became value relevant when earnings were split into retained earnings and dividends. The current study adopted a similar approach of analysing earnings as a combination of dividends and retained income.

Bouteska and Regaieg (2017) analysed informational content of earnings per share (EPS), dividend per share (DPS) and stock returns for firms quoted on the Tunisian equities market from 2005 to 2015 using panel data regression models. They concluded that both EPS and DPS have value relevance. Evidence on the usefulness of dividends points to the fact that the dividend irrelevance theory as well as the tax preference theory do not apply on the Tunisian stock market. In Nigeria, Alkali et al. (2018) analysed value relevance based on an adapted Ohlson model. It was adapted by incorporating dividends and audit quality (further to the usual variables of net income and book values). Value relevance was compared prior as well as post the embracing of International Financial Reporting Standards (IFRS) in Nigeria. Dividends exhibited statistical significance in the pooled sample as well as in the two periods either side of IFRS adoption. This denotes that dividends are informative. Informational content of dividends in Nigeria was again the subject of Omokhudu and Ibadin (2015)'s investigation. Dividends were found to be value relevant just like in Alkali et al. (2018). Findings from the Nigerian market are consistent with Bouteska and Regaieg's (2017) findings on the Tunisian market. Barth et al (2018) studied value relevance of dividends (among other variables) from a slightly different dimension. They focused on the evolution of informational content of financial statement data from the year 1962 to 2014 in the USA. The research uncovered a fall in the usefulness of net profit and dividends over that period. The fact that dividends' value relevance was found to have declined shows that, at the very least, dividends possess some value relevance, thus affirming the findings by Bouteska and Regaieg (2017). These findings raise questions on the cogency of the dividend irrelevance theory and, in the process, give credence to the bird-in-the-hand theory and other dividend relevance theories. A question that arises from Barth et al (2018)'s conclusion revolves around the reason for the decline in dividends' value relevance. Further studies can however explore this issue.

Budagaga (2017) also studied the informational content of dividend payments, employing a panel dataset of firms quoted on the Istanbul Stock Exchange. A fixed effects model was employed, chosen based on a comparison of the Chi-square log likelihood of the random effects model to that of the fixed effects model. The study adopted the residual income valuation model embedded in Ohlson (1995). Findings showed that dividends are value relevant, where a positive relationship with firm value was shown. The findings by Budagaga (2017) are a blight on the dividend irrelevance theory. On the other hand, they are consistent with the agency theory as well as empirical findings by Bouteska and Regaieg (2017). Further evidence that buttresses the above findings was provided by Cole et al. (2016) in a study focusing on three sectors in the USA. A simple linear regression model based on pooled data was used, where equity price was the response variable and DPS was the explanatory variable. A positive association was found between equity price and DPS, and the relationship is statistically significant. This means that the information embedded in dividend payments is informative in share price determination.

Dedman et al. (2017) assessed value relevance of dividends in a rather unconventional way; they included both stock and cash dividends in valuation models that also had net income, book value and capital contributions as the other explanatory variables. Two separate models testing forecasting ability of cash and stock dividends were developed, one with net income for the following period and another one with the next period's cash dividend as response variables. The goal was to determine how good are cash dividends as well as stock dividends in predicting future net income and cash

dividends. The models were run on various samples that include cash dividend paying entities only, stock dividend paying entities only and those entities paying both types of dividends on the Chinese stock market. Predictive ability is interpreted to mean value relevance. Results show value relevance of both cash and stock dividends, and in the event that cash dividends are not declared, stock dividends are useful in predicting future net profit and cash dividends. Value relevance of cash dividends was also found by Al-Shattarat et al. (2013). The study tested the signalling informational content of dividends on the Amman Stock Exchange. Value relevance of dividends was determined by computing abnormal returns around dividend pronouncement dates for both the dividend declaring cluster and the non-dividend declaring cluster. Abnormal equity returns were observed around the dates when dividends were announced. Within the non-dividend declaring cluster, no abnormal stock returns were observed when the non-payment of dividends was announced. The authors concluded that their study was in conformity with the dividend signalling hypothesis, implying value relevance of dividends.

On the contrary, Rees and Valentincic (2013) argued against value relevance of dividend payments. Specifically, they posit that value relevance of dividends arises due to some valuation error in the previous year's earnings. Where 'other information' is included in valuation models, Rees and Valentincic (2013) assert that core earnings will be estimated correctly, resulting in value irrelevance of dividends. They further stated that value relevance of dividends appears to be over-hyped due to the nexus between net income and dividends. The general conclusion of their study lends support to MM's dividend irrelevance theory. Al-Hares et al. (2012) studied informational content of net income, dividends and book value in Kuwait; mainly with the objective of finding out if dividends can substitute earnings in valuation models. In a model that has earnings, their results support Rees and Valentincic's (2013) assertion that dividends are not informative. Interestingly, however, dividends turn out to be informative when they substitute earnings, i.e., when earnings are dropped from the model. Benartzi et al. (1997) examined the extent to which dividends transmit information concerning the level of net income in the future. To achieve this, the study examined if 'firms that increase (decrease) dividends in year 0 will have positive (negative) unexpected earnings in years 1, 2, etc.' (p.1010). Their results found scant evidence that dividends possess any information that informs us about the level of future net income. Overwhelming evidence was, however, found to the effect that dividends relay past earnings information. The existence of contrasting empirical findings on the same issue simply points to the need for further research on that issue, and the current study intends to do just that.

2.3 Empirical literature on informational content of retained earnings

Whilst informational content of retained earnings has been studied from as far back as the 1950s (Harkavy, 1953), very few studies of late have been dedicated to informational content of retained earnings, either on their own, or as part of an analysis examining information content of dividends. Two of the few studies are Yemi and Seriki (2018), and Ball et al. (2017). Yemi and Seriki (2018) studied the association between retained earnings, DPS (among other variables) as explanatory variables, and company value as the dependent variable, in Nigeria. The value of a company was represented by Tobin's Q. Findings show that both retained profit and dividend pay-out have value relevance. In

both cases, a positive connection with company value was found. In the other study, Ball et al. (2017) examines retained earnings together with capital contributed by the owners for the period spanning from 1964 to 2016 in the USA. Regressions similar to Fama and MacBeth (1973) were used in a comparative inquiry of the informational content of retained earnings against that of contributed capital. Retained earnings were found to have explanatory power while contributed capital had no explanatory power. They made an important argument in saying “book-to-market (value) only predicts stock returns because it contains retained earnings” (p.3). This stems from the fact that since retained earnings are cumulative over a firm’s lifespan, they contain valuable information because all accounting errors in previous periods would have been corrected in the current retained earnings figure. This is particularly pertinent considering the numerous cases where firms revise and restate their previous year’s accounts in the following year. Breaking down book value of equity into its component parts (cumulative earnings and cumulative dividends) for analysis, Ball et al. (2017) concluded that retained earnings are only value relevant because they subsume earnings from previous periods. Considering studies that found out that earnings are devoid of value relevance (see review by Baltariu, 2015), this assertion by Ball et al. (2017) needs further investigation. Ball et al. (2017, p.3) also concluded that “the accumulated dividends component of retained earnings is uninformative”. It is however not clear what is being referred to as ‘accumulated dividends component of retained earnings’ because retained earnings do not contain dividends. Income is either retained or paid out as dividends, so dividends cannot be a component of retained earnings. In their findings, Ball et al. (2017) further posit that retained earnings are a suitable proxy for earnings yield.

2.4 Modelling issues arising from literature

Budagaga (2017) uses panel data models to examine information content of dividends. Yemi and Seriki (2018) also use panel data (unbalanced) in their analysis. In both cases, however, static models were used. Invariably, literature reviewed in this section also uses static models. The current study makes a departure from this trend and employs dynamic panel data models, justification of which is provided in the methodology section. Yemi and Seriki (2018) use OLS estimators in their panel data models. The current study does not use OLS estimators since it employs a dynamic panel.

Dedman et al. (2017, p.670) say their analysis is an event study, presumably because they investigated the effect of payment and non-payment of cash and stock dividends. However, in the true sense of an event study, focus is on timeliness, which does not seem to be the case in Dedman et al. (2017). Determining forecasting ability cannot be an event study methodology as alleged. Event studies are like the one conducted by Al-Shattarat et al. (2013), where reactions around a particular event are studied to determine the impact of that event.

3 Conceptual underpinning of the study

Empirical researchers have primarily focused on informational content of cash dividends as shown in the literature survey section. This study extends frontiers by including retained earnings in the regression models. This is aimed at tracing the whole shareholder value system. The reasoning behind tracing the shareholder value system is to determine

whether investors ‘follow the value’. This term is used in this study to mean a situation where investors trace the value created by a firm during a particular trading year to its final destination and accord commensurate recognition of the split in value created. The value created is represented by net income and its final destination can either be cash dividends or retained earnings. By tracing shareholder value, it means investors will incorporate these forms of value into their equity valuation models. Conceptually, therefore, it means that if a firm declares a cash dividend, investors will positively respond. The positive response will manifest itself by way of a rise in firm value. Furthermore, the study postulates that if all or some value is retained by the firm, investors will, again, respond positively through increased firm value. The rationale for a positive response when earnings are retained is that these earnings are still at the firm’s disposal and can quickly be deployed into profitable opportunities that arise in the future, which ultimately will increase profits to the benefit of shareholders. Furthermore, retained earnings represent value that is still within the firm. Since common equity holders are owners of the firm, the earnings that have been retained are an addition to the owners’ ‘bank balance’, which should amplify firm value. This results in the following hypotheses for the study:

H1 There exists a positive relationship between firm value and cash dividends.

H2 There exists a positive association between firm value and retained earnings.

The envisaged link between market capitalisation and cash dividends stems from the fact that ex-dividend equity prices are lower than the cum-dividend equity prices. An upsurge in cash dividends results in a greater cum-dividend equity price, meaning that cash dividends positively influence share prices and, by extension, market capitalisation. Retained earnings are expected to have an influence on market capitalisation because they represent a build-up of a company’s cash pile, which can be used to generate more income or can even be distributed to shareholders in the future. An increase in retained earnings should thus increase market capitalisation. This justifies the explanatory variables used in this investigation.

4 Methodology and methods

This section explains the models used, pertinent modelling issues, population and sampling matters as well as the delimitation of the study.

4.1 The models

The following models were used:

$$\ln FV_{it} = \beta_0 + \phi \ln FV_{i,t-1} + \beta_1 D_{it} + \beta_2 \ln RE_{it} + \beta_3 \ln RE_{it-1} + \varepsilon \quad (1)$$

$$\ln FV_{it} = \beta_0 + \phi \ln FV_{i,t-1} + \beta_1 \ln RE_{it} + \beta_2 \ln RE_{it-1} + \varepsilon_{it} \quad (2)$$

$$\ln FV_{it} = \beta_0 + \phi \ln FV_{i,t-1} + \beta_1 D_{it} + \varepsilon_{it} \quad (3)$$

where

$\ln FV_{it}$	log of firm value for company i during period t
$\ln FV_{i,t-1}$	log of firm value for company i during period $t - 1$
D_{it}	indicator variable for dividend payments for firm i during period t , where $D = 1$ if dividend was paid and 0 otherwise
$\ln RE_{it}$	log of cumulative retained earnings for firm i during period t
$\ln RE_{i,t-1}$	log of cumulative retained earnings for firm i during period $t - 1$
β_0	regression intercept
φ	coefficient for the first lag of firm value
β_k	regression coefficient for the k^{th} variable (for $k = 1, 2, \dots, N$)
ε_{it}	disturbance term for company i in time t ($= \mu_i + v_{it}$).

4.2 *Modelling issues*

The study uses dynamic models in line with Clout and Willet (2016) as well as Sixpence et al (2020). Use of dynamic models ensures better specification of regressions (Alexander et al., 2012; Bond, 2002). System GMM is used instead of the commonly used OLS considering arguments in Ohlson and Kim (2015) regarding limitations of OLS. Furthermore, System GMM was chosen because of its robustness (Roodman, 2009). It also performs better than difference GMM in cases where the response variable approximates a random walk (Blundell and Bond, 1998).

Regressions were done using *xtabond2* command in Stata. Net profit and average debt/equity ratio are used as further instrumental variable-style instruments. The reason for using net profit is that both dividends and retained income are derived from net profit. This net profit is affected by interest payments on debt and the settlement of other short-term liabilities of a firm. Highly indebted firms (with high average debt/equity ratios) may find themselves constrained in either declaring a cash dividend or having any profits to retain. For these reasons, these variables were deemed good instruments in such a model. The Hansen test (Section 5.3.4) confirms that these are indeed good instruments.

4.3 *Population, sampling and data issues*

All non-financial companies with a continuous listing from January 2010 to December 2017 form the population of this investigation. This means that companies listed or de-listed during this period are excluded. These criteria yielded around 180 companies, which was then rounded up to a population of 200 companies. A quarter of these companies were purposively sampled, ensuring that a proportionate number is selected from all nine eligible JSE level one sectors. This ensured that each sector is fairly represented in the sample to avoid results that have a sector bias. A conscious decision was also made to ensure both small and large cap companies are included in the sample.

Share prices were sourced from Yahoo Finance website. Cash dividends, retained earnings, net profit and debt ratios were taken from respective companies' audited financial reports. The audited financial reports were sourced from companies' online databases.

4.4 Delimitation

We focus on the period immediately following the global financial crisis (GFC) that commenced in late 2007 and ended in 2009, up to the end of 2017. The year 2010 represents a full year immediately after the GFC, thus it is the study's starting point. Latest full year financial results were available up to the year 2017 when the investigation was started, hence the end date. The decision to carve out the period after the GFC is meant to exclude potential noise emanating from trading under negative sentiment associated with the GFC.

5 Results

This section presents descriptive statistics, correlation as well as regression results.

5.1 Descriptive statistics

Table 1 exhibits descriptive statistics using raw data.

Table 1 Descriptive statistics

<i>Variables</i>	<i>No.</i>	<i>Sum</i>	<i>Mean</i>	<i>St. dev.</i>	<i>Minimum</i>	<i>Maximum</i>
Market cap.	400	1.175e+13	2.938e+10	6.000e+10	1.890e+07	4.083e+11
Share price	400	26,607	66.52	96.86	0.0300	609.3
Average debt ratio	400	329.3	0.823	0.870	0.0500	4.145
Dividends	400	3.481e+11	8.702e+08	2.695e+09	0	2.351e+10
Retained income	400	3.724e+12	9.309e+09	2.272e+10	-1.405e+09	1.767e+11
Net profit	400	7.594e+11	1.899e+09	6.522e+09	-9.634e+09	8.170e+10
Firm count	50	50	50	50	50	50

There are 400 firm-year combinations from 50 firms over the eight-year study period. For the response variable (market capitalisation), the minimum and maximum values indicate that the sample is diverse, covering both low-and high-value shares. There is reasonable dispersion from the mean, as seen from a comparison of the mean and the minimum and maximum values, as well as the standard deviation (St. Dev.). The same pattern is also evident on the explanatory variables (dividends and retained earnings): there is acceptable deviation, which is not expected to pose any problems when running the regressions. In all cases, raw data is transformed into natural logs before running the regressions. This reduces the influence of outliers and any scale bias that may be observed from raw data statistics presented here. The explanatory variable, 'cash dividends', has a lowest value of zero, indicating that some companies did not declare dividends during one or more years under study.

The regressions utilise two additional instrumental variables (net profit and average debt/equity ratio). Net profit depicts wide deviation, which is symptomatic of the inclusion of small and large capitalised firms. The deviation is however not expected to pose any scale bias in the regression because, in this instance, net profit is only an instrumental variable. The other instrumental variable has no such deviation since the figures are means of debt ratios.

5.2 Correlations

Table 2 depicts the correlation matrix.

Table 2 Correlation matrix

	<i>Market cap</i>	<i>Cash dividends</i>	<i>Retained income</i>	<i>Net profit</i>	<i>Av. debt ratio</i>
Market cap	1.0000				
Cash dividends	0.8639* (0.0000)	1.0000			
Retained income	0.9108* (0.0000)	0.8458* (0.0000)	1.0000		
Net profit	0.4125* (0.0000)	0.4684* (0.0000)	0.4332* (0.0000)	1.0000	
Av. debt ratio	-0.3329* (0.0000)	-0.3183* (0.0000)	-0.1642* (0.0013)	-0.1406* (0.0049)	1.0000

Correlation analysis helps as a precursor to the regression models by identifying the nature of the relationships and whether or not these relationships have statistical significance. The study used 5% significance level in the correlation analysis, where an asterisk next to a correlation coefficient indicates a statistically significant relationship. The *p*-values are given in brackets beneath the respective correlation coefficients.

A strong and positive association exists between market capitalisation and cash dividends. The association possesses statistical significance. This implies that a rise in the amount of cash dividends paid translates into a rise in company value. The implication is that when a higher cash dividend is declared; investors will positively respond through an increase in demand for stocks of that particular firm. The increase in demand leads to an upsurge in the company's share price, resulting in a commensurate increase in equity capitalisation. The opposite movement should also hold, where failure to declare dividends (or a fall in the declared dividend) should result in a drop in equity prices and the attendant market capitalisation. A very strong positive relationship exists between market capitalisation and retained earnings (0.9108). The relationship is statistically significant. This means that as retained earnings pile up, firm value also increases. These positive relationships between market capitalisation and both retained earnings and cash dividends show that whatever the firm decides to do with its net profits (distribute or retain), the action induces a positive impact on firm value.

Another positive and statistically significant association exists between market capitalisation and net profit but the association is not very strong (0.4125). An upsurge (drop) in net profit results in an upsurge (drop) in market capitalisation. Failure to grow a firm's bottom-line is, therefore, viewed negatively by investors. A negative association, which has statistical significance, obtains between market capitalisation and average debt/equity ratio. This means that an increase in the amount of debt is viewed negatively by investors, perhaps anticipating debt distress. However, with a correlation coefficient of -0.3329, the association is not very strong. The two independent variables, i.e., cash dividends and retained earnings, have a high and statistically significant positive association. In all the regression models, cash dividends are represented by a dummy variable and not the actual amount of cash dividends paid. This means that the 0.8458

correlation coefficient between cash dividends and retained income is inconsequential. Therefore, collinearity does not exist in this particular case.

A strong positive correlation was anticipated between net profit and either cash dividends or retained earnings, but that is not the case. Net profit and cash dividends exhibit a weak positive correlation (0.4684) while net profit and retained earnings also have a weak positive correlation (0.4332). Both relationships are, however, statistically significant. A strong positive correlation between net profit and cash dividends was expected because dividends are declared from net profits such that an increase in net profits would result in a rise in cash dividends. If that fails to happen, then there should be a strong correlation between net profit and retained earnings because if companies are not paying out more as they make more profits, they will be retaining more. This, again, is surprisingly not the case. What this means is that companies do not have a consistent dividend pay-out ratio, which automatically increases dividend payments when profits increase. Neither is there also a consistent retention ratio for the companies involved. The results suggest that dividend pay-out ratios and retention ratios are subject to change from one year to another depending on the circumstances, leading to weak correlation coefficients. A small bias towards cash dividends is evident. Net profit and average debt/equity ratio, the two additional instrumental variables, have a very weak negative correlation (-0.1406). The relationship is, however, statistically significant. All the other remaining relationships are statistically significant but the correlation coefficients lean towards the weak side.

5.3 Regression results

Table 3 displays regression as well as diagnostic test results.

The analysis makes use of nested models as a way of checking value relevance of one variable without controlling for the other independent variable. For instance, model B gives information content of retained income without controlling for the payment of cash dividends, while model C focuses on the payment of cash dividends without controlling for retained income. This also serves as a measure of sensitivity of the model results to dropping a variable. Furthermore, different lag limits are used to check sensitivity of the model results to variations in the lag structure. Models A and D are similar, except that they have different lag limits, thus their results are presented and analysed together. One independent variable at a time is dropped, yielding models B and E as well as C and F. Presentation of results thus follows this pairing.

5.3.1 Findings for models A and D

The *F*-test depicts that these models are significant (1% level), meaning that the explanatory variables mutually expound movements in market capitalisation. Whereas model A uses 26 instruments, model D utilises 22 instruments, and both models have 330 observations from 49 firms. In both cases, the instruments count is below the total observations and groups, implying there is no problem of too many instruments normally associated with GMM estimation.

In model A, market capitalisation and retained earnings have a positive association. Correlation analysis also showed a positive association between these variables. However, in this instance, the association is statistically insignificant. A change in the lag structure (in model D) has no major impact on the results, where the association is still

positive and statistically not significant. The coefficient of retained income is 0.089 in Model A, which marginally changes to 0.082 as a result of a change in the lag limit. Thus, the results are also robust to changes in the lag structure. Windmeijer corrected standard (WCS) errors barely change between the two models, implying robust results. Lack of statistical significance means that retained earnings are not informative.

Table 3 Regression results

	<i>Model A</i>	<i>Model B</i>	<i>Model C</i>	<i>Model D</i>	<i>Model E</i>	<i>Model F</i>
<i>Variables</i>	<i>Log MC</i>	<i>Log MC</i>	<i>Log MC</i>	<i>Log MC</i>	<i>Log MC</i>	<i>Log MC</i>
Log of lag MC	0.996*** (0.040)	1.009*** (0.036)	1.011*** (0.025)	1.039*** (0.051)	1.042*** (0.044)	1.010*** (0.039)
Log retained income	0.089 (0.141)	0.086 (0.145)		0.082 (0.142)	0.080 (0.142)	
Log of lag retained income	-0.095 (0.128)	-0.103 (0.134)		-0.129 (0.138)	-0.130 (0.139)	
Dummy (dividend payment)	0.071 (0.068)		0.003 (0.068)	0.011 (0.080)		0.008 (0.088)
Constant	0.199 (0.175)	0.212 (0.178)	-0.080 (0.527)	0.174 (0.166)	0.175 (0.168)	-0.029 (0.819)
Instruments	26	25	24	22	21	20
Observations	330	330	350	330	330	350
Number of groups	49	49	50	49	49	50
Arellano-Bond test for AR(1)	-3.39	-3.39	-3.67	-3.40	-3.40	-3.70
AR(1)'s probability	0.001	0.001	0.000	0.001	0.001	0.000
Arellano-Bond test for AR(2)	-0.43	-0.26	-0.70	-0.27	-0.26	-0.72
AR(2)'s probability	0.670	0.796	0.483	0.783	0.797	0.473
Hansen test statistic	19.95	20.39	20.17	15.91	15.97	16.21
Hansen test's probability	0.174	0.157	0.165	0.144	0.142	0.133

Notes: Corrected standard errors appear in brackets. AR(N) = Nth order serial correlation test.

*** = statistical significance at 1% level.

The indicator variable for the payment or non-payment of cash dividends has a positive coefficient in model A. A positive coefficient (where cash dividend payment was coded 1) means that firms that pay cash dividends will have a higher market capitalisation than those that do not pay cash dividends. The correlation matrix also produced a positive relationship between market capitalisation and dividends. However, the relationship lacks statistical significance, suggesting that the observed connection could have arisen by mere chance. Changing the lag structure in model D still yields a positive association, which, again, lacks statistical significance. The coefficients are within the same range in spite of a variation in the lag limit. WCS errors are also within a similar range. This means that the model is robust to lag structure changes, yielding reliable results. Payment of dividends is thus not informative.

5.3.2 *Findings for models B and E*

The dummy variable is dropped from the first two models, yielding model B and model E respectively. According to the *F*-test, model B and model E possess statistical significance at a level of 1%, meaning that dropping the dummy variable does not affect the statistical significance of the remaining explanatory variables. They still mutually expound the movement in market capitalisation. Model B has 25 instruments and 330 observations while model E has 21 instruments and 330 observations as well. The observations are from 49 firms in both models. Comparison of all these figures shows that there is no problem of too many instruments.

Dropping the dummy variable causes the coefficient of retained earnings to marginally change from a model A figure of 0.089 to 0.086 in model B. The association between market capitalisation and retained earnings is still positive and statistically insignificant after the dummy variable has been dropped. This shows that whether or not we control for cash dividend payments, the association between market capitalisation and retained earnings remains positive and statistically insignificant. The results are therefore robust to dropping a correlated explanatory variable. WCS errors also change marginally. Comparing model B to model E shows that changing the lag limit does not change the nature of the association between the response and explanatory variable (it is still positive and statistically insignificant). The regression coefficients, again, marginally change from 0.086 (model B) to 0.080 (model E). WCS errors also change marginally. All these small changes show that the results are robust to changes in lag structure, which is a desirable trait. These models affirm earlier results (from model A and model D) to the effect that retained earnings provide no useful information that explains the movements in market capitalisation.

5.3.3 *Findings for models C and F*

Retained earnings were dropped from model A and model D, and the resultant nested models are model C and model F respectively. There is still a 1% level of statistical significance for the two models, again, showing that the remaining explanatory variables jointly expound the movement in market capitalisation. Dropping retained earnings means that all the 50 firms are now utilised, producing 350 observations in both models. Model C's instruments total 24, with those of model F adding up to 20. Comparing the instruments count to the sum of groups shows that there is no problem of too many instruments in both models.

The indicator variable for the payment or non-payment of cash dividends still shows a positive coefficient. Just like in model A and model D, the indicator variable is not statistically significant. This shows that whether or not we control for retained earnings, the association between market capitalisation and cash dividend payment remains positive and devoid of statistical significance. Besides being statistically insignificant, the coefficients of the dummy variable are very small (0.003 and 0.008), meaning that payment or non-payment of dividends has very little connection with market capitalisation. Thus, the relationship is both statistically and practically insignificant. The results are however robust to lag structure changes as well as to dropping a variable. Dividend payment thus lacks informational content on the JSE. This analysis uses a dummy variable, where payment of dividends was coded 1, and zero for non-payment. To complement model C and model F, regressions were, again, run where the dummy

variable was replaced by the natural logarithm of the actual amount of cash dividends paid. Since retained earnings are not in these models, the observed high correlation coefficient between cash dividends and retained earnings is, again, inconsequential. The results (output not shown) still indicate that cash dividends are statistically insignificant at 5% level. The regression coefficients are however not as small as in model C and model F, meaning that practical insignificance is not an issue when actual amount of dividends is considered. These robustness checks are complemented by diagnostic tests. The outcomes appear in the bottom section of Table 3 and their analysis is the subject of the next section.

5.3.4 Diagnostic test results

In all models, we fail to dismiss the existence of first-order serial correlation since all p -values for AR (1) are under 5%. By construction, first-order serial correlation is bound to exist; hence its existence is not informative. What matters is the second-order serial correlation [AR (2)] [Sixpence and Adeyeye, (2019), p.303]. We dismiss the existence of AR (2) in all the models since the probabilities for AR (2) are all above 5%. This means that autocorrelation is non-existent in the models. According to the Hansen test, the instruments used are valid and the models are robust. This is because the p -values are above 5% in all models. The models are thus not weakened by too many instruments.

6 Discussion of results

The results have shown that whether or not a JSE-listed firm pays a cash dividend, that decision does not influence firm value. As a robustness check, a second set of regressions (output not shown) was run, where the actual amount of cash dividends paid was used instead of a dummy variable for payment or non-payment of dividends. The results still show that cash dividends are not informative. This shows that investors do not place much significance on cash dividends because that is not the only way that they can receive value from their investment. Shareholders' wealth can also increase from capital gains.

The expectation is that if cash dividends are not informative, then retained earnings should be informative. This expectation is premised on a notion of 'following the value' by investors, where value here refers to net profits, which can either be given out as dividends or retained for future deployment into the business. In either case, investors should consider that in firm valuation. This turns out not to be the case as both cash dividends and retained income are devoid of value relevance (i.e., not informative). Retained income provides a firm with 'free funds' to deploy into profitable opportunities that may arise in the future. However, even firms without these free funds can still exploit such opportunities by either borrowing from the bank or raising funds from the market through a rights issue. Considering the existence of these other alternatives, this may be the reason why investors on the JSE do not tie future performance of a firm to its level of retained earnings. An increase in firm value is a reflection of the market's expectation of good future performance. The argument, then, is that future performance can still be good if management is able to source cheap funds and implement new projects and expand existing ones. If there are no profitable opportunities available, or if management is not able to either identify them or take advantage of them, then, the retained earnings will not

add any value to the firm, resulting in their lack of value relevance. In some cases, cumulative retained earnings may be swallowed up by future losses, which do not benefit investors. Losses in the future actually destroy value that would have been created in prior periods. The chances that value represented by retained earnings can easily be destroyed if a firm incurs losses in the future can be the reason why investors do not link firm value to retained earnings, hence their lack of value relevance

Comparing the study's findings with existing dividend theories reveals that the results both confirm and contradict these theories. The study found that dividend payments are not informative. These findings go against the bird-in-the-hand theory. As per this theory, declaring dividends impacts company value. The certainty of cash dividends is much better than the potential capital gains when share prices rise. While the study's findings negate the bird-in-the-hand theory, they however provide empirical support to MM's dividend irrelevancy theory. This theory advances the idea that dividend payment does not affect company value because that value depends on future earning capacity, which is not related to dividends paid. MM contended that dividends paid actually reduce firm value. If investors want cash, they can obtain that at any time by selling off their shares. However, such an argument is flawed in the sense that a shareholder may need cash, but at the same time, they do not want to dispose any of their shares because they may not be able to build the same portfolio again in the future. In this case, cash dividends are preferable to capital gains. Walter's (1963) model also views dividends as being value relevant, where an entity's dividend pay-out ratio is dependent on the association between the internal rate of return (r) of the firm and its cost of capital (k). An increase in the pay-out ratio reduces firm value if $r > k$. Where $r < k$, increasing the pay-out ratio increases firm value. If this holds, it implies that JSE firms are not following this guideline when they declare dividends. This, then, causes dividends not to be value relevant. The fact that cash dividends are not value relevant suggests that cash dividends cannot be used to lessen agency costs between company managers and owners of the company. Thus, the results in the current study fail to back the agency theory.

A number of studies have been conducted to ascertain informational content of dividends and, to a lesser extent, retained earnings. Evidence from Vietnam shows "a significantly negative relationship between payout ratio (PAYOUT), DPS and stock price volatility, ..." [Ngoc and Cuong, (2021), p.672]. The results run contrary to findings from the current study and the difference can be attributed to the different focus areas between the two studies. Willows et al. (2020) investigated the impact of dividend pay-outs on future earnings in South Africa and found out that dividend pay-outs have information content. While that study relates to the same market as the current study and produced contrasting results, the focus of the two studies is not similar; the current study focuses on the informativeness of payment or non-payment of dividends while Willows et al. (2020) focused on the effect of dividend pay-outs on future earnings. In another study, dividend pay-out ratio and retained income were found to be value relevant in Nigeria by Yemi and Seriki (2018). Using OLS estimators, Omokhudu and Ibadin (2015) also determined that dividends have information content on the Nigerian equities market. Ball et al. (2017) provided further evidence on the informational content of retained earnings. Information content of dividends shows that while dividends represent an outflow of funds from the firm, this outflow is reflected in the ex-dividend stock price (which is used as a response variable in most studies). Dividend pronouncements naturally bring about a surge in equity price because the cum-dividend equity price exceeds the ex-dividend

equity price. From ex-dividend date, equity prices drop so as to account for the dividends that are no longer attached to the shares from that date. Assuming that a firm performs at a constant level until the next dividend declaration date; upon announcement of a dividend, the cum-dividend share price rises, only to fall at the ex-dividend date. This pattern helps explain why dividends are value relevant. However, the question arises on why, in some cases, this does not lead to value relevance of dividends, like the JSE scenario in the current study. A possible explanation to this phenomenon is that, while cum-dividend and ex-dividend share prices are different, it is the degree of share price adjustment that is inconsistent with the change in cash dividends paid, such that no link exists between equity price movements and cash dividend payments. Normally, the lure of the cash dividend causes investors to pay a premium with the hope of getting a cash dividend. However, if investors are not very much attracted to cash dividends, the association between equity price adjustment and the payment of dividends will be weak, leading to lack of informativeness. Declared cash dividends may fall below market expectations, which may affect informativeness of such a dividend payment.

Bouteska and Regaieg (2017) studied information content of dividends in Tunisia and found that dividends were value relevant. Budagaga (2017) also determined that cash dividends possess information that explains movement in firm value. On the contrary, Rees and Valentincic (2013) argued that model specification issues influence value relevance of dividends; the link between core earnings, dividends and other information was cited as being crucial in this respect. Specifically, they opined that effective modelling of core earnings and other information leads to lack of value relevance of dividends due to absence of a valuation error in the preceding year. Such an argument augurs well with the findings of this research. Whether dividends are value relevant or not is premised on their information content with regards to future performance. This area was explored by Lintner (1956) who hypothesised that a firm will only increase dividends when it views an increase in earnings as permanent. This means that dividend pay-out has information content about future cash flows, which is what drives firm value. The base model used in this study does not capture increases or decreases in dividends due to the use of an indicator variable that assumes the value of 1 or 0. Even if dividends are increased or reduced, it will still be recorded as a 1, meaning that the change is not captured. This may help explain the disparity in the findings. However, a model that captures the level of dividends was also used and there was no change in the results, thus negating Lintner's (1956) hypothesis. Benartzi et al. (1997) also investigated this issue and reported very little proof of the informational content of dividend pay-out variations. While extant literature reveals that informativeness of dividends is inconclusive, this research posits that dividends are not informative. Observed informativeness of dividends in some studies may be driven by unobservable psychological factors peculiar to each market. This is an issue that needs further research to uncover the psychological factors (if indeed that is the case) that drive informativeness of cash dividends (plus any other financial statement variables).

Al-Hares et al. (2012) studied informativeness of book value, earnings and dividends on the Kuwait Stock Exchange. Findings indicated that the payment of dividends is not informative, which supports the findings of this research. However, when earnings were removed from the model, dividends became value relevant, which contradicts this study's findings: removal of retained earnings does not change the lack of statistical significance of dividends in our study. Al-Hares et al. (2012) also found that splitting net income into dividends and retained income (which was also done in the current study) resulted in

dividends as well as retained income being value relevant. The findings, again, contradict what this research found out.

7 Recommendations

Since the study revealed that payment of cash dividends on the JSE has no bearing on firm value, decisions on pay-out ratios should therefore not be based on the notion that such actions will influence firm value. Management of firms listed on the JSE are advised not to pay much attention to dividend pay-out policies because they have no influence on firm value, i.e., the decision on whether or not a company pays a cash dividend should not be driven by management's intention to positively influence firm value. That will not achieve the intended objective. By extension, company executives should also not aim to increase firm value through retention policies. This is because of the fact that the amount of retained earnings was also found to be uninformative.

Based on the study's findings, investment analysts and equity investors on the JSE should consider making use of equity valuation models that do not include retained earnings, since retained earnings are not linked to firm value. Likewise, investors and investment analysts should not focus on valuation models that are based on cash dividends because such models will also not perform well due to the disconnect between firm value and cash dividend payments. This brings into question the usefulness of the well-known dividend discount model in equity valuation on the JSE. The inclusion of variables that are not linked to firm value increases the 'noise' in the equity valuation model, which affects performance of the model. Poor model performance translates into poor trading strategies, which leads to poor returns on an investor's equity portfolio. This is undesirable to any rational investor, hence the advice given to investment analysts and equity investors.

8 Contributions of the study

This study posits that as long as value is created, how that value is handled thereafter has no much bearing on a firm's future performance (this is supported by regression results). A share price (hence market capitalisation) communicates the view of the market on a particular firm's future cash flows, and that future does not hinge on money leaving the firm (dividends), or money that can still be lost if a firm makes losses in the future (retained earnings). This is a novel contribution to literature on informational content of dividends and retained profits.

9 Conclusions

The study focused on the informativeness of cash dividends and retained earnings, the two channels through which value created by firms during a particular year finds its way to a company's shareholders. The study found out that both variables have no information that explicates movement in market capitalisation. Therefore, we reject Hypothesis 1 and conclude that dividend payments possess no informational content. We also reject Hypothesis 2 and conclude that retained earnings have no association with company

value. The study also concludes that investors on the JSE do not ‘follow the value’, which is a novel contribution of this study. This means that investors do not place any importance on how value created is distributed to shareholders, i.e., whether cash dividends or price appreciation is chosen as the distribution channel that is immaterial because either way, that value has already been created and shareholders will enjoy it in one form or another. Another conclusion that arises from the aforesaid is that firm value can neither be created nor destroyed by the way that value is apportioned to a firm’s shareholders.

While the study traced the information content of value created during a particular year, one aspect related to dividends remained uncovered, i.e., changes in dividend pay-out ratios. This did not fall within the scope of the current study’s research question, but it is equally useful to finance executives within companies. Future research can thus focus on the informational content of variations in dividend pay-out ratios. Such a study is akin to testing the dividend signalling theory. This information is relevant to those companies that make use of a constant dividend pay-out ratio. It will help them to know if any planned changes in the pay-out ratio can influence the market value of their companies.

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