Dividend payout and future earnings growth: A South African study

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Conventional wisdom posits that the payment of dividends will decrease the funds available to finance growth, and will therefore lead to lower future earnings growth. This belief was challenged in recent years with research that tested the relationship between dividend payout and future earnings growth, both on the individual company level and aggregate market level in different countries. Recent results contradict popular belief, and show that companies with high payout ratios tend to realise stronger future earnings growth.

This study investigated the same relationship in South Africa, as an example of a developing country, using a large sample of 12,669 company-years over the period 1973 to 2009. The results fully support recent findings that dividend payouts precede higher future earnings growth.

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Introduction

Conventional wisdom postulates that high dividend payout ratios will negatively affect future earnings since they reduce the cash available to fund further growth opportunities. If companies retain their realised profits, instead of paying them out to shareholders in the form of dividends, they could reinvest the realised profits in their current business activities, or new business ventures, and realise even higher profits. This belief was first challenged by Arnott and Asness (2003). Their research focused on listed companies in the United States of America (USA) and demonstrated a positive relationship between dividend payout ratios and future earnings growth. The study used data from 1871 to 2002, and tested the relationship on an aggregate market level. Even though the data set is comprehensive, the index used is capitalisation weighted, meaning that a few large companies could dominate the results.

In 2006 Zhou and Ruland were the first to test the relationship between dividend payout and future earnings growth on the individual company level. Their results confirmed that there was indeed a positive relationship between dividend payout and future earnings growth. Both studies were done in the USA using companies that operate primarily in a developed economy. The obvious and very relevant question then arises as to whether the results are the same for companies operating in a developing economy, such as South Africa.

This current study explores the relationship between dividend payout and future earnings growth for listed South African companies. The results are compared to those of the USA and Australia in order to identify similarities and differences between companies operating in different parts of the world.

The payment of dividends reflects information about a company's financial wellbeing and is valuable for investors in their investment decision practises. The information presented by the payment of dividends also influences a company's share price (Bernartzi, Michaely & Thaler, 1997; Gul, 1999; Hanlon, Myers & Shevlin, 2006; Lee, 2010). The large number of studies on dividends clearly indicates the importance of this information, and the interpretation thereof. When the focus is on the effect of dividend payments on future earnings, there are two different viewpoints to be considered. The older, widely accepted and well-researched opinion is that dividend payouts will eventually lead to lower earnings growth in future. This view states that, since dividends are paid from retained earnings, funds available to finance future growth opportunities are reduced through dividend distribution.

The second, and directly opposing point of view, was introduced as recently as in 2003. Empirical research in the

USA confirmed that companies with higher dividend payout ratios reported higher growth in future earnings than those with lower payout ratios. Investors are now faced with a difficult decision about which view to follow regarding possible future earnings after dividends have been declared.

Up to now no comparative study has been done for South African companies. This article evaluates the relationship between dividend payout and future earnings growth for South African companies. The result of this study can influence the way individual and institutional investors in South Africa evaluate companies, and ultimately how they direct their investment funds.

The rest of this article is organised as follows:

Section Two provides a review of previous studies on the relationship between dividend payout and earnings, followed by Section Three which outlines the specific methodology employed in the study. Section Four entails a comparative discussion of the findings. Section Five summarises and concludes.

Literature review

Conventional wisdom has it that high dividend payout ratios will negatively affect future earnings since they reduce the cash available to fund growth opportunities. High levels of retained earnings create abundant opportunities for investment, while a high-dividend policy could severely decrease retained earnings. This belief has been supported by a number of academic studies such as the well-known Gordon constant-growth model, which was published in 1962 and which is still very much in use today. It is a simple model that estimates the value of a share based on the dividend payout. It assumes that dividends will grow at a constant rate and is therefore primarily used for mature companies that pay dividends. According to the model the share price is calculated as:

Share price = Dividend per share / Required rate of return – Dividend growth rate.

Rearranging the equation above, the required rate of return can be calculated as follows:

Required rate of return = Dividend per share / Share price + Dividend growth rate.

Therefore, by using the Gordon constant-growth model, it can be seen that expected return is equal to the dividend yield (dividend divided by price) plus a constant expected growth term. The model therefore implies that shares with a low dividend payout ratio, in the absence of high value enhancing growth expectations, will have a high dividend yield and a low price-earnings ratio; or will have a low dividend yield and high price earnings ratio where there is an expectation of high value enhancing growth. Some market participants believe that low dividend payout ratios indicate high future earnings growth.

A firm's capital structure also plays a role in the payout / earnings relationship. A number of empirical studies

confirmed the hypothesis that companies with growth opportunities will prefer internal funds to external funds and will therefore limit the amount paid out as dividends before investments are made. Rozeff (1982) concluded that investment policy, and the way investments are financed, will influence dividend policy. Since external finance is more costly than internal funds, companies in a growth phase would prefer to hold on to excess cash (rather than paying it out as dividends) to limit the amount of external finance required to fund investment expenditures. This will lead to a significantly negative relationship between dividend payout, and past and expected future growth in sales.

Myers (1984) constructed the 'pecking order' theory. According to this theory, companies will prefer internally generated funds to finance new investments. If additional funds are needed they will be obtained from external sources, starting with the safest, low risk option. This leaves high risk, external sources of funding at the bottom of the pecking order. The theory implies that companies with current high levels of growth generally meet their investment demand by using internally generated cash funds, reducing funds available for paying dividends. Lower dividend payouts will therefore signal higher future earnings growth.

A more recent study by Gul (1999) also suggested that there is a clear connection between high growth opportunities and lower dividend payout ratios. Companies that do not have high growth opportunities are more likely to pay out extra resources as dividends, rather than spend them on negative net value projects. Low growth companies overcome the free cash flow problem by paying dividends. Therefore, high-growth companies usually maintain a lower dividend payout ratio.

La Porta *et al.* (2000) concluded that firms that grow fast will pay lower dividends than slow growing firms, even though their study had a different focus than specifically the relationship between payout and future earnings. They investigated the relationship between agency problems and dividend policy, and demonstrated that in countries where shareholders' legal protection is of a high standard, shareholders will wait for dividends when investment opportunities are high (i.e. low dividends imply higher investments, which should lead to higher future earnings).

Fama and French (2002) also concluded that investment opportunities are inversely correlated to dividend payout. They demonstrated that companies that have more investments in reserve tend to have lower dividend payouts over a longer period.

The Miller and Modigliani (1961) dividend irrelevance theorem states that the value of a firm is unaffected by changes in the firm's dividend policy. Ibbotson and Chen (2003) used an intertemporal extension of the Miller and Modigliani dividend irrelevance theorem to predict that price earnings ratios (an indication of firm value) are not influenced by dividend-payout ratios. They also concluded that a high earnings retention rate (i.e. lower dividend payout ratios) will lead to higher growth per share in the

future, given that investments are unaltered and the expected return remains constant.

It is clear from the above that even though it is a logical conclusion that low dividend payout should lead to higher levels of retained earnings, which should lead to higher future earnings, the belief is backed up by respectable research.

The signalling content of dividend payouts has been the subject of many studies over the past number of years. Many believe that by paying dividends firms can signal future profitability (Miller & Modigliani, 1961; Bhattacharya, 1979; Miller & Rock, 1985), but more recent studies actually indicate mixed results. With regard to signalling future earnings growth, De Angelo, De Angelo and Skinner (1996) found no evidence to suggest that favourable dividend actions are reliable in signalling higher future earnings for their sample firms. Their study, however, focused on firms whose annual earnings showed a decline after nine or more years of consecutive earnings growth, effectively excluding a large portion of the market.

Bernartzi et al. (1997) only found limited support for the theory that changes in dividends contain information about a firm's future earnings. They found that firms that increased dividends in year 0 showed an increase in the following year's earnings, but no further unexpected earnings growth. They also found that the size of the increase in dividends does not predict future earnings. The link between past earnings and dividend changes is strong, but there is little predictive value with regard to future earnings.

These theories, however, only focused on changes in dividends and not the payout ratio as such. More recent studies confirmed a positive relationship between payout ratios and future earnings (Arnott & Asness, 2003; Zhou & Ruland, 2006; Huang et al., 2009), contrary to popular belief. The relationship was first tested on the aggregate market level, and later on the individual company level as well.

Arnott and Asness (2003) were the first to challenge the conventional belief. They tested the relationship on an aggregate market level, aiming to forecast earnings growth using dividend payout ratios, which were at an all-time low in the USA at that time. Leading market observers forecasted extraordinary long-term growth based on the then current low payout ratios. Arnott and Asness investigated the relationship between dividend payout and future earnings based on raw data from as far back as 1871, (with the focus on the post-World War II period, 1946 - 2001) and came to the conclusion that higher dividend payout forecasts higher earnings growth, in as far as a market portfolio is concerned.

Gwilym et al. (2006) extended the work done by Arnott and Asness in the US market to an additional 10 countries: France, Germany, Greece, Italy, Japan, the Netherlands, Portugal, Spain, Switzerland and the United Kingdom. The results of their study support the findings of Arnott and Asness, even though the environment of their sample in terms of institutional, tax and legal issues differs significantly from that of the US. Their study also confirmed

that if retained earnings are substantially reinvested, there are no guarantees that it will lead to faster future real earnings growth. They further concluded that higher earnings growth is realised when investing in countries with higher payout ratios, than when investing in markets with low payout ratios – consistent with the findings of Arnott and Asness.

These findings prompted the question whether the high dividend – high growth relationship holds true for individual companies. Zhou and Ruland (2006) tested the relationship between dividend payout and future earnings growth using a multivariate regression model, controlling for variables such as size, profitability, leverage and earnings yield. They also controlled for cross-sectional dependence and considered the possibility of mean reversion in earnings. Their method has since been used to test this relationship in a number of different countries. The results of their study confirmed those of Arnott and Asness (2003), namely that companies with a high dividend payout ratio have strong future earnings growth. Another interesting conclusion drawn by Zhou and Ruland (2006) is the fact that the positive relationship between dividend payout and future earnings growth is more evident where companies show a tendency for over investment or have limited growth opportunities.

Huang et al. (2009) replicated the Zhou and Ruland study in Taiwan. Since the majority of Taiwanese companies have a practice of paying dual dividends (cash and stock dividends), their tests were based on a sample of dual dividends only. The results of these tests displayed a significant positive association between dividend payout ratios and future earnings growth. They extended their tests to sub-samples based on the cash-to-stock ratios of the dividends, and found that the significant positive association between dual-dividend payouts and future earnings growth is only evident in the balanced-dividend sub-samples. They also made the interesting observation that as the firm size increases, the link between payout ratios and future earnings becomes weaker.

In 2010, Lee tested the dividend signalling theory in the Singapore market by applying Johansen's vector error-correction model (VECM). He came to the conclusion that dividend payout does convey information about future earnings, and that dividend payout is positively correlated to future earnings. Increases in dividend payout ratios led to permanent increases in future earnings over time for companies in the Singapore market.

Flint, Tan and Tian (2010) confirmed that there is a positive correlation between payout and future earnings over one, three and five year periods, even though they could not explain the reasons for this positive association. Their results are in line with a previous Australian study by Parker (2005), which confirmed a positive relationship between payout and future earnings at the market-index level.

The majority of the above studies (since 2003) were based on data from developed countries, and could therefore differ substantially from markets in developing countries. The first study on a non-developed market was done by Al-Twaijry (2007) in the semi-developed market of Malaysia. At that

point the market was growing fast and it was somewhere in between a developing and developed market. Al-Twaijry's results contradicted those of the studies done in developed markets, finding no significant association between payout ratios and future earnings. The correlation between payout and future earnings growth was negative but insignificant. This raises the question whether other developing markets will follow the results of Malaysia, or whether Malaysia was an exception and other developing markets will show the same results as those of the developed markets.

There are clearly two contradicting viewpoints, both backed by respectable research. The first, and older view that dividend payout will reduce funds available to finance further growth is a very logical conclusion from an accounting point of view. More recent findings that dividend payout correlate with higher future earnings growth, however, are still debatable and require further research.

Companies that pay out dividends are probably in a sound financial position and can afford to pay out a large sum of cash without running into cash flow problems in the near future. Such companies have a solid base from which to grow and do not need to retain all the cash they generate. The payment of dividends does therefore not affect their growth opportunities negatively. On the other hand, companies that struggle to manage their cash flow properly, will not be able to afford paying out dividends, needing all the cash they generate to manage liabilities. These companies are more likely to fail, since a shortage of cash could severely limit their operations.

The free cash flow theory might also offer some explanation for a positive relationship between dividend payout and future earnings growth. According to this theory companies with large sums of free cash have an incentive to overinvest. This might cause them to invest in less profitable ventures since they move outside of their area of expertise, or into an unknown market. A good example in South Africa is Telkom's expansion into Nigeria, which resulted in the company losing a large amount of money. This loss impacted negatively on their latest financial figures. Old Mutual also burnt their fingers trying to expand into the unfamiliar American market. So retaining cash to expand a business is no guarantee for future earnings growth.

On the other hand, paying out dividends sends out a positive signal regarding the financial health of a company. This could boost investor confidence and lead to a higher demand for the company's shares, causing a rise in the share price. This in turn could make it easier for the company to generate new equity on the market when they need finance for new investments.

Research method

The model

This particular study followed the model of Zhou and Ruland (2006), who studied earnings growth for long-term (five-year), intermediate (three-year) and short-term (one-year) periods. The main reason for this decision is the fact that investors look for both short-term and long-term growth

investments, depending on their individual needs and risk profiles.

Furthermore, a large number of South African companies are only listed for a short number of years, making it difficult to increase the time period to 10 years – the time horizon used by Arnott and Asness (2003). The data prior to 1973 are also very difficult, if not impossible to find, and mostly incomplete, limiting the total time frame available to about 40 years compared to the 53 years used by Zhou and Ruland.

The relationship between dividend payout and future earnings growth was tested for each of the three time horizons by using the following multivariate regression, the same model used by Zhou and Ruland (2006), so that the results are comparable.

$$EG_{it1,3,5} = \alpha + \beta_1 Payout_{it} + \beta_2 Size_{it} + \beta_3 ROA_{it} + \beta_4 Yield_{it} +$$
$$\beta_5 LEV_{it} + \beta_6 PEG_{it-1,3,5} + \beta_7 AG_{it1,3,5} + \varepsilon_{it} \qquad \dots (1)$$

The numbers of the data items that were used below refer to the McGregor BFA database.

EG_{i0t} = Earnings growth; calculated for one-, three-, and five-year periods (t = 1, 3, or 5). A compound annual growth rate in earnings was calculated for each of the respective periods. Earnings for each year was calculated as profit to ordinary and preference shareholders less preference dividend (company i *)*.

$Payout_{i0}$ = Dividend payout; calculated as Year 0 ordinary dividend divided by Year 0 earnings.

$Size_{i0}$ = Natural logarithm of market value of equity; calculated as the number of ordinary shares in issue at year end multiplied with the share price on the date of the company's financial year end.

ROA_{i0} = Return on assets; calculated as Year 0 earnings divided by total assets at the end of Year 0.

$Yield_{i0}$ = Earnings Yield; calculated as Year 0 earnings divided by the end of the year market value of equity (Size).

LEV_{i0} = Leverage; calculated as total long-term loan capital and total current liabilities as a percentage of total assets at the end of Year 0.

PEG_{i-t0} = Past earnings growth; calculated as compounded annual earnings growth from year -t to Year 0 (t = 1, 3, or 5). The same method was used than the one t which was used to calculate earnings growth.

AG_{i0t} = Asset growth; calculated for one, three, and five-year periods (t = 1, 3, or 5). A compound annual growth rate was calculated for total assets for each of the respective periods.

The important variable in the multiple regression model is payout. A positive coefficient would confirm that higher payout ratios indicate higher future earnings. A negative coefficient would confirm popular belief that dividend payout restricts funds available for future growth and therefore does not lead to increased future earnings.

Since smaller companies are not yet mature and established, they are more likely to show stronger growth in earnings, all other things being equal. The expected relationship between size and future earnings growth is therefore negative.

The ROA variable is expected to be negatively associated with future earnings growth, since when profitability is already high, and all other factors remain equal, it should be more difficult for a company to increase earnings growth.

Fama and French (2002) suggested that companies with high leverage will tend to have large investments, assuming that external finance was acquired to finance growth opportunities. These opportunities should realise higher earnings growth in future. Therefore, we expect to see a positive relationship between leverage and future earnings growth.

The earnings yield (E/P) control was based on the expectation that, given a reasonable efficient market, investors would be willing to pay more for each rand of current earnings if future earnings growth is expected to be high. Miller and Modigliani (1961) described it aptly when they said "the price still being solely a reflection of future earnings and growth opportunities". The price earnings (P/E) ratio would therefore be higher if future earnings is high, and the expected relationship between E/P and future earnings growth would be negative.

The possibility of mean reversion in earnings will be controlled for by including past earnings growth in the regression model. The same observation periods (one, three and five years) are used for past and future earnings growth. When testing one year's future earnings growth, one year's past earnings growth is used, similarly for each observation period. The expected coefficient is negative since in competitive markets an abnormally profitable company will attract competitors to its industry who will then share in the profits, causing mean reversion of earnings (Fama & French, 2000).

Lastly, future asset growth is also controlled for. As companies grow they acquire more assets, and growing companies are expected to show growth in earnings as well. The expected relationship between asset growth and future earnings growth is therefore positive.

The population and sample

The sample period for the study is 1973 through to 2009. Data before 1973 are not readily available for research. The sample includes companies currently listed on the JSE as well as companies that are delisted. Where a company was only listed for two years, or only two years' data were included in the respective databases, the company was left out of the sample since earnings growth and past earnings growth could not be calculated.

As the growth horizon increases from one to three or to five years, the sample size decreases since data are required for both future and past earnings growth. The first year for which all the required data are available is 1973, but to calculate past earnings growth for a company with a 1973 year-end you would need data from 1972, which are not available. Therefore the first year examined for a one year growth period was 1974. The same reasoning applies to future earnings growth. The 2009 year-end of a company cannot be included since it is not possible yet to calculate growth from 2009 to 2010 (since most companies' 2010 financials have not been published at the time this research was done).

Companies on the JSE are listed in one of the following 10 industries: oil and gas, basic materials, industrials, consumer goods, health care, consumer services, telecommunications, utilities, financials and technology. Since the activities of financial and mining companies are inherently different from industrial companies, they were excluded from the study. The financials industry consists only of companies in the financial sector, and therefore the whole industry was excluded. The basic materials industry consists of the following four sectors: forestry and paper, industrial metals and mining, mining and chemicals. Since companies in the forestry and paper and chemicals sectors are involved in the same type of activities as industrial companies (manufacturing, distribution and services to the industry), they were included in the sample. Industrial metals and mining and mining companies were excluded due to their specialised activities.

The following conditions also needed to be met before a company was included in the sample:

- the company declared dividends on ordinary shares in Year 0;

- the company published positive earnings for Year 0;

- the company has total assets greater than R10,000,000 or the book value of equity is greater than R5,000,000 in Year 0.

Following the literature, small companies were identified as outliers based on the method used by Fama and French (2002) – minimum book value of equity or total assets. With regard to payout, the top 0,5 per cent of observations were removed to control for the effect of outliers. The bottom 0,5 per cent were not removed since the minimum payout would be 0, and companies that did not pay dividends had already been removed from the sample. For all the other variables the top and bottom 0,5% of observations were removed to control for the effect of outliers.

The result of the above-mentioned procedure is that only companies that paid out dividends and reported positive earnings for each year during the testing period were included in the sample. Even though companies may have skipped dividends or reported losses in some years, they

were still included in the sample for the years when they did pay dividends and recorded profits, in order to maximise the sample size.

Data collection

The data used in this study were obtained from three sources. The main source is the McGregor BFA database, providing financial statement and share price data for listed as well as delisted companies. A large number of companies listed on the JSE before the 1990's, were not integrated into the McGregor BFA database. The data for these companies were obtained from a private database of the University of Stellenbosch Business School (USB). Some share prices were unobtainable from either of the data sources they were obtained directly from the JSE.

The source used for each data item used to calculate the variables above was as follows:

1) *Earnings:* McGregor BFA was used as the primary source. For the companies not included in McGregor BFA, the USB's database was used.

2) *Dividends:* McGregor BFA was used as the primary source. For the companies not included in McGregor BFA, the USB's database was used.

3) *Number of shares issued at year-end:* The USB's database was used as the primary source since McGregor BFA does not include share repurchases on a consistent basis in this figure. Since July 1999 South African companies have been allowed to buy back their own shares, either through the specific company, or through a subsidiary or share trust. The shares of the holding company held by the subsidiary or share trust should be deducted from the issued shares when consolidating the group and calculating market capitalisation for the group (Bester *et al*., 2008). The data in the USB's database consolidates the number of shares correctly on a consistent basis. For the companies that were not included in the USB's database, McGregor BFA was used to find the number of issued shares.

4) *Share price at year end:* McGregor BFA was used as the primary source, but it only provides share prices as far back as 1990. Where McGregor BFA did not have the share prices, the USB's database was used. However, after both these databases had been consulted, there were still about 1 400 company years for which not one of the databases had the closing share price. It was observed that the McGregor BFA database included the financial statement data for some companies for the year-end just before the company was listed. For these companies (26) the first available share price was used as a proxy for the price on the preceding year-end. The rest of the missing share prices were obtained from the JSE directly.

5) *Total assets:* McGregor BFA was used as the primary source. For the companies not included in McGregor BFA, the USB's database was used.

6) *Total liabilities:* McGregor BFA was used as the primary source. For the companies not included in McGregor BFA, the USB's database was used.

To collect all the data was indeed an exhausting and a very time consuming process with many obstacles along the way. The McGregor BFA database keeps data separate for companies that have been delisted and therefore two batches of data were downloaded as the starting point. The first batch included all currently listed companies except gold companies (3 593 company-years). The second batch included all delisted companies (5 611 company-years). The first problem with the data was that the share price extracted as part of the financial statement data was calculated as the weighted average price for the last month of the financial year. The price needed for the research is the actual price on the day of the companies' financial year-end. The closing prices per day are available in another module of the McGregor BFA database, but only as far back as 1990. These prices were then downloaded to Excel, but in this form there is no indication of the companies' year-ends. Each company's financial year-end date for each year (many companies' year-ends changed) in the sample had to be found from another module in the database. Then the price for each company for every year was extracted from the Excel file using the functions available in Excel. Prices before 1990 remained a problem.

When the USB database was consulted, it came to light that there are many delisted companies that are not included in the McGregor BFA database, since they were delisted before the database was started. These companies now had to be integrated into the data extracted from the McGregor database but this proved to be a complex task. Whenever a company changes its name, the McGregor BFA database changes all the historic data to the new name, without an indication what the old name was. The USB database keeps a record of all the names, but sometimes uses the old names. This made it extremely difficult to connect the correct data for the same companies. The JSE Stock Exchange Handbooks from 1970 to 2010 were consulted to find all the name changes in order to connect the data between the two databases. When the data from the USB database were added to that of the McGregor BFA database, the company-years available increased with 3 465, bringing the total to 12 669.

Between these two databases, however, all the share prices were still not available. The InetBridge database was consulted, but only a small number of additional prices were found since they do not keep all the data for delisted companies. Thereafter the JSE was contacted directly to find the missing prices. The data were available in Excel format, but used different codes for the companies than the McGregor BFA database, so once again it was quite a process to match the prices to the correct companies in the dataset used for this research. After this process, there were still about 300 company-years without corresponding share prices. These prices were then taken from the JSE bulletins from 1970 to date that are available in the library of the University of Cape Town, and were manually entered into the dataset.

At this point the specific variables needed for the regression were calculated from the raw data. Hereafter the data were adjusted to comply with the requirements discussed in Section 3.2 as follows:

- company-years where no dividends were paid were removed from the sample;

- company-years with negative earnings were removed from the sample;

- small companies were removed from the sample; and

- outliers were identified and removed from the sample.

Quite a large number of years were removed with the process described above, and the final sample sizes used to test the model for the different growth periods were as follows:

One-year growth: 6 307 company-years
Three-year growth: 4 965 company-years
Five-year growth: 3 767 company-years

The above sample sizes were considered large enough for reliable statistical analysis.

Results

The data were analysed using STATISTICA as well as SAS computer software programmes. A few basic statistics are discussed first to present a broad overview of the data. Thereafter a univariate analysis of the correlations between the main variables follows, and finally the regression model is estimated.

Scatterplots of the relationship between dividend payout and future earnings growth were drawn to get an indication of what to expect. All three figures show a positive relationship between the two variables, providing an initial indication that results may compare very well with the study done in the USA by Zhou and Ruland (2006).

There are some limitations in comparing the results of the USA and Australian study with this South African study. First, the sample periods used are very different (see Table 4.1 below), with the USA study covering 53 years, compared to the 20 years of Australia and 36 years of South Africa. The sizes of the datasets used are also considerably different, with South Africa larger than Australia, but significantly smaller than the USA.

Table 1: Comparison – number of company years used in regression models

1)	2) USA companies	3) Australian companies	4) SA companies
5) One-year growth period	6) 40 968	7) 3 629	8) 6 307
9) Three-year growth period	10) N/A	11) 1 425	12) 4 965
13) Five-year growth period	14) 27 925	15) 533	16) 3 767
17) Sample period	18) 1950 - 2003	19) 1989 - 2008	20) 1974 - 2009

Source: Author

Table 2 reports some descriptive statistics for the dataset. Interesting to note is that the median for earnings growth in South Africa varies between 12.7 and 14.5 per cent for the three growth periods, while the USA median varies between 9.7 and 12.6 per cent (Zhou & Ruland, 2006), and the Australian median varies between 7.0 and 11.0 per cent (Flint *et al.*, 2010). Since South Africa is a developing economy, one would expect more companies to be still in a growth phase, whereas in the developed economies of the USA and Australia there is a larger percentage of matured companies, lowering the overall growth rate.

The South African data also have much more variation around the mean, with the standard deviation for earnings growth ranging from 66,8 to 133,9 per cent, compared to the USA range of 17 to 73,2 per cent (Zhou & Ruland, 2006). The South African economy is much younger than that of the USA, and earnings tend to be more volatile in a developing economy (Jansen, 2004). Australia shows very interesting results, with a standard deviation for earnings growth ranging from 27,5 to 210,3 per cent (Flint *et al.*, 2010). The reason for this extreme volatility could be the relatively small number of data points used for the five-year

growth period, or specific economic conditions during the sample period. It will not, however, be explored further since Australia is not the main focus of this study.

With regard to return on assets, as a measure of profitability, the median for South African companies is 8,3 per cent. This is somewhat higher than in the USA (6,7%) and Australia (6,14%). Despite being a developing country with a unique set of economic challenges, South Africa managed to show uninterrupted economic growth for 62 quarters from 1993 through to 2008, before being hit by the global recession in 2009. This long period of growth was the platform for South African companies to realise higher profit margins compared to their developed nation counterparts.

The median leverage ratio for South African companies is 48,2 per cent which is in line with the USA's median leverage ratio of 46,8 per cent. Australian companies, however, are much less geared than South African and USA companies, and have a median leverage ratio of 17,5 per cent.

Table 2: Descriptive statistics (SA)

Variable	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
Dependant variables					
EG 0 - 1	0,219	1,339	-0,201	0,145	0,454
EG 0 - 3	-0,009	0,706	-0,081	0,127	0,306
EG 0 - 5	-0,042	0,668	-0,020	0,130	0,257
Independent variables					
Payout	0,433	0,398	0,260	0,361	0,484
Size	18,471	2,293	16,661	18,229	20,106
ROA	0,095	0,063	0,054	0,083	0,120
Lev	0,474	0,187	0,354	0,482	0,603
E/P	0,188	0,157	0,088	0,149	0,242
PEG 0 - 1	0,444	1,949	-0,103	0,200	0,539
PEG 0 - 3	0,129	0,709	-0,004	0,179	0,371
PEG 0 - 5	0,106	0,558	0,054	0,172	0,302
AG 0 - 1	0,200	0,334	0,050	0,140	0,257
AG 0 - 3	0,166	0,184	0,070	0,142	0,229
AG 0 - 5	0,156	0,146	0,080	0,145	0,217

Source: Author

Another interesting observation is the similarity of the main independent variable, payout, between the three countries (see Table 3 below). The mean payout ratio of South African companies is 43,3 per cent, compared to 39,8 per cent for USA companies and 41,1 per cent for Australian companies. The median payout ratio of South African companies is 36,1 per cent, compared to 33,2 per cent for USA companies and 40,7 per cent for Australian companies. The standard deviation indicates more or less the same level of variation among companies. Even though South Africa is a developing country, it seems that the overall dividend policy does not differ much from companies in developed countries, with regard to the level of earnings that are paid out.

It is clear from the above discussion that most of the variables for South African companies compare well to either USA companies or Australian companies, or both. The only variable where South African companies differ significantly from the USA and Australian companies is earnings yield. The median earnings yield ratio for South African companies is 18.8 per cent, compared to the median earnings yield ratio for USA companies of 8,7 per cent and the median earnings yield ratio for Australian companies of 6,9 per cent. This translates to a much lower price-earnings ratio (inverse of earnings yield ratio) for South African companies. A high price-earnings ratio indicates that investors are expecting higher growth in future earnings, and are therefore willing to pay a higher price for one unit of earnings.

Overall emerging markets have become very attractive for investors during the past few years, despite their volatility and increased financial, political and operating risks. In fact, it is increased risk that creates the opportunity for higher rewards (Ross, 2006). The demand for these emerging-market shares is driving prices upward, to a level where the price-earnings ratio reflects the market's expectation of exceptional growth. Lower price-earnings ratios (as described above for the USA and Australia) are indicative of lower, but more stable growth in earnings that is found in developed economies.

Univariate analysis

The results of the univariate analysis are shown in Table 4 below. A cross-correlation matrix was set up that shows the Pearson product-moment correlation coefficients between payout, past and future earnings growth for each of the three growth periods. The correlation coefficients for USA companies are shown below in Table 5.

Table 3: Comparison between USA, Australian and SA companies – payout

21) Payout	22) USA companies	23) Australian companies	24) SA companies
25) Mean	26) 0,398	27) 0,411	28) 0,433
29) Standard deviation	30) 0,314	31) 0,402	32) 0,398
33) 25th Percentile	34) 0,197	35) Not available	36) 0,260
37) Median	38) 0,332	39) 0,407	40) 0,361
41) 75th Percentile	42) 0,506	43) Not available	44) 0,484

Source: Author

Table 4: Correlations between dividend payout, past and future earnings growth (SA)

	Payout	PEG(-5,0)	PEG(-3,0)	PEG(-1,0)	EG (0,1)	EG (0,3)	EG (0,5)
Payout	1,000	-0,070*	-0,090*	-0,126*	0,190*	0,124*	0,067*
PEG(-5,0)		1,000	0,151*	0,027	*-0,026*	*0,032*	***0,059***
PEG(-3,0)			1,000	0,080*	-0,085*	***0,012***	*0,019*
PEG(-1,0)				1,000	***-0,052***	-0,060*	*-0,093**
EG (0,1)					1,000	0,234*	0,008
EG (0,3)						1,000	0,269*
EG (0,5)			one				1,000

* Correlation coefficients significant at the 1 per cent level.

Source: Author

Table 5: Correlations between dividend payout, past and future earnings growth (USA)

	Payout	PEG(-5,0)	PEG(-3,0)	PEG(-1,0)	EG (0,1)	EG (0,3)	EG (0,5)
Payout	1,000	-0,495	-0,457	-0,209	0,248	0,214	0,162
PEG(-5,0)		1,000	0,554	0,144	*-0,218*	*-0,190*	***-0,164***
PEG(-3,0)			1,000	0,228	*-0,199*	***-0,190***	*-0,155*
PEG(-1,0)				1,000	***-0,052***	*-0,072*	*-0,061*
EG (0,1)					1,000	0,509	0,383
EG (0,3)						1,000	0,646
EG (0,5)							1,000

Note: All correlation coefficients are significant at the one per cent level.

Source: Zhou and Ruland, 2006: 61

The study done by Zhou and Ruland (2006) on USA companies, showed a negative correlation between past and future earnings growth, confirming mean reversion in the growth of earnings. The data in the correlation matrix show that high current dividend payouts tend to be followed by high future earnings growth, but are preceded by relatively low past earnings growth. Because there is a trend of mean reversion in earnings growth the positive relationship between payout and future earnings growth might be explained by low past earnings growth where companies have high dividend payout ratios. Zhou and Ruland controlled for this possibility in their multivariate analysis.

As with the USA companies, the relationship between dividend payout and future earnings growth (one, three and five years) for South African companies is positive, although a little weaker than in the USA. The relationship between dividend payout and past earnings growth is also negative, but much weaker than the USA comparative. In South Africa the relationship between past and future earnings growth for the one-year period is negative (-0.052). The relationships for the three and five-year periods are

0.012 and 0.059 respectively. It therefore appears as if mean reversion in earnings is not the cause of the positive relationship between payout and future earnings growth. The situation will be explored further, based on the results of the multivariate analysis.

Zhou and Ruland (2006) used the Fama and MacBeth (1973) procedure to determine the multivariate regression results for all three the growth periods and their results are shown in Table 6. This procedure controls for cross-sectional dependence by calculating averages of yearly regressions.

The SAS procedure "TSCSREG" (time series cross sectional regression) was used to analyse the data. This procedure takes into account the time series dependence in the data and analyses a class of linear econometric models that commonly arise when time series and cross-sectional data are combined. The TSCSREG procedure analyses panel data sets that consist of multiple time series observations on each of several individuals or cross-sectional units. The performance of any estimation procedure for the model

regression parameters depends on the statistical characteristics of the error components in the model. The TSCSREG procedure estimates the regression parameters in the preceding model under several common error structures, including one and two-way fixed and random effects. The results for South African companies are shown in Table 7.

There is a significant positive relationship between current dividend payout and future earnings growth for South African companies. Future earnings growth increases as the dividend payout rate increases. In the Zhou and Ruland (2006) and Flint *et al*. (2010) studies, all the coefficients on payout were positive and highly significant for all three the growth periods, which led to the conclusion that there is a positive association between current dividend payout and future earnings growth for USA and Australian companies. In Table 8 below these results are compared to the South African results.

Table 6: Future earnings growth as a function of dividend payout (USA)

Variable	One-Year EG		Three-Year EG		Five-Year EG	
	Coefficient	t-Stat.	Coefficient	t-Stat.	Coefficient	t-Stat.
Intercept	0,283	6,79***	0,103	6,63***	0,061	7,15***
Payout	0,537	12,45***	0,167	12,96***	0,083	10,31***
Size	-0,029	-7,48***	-0,012	-9,92***	-0,007	-7,90***
ROA	-2,388	-10,54***	-0,974	-11,71***	-0,646	-11,30***
E/P	-1,537	-9,41***	-0,695	-11,97***	-0,468	-11,16***
Leverage	0,077	2,22**	0,065	5,35***	0,058	9,12***
PEG	0,012	0,089	-0,083	-5,90***	-0,118	-10,12***
AG	0,873	14,13***	0,996	29,67***	1,011	39,61***
Adjusted R²		19,96%		31,59%		36,41%

Note: The reported t-statistics and adjusted R²s are based on the Fama-MacBeth procedure.
* Significant at the 10 per cent level in a two-tailed test.
** Significant at the 5 per cent level in a two-tailed test.
*** Significant at the 1 per cent level in a two-tailed test.
Source: Zhou and Ruland, 2006: 61

Table 7: Future earnings growth as a function of dividend payout (SA)

Variable	DF	Coefficient	Standard Error	t Value	Pr > |t|	Significant at:
			One-year EG			
Intercept	1	0,187	0,240	0,78	0,4344	
Payout	1	0,695	0,043	16,37	<,0001	1% level
Size	1	-0,008	0,012	-0,68	0,4969	
ROA	1	-2,958	0,302	-9,8	<,0001	1% level
Lev	1	0,184	0,103	1,8	0,0727	10% level
E/P	1	-0,536	0,139	-3,85	0,0001	1% level
PEG	1	-0,008	0,009	-0,92	0,3558	
AG	1	1,086	0,051	21,43	<,0001	1% level
Adjusted R²			14,10%			

Three-year EG

Variable	DF	Coefficient	Standard Error	t Value	Pr > |t|	Significant at:
Intercept	1	-0,168	0,177	-0,95	0,3424	
Payout	1	0,204	0,026	7,83	<,0001	1% level
Size	1	0,000	0,009	0,03	0,9756	
ROA	1	-1,396	0,199	-7,03	<,0001	1% level
Lev	1	0,125	0,071	1,77	0,0772	10% level
E/P	1	-0,253	0,080	-3,17	0,0016	1% level
PEG	1	-0,013	0,013	-1,03	0,3037	
AG	1	1,114	0,052	21,57	<,0001	1% level
Adjusted R²			12,63%			

Five-year EG

Variable	DF	Coefficient	Standard Error	t Value	Pr > |t|	Significant at:
Intercept	1	-0,482	0,201	-2,4	0,0163	5% level
Payout	1	0,085	0,035	2,43	0,0153	5% level
Size	1	0,017	0,010	1,73	0,084	10% level
ROA	1	-0,998	0,236	-4,22	<,0001	1% level
Lev	1	0,046	0,084	0,54	0,5884	
E/P	1	-0,128	0,087	-1,47	0,1411	
PEG	1	-0,027	0,019	-1,43	0,1532	
AG	1	1,047	0,080	13,14	<,0001	1% level
Adjusted R²			5,69%			

Source: Author

Table 8: Comparison – payout coefficient

45)	46) USA companies	47) Australian companies	48) SA companies
49) One-year Payout	50) 0,537	51) 0,537	52) 0,695
53) Significant at	54) 1% level	55) 1% level	56) 1% level
57) Three-year Payout	58) 0,167	59) 0,084	60) 0,204
61) Significant at	62) 1% level	63) 1% level	64) 1% level
65) Five-year Payout	66) 0,083	67) 0,052	68) 0,085
69) Significant at	70) 1% level	71) 1% level	72) 2% level

Source: Author

The payout ratio of all three countries is positively related to future earnings growth for one, three and five years. All the relationships were significant at the one per cent level, except for South Africa's five year relationship that tested significant at the two per cent level. All these relationships can therefore be considered highly significant and confirm the alternative view first investigated by Arnott and Asness in 2003: Higher dividends are likely to be followed by higher earnings growth. It can be concluded then, that even in a developing country, companies that pay out dividends tend to perform better in terms of future growth in earnings than companies that retain earnings.

Tables 9 to 11 compare USA companies to SA companies with regard to the results for the control variables.

For USA companies all the variables displayed the expected relationship with future earnings growth and tested highly significant, except for past earnings growth for the one-year period, which was not significant at all and showed a positive association with earnings growth instead of negative as expected.

The Australian study produced similar results with the majority of independant variables in all three testing periods showing the expected relationship with future earnings growth. The majority of the variables also tested significant at the one and five per cent levels (Flint *et al.*, 2010).

In South Africa the situation is somewhat different. Although all the variables (except for size in the three-year period) display the expected relationship with earnings growth, all of them are not statistically significant. The highly significant (1% level) variables for the one-year and three-year periods are return on assets, earnings yield and asset growth. Leverage is significant at the 10 per cent level for both periods. For the five-year period, however, only return on assets and asset growth are highly significant and size is significant at the 10 per cent level.

The two most influential factors for South African companies, apart from dividend payout, are return on assets

and asset growth, being the only other variables that are highly significant in all three periods. Return on assets is a measure of profitability, and the expected relationship with earnings growth was negative since companies that are already highly profitable should find it difficult to keep on showing high levels of earnings growth. This is a little unexpected since many investors believe that profitable companies should show significant growth in future as well. But profitability does have some mean reverting properties,

moving in cycles of high and low profit periods, following normal business cycles. Fama and French (2000) confirmed this by concluding that high profitability will most likely lead to lower future earnings and vice versa. This is true for the South African companies as well, since it is a basic business principle, and should not change when companies are operating in a developing economy.

Table 9: Comparison – other variables: One-year growth period

73)	74) Expected relationship	75) USA companies	76) Significant at	77) SA companies	78) Significant at
79) Size	80) Negative	81) Negative	82) 1% level	83) Negative	84)
85) ROA	86) Negative	87) Negative	88) 1% level	89) Negative	90) 1% level
91) Lev	92) Positive	93) Positive	94) 5% level	95) Positive	96) 10% level
97) E/P	98) Negative	99) Negative	100) 1% level	101) Negative	102) 1% level
103) PEG	104) Negative	105) Positive	106)	107) Negative	108)
109) AG	110) Positive	111) Positive	112) 1% level	113) Positive	114) 1% level

Source: Author

Table 10: Comparison – other variables: Three-year growth period

115)	116) Expected relationship	117) USA companies	118) Significant at	119) SA companies	120) Significant at
121) Size	122) Negative	123) Negative	124) 1% level	125) Positive	126)
127) ROA	128) Negative	129) Negative	130) 1% level	131) Negative	132) 1% level
133) Lev	134) Positive	135) Positive	136) 1% level	137) Positive	138) 10% level
139) E/P	140) Negative	141) Negative	142) 1% level	143) Negative	144) 1% level
145) PEG	146) Negative	147) Negative	148) 1% level	149) Negative	150)
151) AG	152) Positive	153) Positive	154) 1% level	155) Positive	156) 1% level

Source: Author

Table 11: Comparison – other variables: Five-year growth period

157)	158) Expected relationship	159) USA companies	160) Significant at	161) SA companies	162) Significant at
163) Size	164) Negative	165) Negative	166) 1% level	167) Negative	168) 10% level
169) ROA	170) Negative	171) Negative	172) 1% level	173) Negative	174) 1% level
175) Lev	176) Positive	177) Positive	178) 1% level	179) Positive	180)
181) E/P	182) Negative	183) Negative	184) 1% level	185) Negative	186)
187) PEG	188) Negative	189) Negative	190) 1% level	191) Negative	192)
193) AG	194) Positive	195) Positive	196) 1% level	197) Positive	198) 1% level

Source: Author

It is also logical that companies that show high growth in assets and are in a growing phase, should realise growth in future earnings, hence the positive relationship between asset growth and future earnings growth. South African companies are no different from the USA and Australian companies in this regard, and the asset growth variable showed a significant, positive relationship with future earnings growth. The three studies that are compared demonstrate that growing companies in developing and developed countries show growth in future earnings.

As mentioned earlier, earnings yield for South African companies is significant at the one per cent level for the one and three year growth periods, but insignificant for the five year growth period. This result was expected since it is consistent with market behaviour. Investors are willing to pay more for shares where they expect high future earnings, creating to a positive relationship between the P/E (price earnings) ratio and future earnings. The inverse of the P/E

ratio is earnings yield, and therefore the relationship between earnings yield and future earnings should be negative.

Leverage is significant at the 10 per cent level for the one and three year growth periods, but insignificant for the five year growth period. So clearly the method of finance is not such a strong predictor of earnings growth in the long run.

In a developing economy, such as South Africa, there are more factors impacting on earnings growth than the variables tested above. The results of this study show that for the five year growth period there are more additional factors influencing earnings since the variables tested contribute less to the changes in future earnings growth. As companies in developing economies survive and stay in business for longer, the broader economic conditions of developing markets have a larger impact on their earnings,

making them vulnerable to factors that have no impact on companies operating in developed markets.

Past earnings growth is negative, as expected, for all three years in South Africa, but it is not significant at all. Earnings might therefore be mean reverting, but that is not an explanation for the positive correlation between payout and future earnings growth. In the USA and Australia the past earnings growth variable was significant at the one per cent level for the three and five year growth period, and the possibility of mean reversion in earnings was explored further. This is not necessary in South Africa's case.

A company's size is also insignificant in South Africa when trying to explain patterns in payout ratios and earnings growth, whereas in the USA and Australia size was significant and larger companies had slower earnings growth than smaller companies. Relatively large companies in a developing economy, however, might still be considered small compared to the really large companies in developed economies such as the USA. This might explain the insignificance of the size variable for South African companies.

The most notable difference between the USA, Australian and South African studies, is the fact that the variance in the chosen independant variables explain much more of the variance in the dependant variable in the USA and Australia than in South Africa.

Also the R^2-value in the USA and Australia increased as the testing period was extended, where in South Africa the opposite is true, so much so that in the five-year period only 5.69 per cent of the variance in earnings growth is explained by the independent variables. South African companies are clearly more exposed to other factors impacting on earnings, such as competitors from more efficient global economies, BBE requirements, fluctuating interest and inflation rates and so on. Since these companies are operating in an emerging financial market, they are exposed to much higher levels of financial, political and operating risks, which also have a significant impact on earnings growth – be it positive or negative.

Summary and conclusion

The question of dividends and the information it conveys remains an unanswered one. Over the years, however, much research has been done and much written about different aspects of dividend payout. A more recent area of interest is the relationship between dividend payout and future earnings growth. This relationship has been investigated in the USA (Arnott & Asness, 2003; Zhou & Ruland, 2006), Taiwan (Huang *et al.*, 2009), Europe (Gwilym *et al.*, 2006), Singapore (Lee, 2010), Australia (Parker, 2005; Flint *et al.*, 2010) and Malaysia (Al-Twaijry, 2007), but no such study has been done in any African country. This study's aim was to test the relationship between dividend payout and future earnings in South Africa (developing economy), and to compare it to that of the USA (developed economy).

In terms of the univariate analysis South Africa compared very well with the USA. Both countries showed a significant positive correlation between dividend payout and future earnings growth, and a significant negative correlation between dividend payout and past earnings growth. With the multivariate analysis all three growth periods for both countries showed a highly significant positive correlation between dividend payout and future earnings growth. An interesting observation was that the relationship was stronger in South Africa than in the USA.

The other control variables did not test as significant in South Africa as in the USA, except for return on assets and asset growth. Although these variables were not significant in the regression model, they still displayed the expected relationship with future earnings growth. The fact that the chosen variables explained less of the variation in earnings growth compared to the USA indicates that there are other factors influencing earnings growth in South Africa. These factors most probably reflect the fact that South Africa is still a developing country.

Al-Twaijry (2007) concluded that the payout ratio does not significantly impact on a company's future earnings growth in a developing country such as Malaysia. This is definitely not the case in South Africa and it is therefore clear that all developing countries cannot be treated the same with regard to dividend policy decisions.

The results of this study have some important implications for the valuation of firms in South Africa. Importantly, dividend payout ratio should be taken into consideration when evaluating growth expectations, as well as the current profitability and level of growth in assets.

Table 12: Comparison between USA, Australian and SA companies - adjusted R^2

199)	200) USA companies	201) Australian companies	202) SA companies
203) One-year	204) 19,96%	205) 29,56%	206) 14,10%
207) Three-year	208) 31,59%	209) 34,96%	210) 12,63%
211) Five-year	212) 36,41%	213) 48,99%	214) 5,69%

Source: Author

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