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Dividends, Payouts and Stock Returns in the United Kingdom

by

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Abstract

The aim of this thesis is to investigate a number of different aspects of the dividend policy imposed by firms in the United Kingdom and the implications for shareholders. Dividends, and in particular dividend reinvestment, have previously been shown to have contributed significantly to long-term equity returns with capital gains representing a relatively small component. Recent evidence, however, from the United States has pointed to a considerable decline in the proportion of firms paying dividends. This has implications for investors that require a history of dividend payments and thus who are now constrained in a smaller portion of the equity market.

This thesis reports that whilst there has been a decline in the percentage of firms making payments in the UK, this has been relatively modest compared to the US. Furthermore, the total market payment has increased in real terms as a concentration of dividends has occurred amongst the largest payers. The aggregate dividend payout ratio is also considered as a stand-alone investment tool. Contrary to conventional wisdom, it is reported that a positive relationship exists between the payout ratio and future real earnings growth. The remainder of the thesis studies factors that influence the dividend policy of individual firms and whether managers use this as a means of addressing informational asymmetries by signalling their expectations to investors. It is found that the major factor in dividend setting is profitability, however, there is 'stickiness' observed that leads to current dividends being influenced by past payments. There is only limited evidence presented of dividends conveying information regarding the future profitability of firms.

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Declaration

I, James Seaton, declare that the thesis entitled, "Dividends, Payouts and Stock Returns in the United Kingdom" and the work presented in it are my own. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;

- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

- where I have consulted the published work of others, this is always clearly attributed;

- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

- I have acknowledged all main sources of help;

- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

- parts of this work have been published as follows:

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Chapter 1 - Introduction

Whenever investors risk capital by purchasing equity investments they are doing so with the prospect of future returns in mind. These gains can take either the form of capital appreciation, i.e. someone else is prepared to pay more for the asset in the future, or through distributions to shareholders typically in the form of dividends. Whilst it is often price levels that garner much of the attention in the financial media, the component of total returns attributed to dividends, and particularly the reinvestment of dividends, is not to be underestimated. For example, the price level of the S&P 500 increased over 240 times between 1872 and 2005, however, an investor's return when dividends were both accounted for and reinvested was over 5700 times the initial investment.

The dividend decisions that individual firms make encompass a variety of considerations. Different businesses are at various stages of maturity, for example, utilities are generally considered to be mature businesses that have stable cash flows and are able to pay dividends on a consistent basis to investors. Technology companies, by contrast, typically invest heavily in research and development and may be unprofitable for many years thus dividends are frequently passed. The decision to make payments to shareholders may also reflect investors' demand for dividends at any given time. This could be attributable to the taxation regime that is in place or possibly reflect the recent market experiences of investors.

There have been a number of relatively recent developments that have drawn attention towards firms' dividend policy. In the UK, dividend taxation policy has been changed in the last decade so that both individual investors and pension funds are no longer able to reclaim tax credits paid on their behalf. By contrast, taxation policy in the US has been adjusted to make the treatment of dividends more favourable than in the past. This change came at a time when the proportion of US industrial firms paying dividends was at a historic low of around 20% compared to approximately 65% twenty-five years earlier. Changes in dividend behaviour such as these have implications for financial planning for many investors. Dividends are frequently used as a means of meeting ongoing liabilities, particularly given that selling small portions of equity holdings is not a costless exercise, and a declining supply may cause asset allocation decisions to be rethought.

The central aim of this thesis is to investigate a number of different aspects of dividend policy and to analyse the investment repercussions for shareholders. Topics covered include factors in the decision of firms to actually pay a dividend or otherwise, the proportion of earnings paid as dividends (the payout ratio), the informational content of dividends and the historic investment returns derived from strategies based around dividend policy. The thesis hereafter consists of a summary of the relevant previous literature on dividend policy, followed by six empirical chapters investigating various aspects of dividend behaviour with one final chapter summarising the overall findings.

Chapter 2 reviews the previous relevant literature on dividends based around several dominant themes. Initially the characteristics of dividend payers are reviewed including factors such as profitability, investment opportunities, leverage and size. Additional areas considered include the relationships that have historically existed between dividend yield and subsequent stock returns, the impact taxation regimes have had on dividends, dividend clientele theories and the dividend-signalling hypothesis.

Chapter 3 considers an investment strategy based around the widely observable metric of dividend yield. Several books and papers have assessed the profitability of buying the US stocks with the highest dividend yields within an index and holding them for a period of one year before rebalancing the portfolio. By contrast relatively little work has been done on applying the same principles to the UK market. In this chapter groups of companies are selected to represent major UK equity benchmarks and portfolios formed within these groups according to dividend yields with annual rebalancing. As an extension to previous work, additional filters such as payout ratio and payment history are also imposed to supplement the yield criteria. The performance of the various investment strategies is analysed on both an unadjusted basis and with risk-adjustment plus transaction costs.

Chapter 4 investigates the trends in dividend payments made by UK firms between 1979 and 2000. During this period in the US the proportion of dividend paying companies declined dramatically from around two-thirds at the beginning to around one-fifth by the end. Interestingly, despite the decline in the percentage of payers the actual total dollar amount of real dividends increased over the period. This was attributed to a few very large payers substantially raising their real payments whilst many of the firms that stopped paying were typically small. This chapter investigates how the proportion of UK industrial firms paying dividends has varied over the study period, accounting for changes in the market structure with the introduction of the Alternative Investment Market (AIM) and its predecessor the Unlisted Securities Market (USM). In addition, the change in the total and average dividend payments is analysed plus whether there has been a concentration in payers in the UK akin to the US experience.

Chapter 5 examines the role that the aggregate payout ratio plays in explaining future real growth in both earnings and dividends. Conventional wisdom has generally dictated that firms that reinvest heavily in their businesses by retaining large proportions of earnings (i.e. a low payout ratio) should grow at a faster rate than firms that distribute a high proportion of profits to shareholders. This generally accepted theory is tested in both the UK and US markets by observing the relationship between the payout ratio and future real growth of dividends and earnings. Predicting future growth is an interesting concept but the stock market is a discounting machine for expectations. To this extent the ability of the payout ratio to describe future returns is also investigated and compared with traditional valuation methods such as earnings yield and dividend yield.

The remaining chapters all follow a central theme of studying dividend policy at the individual firm level and considering whether dividends have any informational content regarding companies' future prospects. The premise is that dividends are a means of communicating information between managers and shareholders. It is assumed that an information asymmetry exists between investors, who rely largely on the media for news, and management, who have day-to-day exposure to the business. By making changes in the dividend policy it has been suggested that this reflects managements' outlook for the investment prospects of the firm. Given that dividends are cash rather than accounting items it is virtually impossible to manipulate dividends in the same fashion as has recently been exposed with earnings. Furthermore, managers are typically reluctant to cut dividends as this frequently generates shareholder displeasure. Thus a dividend increase is widely believed to be a commitment for not just one year but many future periods also. Equally a dividend cut, or an omission, is generally accepted to be a last resort and reflects a particularly poor period of trading.

To investigate the dividend-signalling hypothesis various groups of firms are studied where changes in dividend policy may be of particular interest to investors. Chapter 6 investigates the dividend decisions of firms that have a history of both profitability and dividend payments but then suffer a loss year. It is hypothesized that this decision is particularly interesting since a dividend increase based on signalling theory would suggest management views the loss period as a temporary phenomenon. By contrast a dividend reduction, or in the extreme case an omission, would convey the message that trading is likely to be difficult for the foreseeable future. The financial factors involved in the dividend decision in the initial loss year are investigated and related to the performance in future periods.

Chapter 7 uses a sample of firms that have experienced prolonged growth in earnings but then suffer a decline in profits. It is hypothesized that the dividend decision in the year of declining earnings disseminates information about the future prospects of the firm. Previous work has shown that firms with a track record of sustained earnings growth are accorded higher market valuations than firms with similar levels of profitability but a more variable history. To this extent it is of interest to know if the earnings decline is a short-term blip or rather a precursor to a more variable future. The financial performance of the sample firms is examined in the years following the earnings decline according to the dividend decision. In addition, the stock performance of the companies is analysed over the same period.

Chapter 8 studies firms that were former payers of dividends but then subsequently reinitiated payments. In the overwhelming majority of cases, a dividend omission is consistent with a particularly poor trading performance. For a firm to subsequently reinitiate payments some years later should be an extremely powerful message under the signalling hypothesis. By recommencing distributions to shareholders management are setting an additional benchmark against which to be judged. It is unlikely that investors would be very sympathetic if the dividend were withdrawn in the following years. The implication is that dividends should only be reinstated when the outlook for the future appears particularly positive. The decision to reinitiate payments is investigated for a sample of former paying firms using a number of financial variables plus the time elapsed since the last payment. Furthermore, the profitability of the firms in the years following a dividend recommencement is studied along with the dividend decisions in subsequent periods. Finally, it is analysed whether a strategy of purchasing stocks that have resumed payments outperforms a control portfolio of stocks with a similar financial characteristics.

Chapter 2 – Review of Literature

2.1 Introduction

The twentieth century has seen considerable changes in both the proportion of firms paying dividends and the valuation of equities using dividend-based methods. For example, Dimson et al (2004) report that in 1900 the US dividend yield was around 4.7% whilst a hundred years later it was below 2%. This can be attributed in part to equities being accorded much higher valuations in recent years but the last twenty-five years have seen a sharp decline in the proportion of firms choosing to pay a dividend in both the UK and US. The aim of this chapter is to review the literature surrounding the history of dividend payments, the long-term performance of dividend investment strategies and the factors that affect dividend policy.

2.2 Characteristics of Dividend Payers

Two recent studies have focused on the characteristics of zero-dividend stocks, and the differences that exist between dividend paying firms. This is highly relevant to this thesis and as such is covered in considerable depth. The first paper is by Fama and French (2001) (hereafter FF) who use US data between 1926-99, with particular attention placed on the period from 1972 onwards when the data set includes NYSE, AMEX and NASDAQ firms. Secondly, Benito and Young (2001) (hereafter BY) use data on all quoted non-financial companies in the UK available from 1974-99, including the Unlisted Securities Market (USM) and Alternative Stock Market (AIM).

2.2.1 Dividend Trends

In the US, FF report that prior to the Great Depression around two-thirds of non-financial, non-utility (industrial) firms were paying dividends, by 1933 though this had fallen to just one-third. Hereafter the number of companies making cash payments rose until a peak was reached in 1951-52 of over 90% of firms paying dividends. By 1973, with the addition of AMEX and NASDAQ firms, this had fallen to 53% before dwindling to 30% in 1987 and just 21% in 1999. FF find new listings caused the number of firms to swell by 40% from 1978 to 1999. New lists averaged 5% annually between 1963-77 but this was nearly 10% through 1978-99. These new firms failed to replace disappearing payers that omitted dividends, merged or delisted. During 1963-77 around half of new lists paid dividends but this was down to 9% in the period of 1978-99 and just 4% in 1999. The rates of former payers resuming, and initiations of dividends by firms that previously had never paid, also declined considerably.

BY investigate the proportion of UK firms omitting dividends. They find the percentage increases significantly during recessionary periods. In 1979, 5% of firms did not pay dividends, this rose to peaks of around 16% in 1982 and 17% in 1993 before climbing steeply to 25% in 1999. The proportion of total market value of non-payers increased from 1% in the late 80's to 7.5% in 1999. When non-payers are split into 'former payers' and 'never paid', the increases in the proportion of firms omitting are initially mainly attributable to more former payers. The sharp rise in the last few years of the sample was, by contrast, found to be due to more never paid firms. Thus BY suggest the change in recent years is different to that of previous recessions.

When BY analyse the proportion of firms cutting dividends over time they find the greatest proportions of cuts occur during the two recessionary periods and also after 1995. They identify stickiness in dividend policy with many firms reporting the same nominal dividends in successive years. When real dividends are considered many firms show cuts during periods of high inflation but there is a less pronounced change in recent times.

2.2.2 Profitability

FF calculate profitability as the ratio of aggregate earnings before interest to aggregate assets, (E_t/A_t). They find that payers are more profitable than non-payers. When non-payers are divided into former payers and those that have never paid the latter is more profitable but both are still less profitable than payers. The same relationships are observed when profitability is measured as the ratio of earnings available to common to aggregate book equity, (Y_t/BE_t), however the differences between the groups are larger.

FF plot decile breakpoints for E_t/A_t over 1963-98. They find an overall increase in profitability up to 1980 but after this profitability declines for the remainder of the time period. The decrease in profitability is most noticeable in the less profitable deciles whilst the high deciles show virtually no change. Around 1980, less than 10% of firms had negative profitability but by 1998 this was over 30%. FF attribute much of the decline to the new lists, in particular those that fail to pay a dividend. During 1993-98 newly listed non-payers average 0.27% on the Y_t/BE_t measure compared with 11.26% for all firms.

BY measure profitability for UK firms as the return on capital, that is the ratio of profits to capital stock, $(\pi/K)_{it}$. They find during 1974-99 that average *losses* for firms omitting a dividend are 3% compared with *profits* of 14% for payers. The profitability of payers is at its highest during 1995-99, whilst the profitability of non-payers is at its lowest during the same period.

2.2.3 Investment and Investment Opportunities

FF report that those firms that have never paid dividends have the greatest growth opportunities. From 1963-98 they exhibit the highest asset growth rates, (dA_t/A_t), of 16.5% compared with 9% of payers and 5% of former payers. When investment opportunities are measured as the ratio of aggregate market value to aggregate book value of assets, (V_t/A_t), an approximation of Tobin's Q, and also on research and development spending (RD_t) the dividend classifications continue to be ranked in the same order. It is concluded; firms that have never paid dividends have low profitability but better growth opportunities whilst former payers suffer from both poor profitability *and* investment opportunities.

FF include a caveat about using E_t/A_t in that it tends to exaggerate the profitability difference between payers and non-payers for three reasons, (i) if investments take considerable time to reach full profitability then E_t/A_t understates for growing firms, (ii) when RD_t is a multiperiod asset then R&D expense causes the understatement of earnings of assets, if R&D is growing the E_t/A_t understates profitability, and finally, (iii) non-paying firms are likely to have younger assets than dividend payers and inflation is likely to causes overestimates of the profitability gap between payers and non-payers.

BY measure investment opportunities for UK firms using Tobin's Q, Q_{it}. They find that Q_{it} is significantly higher for non-paying firms compared to payers and even more so when firms that have never paid are related to payers. Q_{it} increases for all groups with time during 1974-99. When actual investment is considered, measured as investment divided by capital stock in the previous period, I_{it}/K_{it-1}, non-payers again have higher levels than payers and never paid firms the highest overall.

2.2.4 Size

Dividend payers are much larger than non-payers according to FF. The ratio of assets of payers to non-payers increased from eight times in 1963-67 to over thirteen times in 1993-98. During 1963-98 dividend payers accounted for over 90% of Y_t, E_t, A_t, V_t, BE_t, market value of equity (ME_t) and book liabilities (L_t). In the final sub-period of the sample, 1993-98, dividend payers still account for over 75% of all of the variables. However, whilst the proportion of Y_t declines very little over time, ME_t declines much more substantially. This suggests non-payers are being valued more highly on expected growth. BY confirm the US findings of FF using sales as a measure of firm size. They find that non-payers are over five times smaller in real terms than their dividend paying counterparts. Those firms that have never paid have lower average sales than the whole group of firms that have omitted dividends in any sub-period.

2.2.5 Debt and Interest Cover

FF show that dividend payers in the US have higher book leverage rates (L_t/A_t) than non-payers. When non-payers are subdivided into former payers and never paid firms, then former payers show a higher L_t/A_t than payers compared with never paid firms that have a significantly lower ratio. For new lists, payers are again more highly leveraged than the zero-dividend firms.

In the UK, BY find that interest gearing, the ratio of interest payments to profits, $(IP/\pi)_{it}$, is higher for non-payers on average at 1.95 compared to 0.28 for dividend payers during 1974-99. Zero-dividend firms are particularly highly leveraged (measured as ratio of debt to market value, $(B/MV)_{it}$) over the whole sample but less so during 1995-99. Firms that have never paid though are not highly leveraged; in fact they are less leveraged than payers after 1995.

2.2.6 Dividend Events

BY model dividend 'events', both cuts and omissions, using a standard probit model for a binary event with a random effects term. They include in their regressor set a lagged dependent variable to capture tendencies for paying firms to continue doing so, along with cash flow (CF/K), B/MV, Q, I/K, and the log of real sales (s). Also used are π/K and IP/K as substitutes for the cash flow term. A test is performed without the lagged variable and also with IK/Q as a substitute for Q. This method is applied to both dividend cuts and omissions separately.

They find that dividend omission is highly persistent. High cash flow (or profitability) lowers the probability of omission whilst high B/MV increases the probability. A higher Q value increases the likelihood of omission, whilst actual investment is negatively related to omission. When interest gearing is used to substitute for cash flow, and to represent financial distress, it suggests the higher the level of gearing, the significantly more likely that dividend omission will occur. Large companies are less likely to omit when other characteristics are controlled for such as cash flows, leverage and investment opportunities. BY argue this agrees with signalling and agency problems that large companies face and as a result are more likely to pay dividends than small firms.

The characteristics of firms cutting dividends are similar to those that omit dividends according to BY. Low cash flow and high leverage encourage cuts. Again investment is negatively related to the dependent variable but this time so is Q. BY suggest the market may expect firms with increases in Q to have good financial prospects and whilst they a greater probability of omitting they can also maintain a dividend when it is paid. Hence the opposite sign to the omission model. Dividend cutting is much less persistent than omission but still remains strong. BY find some evidence of state dependence in dividend cutting. This is consistent with Lintner's (1956) notion of 'partial adjustment', that is that firms choose not to make a whole change in dividend policy in a single period. When some of the characteristics are controlled for, the evidence for state dependence decreases but they still find some dependence.

BY also test to see if changes in characteristics are relevant as well as levels. They find that changes produce the same signs in the models. It is put forward that falling cash flow and an increase in gearing increase the probability of a dividend cut when they are combined with low cash flow and high gearing. The marginal effects of the probability of both a dividend cut and omission are presented by BY. In general, the marginal effects for a cut are greater than those for an omission. The suggestion is that a dividend cut is a stronger sign of financial pressure than omission.

2.2.7 Propensity to Pay

FF use regressions to estimate the probability that firms with given characteristics pay dividends during 1963-77. These probabilities are then applied from the base period to estimate the expected number of payers annually after 1977. The difference between the expected and actual figures is due to the change in propensity to pay. Two sets of regressions were employed to estimate probabilities. The first used explanatory variables, E_t/A_t, dA_t/A_t, V_t/A_t and NYP_t. In the second the V_t/A_t was dropped. The analysis presumes the variables have constant meaning over time. With V_t/A_t they find some evidence of drift over time that is not displayed by the other variables. FF suggest, with rational pricing, this may be due to increasing profitability of assets in place, more profitable or abundant investments or lower discount rates for expected cash flow. Applying the logit regression coefficients to each firm in turn and then summing for all firms calculates the expected number of firms. The number of firms is then expressed as a percentage of total firms.

When the first method is applied, the year after the base period shows roughly the same proportion of dividend payers and the expected proportion is approximately the same. Over time the spread between actual and expected widens, with the expected always overestimating. By 1998 the spread has reached 23%. This emphasises the declining propensity to pay. When the second regression is applied the conclusion reached is the same but the spread becomes wider still. A portfolio method is also tested by FF and this reinforces the conclusions drawn from the regression analysis.

FF then move to introduce lagged dividend status. By splitting the sample into payers, former payers and firms that have never paid, they show that dividend status in the current period is dependent on the status in the previous period. Dividend payers show a significant positive intercept when regressed using the full four explanatory variables; this compares to former payers and never paid firms that have a strongly negative intercept. The regression slopes confirm the inertia of dividend policy.

Having split the firms into the three dividend classifications FF analyse the changing propensity to pay among these groups. They find the characteristics of dividend payers adjust very little over time and that the propensity to pay falls by an average of about 1.2% for 1978-98 (approx. 320 firms). Much larger declines were discovered in the propensity to pay of former payers. In addition, the proportion of firms expected to initiate payments was considerably higher than actual amount that did.

FF argue that while these regressions are useful for documenting the different degrees of changing characteristics and propensity to pay they are inappropriate for estimating the overall decline due to a changing propensity to pay. In separate cases the probability of a payer continuing to pay is higher than a non-payer starting to pay. Hence the expected number of payers depends on the distribution of firms across dividend groups in the previous year. Towards the end of the period many firms are non-payers due to a falling propensity to pay. Hence the decline combines the effect of changing characteristics and lower propensity to pay.

BY consider the propensity to pay in the UK by using parameter estimates from data up to 1994. They go on to predict the expected proportion of non-payers from 1995 onwards. An estimate of an increase from 10% in 1994 to 17% in 1999 compares with actual figures of 15% and 25% respectively. The difference between the actual and expected reflects the decline in propensity to pay by UK firms as a whole group.

2.2.8 Share Repurchases

FF find share repurchases rather unimportant since they are mainly the province of dividend payers and as such fail to explain the decline in percent of payers. They tend instead to further increase the already high cash payouts of dividend payers. FF use changes in treasury stock (dT_t) to capture the cumulative effects of share repurchases and reissues. They find aggregate changes in dT_t are substantial relative to aggregate earnings but fall short of explaining lower propensity to pay. During 1983-98 only 14% of firms have positive dT_t. This could be overstated since a repurchase and reissue can take place over two fiscal years. The proportion of firms with negative dT_t is 7%. Even if 14.5% is the correct figure, given that 76% of firms do not pay a dividend it can only account for a maximum of 11% of firms not paying and hence cannot explain the 30% plus shortfall found by FF in the portfolio approach.

Net repurchases are larger for dividend payers than non-payers. FF show that dividend payers use repurchases rather than cash for around 25% of the payout. Cash dividends do not decline over the period by those companies. The suggestion is made that the large share repurchases of 1983-98 are mostly due to an increase in the desired payout by companies that they do not wish to satisfy with cash dividends.

BY point out in the UK, in the first three quarters of 2000, share repurchases by non-financials were worth £7.1bn compared with £49.3bn of domestically paid dividends (Economic Trends, Feb. 2001, p.45). Using a sample of firms in 2000, BY find 9.0% repurchased shares but less than 2% of these were non-payers. The suggestion is that companies have not substituted repurchases for dividends.

2.2.9 Dividend & Earnings Concentration

DeAngelo, DeAngelo and Skinner (2004) (hereafter DDS (2004)) further consider the evidence of declining dividends in the US combined with the concentration of dividends and earnings. They use data for all industrials (non-financials and non-utilities) available from the Center for Research in Security Prices (CRSP) that traded on NYSE, AMEX or NASDAQ between 1978-2000. The proportion of industrials paying dividends is found to have declined by 59% over the data period, whilst in the same time dividend-paying financials increased by 9.5%. It is suggested since the fall in distributions by industrials is not matched by financials, there has been some underlying change confined to the former rather than a general aversion to dividend paying. Using summary statistics, DDS (2004) show that nominal dividends have increased from $31bn in 1978 to $96bn in 2000, and in real terms (in 1978 dollars) to $36bn. The real mean dividend (per dividend paying firm) increases from $14.4m to $39.2m over the period while the median rises from $1.4m to $3.6m. The difference between the real mean and median indicates the distribution is skewed.

DDS (2004) proceed to rank firms from highest to lowest in terms of total dollar dividends in a given year, and then form groups with breakpoints after every hundredth company. They demonstrate the proportion of total dollar dividends for the top one hundred firms increases considerably from 1978 to 2000. A small increase is found for the second one hundred firms but all other groups show declines. When companies are classified according to the dollar magnitude of real dividends (1978 base) they find a 79% increase (from 42 to 75) in the number of companies paying over $100m. The number paying over $500m rose from 6 to 14. By contrast a 60% decline (2134 to 854) is registered in the number of firms distributing less that $100m cash, mostly due to firms paying small amounts (<$5m) ceasing this activity. DDS (2004) say this demonstrates more firms are making large distributions to investors but fewer firms are making small payments.

Using Lintner's (1956) finding that corporate boards view earnings as the primary determinant of dividends, DDS (2004) investigate the concentration of earnings to explain the concentration of dividends. Again forming groups of one hundred firms based on 'dividend ranking', they find a considerable increase in the proportion of earnings attributable to the top three hundred companies in 2000 compared with 1978. Dividend-paying firms are then categorized according to real earnings using a similar approach to dividend classification. This is done on both a one-year basis and a five-year average (ending in 1978 or 2000). They argue the five-year measure may be more appropriate since dividends tend to be set to long run earnings (Lintner, 1956). Both methods show a concentration of earnings over the period considered but the one-year measure more so. On a one-year basis, in 1978 nine companies earned over $1bn (24% of total dividend paying earnings) but by 2000 twenty-six industrials achieved this (63% of total). Five-year average real earnings increased from $76bn to $89bn and, when only positive earnings are considered, from $76bn to $111bn. DDS (2004) suggest this show firms had a greater capacity to pay dividends in 2000 and they used this capacity to do so.

An interesting finding is the large increase in the proportion of firms showing negative earnings. In 1978 this was around 9% (-1.4% of real earnings), but by 2000 it became approximately 45% (-59.5% of real earnings). The proportions were not greatly different when measured using the five-year average although the percentages of real earnings were lower in both cases. DDS (2004) propose that the large number of firms posting losses could play a key role in explaining why so few firms pay dividends. This supports DeAngelo et al (1992) who find that losses are significant in the reduction or elimination of dividends.

DDS (2004) move to include both industrial payers and non-payers in their sample and categorize according to earnings as before. They find in 1978 all firms with earnings greater than $250m (on both one-year and average) paid dividends. In 2000 less than three-quarters of firms with earnings exceeding $250m paid out. The decline is most noticeable in firms that earned between $10m and $24.9m in 1978, with percentages falling from 92% to 36% and 95% to 46% on a one-year basis and the five-year average respectively.

DDS (2004) again classify firms according to the size of dividend payments in 1978. They analyse the proportion of firms that continue to pay dividends in 2000. Only 22% of payers in 1978 also pay in 2000, however this group was responsible for 62% of total payments in the initial year and 84% of the latter year. Of the firms that ceased to pay over the period, 7% were listed but did not pay, 11% had delisted due to financial distress and 57% were delisted due to acquisition. All firms that paid over $80m in 1978 were payers in 2000 except for those acquired. The suggestion is while financial distress and acquisitions contribute to the changing number of dividend paying firms they have clear differences in dividend policy. Distressed firms cut dividends because of reduced capacity to pay but this is not true for acquired firms. In many cases the issuance of bidder's shares to target shareholders increases the acquiring firms total dividend and hence continues at least a proportion of dividends paid by the target firm.

2.2.10 Liquidity

Banerjee, Gatchev and Spindt (2002) (hereafter BGS) investigate the effect that liquidity has on firms' dividend decisions. They postulate that in a market where trading frictions exist investors are not indifferent as to whether they receive their returns via capital gains or through dividends. Changes in liquidity thus have an impact on the benefits of dividend paying stocks relative to their non-paying counterparts. It is hypothesized that improvements in overall liquidity should reduce the attraction of dividend payments relative to capital gains since the costs of selling a small portion of one's holdings, creating in effect a synthetic dividend, are reduced.

BGS report that a firm's propensity to pay a dividend is directly related to the trading activity within its stock. Consistent with their hypothesis, firms with more active markets are less likely to make a distribution. They find that increased market activity is able to largely explain the lower propensity of firms to pay dividends highlighted by Fama and French (2001). The predictive ability of this model is at its best for large firms with low bid-offer spreads and high share turnover. In addition to this, BGS demonstrate that liquidity within individual stocks is able to explain a considerable proportion of a firm's decision to initiate a dividend payment.

2.3 Dividend Yield & Equity Returns

There has been a considerable amount of research undertaken to investigate the relationship between dividend yield and equity returns. Dividend yield has a number of potential attractions as a valuation metric for investors. The first point is that dividends are paid in cash and thus are virtually indisputable compared to the vagaries of accounting earnings for example. Dividends can also be used as a method of meeting ongoing liabilities and thus more income per unit invested can be preferable to some investors compared to less income. Finally it is relatively easy to make comparisons based on dividend yield since the data is widely available via financial newspapers. The major problem from an investment standpoint is that the yield reported is a historic value and thus investors typically have to make judgements as to whether they anticipate the future dividend will be comparable or otherwise.

Keim (1985) studies the dividend yield and common stock returns for firms trading on the New York Stock Exchange (NYSE) using monthly data between 1931-78. In order for a firm to qualify for a place in the sample it must have returns data available for the previous sixty months. Each month K the sample firms are divided into six groups. Firms with a positive yield are ranked according to the size of yield and then divided into quintiles; the sixth group contains all those firms that fail to pay a dividend. The method of Blume (1980) is used to calculate dividend yield, d_t, in month t as the sum of dividends paid in the preceding twelve months divided by the stock price in month $t-13$:

$$d_t = \left(\sum_{T=t-13}^{t-1} Div_T \right) \div P_{t-13} \qquad \text{Equation 2.1}$$

Returns are calculated for each portfolio using an equal weighting for all stocks within that portfolio. The procedure is adopted for each month of the sample with portfolios rebalanced on a monthly basis.

Keim (1985) reports a non-linear relationship between the average returns of the dividend yield portfolios. This had previously been discovered by amongst others, Litzenberger and Ramaswamy (1980). Zero-dividend stocks showed the largest average returns whilst returns on dividend paying stocks increased with yield. This is often referred to as a 'U-shaped' relationship or curve. The relationship between risk-adjusted returns and dividend yield is investigated further using the one-period Sharpe-Lintner CAPM:

$$(R_{pt} - R_{ft}) = \alpha_p + \beta_p (R_{Mt} - R_{ft}) + e_{pt} \qquad \text{Equation 2.2}$$

$$p = 0, \ldots, 5$$

$$t = 1, \ldots, T$$

where, R_{pt} = rate of return on portfolio p in month t

R_{Mt} = rate of return on equal weighted market portfolio in month t

R_{ft} = riskless rate of interest in month t

The implication of the model is that $\alpha_p = 0$, however both the two highest yielding categories and, to a lesser extent, the zero-dividend category display a positive α. All of the remaining portfolios delivered negative excess returns. The 'U-shaped' curve can therefore not be explained by adjusting for CAPM risk.

Keim (1985) suggests that the differences in excess returns may be due to a size effect. The average market capitalization of zero-dividend firms is around \$60m compared with \$422m for the lowest yielding portfolio. As dividend yield increases across the remaining portfolios so the average firm size decreases. To further test the distribution of size across the portfolios, a two-way table is formed with the six yield categories and five size quintiles (which are calculated independently). The cell values are the total number of monthly observations in which a firm was a member of both the size and yield category. The smallest firms were found contained in the zero-dividend and the highest dividend categories. Of the larger firms most observations occurred in the lowest yielding portfolios (excluding zero). It is suggested that the concentration of the small firms in the best performing yield categories may explain some of the superior returns rather than attributing it all to a yield effect. The issue of returns to size is considered further in a later section.

Keim (1985) also investigates seasonality in relation to the dividend yield and stock returns relationship. It is shown the average monthly percentage returns are considerably higher for January than any other month and statistically significant. The higher returns are observed across all of the yield groups but particularly in the zero-dividend category and, to a lesser extent, in the two highest yield categories. There are no other months where any significant abnormal returns are detected.

Christie (1990) continues to investigate dividend yield effects using monthly data for NYSE firms between 1926-85. The method employed for determining dividend status differs considerably from Keim (1985) however. It is argued that using the sum of dividends over the preceding twelve months gives rise to an overestimation of the number of firms making cash distributions. For example, a firm that omits a quarterly dividend after three months is considered as a dividend payer for a further nine months during which time it slips to progressively lower yield categories before reaching its destination in the zero-dividend category. Furthermore, firms that cease payments but reinstate within a year are always classed as dividend payers. To overcome all firms that have not paid dividends since listing or have announced that the next dividend will not be paid are classed as zero-dividend companies. This is further qualified through the formation of three categories:

- Non Dividend-Paying Firms – those that have no regular structure for dividends.
- Dividend Initiating Firms – those where cash dividends are paid after listing where the elapsed time since the list exceeds the frequency of payment by two months e.g. if a semi-annual dividend is paid more than eight months after listing then Christie (1990) defines the preceding period as a zero-dividend interval.
- Dividend Omitting Firms – in a similar manner to the above, where the time between ex-dividend dates departs from a firm's previous schedule by more than two months the firm qualifies as a non-payer.

In contrast to other studies, Christie (1990) uses a size-based expected returns model. In month *t*, firms are sorted into size deciles based on their market capitalization at the end of month *t – 1*. Within each decile firms are allocated to the zero-dividend category or one of four positive yield quartiles. The expected return for a particular firm *i* is given as the average monthly return on a firm within the same size decile excluding those from the same yield category:

$$E\left(R_{i,t} \mid s_j y_k\right) = \sum_{i=1}^{N_{j,k}} \frac{\left(R_{i,t} \mid s_j y_k^c\right)}{N_{j,k}} \qquad \text{Equation 2.3}$$

where, y_k = yield category ($k = 0, \ldots, 4$)

s_j = size ($j = 1, \ldots, 10$)

y_k^c = not in same yield category as firm i

$N_{j,k}$ = number of firms in s_j excluding those in yield k

Excess returns are calculated by comparing the actual return with the expected return. Christie (1990) argues this method means that newly listed firms can immediately be included since they are assigned to a size category based on the end-of-month market value. There is no requirement for sixty months previous returns or even twelve months in order to calculate the summation of dividends. It is suggested that by including firms in the month they list rather than after sixty months restores half of the non-dividend paying sample.

When the methodology is applied between 1946-85 (pre-war years had no dividend-paying firms in some deciles hence expected returns could not be generated), Christie (1990) finds that zero-dividend firms show a negative excess return of –0.40% a month compared to similar sized paying firms. This occurs across all of the size deciles and in addition the average β of non-paying companies is significantly higher than positive yield firms. There is evidence of a seasonal effect, again confined to only January; where there are significant positive excess returns to zero-dividend firms in the lowest six size deciles. On completing the dividend yield-stock return curve Christie (1990) shows the positive relationship that been documented by previous studies. However, given the negative excess returns of zero-dividend firms there is no 'U-shaped' curve observed but rather more of a linear relationship.

Christie (1990) attempts to reconcile the differences between the findings of Keim (1985) by imposing the methodology of the latter upon the data. Doing this generates a positive excess return of 0.36% per month when the period used is from 1931-78. However when data is used from 1945-85 then the excess return is found to be –0.20%. Christie (1990) attributes the differences to the abnormally high returns pre-1945 as firms emerged from the Depression. Many companies ceased to pay dividends during that period thus creating a significantly larger zero-dividend population (as discussed earlier by DeAngelo et al, 2004).

Morgan and Thomas (1998) (hereafter MT) analyse the UK dividend yield/returns relationship using monthly data from 1975-93. They adopt the same approach as Keim (1985) for ease of comparison. The findings show the 'U-shaped' curve again, however the highest two yield categories outperform the zero-dividend firms. When MT relax the stipulation that firms must have sixty months of previous returns available to 48, 36, 24 and finally 12 there is very little difference noticed in the average monthly return across any of the positive yield portfolios. However, average returns for zero-dividend firms fall from 2.06% per month to 1.69% per month when the amount of returns data required is reduced from sixty to twelve months. This is consistent with Christie (1990) who concluded that much of the outperformance of zero-dividend firms in Keim (1985) was due to the long qualifying period and that when firms listed there was a, "heightened expectation of a forthcoming dividend program." A further interesting finding was that as MT decreased the number of months of returns required so the average firm size across all categories decreased This was attributed to newly listed firms being of lower market value and that the sixty month qualifying period excluded a disproportionate amount of small stocks.

When MT introduce the Sharpe-Lintner CAPM they find that β is very similar for all of the positive yield portfolios but a little higher for the non-paying firms. There were significant positive excess returns for both of the highest yielding quintiles and a significant negative excess return to the lowest yielding quintile. The zero-dividend firms delivered a small negative excess return. MT find that the average size of zero-dividend firms is again much smaller than dividend payers. The average non-paying firm was capitalized at around £30m. There was no obvious linear relationship between size and dividend yield exhibited though. The authors do discover that, like Keim (1985), many of the small firms lie in the zero-dividend category whilst many large firms lay in the lowest three positive yield categories.

In a previous study Clare et al. (1995) found pronounced seasonal effects on UK stock returns in January, April and September. MT find these persist for zero-dividend firms with large positive returns in January and April and a negative return in September. When these were tested more formally under regression analysis, no effects were found for the market as a whole during these months but strong evidence for seasonal zero-dividend returns were discovered.

McManus (2001) employs a method similar to that of Keim (1985) and MT. Data is used from the UK during the period 1958-97. Portfolios are formed on the basis of firstly yield and secondly size. The qualifying period is set at 24 months of preceding data. Once more the 'U-shaped' relationship is observed but non-payers outperform the high yielding firms in this study. The relatively poor performance of the low yielding companies is confirmed. When risk-adjusted performance is considered, there are positive excess returns still attributable to both high and non-yielding stocks. The zero-dividends still show a small relative out-performance compared to those top yielding firms. In common with all previous studies, M finds the zero-dividend firms are easily the smallest in terms of average market capitalisation.

McManus (2001) also looks into migration of firms between yield categories. It is found there is least migration from firms in the zero-dividend category followed by the highest and lowest yielding portfolios. The middle yield groups showed the highest turnover of firms. Migration is found to be mainly into adjacent dividend groups, but non-paying firms show the second most likely move is into the high yield portfolio. In addition, the second most likely place for highest yielding firms is in to the zero-dividend portfolio.

The migratory patterns combined with the similar returns lead McManus (2001) to suggest a possible 'adjacency' between high yielding stocks and non-paying stocks. Rather than these two groups being at opposite ends of a spectrum, the yield-return relationship is circular with them positioned next to each other. This could possibly be attributed to firms showing reluctance to cut dividends despite facing financial difficulties resulting in yields tending to rise as the share price falls. Eventually the dividend policy becomes untenable and the firm omits thus migrating to the zero-yield category.

Finally McManus (2001) considers only the population of zero-dividend stocks in an attempt to discover if returns can be explained by firms being either former payers of dividends or having never paid a dividend since listing. Companies are divided into quintiles based on size and then into portfolios according to their dividend status (either former or never) with rebalancing occurring every month. An earnings yield is calculated for each portfolio by summing all of the earnings of firms in that portfolio over the preceding twelve months and then dividing by the number of firms in the portfolio.

The earnings yield is used as one of a number of explanatory variables in a regression equation where the dependent variable is set as the excess return on the portfolio above the risk-free rate. In addition to earnings, other independent variables include the excess return on the portfolio relative to the return on an equally weighted portfolio of all firms (including dividend payers), seasonal dummy and interaction variables and a logarithm of average market capitalization term. The model was estimated using the Generalisation Method of Moments with the heteroskedasticity-constant estimation of White (1980) and the autocorrelation correction of Newey and West (1987).

Whilst this method initially generated a large number of parameters, the one with least significance was eliminated until only those with significance remained. From the resulting analysis McManus (2001) found no evidence that returns behaviour could be predicted using the explanatory variables. Therefore the notion of a former payer/never paid effect was rejected. The same model was used to investigate whether zero-dividend firms can be explained by whether a firm is expanding or contracting. Instead of sorting, after size, on whether a dividend has ever been paid, a distinction is made between firms whose market value has increased (expanding) or decreased (contracting) over the previous year. A measure is thus calculated as the sum of all market values of firms within the portfolio divided by the market value of the firms twelve months previously. This describes the expanding/contracting variable and replaces the former/never variable in the model.

Although McManus (2001) finds some initially strong evidence of expansion/contraction and earnings yield effects, further analysis on a sub-period basis showed these failed to be persistent. As a caveat it is pointed out that the database saw an influx of new firms in 1975. If the characteristics of these proved to be different to those initially analysed then this would impact on the sub-period analysis in an additional way to the changing characteristics of firms over time.

2.4 Tax Theories

In a hypothetical environment where, amongst other assumptions, there is no personal taxation Miller and Modigliani (1961) demonstrate that investors are indifferent to dividends or capital gains. Clearly in Britain and America taxation on individuals exists and hence dividend policy becomes an issue. Before examining the tax-based explanations for the findings in the dividend yield-stock return relationship studies it is worth considering taxation policy in the UK and US.

Morgan and Thomas (1998) point out that there are considerable differences between the way dividend income and capital gains have been historically assessed for taxation purposes in Britain and America. They describe the US as operating a 'classical' tax system whereby corporations and shareholders are considered separate entities when calculating tax owed; this leads to double taxation. Profits generated by firms are subjected to a corporation tax. Shareholders are then taxed at their marginal rate on any dividend payments they receive. If any profits are retained then the value of the equity rises and shareholders become liable for capital gains tax (CGT). However, CGT is only payable when a gain has been realised, thus for a long-term investor this leads to a bias against dividends. Prior to 1986 in the US, capital gains were treated less harshly than dividend income, further penalising the latter. Even after 1986, Fedina and Grammatikos (1991) estimate the effective taxation rates still offered an advantage to capital gains. Recent taxation changes in the US (May 2003) however, have now equalized the rates levied on capital gains and dividends at 15% thus making investors indifferent between the two from a purely taxation standpoint (see Julio and Ikenberry, 2004, for a full discussion).

Chui et al. (1992) describe a number of structural changes that have occurred in British tax policy. Indeed they state, "Since 1958 Britain has had a form of partially integrated corporate and personal tax system (1958-65), a classical system (1965-73) and since 1973 an imputation system. Other major changes have been the introduction of capital gains tax in 1965, the reduction of the top rate of income tax from 83 percent to 60 percent in 1979 and the abolition of investment income surcharge in 1984."

Benito and Young (2001) identify further changes to the UK taxation system. They point to the abolition of tax credits on dividend payments to pension funds in July 1997 and the removal of Advanced Corporation Tax (ACT) in July 1997. This effectively ended the imputation system whereby companies paid a net dividend to shareholders and then paid tax equal to the rate of imputation (usually the standard rate of income tax) multiplied by the gross dividend. The tax paid was considered to be an advance payment of corporation tax *and* shareholders' income tax at the basic rate. This ACT payment was deducted from the total corporate tax bill with the remainder paid as corporation tax provided sufficient taxable profits existed. According to Chui et al. (1992), the imputation system made basic rate tax-payers prefer dividends since the income tax was already included in the ACT payment and retentions of earnings would give rise to capital gains and a subsequent CGT bill.

Poterba and Summers (1984) quantify the imputation system in the UK between 1973-81. They find the weighted average marginal tax rate across all investor classes was negative, with a value of –0.0277. This compared to a value for capital gains of 0.1343. The fact that a negative effective rate was discovered was attributed to the sizeable amount of tax-exempt pension funds in existence during the period of study.

The use of tax-based models to explain the dividend yield-equity returns relationship has produced mixed results. Litzenberger and Ramaswamy (1979,1982) and Poterba and Summers (1984) amongst others find evidence of possible tax explanations whilst others such as Miller and Scholes (1982) find no proof or offer alternative explanations. Of the studies considered in detail in the previous section it might be expected that those using US data would display superior returns for high-yielding firms compared to low-yielding companies to compensate for the higher taxes on dividends under the classical system. For those investigations using UK data during the imputation era the converse would be expected, as capital gains are valued less highly than dividends.

Keim (1985) displayed a positive relation with yield and returns in the US, except for zero-dividend stocks, with the former being apparently consistent with taxation policy. However, much of the effect is concentrated in the month of January suggesting that differing tax rates for dividends and capital gains are not the only explanation. Christie (1990) also showed an upward sloping US dividend yield-returns curve but with zero-dividend firms also conforming to the pattern. Once again this initially appears consistent with a taxation hypothesis but on further inspection Christie (1990) discovers the poor returns of non-paying firms are concentrated in the first few years after listing. The suggestion is that a dividend expectation effect exists with new listings and that failure for dividend initiation to occur results in negative excess returns. By removing those initial years of zero-dividend firms it is shown that any returns due to taxation policy are not statistically different from zero, thus leading to rejection of the tax explanation.

Using UK data, Morgan and Thomas (1998) present a 'U-shaped' curve that is clearly inconsistent with the tax based hypothesis given that most of the study occurred whilst under the imputation system. Whilst rejecting the taxation model as an explanation for their findings it is suggested it may be still be a relevant factor. They point to work by Reinganum and Shapiro (1987) who found no seasonal effects in the UK market before the introduction of CGT. After this they observed seasonal effects in January (usual end of year for corporations) and April (end of year for individuals) although only the latter was determined as consistent with tax-loss selling.

2.5 Dividend Clienteles

The theories presented regarding dividend clienteles can generally be classified in to one of two groups, either taxation driven or based on income preferences. In the case of the former it assumes investors inhabit yield groups according to their tax rates', for example; a low rate income tax payer is happy to hold high-yielding shares. The alternative theory suggests that investors have different preferences for income and that this forms a basis for investment decisions. For example, one investor may like the regular payments of a quarterly dividend and thus own mainly high-yielding firms, whilst another may dislike the reinvestment problem of receiving income and so inhabits the other end of the yield spectrum. Some of the evidence for these theories is now considered.

Elton and Gruber (1970) (hereafter EG) test for the existence of a dividend clientele effect by investigating two variables. The first of these is dividend yield, where it is expected that investors in high-yielding stocks would be in relatively low tax brackets compared to low-yielding firms. Secondly payout ratio is analysed, it is suggested that firms that retain more earnings grow more quickly that firms that distribute none of their earnings. Thus firms with high payout ratios should attract investors in lower tax brackets than low payout firms.

EG initially describe the relationship whereby an investor would be indifferent between selling stock the day prior to ex-dividend or on the ex-dividend day itself. This is given by,

$$P_B - t_c(P_B - P_C) = P_A - t_c(P_A - P_C) + D(1 - t_o)$$

where, P_A = price of stock on ex-dividend day
P_B = price of stock the day before ex-dividend
P_C = price of stock at purchase
t_o = tax on ordinary income
t_c = tax on capital gains

This rearranges to,

$$(P_B - P_A)/D = (1 - t_o)/(1 - t_c) \qquad \text{Equation 2.4}$$

Thus $(P_B - P_A)/D$ reflects the ex-dividend behaviour that causes an investor with tax rates t_o and t_c to be indifferent regarding purchases and sales of the shares. The statistic represents the marginal tax rates.

EG studied all firms on the NYSE that paid a dividend between 1st April 1967 and 31st March 1968. They investigated the dividend yield and payout ratio separately but in both cases ranked firms by the variable and then formed deciles. It was discovered that, in general, with increasing deciles of yield so the value of $(P_B - P_A)/D$ also increased. Hence, the implied tax bracket decreases with yield supporting the hypothesis that investors with low income tax rates invest in high-yield companies. When deciles were constructed on payout ratio the tax bracket declines as the distribution rate increases but the relationship was not as smooth as that of dividend yield. Nevertheless the results remain consistent with the original hypothesis, however it would be interesting to see if the pattern remained if more than twelve months of data was utilised. The issue of payout ratio is considered in greater detail in a later section.

Denis et al (1994) consider the existence of dividend clienteles to explain stock returns after the announcements of dividends. They cite previous work by Bajaj and Vijh (1990) (hereafter BV) who hypothesize that the price reaction to a firm's dividend change announcement is influenced by the marginal investor in that firm's preference for yield. Excluding other factors, investors in low-yield firms will react negatively to an increase in dividends while those investors in high-yield equities, who have a desire for yield, react positively. Any price reaction is therefore a function of yield. When BV relate dividend yield prior to the announcement to the magnitude of share price change post-announcement they find the higher the yield, the greater the price reaction. They interpret this as supporting their hypothesis.

Denis et al (1994) form their sample by using all firms with absolute changes in quarterly dividends of greater than 10% that are available on CRSP between 1962-88 and with sufficient data available to calculate Tobin's Q. Any firms that made special dividends were excluded. The result was around 6000 incidences of dividend increases and 800 dividend decreases. When these were tested using the same methodology as BV it was noted that firms with yields above the median were more sensitive to both dividend increases and decreases. When the sample was broken down into quartiles based on yield, the two-day announcement period returns increased with increasing yield. Particularly large excess returns were displayed in the largest yield quartile. In addition by forming quartiles on standardized yield change it was demonstrated the greater the change in dividend the greater the excess return. Once again the largest change in yield quartile delivered considerably larger returns than the remainder. It is argued these results are consistent with a dividend clientele effect being present.

Michaely, Thaler and Womack (1995) (hereafter MTW) investigate the possibility of dividend clienteles using data from the NYSE and AMEX between 1964-88 for both dividend payers and non-payers. They suggest that institutions primarily hold stocks in large firms whilst individuals primarily hold small firms. Other possible clientele reasons are that high-yielding firms are more appealing to low-rate taxpayers when dividends are taxed more heavily than capital gains. Shefrin and Statman (1984) have argued that some individuals like dividend paying firms as they 'spend the dividends, don't touch the principal'. Thus a dividend omission would imply a change in clientele. MTW suggest clientele change is more likely to occur in omitters rather than initiators since the average yield before omission is 6.7% while the average initiation yield is 0.9%.

A possible clientele shift is tested for by studying the volume of shares traded as a proportion of the total issued both before and after the announcement. Whilst they find a significant increase in abnormal volume around the announcement period this does not represent a very large increase in turnover, suggesting if there are any changes in clientele they are not very dramatic. They also study institutional ownership both prior to omission and after the event. Again there is little change indicating omissions do not dramatically change ownership.

Morgan and Thomas (1998) consider the usefulness of the dividend clientele hypothesis in explaining the dividend yield-stock returns relationship. They point to the evidence of clienteles produced by previous studies but note that many of these focus on the data surrounding the ex-dividend date. However, studies by Chaplinsky and Seyhan (1987) and Scholz (1992) are cited as having examined individual portfolio data and still find evidence consistent with dividend clientele behaviour. Despite this Morgan and Thomas (1998) do not find compelling reasons for this explanation of their findings. They argue that if firms adjust their dividends in response to the demand from different clienteles this would cause pre-tax returns to tend to be equal. This clearly was not the relationship discovered with large differences in the returns across yield groups. Indeed this was the case for all of the studies considered in the earlier section, regardless of whether US or UK data was used.

2.6 Dividend Signalling

The evidence presented for dividend signalling falls into two groups, those that focus on the days surrounding the announcement and those concerned with long-run reactions to dividend changes. As a complement, evidence of stock price changes around earnings announcements are considered since it may be possible that parallels can be drawn with dividends in both the short and long-term.

DeAngelo, DeAngelo and Skinner (1996) (hereafter DDS (1996)) investigate the importance of dividend signalling using a sample of 145 NYSE firms who have suffered earnings declines after a period of nine or more years of consecutive growth. The median firm in the sample had average annual growth of 18% in the five years prior to the initial earnings decline (Year 0). It is stated that had this trend continued then Year +3 earnings would have been around 190% of the peak earnings in Year −1, this is double the level actually achieved. The fall in earnings growth in Year 0 thus marks a transition to a period of zero growth. DDS (1996) study the Year 0 dividend decisions since they argue these should be of particular interest to outsiders who wish to know if the earnings decline is a one-off or the start of a significant departure from the previous trend.

Six possible explanations are considered as to why a favourable dividend action may not be representative for the future prospects of the company. These are,

i) Current earnings are such good predictions of future earnings that little can be gained from other signals.
ii) Capital expenditure is cut so additional payouts are from the cash flow rather than a sign of earnings expectations.
iii) Dividend changes are a lagged variable of earnings changes.
iv) Managers send favourable signals but make understandable mistakes from the information available at the time.
v) Managers are over-optimistic about future growth and send signals that reflect this over-optimism.
vi) The cash commitment to a dividend increase is modest, thus reducing the reliability of the signal.

DDS (1996) find evidence that causes them to reject explanations i), ii) and iii) completely. It was discovered, using regression analysis, that current earnings information was only able to explain 9% of the variation in future earnings. Hence it would appear that other sources of information might improve the forecasting of subsequent profits. The capital expenditure explanation was rejected on the basis that whilst the median capital outlay declined as suggested this was driven by firms maintaining or cutting dividends as opposed to those increasing dividends. Companies that cut or held dividends had a median capital outlay change of –19% from Year –1 to Year +1 compared to +5% for the remainder. Finally, the lagged variable explanation was tested by assuming that if Year 0 dividend decisions were a lagged response then evidence of this should be present for previous dividend changes also. However, no evidence was found that firms raising dividends in Year 0 had the longest lags between dividend and earnings growth. Also there was no relation found between the percentage change of dividends in Year 0 and prior earnings growth.

The fourth explanation proposed that managers might make a favourable signal given the information available at the time. This was tested by studying firms that raised dividends in Year 0 but subsequently cut sometime in the next three years (12% of sample). Given the reluctance of managers to reduce dividends, it would appear unlikely that distributions would be increased if foresight suggested it could not be maintained. However, 64% of the sample made multiple increases over the three years after raising dividends in Year 0. This implies there was no recognition of any error of judgement. Any evidence of explanation iv) is weak at best.

DDS (1996) discover that explanations v) and vi) are the most plausible from the analysis they undertake. They find that 26% of managers portray the results in Year 0, and the future prospects, as favourable in the annual report. In only 5% of cases are managers not optimistic about the forthcoming year. Given the lack of pessimism in the annual statement it is argued there is no reason to expect dividend decisions in Year 0 to be pessimistic either. The suggestion by DDS (1996) is that managers can do this by only increasing dividends by a small amounts, indeed the median firm only increased by 3.5% of Year 0 earnings. A proposition is made that unless managers sacrifice control of a considerable amount of resources, the signal is not particularly credible. DDS (1996) argue this is consistent with Myers and Majluf (1984) and Jensen (1986) who imply that corporate policy reflects managements' desire to have access to significant financial resources.

Overall DDS (1996) consider the findings offer no great support for the signalling hypothesis. However some studies are cited where evidence consistent with signalling has been found, e.g. in the dividend decisions of firms in financial difficulties. DeAngelo et al. (1992) find greater future earnings performance for firms initially reporting a loss when accompanied by a favourable dividend policy. Woolridge and Ghosh (1986) have also shown that dividend reductions are related to considerable stock price falls, whilst others including Aharony and Swary (1980) find dividend increases are accompanied by rises in share prices. DDS (1996) point out that often the rises are around 1% and that if translated into future earnings growth of 1% is of no particular economic significance.

DeAngelo, DeAngelo and Skinner (1999) (hereafter DDS (1999)) consider the role that special dividends play in dividend signalling theories. They use data from NYSE firms between 1926 and 1995, with special dividends being classified according to a code from CRSP that encompasses dividends such as either year-end, final, extra or special. This attempts to highlight any dividend that diverges from the pattern of four equal dividends paid quarterly. When considering the returns relating to a special dividend, DDS (1999) use the returns over the announcement day itself plus one day either side.

Work by Brickley (1983) is referred to, who discovered that share prices rose by around 2% on average after the announcement of an unexpected special dividend (defined as no special dividend having been paid in the previous two years). It was also found that regular dividend increases were received considerably more favourably than unexpected specials. DDS (1999) build on this by introducing other changes in special dividends, particularly reductions from previous specials but that remain positive and whether price reactions are related to the magnitude of the change in special.

The conclusions drawn were that the informational content of a special dividend was due to whether one was declared or not. There was no differentiation attributed to the size of the dividend or the magnitude of the change from the previous special. It is argued this may motivate managers to pay special dividends even if they are unable to match previous distributions. This is confirmed by DDS (1999) discovering that some managers do indeed pay specials frequently and in effect they are a regular payout that is nominally labelled as 'special'.

Despite this the incidence of special dividends has decreased considerably over time. Between 1940-59 over 5500 special payments were made, but between 1980-95 less than 400 special distributions occurred. Considered from another perspective, over 50% of firms during the 1950s made special payments compared to less than 10% during the 1980s. This leads DDS (1999) to question if special dividends were once commonplace, why they have declined so markedly if they provided an economically important signal? They suggest that possibly an improved method of signalling has overtaken special dividends, such as share repurchases, although they find no empirical evidence to support this theory.

Bernard and Thomas (1989) (hereafter BT) investigate the notion of 'post-earnings-announcement drift'. They discuss evidence in studies, including Ball and Brown (1968) and Foster et al (1984), showing that abnormal returns for stocks reporting 'good news' tend to drift up whilst firms with 'bad news' drift in the opposite direction. Indeed Foster et al (1984) estimate in the sixty days after an earnings announcement, a long position in the top decile of unexpected earnings combined with a short position in the bottom decile gives an annualised excess return of around 25%.

BT point to two different theories that have been used to try and explain this drift. The first says that part of the price reaction to announcements is delayed due to failure to quickly interpret the news or that costs exceed the benefits of trading immediately. A second explanation proposes the drift is really a compensation for bearing risk that is not estimated in the CAPM. This requires firms that announced better than expected earnings to be riskier in some way than those that delivered below expectation earnings.

The sample used by BT covers firms traded on NYSE and AMEX between 1974-86 and NASDAQ from 1974-85. Abnormal returns were calculated using a comparison portfolio approach designed to control for the Banz-Reinganum size effect.

$$AR_{jt} = R_{jt} - R_{pt} \qquad \text{Equation 2.5}$$

where, Ar_{jt} = abnormal return for firm j, day t

R_{jt} = raw return for firm j, day t

R_{pt} = equally weighted mean return on day t on NYSE/AMEX firms size decile that firm j is part of at start of calendar year

By using a long position in the highest unexpected earnings decile and a short position in the lowest, BT find an abnormal return of around 4.2% during the sixty days subsequent to the earnings announcement (in which most of drift exists). This varies between 5.3% and 2.8% when just small and large firms are considered respectively. A particularly large amount of the drift is found to occur within the five days after the announcement.

BT test a number of theories in order to try to explain their results. They consider the possibility that shifting beta values could cause the variation but this is found to explain less than a tenth of the total drift. Transaction costs are also investigated under the reasoning that, if the abnormal returns are below an upper bound of round-trip dealing expenses, this may be a valid explanation. The results are of approximately the right magnitude to be consistent with this theory but BT argue that if a price response is delayed due to transaction costs there should be no trading at all. If a trade occurs it should be at the price according to full information. In addition, it may be expected that transaction costs would cause noise around the price rather than under-reaction to new information.

Finally BT consider the possibility that the market fails to fully reflect the prospects of future earnings based on current earnings. Abnormal returns are therefore measured during a period beginning four days before the announcement in the following quarter up to and including the announcement day itself. They find for the top decile of firms ranked by expected earnings in quarter t, these again deliver good news in quarter $t+1$ with abnormal returns of 1.3% and 0.3% for small and large firms respectively. A similar pattern emerges for the lowest decile in quarter t, generating abnormal returns of –0.8% and –0.4% in quarter $t+1$. These returns are considerably greater than would be expected if any drift followed a smooth trend. BT suggest these discrepancies may remain until they reach a certain threshold when speculators move in. However, they fail to understand why investors would be willing to trade at the 'wrong' price in the meantime.

Bernatzi, Michaely and Thaler (BMT) (1997) investigate the theory that changes in dividends have information about future earnings. In particular they study unexpected earnings, which they define as the difference between the actual earnings and the expected using all relevant information apart from the dividend change. Using data from NYSE and AMEX between 1979-91 they look at firms that have paid dividends in all four quarters for two consecutive years (excluding initiation and/or omission). The sample is also restricted to those firms with a December fiscal year end and those with earnings information available five years before the dividend payment year.

BMT form seven portfolios based on dividend change (5 quintiles for dividend increases, 1 for no change and 1 for all decreases) and analyse changes in initially raw earnings. For the same year as the dividend change, they find earnings increase most strongly among those firms that increased dividends by the greatest proportion. The less the dividend increases, the less strong the concurrent increase in earnings. Firms cutting dividends had significantly lower earnings in the same year whilst firms holding distributions constant showed a small, insignificant decrease. When BMT introduce unexpected earnings (calculated in three different ways) they find similar relationships to those observed with raw earnings.

In the periods one and two years after the dividend change are investigated, BMT find no particularly strong effects for any portfolios apart from those firms that cut dividends. This group showed significant earnings *growth* in the year after the dividend change. Further analysis shows that firms that increased dividends are less likely to have subsequent earnings decreases compared to those firms with similar earnings growth but that did not raise dividends.

When BMT go on to consider omissions and initiations they refer to work by Healy and Palepu (HP) (1988). HP found a significant drop in earnings for firms cutting dividends in the same year but earnings increases in subsequent years. This is similar to the findings of BMT for dividend cuts. However, HP find significant earnings increases in subsequent years after a dividend initiation, which clearly differs from BMT's findings for dividend increases. When BMT test raw earnings in a similar way for initiators they generate similar results. They offer no explanation for the difference between an initiation and a raise except to suggest a firm may only be able to use the dividend signal once.

Michaely, Thaler and Womack (1995) (hereafter MTW) investigate market reactions to both dividend initiations and omissions. The sample chosen includes firms from NYSE and AMEX between 1964-88. In order for a firm to qualify as having initiated a dividend it must have been listed on either of the exchanges for two years prior to the initiation of the first dividend. Closed-end funds and monthly dividend payers were excluded. Qualification for having omitted a dividend was based on having either, declared six consecutive quarterly dividends before not making a cash payment in a quarter, declared three consecutive semi-annual payments and then no cash payment in the next six months or declared two annual payments and then no cash payments in the next year. A number of potential omissions were then removed from the sample, mainly due to changes in fiscal year-ends (mostly applicable to quarterly payers), being closed-end funds or paying monthly dividends, or no report could be found in financial records of an omission.

To evaluate the performance of companies MTW calculate the returns from a buy-and-hold strategy and compare these to an equally weighted portfolio of all stocks. The difference between the two gives the excess return. This method is applied to calculate the performance for firms that have either initiated or omitted dividends before the event took place and in the short-run afterwards. For firms initiating there is an excess return of +15.1% in the previous year and +3.4% during the announcement period (the announcement day plus one day either side). The average initial yield was found to be 0.9%. Firms omitting dividends performed poorly in the previous year, consistent with DeAngelo et al (1992), exhibiting average excess returns of –31.8%. During the announcement period the return was –7.0% with an average yield prior to omission of 6.7%.

When MTW considered long-run performance they found companies initially delivered excess returns of +7.5% and +24.8% over one and three years respectively after the announcement period. This compared with dividend omitting firms that had excess returns of –11.0% and –15.3% after one and three years. Whilst the excess returns reported are all significant, MTW consider using a different control than the equally weighted portfolio. Thus they repeat the results adjusting for beta, size and using industry and size matched portfolios. In the case of the initiating firms, using these benchmarks still generated positive excess returns but these are lower and in some cases lose their significance. For the omitting firms the different benchmarks merely reinforce the relationship with all producing larger negative returns and without any loss of significance. As a further test MTW calculated the returns if after each initiation occurred a long position was taken in the stock combined with an offsetting short position in the market portfolio. For every omission a short position was taken in the stock and a corresponding long position in the market. Returns were calculated as a percentage of the long position. This strategy was found to be profitable in 22 out of 25 years and delivered an average return of +9.7% annually. MTW concluded the excess returns were not due to any particular time period and appeared to be economically significant.

Given the results appear inconsistent with an efficient market explanation, MTW seek other explanations for their findings. They consider if they have rediscovered a mean reverting process. De Bondt and Thaler (1985, 1987) find companies with the most extreme performance over long periods show returns consistent with mean reversion in subsequent periods. However MTW show over a four-year period prior to firms omitting dividends, excess returns are an average –45.6%, hence the firms were already losers. They also consider if their results mirror the 'post-earnings-announcement drift' described by Bernard and Thomas (1989). However, the drift is more pronounced, persists for longer and is not generally confined to periods around earnings announcements. MTW point to other studies of long-term drift that appear consistent with their results. These include Ikenbery et al (1995) who find long-term excess returns to share repurchases and Loughran and Ritter (1995) who demonstrate negative excess returns in the long run to seasoned equity issues.

2.7 Dividend Payout Ratio

Lamont (1998) finds that the dividend payout ratio (the ratio of dividend payments to earnings) is a useful variable in forecasting returns since dividends and earnings have separately identifiable forecasting ability. Although it can be said dividends contain information about future returns since they offer some guide to future dividends and earnings convey information about business conditions, there is no loss of explanatory power found when these variables are combined in payout ratio. Hence there is no need to regress separately on dividends, earnings and price when dividend yield and payout ratio are just as good.

Lamont (1998) reports that previous studies have found quarterly earnings to be noise but this is actually useful short-term information for expected returns. High prices and high current earnings both predict low future returns; hence it is argued that using earnings yield alone is not a good idea. However, Lamont (1998) states that, "Dividends and earnings help predict short-term returns, but these variables are unimportant for forecasting long-term returns. In the mid-1990s, US stock prices are high relative to any accounting benchmark. Low forecasted long-horizon returns in the mid-1990s are due to high prices, and nothing else".

McManus, ap Gwilym and Thomas (2004) (hereafter MGT) introduce payout ratio into a model for the dividend yield/stock return relationship. Using UK data between 1958-97, they calculate payout ratio as the rolling total of dividends paid over the twelve months preceding the current month, divided by earnings calculated over the same period. It is suggested that payout ratio might be expected to vary between 0 and 1. Those firms with low capital requirements could inhabit the upper end of the range with zero-dividend firms at the other end of the spectrum. In practice it is found that approximately only two-thirds of the sample fall within this range. A very small proportion has a negative payout ratio (i.e. pay dividends but make losses) whilst a third of the sample pay dividends not covered by earnings (i.e. payout ratio is greater than one). In addition when earnings are close to zero, either positive or negative, this causes payout ratio to become a large number. To overcome this the technique of 'Windsorisation' is employed to truncate the outliers to an acceptable range. In this case the range is arbitrarily set from –5 to +5, with less than 0.005% of observations initially lying outside.

MGT find large, high-yielding firms are the most likely to have high payout ratios. At the other end of the payout range are small, low yielding companies. In terms of returns, the regression coefficient for payout ratio is negative and significant at the 2% level when entered into a model with variables for size, earnings, seasonality and dividend yield. However the introduction causes the usefulness of dividend yield to explain returns to diminish. MGT argue payout ratio offers some further information compared to a dividend yield only model as managers adjust the distribution of earnings to varying financial conditions.

Arnott and Asness (AA) (2003) point out that since 1995 US dividend payouts have been in the lowest 10% by historical measures, or alternatively, the earnings retention ratio is near all-time highs. In addition there have been high price-to-earnings and price-to-dividend ratios. It is argued by AA that previous levels of returns can only continue if earnings growth considerably outpaces previous earnings growth.

AA investigate the relationship that exists between payout ratio and future earnings growth using US data from 1871 to 2001, focusing particularly on the last fifty years of the sample. They calculate the rolling forward 10-year earnings growth of the S&P 500 each month, thus endeavouring to see if the level of current earnings distribution can provide a long-term prediction of future profits. Contrary to popular wisdom, they find the lowest payout ratios accompanying the lowest future earnings growth (in many cases negative) and the highest payout observations showing the highest future growth. When the earnings were calculated on a 5-year forward looking basis the same relationship was discovered, although with a little less significance. AA suggest there are a number of possible reasons for their findings.

- Management is reluctant to cut dividends and hence a high payout ratio signals confidence for the future but a low ratio signals concern.
- There are few compelling internal investments for companies. The first dollar is spent more wisely than subsequent dollars and thus the lower the retention, the less is available for speculative ventures.
- Earnings retention is based upon the desire of management to build 'empires'. Alternatively cash could 'burn a hole in the corporate pocket'. Distribution of

earnings to shareholders, whilst maybe less efficient, could subject management to more scrutiny.

- Mean reversion of earnings could cause temporary peaks and troughs. When these are reversed there could be positive correlation of future earnings growth.
- AA accept it could be their data or experimental design that biases results or maybe share buy-backs can explain the pattern?

2.8 Initial Public Offerings

It has previously been described how Fama and French (2001) find a significant increase in the proportion of new lists that joined the US stock market during the 1980s and 1990s. A very large percentage of these failed to pay dividends and thus entered the zero-dividend category. This combined with the evidence of Christie (1990) and Morgan and Thomas (1998), who found considerable differences in the returns of zero-dividend stocks depending on the amount of time after listing before a firm was admitted to the sample, suggests that a brief consideration of the work on initial public offerings (IPO) may be of benefit.

Ritter (1991) draws attention to the numerous studies that have shown anomalies in the pricing of IPOs, particularly the short-run underpricing (around 15%) and the 'hot issue' market phenomenon. A third anomaly is also suggested; in the long-run IPOs are overpriced. This is of interest for a number of reasons, i) possibilities of trading strategies for superior returns, ii) excess returns indicates there is no informational efficiency and there is the possibility of 'fads' (see Shiller, 1990), iii) the volume of IPOs coming to market shows large variation over time, if high volume periods show subsequent low returns then it may show firms taking advantage of 'windows of opportunity', and iv) if low returns are achieved in the aftermarket then firms going public achieved a low cost of external equity capital.

Ritter (1991) uses US data of 1526 IPOs in the US during 1975-84; this represents 85% of the gross proceeds of firms going public during this period. However, only 143 of the IPOs occurred during the first half of the sample period. When returns are constructed in the 36 months after offering, 31 of these are found to have negative average adjusted returns (relative to a corresponding matching firm). The cumulative average adjusted return is positive for the first four months but is –10% after 12 months, -17% after 24 months and –29% after 36 months. When IPO performance is measured relative to other benchmarks a similar poor performance trend is noted but with varying degrees.

On further analysis it is found that small issues have the highest initial adjusted return and then worst subsequent aftermarket performance. The medium-large firms show the best adjusted returns but this is still worse than matched equivalent firms. Underperformance of IPOs is also exhibited on an industry basis. Of the 14 industry groups IPOs in a particular industry underperformed their peers in all but 3 cases, Ritter (1991) argues this suggests a 'fads' explanation.

When the issuance of IPOs is study each year it is found that underperformance occurs in only 5 out of 10 years. However, due to the large number of new lists in the early 1980s there is still an overall significant underperformance. When there were high numbers of firms gaining a listing in a calendar year these were nearly always followed by particularly poor subsequent three-year adjusted returns. Ritter (1991) argues the findings suggest that firms choose to go public when investors are prepared to pay high multiples (price-to-earnings or price-to-book) reflecting high optimism about future growth. The subsequent underperformance is then due to disappointing net cash flows. This in turn can be ascribed to either bad luck or irrationally over-optimistic forecasts. Ritter (1991) tends to favour the latter pointing to evidence of other markets where investors have systematically lost money, including that by Weiss (1989) and Peavy (1990) of losses in closed-end funds between 1985-87 and Elton et al (1989) of poorly performing funds going public in 1979-83.

Purnanandan and Swaminathan (PS) (2002) investigate the pre-market valuation of IPOs using comparable firm multiples. They again point to the high first-day returns suggest initial underpricing. The authors compare IPOs to other similar industry firms on the basis of measures such as price-to-EBITDA, price-to-sales and price-to-earnings. This allows for the IPO to be related to some 'fair value' benchmark.

PS find IPOs are systematically overvalued at offer compared to similar firms, the median is around 50% overvalued in a sample of more than 2000 firms between 1980-97. The authors also find first day returns of overvalued IPOs exceed those of undervalued offerings by 5-7%. Over the next five years though the overvalued IPOs underperform the under-rated IPOs by 20-40%, beginning in year two and continuing to the fifth year. When PS consider if overvalued IPOs are priced to reflect a growth premium they look at sales figures. They show that IPOs have higher growth in the first year but this declines sharply and is no different to undervalued IPOs by the fifth year. During the same period they also deliver significantly lower returns on assets and profit margins. Overall PS tend to believe that over-confidence in future growth is central to IPO overvaluation and subsequent poor adjusted returns. The initial price rise tends to suggest excess demand and positive price momentum shortly after the firm comes to market.

2.9 Size Effect

Keim (1983) investigates the possibility of a size effect by drawing on US data from the CRSP daily stock files for NYSE and AMEX firms between 1963-79. Companies are ranked at the start of every year according to market capitalization and then divided into ten portfolios (with portfolio 1 comprising the smallest firms). In order for a firm to qualify for the sample, it is stipulated that returns must have been available for the entire calendar year under consideration.

Firms are annually ranking firms according to their risk using estimated Scholes-Williams beta values (also to adjust for thin trading) and deciles formed. The excess returns for each stock are calculated as the daily return on the particular stock minus the equally weighted return on the risk decile of shares that the stock in question belongs to. An equally weighted return is then computed for all stocks within a particular size portfolio.

Keim (1983) finds excess returns are inversely related to size, with particularly large excess returns for the smallest size portfolio. It is stated the average return of this portfolio is over 20% higher annually than would be expected for its risk. By contrast the largest decile returns nearly 10% less annually than would be commensurate with its risk. Seasonality also plays an important part in the findings, in particular the excess returns during the month of January. This is illustrated by plotting the daily percentage abnormal returns for each month against the deciles of market value. A big difference is noted between the slopes of January and the other eleven months. The former is much steeper negatively whilst the remainder are only slightly negative and generally close to zero abnormal return. As further analysis, Keim (1983) compares the difference in excess returns between the smallest and largest deciles across each month in turn. It is discovered this is 15% during January compared to an average of just 2.5% monthly for all twelve months.

Levis (1989) investigates the size effect in the UK in conjunction with dividend yields, PE ratios and share prices. Monthly data is taken from the London Share Price Database (LSPD) over the period of 1955-83. Both dividend yields and PE were evaluated as the dividends/earnings per share over twelve months divided by the share price at the end of that calendar year. Market capitalization was also calculated on this share price annually. At the end of each calendar year companies are ranked separately in ascending order according to market value, dividend yield, PE ratio and share price. Returns were calculated for portfolios (the formation of which is discussed later) on an equally weighted basis for twelve months starting the April after ranking took place. Portfolios were rebalanced annually throughout the sample with a firm qualifying on the basis of possessing data for the ranking procedure at the end of the year and a rate of return the following April. From a preliminary analysis it is noticed that significant variations in the amount of data occurred when earnings per share were considered compared to the other three variables. Given the missing earnings data does not occur randomly across quintiles of the other variables, Levis (1989) argues it would be unfair to make comparisons with varying sample sizes. However using a unified sample would considerably reduce the size of the data set and this was also considered undesirable. Hence the full sample was employed when market size, dividend yield and share price were used (or any combination of) as the ranking method. When PE ratio was used, whether on its own or not, the reduced sample was used.

Levis (1989) controls for interaction effects between the variables by forming combined portfolios with both within-groups only and within-groups plus randomisation methods employed (tested by Cook and Rozeff, 1984). In the case of the former, quintiles were formed according to the chosen variable and then within each quartile firms were ranked on a second variable and quintiles formed within the first. When randomisation was introduced the twenty-five portfolios were combined and the second variable was allowed to vary freely across the quintiles of the first.

When the monthly mean returns are considered for the single ranking methods, Levis (1989) discovers a size effect is present. This equates to a difference of around 5% annually between the smallest quintile of size and the largest quintile. A very similar effect was found when share price was analysed. Both effects persisted when the reduced sample was employed. The PE ratio delivered a negative effect (lowest PE quintile returned 7% per annum more than highest) whilst dividend yield returned a positive effect (consistent with previous findings, especially as there was no distinct zero-dividend classification). Of particular interest was when Levis (1989) studied the variability of portfolios constructed from the ranking methods. The mean return per unit of variability for the smallest size quintile was more than twice that of the largest quintile, with the UK size premium 1.8 times greater than the same measure in the US. At least a portion of this is attributed to infrequent trading, particularly as high levels of autocorrelation are present in the lowest size quintiles. When five-year rolling beta values are calculate, a positive relation with size quintiles is found (ranging from 0.7 to 12) whilst for all other variables the beta values are essentially equal to one. After adopting the Aggregated Coefficients method to compensate for thin trading (see Dimson, 1979) small stocks still fail to be riskier than their large counterparts although the positive relationship with size all but disappears.

After introducing randomisation to the portfolios Levis (1989) finds much of the size effect is removed for all but the portfolio of smallest stocks. The share price portfolios behave in much the same way, suggesting these effects are very similar. Overall the most dominating effect was found to be dividend yield, the negative effect was maintained despite randomisation. The PE ratio is also found to have a negative effect and is largely independent of dividend yield. Levis (1989) proceeds to test the relationships when ranking within portfolios is adopted. A combination of small size and high dividend yield appears to be profitable, as does small size along with low PE ratio. Again ranking on either dividend yield within the PE ratio portfolios or vice versa leads to significant change compared to when the variables were considered independently. The size and share price effects were once again very difficult to distinguish.

2.10 Catering Theory

Baker and Wurgler (2004a) (hereafter BW, 2004a) propose that investors have an uninformed and possibly time-varying demand for dividend paying stocks, that arbitrage fails to prevent this demand from driving apart the values of payers and non-payers and, finally, that managers cater to investor demand by paying dividends when investors value payers more highly and vice versa. They test this theory by studying US industrial firms between 1962 and 2000. To determine the level of investor demand a number of different measures are utilized including the difference in valuations between payers and non-payers (the dividend premium) using a price-to-book approach, the difference in price of the Citizens Utilities cash dividend and stock dividend share classes (there were two classes of share that differed in form but had the same payout) and the average stock price effect surrounding dividend initiations.

BW (2004a) find that each of these investor demand measures for dividends has some ability to explain the annual initiation rates of dividends with the dividend premium accounting for over half of the variation. They conclude that managers adjust dividend payments to cater to investors' preferences for distributions at any given time. BW (2004a) caution however that the dividend proxies merely explain the proportion of firms that pay dividends at any one time; they make no inference to the overall level of payout. It is suggested that firm-specific financial constraints such as profitability are what determines the level at which dividends are set.

Baker and Wurgler (2004b) (hereafter BW, 2004b) consider whether the catering theory of dividends proposed by BW (2004a) can be used to explain the propensity of firms to pay a dividend within the US market. They observe that the dividend premium fits remarkably well to the changes in propensity to pay dividends and indeed predicted the decline in payers seen from the late 1970s onwards. The lone exception to the correlation occurred in the early 1970s when Nixon's Committee on Interest and

Dividends dissuaded firms from increasing dividends in an effort to combat inflation. BW (2004b) report however that once this artificial control was ended the propensity to pay dividends once again realigned itself with the dividend premium. Going one stage further, it is also shown that the dividend premium has the ability to forecast the relative returns of dividend payers and non-payers in aggregate over one to three years. BW (2004b) argue that this adds credence to these variables being associated with an investor demand led mispricing.

Chapter 3 – Dividend Yield Investment Strategies and the Payout Ratio

3.1 Introduction

Investment products are typically categorized by their stated investment approach. This leads to stock funds being grouped according to, amongst others, geographical biases, the size of component firms and the style of the investing approach. Two major categories of style investing are termed 'value' and 'growth'. Growth investing is widely perceived to mean that targeted investments will generate returns via capital gains with only a minimal income component. The emphasis is placed on firms that are likely to see increasing earnings with the acceptance that these stocks may be priced relatively more expensively on conventional valuation metrics compared to some less glamorous stocks. Value investing by contrast is often portrayed as the investment in out of favour companies that trade on cheap valuations relative to the rest of the investment spectrum. Intuitively, value investing has been linked with the purchase of firms with high dividend yields.

Chapter 2 discussed the historic relationship that has existed between dividend yields and stock returns with the conclusion that higher yields have generally resulted in higher returns. The exception to this relationship was when zero-dividend stocks were considered as a distinct group rather than being included in the lowest yield group. Both Keim (1985) and Morgan and Thomas (1998) report evidence of a 'U-shaped relationship' between yields and returns using this methodology. High dividend yielding stocks can generally be categorized as either firms with high dividend payouts but minimal prospects of future growth, such as utilities, or companies that have some sort of distress risk attached to them and hence the low valuation. In both cases though the firms are almost exclusively classed as mature since they have at least committed to making a dividend payment in the past and thus anticipated a profitable future. The zero-dividend category by contrast is likely to contain a much wider variety of firms. Those relatively new lists that are yet to reach profitability will inhabit this group but there will also be firms that have reached profitability but chosen not to make distributions due to either wanting to maximise investment or because they are not sufficiently confident of the future to initiate a payment. The final type of firm is more akin to a mature value firm where distress risk is attached. In this case, though, rather than the market anticipating a possible dividend omission, it has actually occurred.

Whilst the evidence of Keim (1985) and Morgan and Thomas (1998) points to high absolute and risk-adjusted returns for both high dividend yield *and* non-payers, the former has been embraced as a recognized investment strategy whilst the latter has been ignored. Over the last decade several books[1] and articles have devised strategies based on selecting a number of the highest yielding firms from within the thirty Dow Jones Industrial Average (DJIA) components. These have received considerable media attention[2]. Their proponents argue that these methods have produced better returns than the market over a number of years. The so called 'Dow 10' strategy involves investing equal amounts in the ten highest yielding DJIA firms on 31st December and then holding these stocks for a year. The process is then repeated annually. A variant of the strategy involves choosing just the five firms with the highest yields. Hybrid versions have evolved where price based criteria are also applied to the stock selection method. Collectively the stocks these strategies select have become known as the 'Dogs of the Dow'.

McQueen et al. (1997) investigated the Dow 10 strategy between 1946-95. They found a statistically significant annual difference of around 3% to the Dow 10 compared to an equally weighted portfolio of all constituents. When risk-adjustment and transaction costs were introduced the outperformance was reduced to less than 1% annually. Given that during the period of study dividends were taxed more heavily than capital gains, it was argued the remaining excess return could well have been taken in tax due to the high yield nature of the Dow 10 portfolio. When just the five highest yielding firms were selected, the excess return after risk and costs was just 0.5% annually whilst still being subject to the same tax disadvantages as its counterpart.

Filbeck and Visscher (1997) considered the virtues of implementing a 'Dow 10' strategy on the UK market during the period of March 1984 to February 1994. It was

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[1] See Knowles and Petty (1992), O'Higgins and Downes (1992) and Gardner and Gardner (1997).
[2] For examples see "How to Profit From PPP", Financial Times (08/04/03) and "However You Train It, That Dog Won't Hunt", New York Times (30/05/99).

discovered the high yield strategy would only have outperformed the FTSE 100 index in four of the ten annual periods. The index also displayed higher returns after the holding periods were extended to five years. When risk-adjustment was applied to the portfolios the index still had the larger returns, and thus the high yield strategy was considered unsuccessful.

Visscher and Filbeck (2003) tested a Dow 10 strategy on the Canadian Toronto 35 index and the broader Toronto Stock Exchange 300 between 1988-97. They found the strategy works for eight out of the ten years considered for both indexes. This persisted after the variance in returns was accounted for.

All of the previously cited studies have focussed on the size of the dividend relative to the market price but none make any consideration for the size of the dividend payout. Recent evidence suggests this may have implications for future stock returns. Arnott and Asness (2003) demonstrate that when the US aggregate payout ratio is high, future earnings growth is also high and vice versa. McManus et al (2004) find a positive relationship between the payout ratio and returns on a rolling 10-year basis in the UK.

The aim of this chapter is to firstly build on previous work by examining if additional screening based on payout ratio can enhance high dividend yield strategies. This is then extended by comparing the performance of these strategies relative to portfolios of zero-dividend stocks. The non-payer classification is then further divided into stocks that were *former* payers of dividends and those that have *never* paid. There is reason to believe that this may affect future returns since these stocks have very different financial characteristics. For example, Fama and French (2001) report that former payers tend to be more heavily indebted and have less investment opportunities than companies that have never paid a dividend.

The rest of this chapter is organized as follows. Section 3.2 describes the data and methodology used. Section 3.3 reports the empirical results of the high dividend strategies with additional payout screening plus the performance of the zero-dividend portfolios. Section 3.4 concludes.

3.2 Data and Methodology

The most widely quoted index in the United Kingdom is probably the FTSE 100. This comprises the largest one hundred companies by market capitalization provided they have their main listing in London and fulfil some additional criteria. A quarterly review of the index is undertaken and companies are entered or ejected on an automatic basis. This is also true of the FTSE 250, an index including the next 250 companies outside of the main index. A FTSE 350 also exists containing all the firms in the previous two indices.

These indices are of a different nature to the DJIA, on which the original US dividend strategies discussed earlier were based. They contain more companies, have automatic entry criteria and exhibit a higher turnover of constituents. According to McQueen et al. (1997), between 1946-95 there was an annual turnover of just 0.35 firms in the DJIA. A more comparative UK index may be the little used FT 30. This incorporates mainly large capitalization stocks representing different sectors of the market. There is no automatic qualification for achieving entry to this index.

A comprehensive data set of UK stocks is examined for the period 1980-2001 using the archive, source and returns files of the London Share Price Database (LSPD). FT 30 constituents are available throughout this time period, however FTSE 100 components are only labelled from June 1986 onwards and FTSE 250 components from later still. Therefore, to maximize the data period used, it was decided to take the one hundred largest stocks at the end of trading on the last day of December each year as representative of the main index. This will be known as the 'Large 100'. Given that a quarterly review of the FTSE 100 takes place in mid-December it should be a reasonable proxy. The next largest 250 stocks not included in the Large 100 will form the 'Mid 250' and the combination of these will be referred to as the 'All 350'. Due to the market capitalization data being quoted to the nearest million pounds, the first two years of the sample saw a number of companies being tied for 100th place in the ranking procedure of the Large 100. This lead to 102 firms being included in the sample in 1980 and 1981. The Mid 250 typically had either 250 or 251 stocks although there were two incidences of 252, one of 256 and one of 266. The FT 30 always had 30 firms apart from one year where 29 were labelled in the data set and one year of 28, this appeared to have occurred primarily due to mergers, demergers and acquisitions.

Firms were ranked in their respective groups according to dividend yield at the end of the last day of trading in December. The five companies with the highest yield formed the Top 5; the ten highest yields formed the Top 10 portfolio. Each portfolio was equally weighted and held for a calendar year. During the same period an equally weighted portfolio of all stocks in the index was also held. Annual returns were computed from the monthly returns data based on the assumption that all dividends were reinvested. If returns were not available for the entire year due to mergers or acquisitions then, consistent with McQueen et al. (1997), the proceeds were invested in short-term T-Bills for the remainder of the year. In cases where returns ceased due to a company entering administration it was assumed a 100% loss was taken.

3.3 Empirical Results

3.3.1 Dividend Yield Strategies

Table 3.1 shows the results of the dividend strategies on the various groups of stocks for each year in turn. In each case the Top 10 dividend yield portfolio produced a higher simple annual average return than the corresponding equally weighted portfolio of all stocks. Panel A of Table 3.2 shows these results presented as simple excess returns relative to the equally weighted portfolio. The difference varied between +1.1% for the Mid 250 to +2.7% for the All 350. In terms of the proportion of years when the strategy exhibited a positive difference this was 59% (13 out of 22) for the All 350, 55% for the FT 30 and 50% for the Large 100 and Mid 250. There were considerable sub-periods however where strategies either failed or succeeded, for example the Mid 250 underperformed in nine out of ten years between 1989-98 but in the previous six years it was successful in each. When just the Top 5 stocks were chosen there was a greater spread in performance, from +3.0% on the Mid 250 to –1.2% on the Large 100.

Panel B shows standard deviations for the different strategies in each group of stocks. Unsurprisingly the Top 5 method was more variable than the Top 10 in all four cases. In

Table 3.1: Historical Returns and Summary Statistics of Index Portfolios and Top 10 Dividend Yield Strategies between 1980-2001.

Year	Returns (%)							
	FT 30		Large 100		Mid 250		All 350	
	Total	Top 10	Total	Top 10	Total	Top 10	Total	Top 10
1980	30.17	21.78	34.06	27.51	35.60	0.48	35.15	-4.54
1981	22.08	12.92	16.90	16.07	16.46	28.47	16.88	30.69
1982	27.74	22.27	29.51	50.20	25.26	17.90	26.47	39.56
1983	44.30	50.69	33.03	59.54	36.02	63.18	35.18	60.25
1984	23.29	30.50	27.25	19.12	28.80	39.66	28.35	42.99
1985	28.24	45.08	23.27	29.81	20.12	36.91	21.02	34.15
1986	23.72	30.61	24.94	38.47	31.34	32.23	29.52	32.08
1987	9.76	15.32	7.89	8.53	15.50	33.87	13.34	29.71
1988	13.01	17.03	11.34	20.20	14.57	24.62	13.65	22.76
1989	39.71	45.25	37.37	41.51	28.96	11.20	31.36	27.09
1990	-6.31	-8.79	-8.67	-14.65	-15.75	-35.80	-13.73	-39.28
1991	24.14	19.64	14.05	-19.38	16.82	14.20	16.03	5.63
1992	23.35	33.10	19.43	5.07	23.01	15.91	21.98	8.54
1993	24.77	43.32	29.41	43.06	35.75	52.43	33.94	52.43
1994	-2.02	-0.47	-6.08	-6.51	-3.86	-13.54	-4.49	-6.66
1995	21.66	7.51	26.11	23.35	19.77	8.19	21.58	15.06
1996	11.35	6.66	16.33	11.38	16.40	3.46	16.38	6.88
1997	22.79	17.65	25.15	32.18	9.04	6.45	13.64	18.47
1998	15.26	14.34	16.24	0.22	2.79	-24.12	6.62	-24.12
1999	21.21	15.14	17.04	8.24	39.93	51.97	33.39	51.97
2000	-1.16	14.50	1.58	30.73	-0.26	23.38	0.26	19.96
2001	-9.32	-0.06	-14.67	10.81	-10.60	19.47	-11.76	19.66
Average	**18.53**	**20.64**	**17.34**	**19.79**	**17.53**	**18.66**	**17.49**	**20.15**
Standard Deviation	**13.78**	**15.89**	**14.13**	**20.41**	**15.48**	**24.21**	**14.66**	**24.42**

NB. All returns are for equally weighted portfolios. 'Total' indicates all stocks within an index were included and 'Top 10' indicates that only the highest 10 dividend yield firms were included.

addition, the Top 10 strategy was always more variable than the equally weighted portfolio of all stocks. To test whether investors were compensated for bearing the additional risk in these less well-diversified portfolios, the approach of McQueen et al (1997) was adopted. The risk-free rate of interest was taken as the average annual return from holding short-term T-Bills during 1980-2001. This was a period of particularly

Table 3.2: Average Annual Returns, Before and After Adjustment, for Yield Strategies in the UK Market between 1980-2001.

	FT 30	Large 100	Mid 250	All 350
A. Average Annual Return				
Total	18.53	17.34	17.53	17.49
Top 10 Div. Yield – Total	+2.10	+2.45	+1.13	+2.66
Top 5 Div. Yield – Total	+2.45	-1.71	+3.04	+2.62
B. Standard Deviations				
Total	13.78	14.13	15.48	14.66
Top 10	15.89	20.41	24.21	24.42
Top 5	19.39	21.88	28.82	30.27
C. Risk-Adjusted Returns [a]				
Top 10 – Total	+0.57	-0.84	-2.32	-1.75
Top 5 – Total	-0.98	-4.02	-2.27	-3.05
D. Turnover (%) [b]				
Total	3.7	12.3	19.3	12.0
Top 10	36.2	54.3	68.6	68.1
Top 5	52.4	53.4	84.8	82.0
E. Risk and Transaction Costs Adjusted Returns [c]				
Total	18.49	17.22	17.34	17.37
Top 10 – Total	+0.25	-1.26	-2.82	-2.31
Top 5 – Total	-1.46	-4.43	-2.93	-3.75

[a] Using the approach of McQueen et al (1997), returns were calculated as the excess return of the strategy portfolio over the risk-free rate multiplied by the ratio of the standard deviation of all stocks in that index to the standard deviation of the strategy plus the risk-free rate, or,

$$R = (R_p - R_f) \times (\sigma_a / \sigma_p) + R_f$$

[b] Calculated as the average number of changes in the portfolio divided by the average total number of stocks in that portfolio.

[c] A similar approach to McQueen et al (1997) was adopted, with transaction costs calculated as turnover divided by 100 multiplied by 1%, e.g. for All stocks in FT 30, (3.7 / 100) × 1% = 0.037%. Therefore 18.53 – 0.037 = 18.49.

high interest rates in the UK and the average return was 9.11%.

After considering the variability of returns, all of the Top 5, and three of the four Top 10 strategies produced negative differences. Panel C shows performance now ranges from +0.6% to –2.3% and –1.0% to –4.0% for the Top 10 and Top 5 strategies respectively. It is noticeable that after risk-adjustment both strategies were most successful when applied to the FT 30. The considerable reductions in excess returns after taking account of risk are similar to the findings of McQueen et al. (1997) for the DJIA.

A final adjustment is presented in Panel E that attempts to take account of transaction costs. As with previous studies it is found adopting a Top 5 or Top 10 selection leads to a higher turnover of stocks and thus incurs more transaction costs than holding an index. For example, the annual turnover of FT 30 companies is 1.10 (3.7%) compared to 3.62 (36.2%) and 2.62 (52.4%) for Top 5 and Top 10 portfolios respectively. For a high yield strategy to be profitable it must produce returns to compensate for the additional costs attracted. If a round-trip transaction cost is assumed to be 1%[3] then the average annual costs of adopting the FT 30 Top 10 strategy would be 36 basis points compared to just 4 basis points for holding all stocks. When these costs are combined with risk-adjustment the losing strategies fall further behind. The remaining profitable strategy in FT 30 still shows a positive difference although this has diminished from a raw 2.1% to an adjusted 0.25% annually.

Overall, the results suggest that high yield strategies have produced higher average annual returns than equally weighted index portfolios, but in terms of the proportion of annual periods that these strategies have beaten the market it is still only around 50% of the time. Furthermore the returns have been insufficient to compensate investors

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[3] The appropriate choice of transaction costs is difficult and is really meant to be illustrative of the additional costs to implementing a strategy with a high turnover. In the UK stamp duty is levied at 0.5% on stock purchases hence anything less than this is unreasonable. For a private investor there are a number of firms offering dealing from around £10-15 per trade. A round-trip trade on a deal of £10,000 might reasonably cost £20 or 0.20%. This leaves from the assumed transaction cost of 1% a bid-ask spread of 0.30%. In large stocks (all of the FTSE 100 and some of the FTSE 250) investors are able to place orders on the order book thus avoiding the necessity of paying the bid-ask spread. However if investors wish to trade immediately they have to pay this cost. In this case 0.30% may be too low, perhaps 0.50% or even 0.80% is more appropriate. If the latter figure is chosen, making a total transaction cost of 1.5%, this equates to an additional cost of $0.5 \times (1.5\text{-}1.0) = 0.25\%$ annually on a portfolio with 50% turnover compared to the assumed 1% transaction cost. In reality, there is likely to be a difference between the costs associated with transacting in the largest of FTSE 100 stocks and the smallest FTSE 250 stocks. The bid-ask spread is generally wider for the latter with also considerably less liquidity in many cases. Thus for an investor trading in large size the costs of transacting are probably somewhat higher than the assumed cost. An additional point is that the assumed costs are based on today's rates. The advent of the internet has seen trading charges fall quite sharply and, as such, the estimate of costs is almost certainly an understatement of what investors paid in the 1980's.

adequately for the additional risk and costs. The absence of significant risk-adjusted returns is in agreement with the previous UK study by Filbeck and Visscher (1997). An interesting outcome though is that the index most similar to the DJIA, the FT 30, did produce the best results. It seems credible this occurred due to the rules for inclusion in the index. In other indices, firms that fall considerably in value may have a high yield but they face the possibility of ejection from the index due to insufficient market capitalization; hence many 'dogs' could be omitted. These face less risk of ejection[4] from the FT 30, thus having a greater ability to 'bounce back' from any particularly large declines in value, and perhaps this can explain the slightly better returns to the strategy.

3.3.2 Price Strategies

A number of price filters after the initial yield sort have been suggested in the literature[5]. In this section four of the more well known, as previously discussed by McQueen and Thorley (1999), are tested over the same period as the yield strategies: these include, an equal weighting of the five stocks with the lowest share prices from the Top 10 yield strategy (Low 1 to 5), an equal weighting of the second, third, fourth and fifth lowest priced stocks (Low 2 to 5), a 40% weighting of the second lowest and a 20% weighting of the third, fourth and fifth (Low 40%) and finally a 100% weighting of the second lowest (Low 2nd).

Conventional wisdom would seem to suggest that any strategy centred on price should offer no outperformance since a firm can adjust its share price through a consolidation or split without any consequence to the business itself. The dividend yield, the price-earnings ratio and a whole host of other measures will remain unchanged but a firm could be accepted or rejected for a particular strategy based on an arbitrary change in the number of shares in issue. Despite this, Levis (1989) finds evidence in the UK of a negative price effect, whereby those firms with the lowest share prices outperform their

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[4] Given there is no automatic quarterly review of the FT 30, unlike the other UK benchmark indices, it seems plausible that a company could remain a 'dog' within this index for a longer period than possibly in any of the others. Arguably this offers potentially greater reward for investors if the firm does manage to turn its financial performance around in the future.

[5] For examples see O'Higgins and Downes (1992) and Gardner and Gardner (1997).

higher counterparts even after controlling for size. Furthermore, low priced stocks were found to have a lower variability of monthly returns.

The logic of applying a price strategy to the DJIA may also be more meaningful than it initially appears since it is a price weighted index as opposed to most indices in the UK that are equally weighted or market capitalization weighted. There may be an incentive for company managers to avoid stock splits since it means these firms will have a higher weighting in the index and as such may gain more media coverage. Alternatively, for an investor tracking the DJIA, a firm making a share split would require a reduction in the weighting of the stock in the portfolio thus possibly causing an additional pressure on the stock price. The result of this is there may be some justification for assuming lower stock prices in the DJIA are more attributable to poor performance than in other market capitalization indices.

Table 3.3 describes the results of the sixteen different trials (four strategies applied to four different universes). Looking at the simple annual averages, there is a positive difference in all of the trials with this in excess of 10% in some cases. These strategies are fairly risky however (particularly investing 100% in a single stock). After an adjustment for risk has been made, 13 out of 16 trials show a *negative* difference. Of the three strategies that generated positive adjusted returns it is interesting to find all of these in the FT 30 again. Two of the strategies produced adjusted excess returns of more than +2.8%, which even after transaction costs should still produce a positive outcome.

The results appear to support the existence of excess unadjusted returns to a combination of yield and price strategies. When the risk of the portfolios is considered many of these strategies look a great deal less attractive though. Whilst the price tweak to the yield method worked generally in the FT 30, the poor performance in the other index groups suggests that caution is advisable in adopting these methods in the future.

3.3.3 Payout Ratio Strategies

Analysts often seek high dividend stocks, which also offer secure income, i.e. they have a low payout ratio. However, the dividend strategies tested earlier have been based around the theory that the selected firms have a high yield since they are likely to have

Table 3.3: Average Annual Returns, Before and After Risk Adjustment, for Yield & Price Strategies in the UK Market between 1980-2001.

	FT 30	Large 100	Mid 250	All 350
A. Average Annual Return				
Total	18.53	17.34	17.53	17.49
Low 1 to 5 – Total	+6.33	+1.45	+1.93	+3.51
Low 2 to 5 – Total	+7.26	+5.15	+3.44	+4.77
Low 40% – Total	+8.81	+6.45	+3.23	+5.65
Low 2nd – Total	+13.56	+11.62	+2.40	+9.18
B. Standard Deviations				
Total	13.78	14.13	15.48	14.66
Low 1 to 5	17.75	25.62	29.46	30.43
Low 2 to 5	22.12	27.74	29.69	31.44
Low 40%	20.24	29.80	33.62	35.41
Low 2nd	35.24	46.65	56.07	56.15
C. Risk-Adjusted Returns				
Low 1 to 5 – Total	+2.81	-2.89	-2.98	-2.65
Low 2 to 5 – Total	+1.20	-1.42	-2.24	-2.25
Low 40% – Total	+3.00	-1.27	-3.06	-2.57
Low 2nd – Total	-0.43	-2.22	-5.44	-3.80

Low 1 to 5 is an equal weighting of the lowest five priced stocks from the Top 10 yielding firms.

Low 2 to 5 is an equal weighting of the second, third, fourth and fifth lowest priced stocks from the Top 10.

Low 40% is a 40% weighting of the second lowest priced stock and a 20% weighting of the third, fourth and fifth lowest price stocks from the Top 10.

Low 2nd is a 100% weighting of the second lowest priced stock in the Top 10.

underperformed in previous periods and may have been financially distressed. A high payout ratio could also be a sign of distress, particularly in the scenario where management attempt to maintain dividends despite profitability declining. Therefore it appears plausible that companies with a high yield and a high payout ratio could be the biggest 'dogs' of all and thus achieve higher average returns. Recent research by Arnott and Asness (2003) finds that high payout ratio, contrary to conventional wisdom, has historically been a prelude to high real earnings growth in the US, while McManus et al. (2003) find the payout ratio to be an important variable in the equilibrium asset pricing model for the UK.

The dividend payout ratio is taken as the ratio of historic dividends to trailing earnings. Therefore, the range of this may be expected to be between zero and one. Any value in excess of one would mean a company has paid out more than it earned. This is likely to be unsustainable since eventually the company would have to take on debt to pay dividends. A dividend-paying firm that posted negative earnings would exhibit a negative payout ratio. Again this is unsustainable should these conditions persist in the long run.

In the data set used, negative earnings were generally flagged by an indicator variable and hence the precise value of payout ratio is meaningless. It was therefore decided that a test of a payout strategy in conjunction with dividend yield should be made only on the universe of stocks with positive earnings within the index groups. Typically this encompassed around 90% of the sample of firms. It was hypothesized that an equally weighted portfolio of the five firms with the highest payout ratio (Hi 5PR) from the Top 10 yielding stocks will produce positive excess returns over all stocks with positive earnings and the Top 10 strategy.

Table 3.4 shows the results of combining payout ratio with the dividend yield strategy. In each case the high payout firms produced an unadjusted excess return of at least 3% when compared to the equally weighted portfolio of all firms in that index. This strategy also provided a small outperformance in all cases over the Top 10 yielding firms as hypothesized. As with previous strategies, when risk-adjustment was introduced the excess returns were diminished considerably. The Hi 5PR portfolio only maintained a positive difference in the FT 30 and the performance relative to the Top 10 became mixed. It would seem that once again the well-diversified index portfolio was the most successful.

A test of payout ratio encompassing all firms, irrespective of whether positive or negative earnings were posted, was also conducted independently of dividend yield. Table 3.5 shows the classifications of payout ratio. Four groups have been created; the first is simply the equivalent of a portfolio of zero-dividend firms. The second group, where dividends are covered by positive earnings, is the range that dividend paying firms would be expected to fall in. The penultimate group contains those firms where

Table 3.4: Average Annual Returns, Before and After Risk Adjustment, for Yield and Yield & Payout Ratio Strategies in the UK Market between 1980-2001 when Applied to only Firms with Positive Earnings.

	FT 30	Large 100	Mid 250	All 350
A. Average Annual Return				
Total Positive Earnings (PE)	19.54	17.02	17.70	17.53
Top 10 Div Yld – Total PE	+3.02	+2.93	+2.01	+1.08
Top 5 Div Yld – Total PE	+4.88	-2.41	+1.91	+0.19
Hi 5 Pay. Ratio (PR) – Total PE	+3.22	+3.10	+3.01	+3.60
B. Standard Deviations				
Total PE	13.98	13.24	14.71	13.77
Top 10 Div Yld	16.75	18.37	26.15	25.89
Top 5 Div Yld	20.21	23.75	29.83	32.20
Hi 5 Payout Ratio (PR)	16.92	23.55	29.75	30.42
C. Risk-Adjusted Returns				
Top 10 Div Yld – Total PE	+0.64	+0.43	-2.32	-3.04
Top 5 Div Yld – Total PE	+0.01	-4.64	-3.14	-4.50
Hi 5 Pay. Ratio (PR) – Total PE	+0.69	-1.31	-2.55	-2.63

dividends are in excess of positive earnings. Finally, there is a group containing all those firms that pay a dividend but have zero or negative earnings.

As intuition suggests, the category where positive earnings cover dividends is by far the largest, with around 70-80% of annual observations. The next largest is the group where dividends exceed positive earnings, whilst the two extreme categories have the fewest constituents.

The returns are fairly mixed throughout the groupings. The extreme categories of the zero-dividend stocks and the firms with positive dividends but zero/negative earnings perform well in the three large index groups but poorly in the FT 30. Those firms with dividends not covered by positive earnings do well in the FT 30 but poorly in the Large 100, they also exhibit slightly higher returns than the average in the remaining two indices. The high yield and high payout strategy shown in Table 3.4 was generally more successful compared to just high payout firms with positive earnings.

Table 3.5: Summary Statistics for Payout Ratio Classifications between 1980-2001.

	FT 30	Large 100	Mid 250	All 350
A. Proportions (%)				
Zero-Dividends	0.6	3.9	4.5	4.3
Dividends Covered by Earnings	84.3	80.4	71.1	73.7
Dividends in Excess of Earnings	9.6	7.2	19.6	16.0
Dividends with Zero/Negative Earnings	5.5	8.5	4.9	5.9
B. Annual Average Returns				
Zero-Dividends	-10.37	20.14	20.26	20.82
Dividends Covered by Earnings	19.23	17.15	17.37	17.31
Dividends in Excess of Earnings	22.30	15.75	18.27	18.11
Dividends with Zero/Negative Earnings	6.82	21.01	22.19	21.38
Top 10 Yield Strategy	20.63	19.79	18.66	20.15
C. Standard Deviations of Annual Average Returns				
Zero-Dividends	35.60	43.50	41.96	40.10
Dividends Covered by Earnings	13.85	13.28	13.16	12.64
Dividends in Excess of Earnings	22.22	15.72	18.57	17.87
Dividends with Zero/Negative Earnings	29.58	23.30	21.42	18.20
Top 10 Yield Strategy	15.89	20.41	24.21	24.42
D. Risk-Adjusted Returns				
Zero-Dividends	1.57	12.69	13.22	13.39
Dividends Covered by Earnings	19.19	17.66	18.83	18.62
Dividends in Excess of Earnings	17.29	15.08	16.75	16.49
Dividends with Zero/Negative Earnings	8.04	16.32	18.56	18.99
Top 10 Yield Strategy	19.10	16.50	15.21	15.74

For comparative purposes, the results from the initial Top 10 high dividend yield strategy have been replicated in Table 3.5. Of particular interest is the difference between the zero-dividend and high yield returns. Non-paying firms did slightly better in three of the four universes but considerably worse in the fourth. A striking finding is the difference in the standard deviation of returns; the zero-dividend firms have much higher variability of returns in all cases.

On a risk-adjusted basis, the dividend payers with a 'sustainable' payout perform the best in three out of the four index groups. With this being clearly the largest classification it is likely to be much better diversified than the others so this result is not entirely surprising. In the All 350 the group with positive yield but negative or zero earnings does well even after risk-adjustment. This is possibly due to there being an average of 20 stocks in this portfolio and hence a better level of diversification compared to the Large 100 where there were only an average of 8 or 9 firms in the same classification.

3.3.4 Dividend Payers and Non-Payers

Having considered zero-dividend stocks as an investment strategy previously, it is the distinction between former payers and firms that have never paid a dividend that is of particular interest at this point. This is motivated by recent studies by Fama and French (2001) and Benito and Young (2001) who find significant differences in the characteristics displayed by former and 'never' payers. The firms that have never paid are typically considered as high growth companies with many investment opportunities available to them, whereas former payers could be regarded as 'fallen angels' with large amounts of debt frequently found on their balance sheets. Indeed should former payers be regarded as being closely linked to high yield stocks as both are likely to have underperformed?

Panel A of Table 3.6 shows the average proportions of dividend payers and non-payers at the start of each year in every index group. As expected for an index containing mostly mature firms, there were very few incidences of zero-dividend firms in the FT 30. In the remaining three index groups the average was around 4%, with slightly more firms having never paid than used to pay.

Panel B shows the average annual returns from holding an equally weighted portfolio of the firms in a particular dividend classification. As previously, these were selected at the end of the last day in December and held for one calendar year. The number of firms in a portfolio was free to vary annually. It is noticeable that the non-payers in the Large 100, Mid 250 and All 350 produced annual returns of around 2.5% to 3% higher than

Table 3.6: Summary Statistics for Dividend Classifications between 1980-2001.

	FT 30	Large 100	Mid 250	All 350
A. Proportions (%)				
Non-Payers	0.6	3.9	4.5	4.3
Former	0.6	1.8	1.8	1.8
Never	0.0	2.0	2.7	2.5
Payers	99.4	96.1	95.5	95.7
B. Annual Average Returns				
Non-Payers	-10.37	20.14	20.26	20.82
Former	-10.37	28.30	26.61	24.82
Never	N/A	6.36	7.08	8.31
Payers	18.69	17.27	17.76	17.63
C. Standard Deviations of Annual Average Returns				
Non-Payers	35.60	43.50	41.96	40.10
Former	35.60	56.02	46.24	40.43
Never	N/A	27.29	53.11	46.52
Payers	13.73	13.56	14.35	13.64
D. Risk-Adjusted Returns				
Non-Payers	1.57	12.69	13.22	13.39
Former	1.57	13.95	14.97	14.81
Never	N/A	7.69	8.52	8.86
Payers	18.73	17.61	18.44	18.27

dividend payers. The difference between former and never firms is very considerable indeed, ranging between 22% in the Large 100 to 16% in the All 350. It should be noted that in many cases these portfolios consisted of very few stocks though. The exceptionally high returns attributable to former payers does suggest that they may have suffered badly in previous periods, probably even more so than high yield firms. These returns may be the result of firms trading perilously close to bankruptcy.

Panel D shows the risk-adjusted returns from holding portfolios of the various dividend classifications. The excess returns attributable to non-payers are eliminated, as are the excess returns to just former payers. It once again appears that portfolios of non-payers are not sufficiently diversified in the universes to produce high, adjusted returns.

Investors seeking to invest in zero-dividend stocks maybe should consider looking at smaller capitalization firms not covered in this study in order to get a more diversified portfolio.

3.4 Conclusion

The purpose of this chapter was to investigate the application of high yield investment strategies in the UK equity market and to extend the analysis by including an additional payout screen. After applying dividend yield strategies to groups of stocks representative of the major indices in the UK it was found these strategies did produce higher average returns than equally weighted portfolios of all stocks. However, when the risk associated with these strategies was considered along with the additional transaction costs, it was found the excess returns provided insufficient compensation to investors. A similar outcome was observed when price filters were combined with initial yield criteria. Outperformance occurred on an unadjusted basis, followed by mostly underperformance after adjustment. Both strategies however were most successful in the index most comparable with the DJIA, the FT 30. This was the only group where adjusted positive excess returns were available.

Following the introduction of high payout ratio as a filter to high dividend yield, larger average returns were found compared to pure dividend strategies and index portfolios of stocks with positive earnings. Once again though, this did not persist after risk-adjustment took place. When firms were placed into one of four payout ratio groups there was some evidence of higher returns to those paying dividends in excess of earnings. After considering the variability of these returns, the portfolios of firms with a positive yield and an apparently sustainable dividend policy generally performed best. There was one exception to this when the portfolio of stocks in the All 350 with a positive yield but zero or negative earnings produced the highest returns.

The final aim of this chapter was to consider the performance of zero-dividend stocks relative to high yield strategies. Particular attention was given to the payment history of these firms, i.e. whether they were former payers of dividends or whether had never paid a dividend previously. Portfolios of zero-dividend firms produced generally higher returns than current dividend payers, and also outperformed the high yield strategy in three of the four universes. Former payers of dividends generated the highest returns and these far exceed any of the returns by 'never' paid firms. This probably reflects the difficult trading these firms have previously encountered and that they underperformed even high yield stocks in earlier periods. All of these excess returns failed to survive risk-adjustment though.

Chapter 4 – Dividends Aren't Disappearing

4.1 Introduction

For many years academic researchers have been analysing the dividend policy of publicly quoted firms and in particular the proportion of earnings distributed to shareholders. Miller and Modigliani (1961) show that in an environment of zero personal taxes, perfect markets and given borrowing and investment decisions that investors should be indifferent between receiving capital gains or dividends.

In recent years a number of payers have documented the decline in the number of firms paying dividends. Chapter 2 has already reviewed the evidence presented by, amongst others, Fama and French (2001) for the US and Benito and Young (2001) for the UK that demonstrates the fall in payers. The drop in dividend paying firms was attributed to a combination of both a diminishing number of companies with the requisite dividend paying characteristics and a generally lower propensity to pay dividends. DeAngelo et al (2004) document a similar decline in the proportion of firms making distributions however they note that the actual total amount of dividends in real terms increased between 1978 and 2000. This result was explained by the loss of many small payers from the sample combined with significant real increases in dividends by the largest payers, with the latter effect dominating the former in terms of the total aggregate payment. Ferris et al (2003) find a 6% increase in real dividends in the UK between 1990 and 2001. This was accompanied by an increase in the concentration of dividends amongst the largest payers, especially those firms distributing in excess of £500m annually.

The aim of this chapter is to build on the work carried out on aggregate dividend payments in the UK. By using a period of data between 1979 and 2000 it provides a very similar epoch to that utilized by DeAngelo et al (2004) from which to draw comparisons. Furthermore, by using annual data in many situations, it is hoped additional conclusions can be drawn compared to the 'snapshot' approach that has been used in much of the work up to now where conclusions are drawn from just two annual periods, one at the start and one at the end. With a data period of over twenty years it is anticipated that there may be many relationships that have not behaved linearly as could be interpreted from essentially just two data points. The aim is to investigate whether there has been a comparable concentration of distributions within the largest payers.

By also considering earnings over the period in question, this study investigates whether a concentration of earnings has occurred in dividend payers similar to the findings in the US reported by DeAngelo et al (2004). Ferris et al (2003) find an increasing proportion of aggregate earnings accountable to relatively few large firms in the UK between 1990-2001. This paper extends this by considering the longer time frame of 1979-2000 and analysing each individual annual period.

The remainder of this chapter is organized as follows. Section 4.2 discusses the tax system in operation in the UK during the period of study, the implications of the Finance Act 1999 and the abolition of dividend controls in 1979. Section 4.3 describes the data and methodology employed in this study. In Section 4.4 results are reported on, amongst others, the concentration of dividends and earnings and the listing status in 2000 of dividend payers in 1979. Section 4.5 concludes.

4.2 Dividend Taxation and Legislation in the UK

Since April 1973 the UK has operated an imputation system of taxation in one form or another. Under this system companies pay a net dividend to shareholders and an amount equal to the gross dividend multiplied by the rate of imputation to the Inland Revenue. The rate of imputation has always been equal to the basic rate of tax on dividends. The tax paid on the dividend is also treated as a payment in advance of the firm's corporation tax. If the firm has sufficient taxable profits then corporation tax is paid on the remainder. The amount of advance corporation tax (ACT) that can be offset is limited to the due amount if a firm chose to pay all taxable profits as a gross dividend. Furthermore only UK earnings can be offset against ACT; thus firms with large profitable overseas subsidiaries may find that dividends do not carry the full ACT credit or indeed any credit at all.

Under the imputation system, with the basic rate of tax on dividends set, for example, at 20%, a net £80 dividend would have a 'grossed up' value of £80 × (1 / 0.8) = £100. Thus a basic rate taxpayer would receive an £80 dividend with no further tax to pay and the Inland Revenue would receive £20 that counts as the firm's ACT payment. A higher rate taxpayer (at 40% on dividends) would have to pay an additional £20 in tax whilst tax-exempt investors, prior to July 1997, could reclaim the £20 ACT from the Inland Revenue and thus receive the full £100 gross dividend.

As of 2nd July 1997 things became more complicated. Pension funds and institutions were no longer allowed to reclaim the ACT payment that their tax-exempt status had until that point granted them. Thus if a net dividend of £80 was paid, they received just £80. Tax-exempt individual investors were still able to reclaim the tax and thus continued to receive the full £100.

On 6th April 1999 the Finance Act was introduced. This meant that tax-exempt investors were no longer able to reclaim the tax paid on their behalf (unless it was sheltered in a PEP or ISA where it can be reclaimed until April 2004). At the same time the ACT rate was reduced, along with the basic rate of tax on dividends, from 20% to 10%. The higher rate of tax on dividends was cut from 40% to 32.5%. The result of these changes was that for the £80 net dividend used as an example previously, tax-exempt individual investors now only received £80. Basic-rate payers also received £80, with higher band payers receiving £80 × (1 / 0.9) × 0.675 = £60. Thus basic and higher rate payers were not affected by the Finance Act 1999 and tax-exempt investors suffered.

4.2.1 Dividend Controls

Dividend controls were in existence in the UK intermittently between August 1966 and December 1969 and then again from December 1972 through to July 1979 inclusive. The desired effect of these controls was to limit the rate at which dividends were allowed to grow. This was consistent with policy during this era that placed restrictions on increases in earned income. The permitted growth rates varied between zero and 3.5% during the 1960s and a typical 10% during the 1970s (for exceptions to these levels see Hansen and Goudie, 1988). Whilst only a small period of this study comes under the 'umbrella' of dividend controls (the first few months of 1979) it seems plausible that the effects may permeate for some years afterwards as payouts gradually revert to 'normal' levels.

Hansen and Goudie (1988) provide a full description of the implementation of dividend controls in the UK. They find the observance of the control legislation declined over time with distributions by over 50% of firms exceeding the allowable limits. Most of these excessive payouts were found to be only slightly above the legal requirements though. It was also discovered that virtually all the largest one hundred firms remained within the set limits. The firms that were most affected by the controls were a small group of firms with relatively high payouts.

Chui et al (1992) argue that dividend controls could cause payout ratios to either rise or fall. The controls could suppress payouts if the allowable growth rate is set very low, or alternatively the growth rate may be set above the usual growth rate for firms and managers view the rate as the norm and try to keep pace with it, thus increasing their payouts. However, findings reported by Poterba (1984) describe that payouts were reduced on aggregate by as much as 50% during 1972-79. Overall, Chui et al (1992) find no evidence of adjustments in the equilibrium rates of return during periods of dividend control.

Dividend controls were also present in the US for a short period during the Nixon administration. Baker and Wurgler (2004b) describe how between August 1971 to December 1971 dividends were frozen as an attempt to control inflation. From January 1972 through April 1974 guidelines remained in place that limited dividend growth to four percent based on the maximum payout over the preceding three years. Thus if a firm had not made a distribution during this time it would be unable to initiate a dividend. Whilst the dividend controls were only 'guidelines' there was found to be a high level of compliance. Baker and Wurgler (2004b) found these controls had a high degree of success with the propensity to pay dividends remaining in decline despite their framework based around firms catering for investors dividend preferences at the time pointing to a higher propensity to pay. After the controls were lifted the propensity to pay realigned itself with the catering theory, as it was prior to the introduction of the controls.

4.3 Data and Methodology

Throughout this study, consistent with Fama and French (2001) and DeAngelo et al (2004), only industrial firms will be included. Their industrial classification excludes firms with SIC codes between 4900-4949 and 6000-6999. Thus sectors outside the sample, amongst others, are banks, insurers, brokers, other financials, property, investment trusts and utilities. Of these firms the financials are excluded to avoid any instances of 'double counting', whilst the utilities are excluded lest there be any regulatory issues that may distort the results. For the purposes of readability the words 'firm' and 'company' have been used as substitutes for 'industrial' intermittently.

Data is utilized from the London Share Price Database (LSPD) between the end of 1979 and the end of 2000. This choice is jointly motivated by a desire to be aligned as closely as possible to previous studies for comparative purposes and also that sufficient data is not available from the LSPD before 1979. Throughout this study two different types of method will be used to present findings. The first is the 'snapshot' method that is extensively used by DeAngelo et al (2004) and Ferris et al (2003). Two annual periods are selected, one at the beginning of the sample and one at the end (i.e. 1979 and 2000), and are compared to reflect changes over the period. The second approach is the 'annual' method whereby figures will be reported for both years in the 'snapshot' approach but also all intermediate years as well (i.e. all years from 1979 to 2000 inclusive). This should enable any potentially misleading conclusions drawn from the first method to be highlighted.

In most cases figures will be reported for all industrials, although in situations where only two years are reported results are often provided both inclusive and exclusive of Alternative Investment Market (AIM) companies. The reasoning behind this is that in 1979 no such 'fledging' market like AIM, or its predecessor, the Unlisted Securities Market (USM), existed. Therefore, companies that opted for an AIM listing in 2000 would have had to either apply for a full listing in 1979 or remain part of the private sector. The provision of two sets of results allows for these different possibilities. All figures from 1982 onwards include the 'unquoted' sector unless explicitly stated. In contrast to Ferris et al (2003), there is no minimum size of firm for inclusion in the sample and all foreign firms are excluded. A minimum qualification period of listing of twelve months is implemented to ensure complete data exists for all firms under study. Finally, where there is evidence of missing data the relevant firms have been excluded from the sample.

In the previous section the Finance Act 1999 was described along with the implications for investors across all taxation bands. After the implementation of this legislation it became common practice for dividends to be reported as net values since no investor actually received the 'grossed up' dividend any more. Prior to this dividends were reported gross. The implications of this extend to this study. All years prior to 1999 have values recorded as gross and gross only. In the years 1999 and 2000 figures for both gross and net dividends are displayed except where there is no appreciable difference. This is necessary since reporting gross values only seems unreasonable given that no investors actually received the gross amount. On the other hand, a basic-rate payer is no worse off prior to the reform so it also appears unreasonable to penalise the aggregate payout from their point of view by just reporting net figures. All gross values are thus reported inclusive of a tax credit equal to 10% of the gross dividend in 1999 and 2000 unless it was found these credits did not exist.

Whilst the possibility exists of some dividends being paid in 1999 prior to the tax changes in April at the higher ACT rate of 20%, by assuming the 10% credit for all it provides a fair comparative throughout the year. Without this a firm could be regarded as a larger payer than another simply because of the timing of its payment. It also provides a better comparison between 1999 and 2000.

Throughout this paper many references are made to real values. These have always been based to 1979 price levels using the Retail Price Index (RPI). For example, in December 1979 this index stood at 240.48 and by December 2000 it had risen to 682.39. Thus all real values in 2000 have been calculated as the nominal value multiplied by the ratio of the 1979 RPI to the 2000 RPI (i.e. 240.48 ÷ 682.39).

This study focuses only on dividends as the method of distributing payments to shareholders, providing a like-for-like comparison with DeAngelo et al (2004). Share repurchases, which were first made legal in the UK in the Companies Act 1981, are not considered. Rau and Vermaelen (2002) find that share repurchases are far less common in the UK than the US, partly due to regulatory provisions making them less attractive. During a period between 1985-98 they find only 264 qualifying repurchases announced by firms. Ferris et al (2003) also document low levels of share repurchases in the UK market between 1990-2001. They find this does not explain the decline in the number of firms paying dividends.

4.4 Empirical Results

4.4.1 Summary Findings

Table 4.1 shows summary statistics of dividend payments by UK industrial firms in 1979 and 2000. Firstly, row (1) describes the number of listed industrials in the UK. There are only approximately three-quarters of the number of firms quoted on the main market in 2000 compared with 1979. There is much less of a decline though when the 2000 figures inclusive of AIM firms are related to 1979, suggesting AIM may have become a substitute for a main listing. Rows (2) and (3) show there has been a decline in both the number of dividend paying industrials and the proportion of all industrials that they make up. In 1979, 94.1% of the sample firms were dividend payers but by 2000 this had fallen to 74.2% with a main listing, and 66.9% when firms from AIM were included. This compares with Benito and Young (2001) who found that in 1999, 74.8% of UK non-financials were dividend payers. The contrast with US evidence presented by Fama and French (2001) is very marked. They find that in 1978, 66.5% of non-financial, non-utility firms paid dividends but by 1999 this was just 20.8%.

Rows (4) and (5) describe the increase in the total dividend payment by industrials between 1979 and 2000. Despite the decline in both the number and proportion of payers, there have been considerable increases in dividends in both nominal and real terms. The 136.5% (or 162.7% using gross values) increase in real dividends from 1979

Table 4.1: Summary Statistics of Dividend Payments by Industrials in 1979 and 2000.

Firms must have been present in the database for at least one year before inclusion in the sample. Industrial firms exclude banks, insurance, property, other financials, investment trusts and utilities. Gross figures for 2000 are shown in brackets.

	1979	2000 (Ex. AIM)	% Change From 1979	2000 (Inc. AIM)	% Change From 1979
1. Number of Listed Industrials	1277	950	-25.6%	1196	-6.3%
2. Number of Dividend Paying Industrials	1202	707	-41.2%	800	-33.4%
3. Proportion of Industrials Paying Dividends	94.1%	74.2%	-19.9%	66.9%	-27.2%
4. Total Nominal Dividends (£m)	£3,539m	£23,748m (£26,377m)	+571.0% (+645.3%)	£23,794m (£26,429m)	+572.3% (+646.8%)
5. Total Real Dividends (£m, 1979 base)	£3,539m	£8,369m (£9,296m)	+136.5% (+162.7%)	£8,385m (£9,314m)	+136.9% (+163.2%)
6. Mean Real Dividend (£m, per dividend paying firm)	£2.94m	£11.84m (£13.15m)	+302.7% (+347.3%)	£10.48m (£11.64m)	+256.5% (+295.9%)
7. Median Real Dividend (£m, per dividend paying firm)	£0.42m	£1.09m (£1.20m)	+159.5% (+185.7%)	£0.82m (£0.91m)	+95.2% (+116.7%)

to 2000 is despite there being 40% fewer paying firms. This resulted in the mean real dividend rising from £2.94m to £11.84m (£13.15m) on the main market, and £10.48m (£11.64m) when AIM is included. Row (7) shows the increase in the median real dividend per dividend paying firm. This has grown but not as rapidly as the mean dividend. In 1979, there was already evidence of a concentration of dividends amongst a few firms given the difference between the mean and the median. The expanding difference discovered in 2000 is consistent with a greater concentration of dividend amongst relatively few large payers. This evidence supports findings by DeAngelo et al (2004) who notice a considerable concentration in dividends in the US market.

When results inclusive of AIM are compared to those of just the main market it is noticeable there are an additional 93 dividend payers. Despite the inclusion of these, Row (3) shows the proportion of dividend payers is lower. This is consistent with AIM listings being fledgling companies and thus less likely to pay dividends compared to more established firms. A glance at the total real dividends shows that these additional 93 payers only contribute a net £16m to the total payment. This is tiny when compared to the £8,369m distributed by the main market. The implications of using gross values for 2000 are small in terms of the overall conclusions; the difference is the increased percentage change on 1979 compared to the net figures.

Table 4.2 provides annual summary statistics of industrial dividend payments. The potential for different conclusions on the trend of dividend paying industrials depending on the base year chosen in the snapshot method is clearly visible. For example, between 1979 and 2000 there was a decline of 402 dividend payers but between 1980 and 1997 there was actually an increase of some 67 payers. Thus two relatively closely aligned snapshot studies could produce very different results if there is a big change in the studied variable around either of the chosen years and this must be borne in mind when considering previous results. The proportion of firms paying dividends can be seen to vary across the annual data but a particularly large decline occurred between 1997 and 2000 as the 'dot-com boom' took hold. Over the whole period the mean and median dividend variables increase more steadily, reaching their peaks in 2000. Throughout all periods the skewness in the dividend distribution continues as evidenced by the persistent differences between mean and median.

Table 4.2: Summary Statistics of Dividend Payments by Industrials between 1979 and 2000 (inclusive of USM and AIM).

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
No. of Div Paying Industrials	1202	1060	1085	1078	1128	1163	1210	1168	1191	1262	1266	1179
Proportion of Div Paying Industrial	94.1%	84.3%	82.8%	80.8%	82.5%	84.3%	85.3%	85.6%	88.2%	90.0%	89.3%	85.0%
Total Nominal Divs (£m)	3,539	3,902	4,215	4,475	5,055	6,112	7,443	9256	11,906	14,310	16,788	17,181
Total Real Divs (1979 base, £m)	3,539	3,390	3,268	3,291	3,530	4,082	4,703	5,638	6,994	7,918	8,576	8,321
Mean Real Div (per payer)	2.94	3.20	3.01	3.05	3.13	3.51	3.89	4.83	5.87	6.28	6.77	7.06
Median Real Div (per payer)	0.42	0.46	0.53	0.37	0.35	0.37	0.38	0.44	0.54	0.59	0.68	0.64

	1991	1992	1993	1994	1995	1996	1997	1998	1999 (Net)	1999 (Gross)	2000 (Net)	2000 (Gross)
No. of Div Paying Industrials	1031	952	953	984	1041	1079	1127	1038	929	929	800	800
Proportion of Div Paying Industrial	79.6%	77.1%	78.0%	80.3%	81.8%	80.8%	80.2%	75.3%	72.0%	72.0%	66.9%	66.9%
Total Nominal Divs (£m)	19,127	18,661	18,443	20,369	23,041	25,253	27,289	24,239	23,366	25,919	23,794	26,429
Total Real Divs (1979 base, £m)	8,553	8,136	7,887	8,466	9,278	9,925	10,350	8,947	8,476	9,402	8,385	9,314
Mean Real Div (per payer)	8.30	8.55	8.28	8.60	8.91	9.20	9.18	8.62	9.12	10.12	10.48	11.64
Median Real Div (per payer)	0.73	0.75	0.69	0.74	0.82	0.84	0.81	0.83	0.75	0.84	0.82	0.91

4.4.2 The Concentration of Dividend Payments between 1979 and 2000

Table 4.3 shows industrial firms ranked according to the size of their dividend payments using a snapshot approach comparable in type with DeAngelo et al (2004) and Ferris et al (2003). The first row displays aggregate figures for the largest one-hundred dividend payers, the second row shows the second hundred largest dividend payers, and so on. Looking first at the 1979 results, there is clear evidence of a skewed distribution, with nearly three-quarters of all dividends being paid by the largest 100 payers. The largest 300 firms, approximately one-quarter of industrial firms, account for over 90% of all dividends.

In 2000 the evidence points to an increasing concentration of dividends. The largest 100 payers distributed 88% of the total dividend payment, whilst the top 300 paid over 97% of all dividends. In all ranking groups, apart from the largest 100, the proportion of the total dividend payment attributable to these groups has fallen. As further evidence of the growth in these large payers, the largest 100 in 2000 paid more than twice the total dividends by all industrials in 1979 in real terms. These findings are consistent with DeAngelo et al (2004) who found a decline in the proportion of the total market payment by smaller payers. The top 100 firms in their US study accounted for 81% of all dividends in 2000. It would appear the UK has an even higher concentration of dividends amongst large industrial payers than the US on this basis. The choice of gross or net values for 2000 has no impact on the percentage of dividends attributable to each group. Gross values do increase the comparative difference between the real values of dividends in 1979 and those in 2000.

Annual data showing the percentages of dividends paid by each ranking group is displayed in Table 4.4. There is a steady increase in the proportion of dividends that the Top 100 are responsible for. All other groups are in virtually constant decline from their highs in 1979 to the lows of 2000. The findings of increased concentration from 1990 onwards are consistent with those of Ferris et al (2003). They find a comparatively lower concentration in 1990 however; this is probably due to the rules for inclusion of stocks in the samples. The main differences are they adopt all new listings, no firms are included under $100m and foreign stocks are accepted whereas this study requires a

Table 4.3: Concentration of Dividend Payments by Industrials in 1979 and 2000.

All dividend-paying industrials are ranked according to size of their total dividend payments. In the case of the group 701-800 in the year 2000 (ex. AIM) there are only 7 companies; there are exactly 800 companies in the year 2000 (inc. AIM). Percent of total dividends is the amount attributable to the particular dividend group as a proportion of the aggregate dividend payment.

Dividend Ranking	Percent of Total Dividends					Cumulative Percent of Total Dividends					Real Dividends (£m, 1979 base)				
	1979	2000 (ex. AIM)		2000 (inc. AIM)		1979	2000 (ex. AIM)		2000 (inc. AIM)		1979	2000 (ex. AIM)		2000 (inc. AIM)	
		Net	Gross	Net	Gross		Net	Gross	Net	Gross		Net	Gross	Net	Gross
Top 100	72.8%	88.1%	88.1%	87.9%	87.9%	72.8%	88.1%	88.1%	87.9%	87.9%	2,576.5	7,371.2	8,188.9	7,371.2	8,188.9
101-200	12.4%	6.6%	6.6%	6.6%	6.6%	85.2%	94.7%	94.7%	94.5%	94.5%	438.6	555.5	615.7	555.5	615.7
201-300	5.2%	2.7%	2.7%	2.7%	2.7%	90.4%	97.4%	97.4%	97.2%	97.2%	185.6	229.8	255.2	229.9	255.3
301-400	2.9%	1.4%	1.4%	1.4%	1.4%	93.3%	98.8%	98.8%	98.6%	98.6%	104.2	113.1	125.6	114.3	126.9
401-500	1.9%	0.7%	0.7%	0.7%	0.7%	95.2%	99.5%	99.5%	99.3%	99.3%	67.2	59.9	66.5	61.6	68.3
501-600	1.4%	0.4%	0.4%	0.4%	0.4%	96.6%	99.9%	99.9%	99.7%	99.7%	48.8	39.8	33.1	32.7	36.3
601-700	1.1%	0.1%	0.1%	0.2%	0.2%	97.7%	100.0%	100.0%	99.9%	99.9%	37.9	9.6	10.6	15.1	16.8
701-800	0.8%	<0.1%	<0.1%	0.1%	0.1%	98.5%	100.0%	100.0%	100.0%	100.0%	29.5	0.1	0.1	5.1	5.6
801-900	0.6%					99.1%					21.4				
901-1000	0.4%					99.5%					15.1				
1001-1100	0.3%					99.8%					9.8				
1101-1200	0.1%					99.9%					4.4				
1201-1202	<0.1%					100.0%					<0.1				
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**3,539.0**	**8,369.1**	**9,295.6**	**8,385.4**	**9,313.8**
No. of Firms											**1,202**	**707**	**707**	**800**	**800**

Table 4.4: Concentration of Dividend Payments by Industrials in Percentage Terms between 1979 & 2000 (inclusive of USM and AIM).

Div Rank	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Top 100	72.8%	75.4%	77.5%	78.1%	78.1%	77.8%	78.5%	79.7%	79.0%	78.5%	78.4%
101-200	12.4%	11.8%	11.1%	11.2%	10.8%	11.0%	10.8%	10.4%	10.6%	10.7%	10.5%
201-300	5.2%	4.8%	4.4%	4.2%	4.3%	4.3%	4.1%	3.9%	4.0%	3.9%	3.9%
301-400	2.9%	2.6%	2.4%	2.3%	2.3%	2.4%	2.2%	2.1%	2.2%	2.3%	2.2%
401-500	1.9%	1.8%	1.6%	1.5%	1.5%	1.4%	1.4%	1.3%	1.4%	1.4%	1.5%
501-600	1.4%	1.3%	1.1%	1.1%	1.0%	1.0%	1.0%	0.9%	0.9%	1.0%	1.1%
601-700	1.1%	0.9%	0.8%	0.7%	0.7%	0.8%	0.7%	0.6%	0.7%	0.7%	0.8%
701-800	0.8%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.4%	0.5%	0.5%	0.6%
801-900	0.6%	0.4%	0.3%	0.3%	0.3%	0.4%	0.4%	0.3%	0.3%	0.4%	0.4%
901-1000	0.4%	0.2%	0.2%	0.1%	0.2%	0.2%	0.3%	0.2%	0.2%	0.3%	0.3%
1001-1100	0.3%	0.1%	0.0%	0.0%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.2%
1101-1200	0.1%				<0.1%	<0.1%	0.1%	<0.1%	<0.1%	0.1%	0.1%
1201-1300	<0.1%						<0.1%			<0.1%	<0.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Div Rank	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Top 100	80.3%	82.3%	83.5%	83.7%	83.2%	83.0%	82.6%	81.7%	82.3%	85.4%	87.9%
101-200	10.1%	9.5%	8.9%	8.7%	8.7%	8.4%	8.6%	9.1%	8.5%	7.6%	6.6%
201-300	3.7%	3.4%	3.4%	3.4%	3.5%	3.4%	3.4%	3.6%	3.8%	3.2%	2.7%
301-400	2.0%	1.9%	1.8%	1.8%	1.9%	1.9%	2.0%	2.1%	2.1%	1.7%	1.4%
401-500	1.3%	1.1%	1.1%	1.0%	1.1%	1.2%	1.2%	1.3%	1.2%	1.0%	0.7%
501-600	0.9%	0.7%	0.6%	0.6%	0.7%	0.8%	0.8%	0.8%	0.8%	0.6%	0.4%
601-700	0.6%	0.5%	0.4%	0.4%	0.5%	0.5%	0.6%	0.6%	0.6%	0.3%	0.2%
701-800	0.4%	0.3%	0.2%	0.2%	0.3%	0.4%	0.4%	0.4%	0.3%	0.2%	0.1%
801-900	0.3%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.3%	0.2%	0.1%	
901-1000	0.2%	0.1%	<0.1%	<0.1%	<0.1%	0.1%	0.1%	0.1%	0.1%	<0.1%	
1001-1100	0.1%	<0.1%				<0.1%	<0.1%	0.1%	<0.1%		
1101-1200	<0.1%							<0.1%			
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

NB. Net figures only supplied for 1999 and 2000 since there is no appreciable difference in percentage terms when gross figures are used.

one-year qualification period, there is no market capitalization restriction and foreign stocks are omitted.

Table 4.5 provides a cross-sectional snapshot view of real dividend payments in 1979 and 2000. Nine different classifications have been formed with each dividend paying industrial allocated to one group only. The left-hand side of the table provides a description of the number of firms in each category while the opposite side reports the real amount of dividends these account for.

In 1979 there were very few firms in the largest dividend categories. Over 88% of dividend paying industrials distributed less than £5m, and 97.5% paid less than £20m. However, by 2000 there had been an increase in the number of payers in all of the five largest categories, and six of the largest seven in net terms. This was in spite of a 41% fall in the number of payers. The biggest decline came in the group paying real dividends less than £1m; main market payers fell by 60%, from 847 to 340 firms. It is this category where the inclusion of AIM stocks is the most notable. Of the 93 dividend payers on AIM, 91 of these paid real dividends of less than £1m. Even after this inclusion there is still a large decline in the number of industrials in the smallest dividend category. DeAngelo et al (2004) report similar findings for US industrials, with a decline of 60% between 1978-2000 in terms of the number of firms distributing less than $100m in real terms. The number of firms paying $100m or greater increased by 79% over the same period.

The total amount of dividends attributable to each category merely reinforces the conclusion of increased dividend concentration described earlier. From 1979 to 2000 (net) the total real dividends distributed by firms with real dividends in excess of £100m increased more than five-fold. There were also significant increases for the other large dividend categories. The category that saw the largest decline was industrials paying dividends less than £1m, however the larger payers dwarf this group in terms of total payment size. In 2000 these firms, including AIM stocks, paid an aggregate of £142.9m on a net basis compared to £4,409.4m by the firms with dividends greater than £100m. Indeed there is the remarkable finding that the 13 firms in this largest category paid more in real terms than all of the quoted industrials in 1979.

Table 4.5: Size and Number of Real Dividend Payments by Industrials in 1979 and 2000 (1979 £s).

Real Dividend Payment (1979 £'s)	No. of Firms 1979	No. of Firms 2000 (ex. AIM)		No. of Firms 2000 (inc. AIM)		Real Dividends 1979 (£m)	Real Dividends 2000 (ex. AIM, £m)		Real Dividends 2000 (inc. AIM, £m)	
		Net	Gross	Net	Gross		Net	Gross	Net	Gross
Greater than £100m	3	13 (+333.3%)	16 (+433.3%)	13 (+333.3%)	16 (+433.3%)	733.5	4,409.4 (+501.1%)	5,213.9 (+610.8%)	4,409.4 (+501.1%)	5,213.9 (+610.8%)
£50-£99.9m	7	21 (+200.0%)	21 (+200.0%)	21 (+200.0%)	21 (+200.0%)	421.0	1,492.9 (+254.6%)	1,505.5 (+257.6%)	1,492.9 (+254.6%)	1,505.5 (+257.6%)
£40-£49.9m	3	8 (+166.7%)	8 (+166.7%)	8 (+166.7%)	8 (+166.7%)	128.2	358.3 (+179.5%)	366.2 (185.6%)	358.3 (+179.5%)	366.2 (185.6%)
£30-£39.9m	7	10 (+42.9%)	8 (+14.3%)	10 (+42.9%)	8 (+14.3%)	230.1	338.8 (+47.2%)	278.7 (+21.1%)	338.8 (+47.2%)	278.7 (+21.1%)
£20-£29.9m	10	11 (+10.0%)	13 (+30.0%)	11 (+10.0%)	13 (+30.0%)	220.6	253.5 (+14.9%)	313.5 (+42.1%)	253.5 (+14.9%)	313.5 (+42.1%)
£10-£19.9m	46	33 (-28.3%)	34 (-26.1%)	33 (-28.3%)	34 (-26.1%)	640.6	480.0 (-25.1%)	511.1 (-20.2%)	480.0 (-25.1%)	511.1 (-20.2%)
£5-£9.9m	58	59 (+1.7%)	63 (+8.6%)	59 (+1.7%)	63 (+8.6%)	404.5	413.5 (+2.2%)	457.3 (+13.1%)	413.5 (+2.2%)	457.3 (+13.1%)
£1-£4.9m	221	212 (-4.1%)	223 (+0.9%)	214 (-3.2%)	225 (+1.8%)	486.1	493.4 (+1.5%)	526.0 (+8.2%)	496.2 (+2.1%)	529.1 (+8.8%)
Less than £1m	847	340 (-59.9%)	321 (-62.1%)	431 (-49.1%)	412 (-51.4%)	274.2	129.4 (-52.8%)	123.5 (-55.0%)	142.9 (-47.9%)	138.5 (-49.5%)
Total	**1202**	**707 (-41.2%)**	**707 (-41.2%)**	**800 (-33.4%)**	**800 (-33.4%)**	**3,539.0**	**8,369.1 (+157.5%)**	**9,295.6 (+162.7%)**	**8,385.4 (+136.9%)**	**9,313.8 (+163.2%)**

NB. Figures in brackets indicate percentage change from 1979 values. Net values are exclusive of the dividend tax credit.

Tables 4.6 and 4.7 show how the number of firms and the real amounts they distribute varies annually. Whilst there have been a significant increase in the number of firms in the larger groups in 2000 compared to 1979, there have been relatively minor changes compared to the late 1980s and early 1990s. For example, in 1991 there were 36 firms with dividends in excess of £50m but only 37 paid over £50m, using gross amounts, in 2000. The real amounts by the former though were equal to £5,170m compared to £6,719m by the latter. Thus the large payers have continued to increase in size over the last ten years of the sample but this has not been accompanied by increasing numbers of firms. During this period many of the small and medium payers were lost from the market. These findings are consistent with Ferris et al (2003).

The changes described in dividend payments in both the US and UK in the final twenty or so years of the last century have been very considerable. Given the magnitude of the change it seems reasonable to examine whether the issue of taxation has been a major cause of this shift in dividend behaviour. Morgan and Thomas (1998) describe how historically dividends have always been taxed more heavily in the US relative to capital gains than in the UK. Given that capital gains tax is only levied in both countries when the gain is realised, this in effect amounts to a loan from the government compared to dividend taxation. In this situation there is a 'traditional' argument that it is most tax-efficient for companies to retain post-tax earnings within the firm rather than distribute cash payments to shareholders. Alternatively, firms could buy in their own shares that hopefully gives rise to capital gains in the longer-term. Some investors are attracted to regular cash payments, however, despite the unfavourable tax treatment. It may be they have ongoing liabilities and that dividend payments help in meeting these. If no investors desired dividends it would be hard to believe that companies would keep delivering them.

Elton and Gruber (1970) and Auerbach (1979) put forward an alternative view to the argument detailed above. They argue that, provided dividends are the ultimate form of cash payment to shareholders, it is the eventual taxation of dividends that is capitalized into the firms share price rather than the current yield of the security. Firms are thus unable to add/destroy value by paying dividends as opposed to turning earnings into capital gains, which are treated as deferred dividends. Value is added by the undertaking of projects with a positive net present value.

Table 4.6: Number of Real Dividend Payments by Industrials between 1979 and 2000 (inclusive of USM and AIM).

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Greater than £100m	3	3	2	3	4	4	4	7	10	12	12	13
£50-£99.9m	7	6	7	7	7	6	12	11	15	18	22	20
£40-£49.9m	3	3	4	1	3	6	4	8	9	8	11	9
£30-£39.9m	7	3	4	4	4	8	8	8	18	20	21	19
£20-£29.9m	10	13	12	13	16	18	24	26	25	26	23	27
£10-£19.9m	46	48	46	46	42	43	42	44	44	47	49	45
£5-£9.9m	58	51	46	45	44	48	49	49	46	52	53	46
£1-£4.9m	221	196	183	176	188	204	218	231	275	296	328	283
Less than £1m	847	737	781	783	820	826	849	784	749	783	747	717
Total	**1202**	**1060**	**1085**	**1078**	**1128**	**1163**	**1210**	**1168**	**1191**	**1262**	**1266**	**1179**

	1991	1992	1993	1994	1995	1996	1997	1998	1999 (Net)	1999 (Gross)	2000 (Net)	2000 (Gross)
Greater than £100m	15	14	15	16	19	23	19	15	16	18	13	16
£50-£99.9m	21	19	18	20	20	19	24	26	22	26	21	21
£40-£49.9m	11	10	9	8	6	7	7	13	10	6	8	8
£30-£39.9m	17	19	18	17	21	21	19	8	6	8	10	8
£20-£29.9m	20	22	23	29	25	24	26	18	13	15	11	13
£10-£19.9m	42	34	33	27	33	35	40	37	38	41	33	34
£5-£9.9m	50	56	56	65	51	68	70	76	67	72	59	63
£1-£4.9m	263	246	236	257	292	290	308	276	243	248	214	225
Less than £1m	592	532	545	545	574	592	614	569	514	495	431	412
Total	**1031**	**952**	**953**	**984**	**1041**	**1079**	**1127**	**1038**	**929**	**929**	**800**	**800**

Table 4.7: Total Real Dividend Payments by Industrials between 1979 and 2000 (inclusive of USM and AIM, 1979 £s).

Values indicate the total dividend payments in £m by industrials categorized by the amount of real earnings each firm had during a given year.

Real Earnings	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Greater than £100m	733.5	779.3	636.9	748.7	858.9	1,040.1	1,190.3	1,858.4	2,533.3	3,092.1	3,365.1	3,393.4
£50-£99.9m	421.0	369.8	454.6	446.5	441.1	420.2	801.0	780.9	979.7	1,143.3	1,403.4	1,293.3
£40-£49.9m	128.2	131.1	176.8	44.8	137.0	273.7	168.9	358.7	414.5	344.9	469.6	409.5
£30-£39.9m	230.1	98.9	132.8	141.4	139.4	278.7	277.8	272.3	611.7	692.8	717.8	681.2
£20-£29.9m	220.6	306.2	273.8	304.0	369.6	420.1	589.6	659.8	617.9	657.8	567.5	679.2
£10-£19.9m	640.6	660.8	644.4	672.0	612.8	616.5	606.2	604.8	615.0	676.4	690.0	645.7
£5-£9.9m	404.5	368.2	332.3	321.7	316.7	339.5	360.5	367.5	351.3	378.3	369.9	321.3
£1-£4.9m	486.1	430.7	389.6	389.9	426.7	455.3	467.3	503.5	623.7	658.4	715.5	642.3
Less than £1m	274.2	244.6	226.6	222.4	227.9	237.6	240.9	232.6	247.3	273.5	277.1	254.7
Total	**3,538.8**	**3,389.6**	**3,267.8**	**3,291.4**	**3,530.1**	**4,081.7**	**4,702.5**	**5,638.5**	**6,994.4**	**7,917.5**	**8,575.9**	**8,320.6**

Real Earnings	1991	1992	1993	1994	1995	1996	1997	1998	1999 (Net)	1999 (Gross)	2000 (Net)	2000 (Gross)
Greater than £100m	3,792.9	3,517.9	3,379.7	3,755.9	4,529.0	5,181.3	5,014.5	3,965.7	4,266.9	4,954.3	4,409.4	5,213.9
£50-£99.9m	1,377.3	1,359.7	1,309.9	1,435.2	1,429.2	1,296.7	1,715.5	1,783.2	1,499.8	1,756.3	1,492.9	1,505.5
£40-£49.9m	489.7	440.0	416.4	359.9	262.2	309.1	318.4	565.9	453.4	275.7	358.3	366.2
£30-£39.9m	591.0	658.8	618.2	519.9	709.1	710.0	664.0	269.7	207.4	271.3	338.8	278.7
£20-£29.9m	500.9	542.2	586.0	738.5	621.9	597.4	646.8	458.1	327.7	365.4	253.5	313.5
£10-£19.9m	628.8	483.8	474.4	373.4	449.7	484.3	564.3	510.8	534.2	557.0	480.0	511.1
£5-£9.9m	360.7	394.3	379.0	444.8	366.5	460.2	494.5	539.6	469.3	498.0	413.5	457.3
£1-£4.9m	605.6	560.3	543.6	578.1	692.5	655.9	710.8	642.2	555.5	564.2	496.2	529.1
Less than £1m	206.3	178.5	179.8	188.6	218.0	230.4	221.2	212.0	161.5	159.4	142.9	138.5
Total	**8,553.2**	**8,135.5**	**7,887.0**	**8,394.3**	**9,278.1**	**9,925.3**	**10,350.0**	**8,947.2**	**8,475.7**	**9,401.5**	**8,385.5**	**9,313.8**

The fact that so few industrials paid dividends in the US in 2000 does appear consistent with the punitive tax policy, however total real dividend payments were increasing at this time, which contradicts the falling number of payers. From the start of this study in 1979 until 1997, the UK did not penalise dividend income in the same way as the US. According to Chui et al. (1992), the imputation system at the time made basic rate taxpayers prefer dividends since the income tax was already included in the ACT payment and retentions of earnings would give rise to capital gains and a subsequent CGT bill.

Whilst the decline in the number of industrial payers appear to coincide with the changes to the tax system, Benito and Young (2001) show that there had been a steady decline in the proportion of UK non-financials paying dividends since at least the beginning of the last decade of the century rather than a sharp drop around the time of policy change. Once again, the large increase in total dividend payment does not agree with a traditional theory based on dividend changes surrounding taxation changes. This concurs with previous work on the UK market by Morgan and Thomas (1998) who found evidence among dividend payers of higher risk-adjusted returns to higher yielding stocks after controlling for size. This is the reverse of what would be expected during the period of their study given a smaller proportion of the total return was a capital gain. Christie (1990) found a similar relationship in the US. However, in the US this is consistent with a tax-based explanation since the higher pre-tax returns on firms that pay higher dividends compensates investors for the subsequently harsher tax penalties placed on the dividend part of the total return. Dempsey (2001) however argued that Morgan and Thomas's (1998) findings were consistent with a rational tax-based explanation proposed by Elton and Gruber (1970) and Auerbach (1979) that was subsequently built upon by Lasfer (1995). Under this 'classical' approach it is shown there is an expected rational positive relationship between dividend yield and ex-day returns.

An alternative theory to explain the concentration of dividends is considered by DeAngelo et al (2004). They point to previous work by Black and Scholes (1974) and Miller (1977) who propose that the number of firms with a particular set of characteristics, in this case dividends, was unimportant to investors as long as their needs were met in aggregate. Hence the decline in dividend payers in the US was of no consequence so long as the remaining payers paid sufficient dividends. DeAngelo et al (2004) argue that given the increase in aggregate dividends combined with a simultaneous decline in the number of payers, the latter was not caused by investors demanding fewer dividends. Instead some changes in dividend policy decisions made by firms caused the aggregate changes in dividends.

Applying this logic to the UK findings in this study, there has been a significant increase in real dividends and hence there appears to have been no loss of appetite by investors for these payments; in fact the reverse appears to be true. Whilst there has been a decline in the number of payers over the period in question, around three-quarters of main listed industrials still paid dividends. Hence there have been changes in dividend decisions by UK industrials but these have not been as radical as the US.

4.4.3 Dividends and Earnings

This section considers the interaction that exists between dividends and earnings and looks at changes that have occurred between 1979 and 2000. Before presenting the results it should be noted that a limitation of the data in 1979 is that negative earnings are marked only as zero. Therefore, in many cases comparisons are made between only positive earnings since this is applicable to both epochs. Where possible figures inclusive of negative earnings are also included for 2000.

Table 4.8 shows the concentration of positive earnings amongst dividend payers using the same dividend ranking system as in Table 4.2. In 1979, it is clear that earnings were concentrated amongst the largest dividend payers with 68.3% of total positive earnings attributable to the largest 100 payers. The largest 300 payers account for 88.7% of the earnings. This is consistent with the previous findings of dividend concentration.

In 2000, earnings have concentrated still further with the top 100 now accounting for 85% of all earnings and the largest 300 over 96% of the total. As with dividends in 2000, only the largest 100 payers show an increase in the proportion of total earnings compared with 1979. All the other groups have a lower percentage of the aggregate figure. The introduction of AIM firms makes little difference to the results since these

Table 4.8: Concentration of Earnings by Industrials in 1979 and 2000.

All dividend-paying industrials are ranked according to size of their total dividend payments. In the case of the group 701-800 in the year 2000 (ex. AIM) there are only 7 companies; there are exactly 800 companies in the year 2000 (inc. AIM). If negative earnings are included then totals are £16,721.2m for 2000 (ex. AIM) and £16,762.2m for 2000 (inc. AIM). Negative earnings are unavailable for 1979.

Dividend Ranking	Percent of Total Positive Earnings			Cumulative % of Total Positive Earnings			Real Positive Earnings (£m, 1979 base)		
	1979	2000 (ex. AIM)	2000 (inc. AIM)	1979	2000 (ex. AIM)	2000 (inc. AIM)	1979	2000 (ex. AIM)	2000 (inc. AIM)
Top 100	68.3%	85.3%	85.1%	68.3%	85.3%	85.1%	4,898.2	14,815.6	14,815.6
101-200	14.2%	8.0%	8.0%	82.5%	93.3%	93.1%	1,017.1	1,395.6	1,395.6
201-300	6.2%	3.3%	3.3%	88.7%	96.6%	96.4%	448.6	575.1	574.5
301-400	3.4%	1.5%	1.5%	92.1%	98.1%	97.9%	242.6	261.4	260.9
401-500	2.2%	1.1%	1.1%	94.3%	99.2%	99.0%	155.7	184.8	184.0
501-600	1.6%	0.5%	0.6%	95.9%	99.7%	99.6%	111.9	89.8	97.9
601-700	1.4%	0.2%	0.3%	97.3%	99.9%	99.9%	98.8	31.1	52.7
701-800	0.9%	<0.1%	0.1%	98.2%	100.0%	100.0%	68.4	0.5	20.1
801-900	0.7%			98.9%			54.2		
901-1000	0.5%			99.4%			37.8		
1001-1100	0.4%			99.8%			25.8		
1101-1200	0.2%			100.0%			13.7		
1201-1269	<0.1%			100.0%			<0.1		
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**7172.9**	**17,353.9**	**17,401.3**
No. of Firms							**1202**	**707**	**904**

firms have relatively small earnings, just as they had relatively small dividend payments.

In 2000 the real positive earnings of main listed industrials had increased from £7,172.9m in 1979 to £17,353.9m. The real earnings of the largest 100 dividend payers were more than twice the total earnings of all industrials in 1979. The footnote to Table 4.8 shows the effect of the inclusion of negative earnings in 2000. These reduce the total figures by around 4%, thus not affecting any conclusions too substantially.

Comparing these results to those of DeAngelo et al (2004) it is noticeable that the UK results mirror the US evidence. The concentration of earnings once again is focussed on the largest 100 payers whilst the other groups decline in significance. There has also been an increase in total real earnings by industrials although this has been of a greater percentage than the US.

Table 4.9 displays the percentages of earnings annually across the dividend classifications. These figures, whilst mirroring the dividend figures in the display of a concentration among the Top 100 payers and a decline in all other groups over time, were relatively unchanged for much of the sample period. For instance in 1981 the Top 100 accounted for 80.0% of all positive earnings whilst in 1999 this was 80.3%. This is another example of the snapshot method offering very different conclusions depending on the base years chosen. Over the whole period of 1979-2000 the Top 100's share of total positive earnings rose from 68.3% to 85.1%. Thus, in reality, there was a sharp rise from 1979-1981, a long period of relatively little change and finally another jump from 1999-2000. It was anything but a linear increase between the beginning and end of the sample.

Table 4.10 offers similarities with Table 4.9 but this time it is real amounts that are shown as opposed to percentages. The variability in earnings persists in real amounts as well as percentages. A peak in earnings of the Top 100, and indeed all industrials together, are reached in 1990 but these are not exceeded until 1996. The inference is that dividends are less cyclical than earnings. As such this makes the snapshot method less appropriate for analysing earnings than dividends. The use of an average measure

Table 4.9: Percentages of Earnings by Dividend Paying Industrials between 1979 and 2000.

Firms are ranked according to the size of their dividend with values indicating the proportion of total earnings attributable to dividend payers for each category.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Top 100	68.3%	78.0%	80.0%	79.5%	78.0%	77.9%	78.5%	78.8%	76.2%	75.0%	75.3%
101-200	14.2%	10.2%	9.9%	10.1%	10.5%	9.9%	10.4%	10.3%	10.6%	12.1%	10.9%
201-300	6.3%	4.4%	3.9%	3.9%	4.5%	4.6%	3.9%	4.1%	5.2%	4.3%	4.8%
301-400	3.4%	2.4%	2.1%	2.3%	2.5%	2.7%	2.4%	2.5%	2.9%	2.8%	2.5%
401-500	2.2%	1.6%	1.5%	1.6%	1.6%	1.5%	1.5%	1.4%	1.7%	1.8%	1.9%
501-600	1.6%	1.2%	0.9%	1.0%	1.0%	1.1%	1.1%	1.0%	1.1%	1.2%	1.4%
601-700	1.4%	0.9%	0.7%	0.6%	0.7%	0.8%	0.7%	0.7%	0.7%	1.0%	1.0%
701-800	1.0%	0.6%	0.5%	0.4%	0.5%	0.6%	0.5%	0.5%	0.6%	0.6%	0.8%
801-900	0.8%	0.4%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%
901-1000	0.5%	0.2%	0.2%	0.1%	0.2%	0.3%	0.2%	0.2%	0.3%	0.3%	0.4%
1001-1100	0.4%	0.1%	<0.1%	<0.1%	0.1%	0.1%	0.2%	0.1%	0.2%	0.3%	0.3%
1101-1200	0.2%				0.1%	0.1%	0.1%	<0.1%	0.1%	0.1%	0.2%
1201-1300	<0.1%						<0.1%			<0.1%	<0.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Top 100	78.1%	81.0%	81.7%	80.8%	80.5%	78.8%	78.5%	78.5%	78.4%	80.3%	85.1%
101-200	10.5%	9.6%	8.8%	9.3%	9.5%	10.3%	9.8%	9.7%	9.8%	9.7%	8.0%
201-300	4.3%	3.7%	4.0%	4.1%	4.3%	4.1%	4.2%	4.1%	4.9%	4.0%	3.3%
301-400	2.5%	2.2%	2.3%	2.5%	2.3%	2.6%	2.4%	2.6%	2.5%	2.6%	1.5%
401-500	1.5%	1.4%	1.4%	1.3%	1.3%	1.5%	1.4%	1.5%	1.5%	1.4%	1.1%
501-600	1.0%	0.8%	0.7%	1.0%	0.9%	1.0%	1.0%	1.1%	1.1%	0.9%	0.6%
601-700	0.8%	0.5%	0.5%	0.5%	0.6%	0.8%	0.8%	0.8%	0.8%	0.6%	0.3%
701-800	0.5%	0.4%	0.3%	0.3%	0.4%	0.5%	0.7%	0.5%	0.5%	0.3%	0.1%
801-900	0.4%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.2%	
901-1000	0.3%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.6%	0.2%	<0.1%	
1001-1100	0.1%	<0.1%				<0.1%	0.5%	0.2%	<0.1%		
1101-1200	<0.1%						0.1%	<0.1%			
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4.10: Real Amounts of Earnings by Dividend Paying Industrials between 1979 and 2000 (inclusive of USM and AIM, 1979 £s).

Firms are ranked according to the size of their dividend with values indicating the total amount of real earnings attributable to dividend payers for each category.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Top 100	4,898.2	6,545.9	5,210.3	4,862.7	4,813.5	6,003.4	7,421.5	8,243.7	9,517.9	10,538.5	10,829.2
101-200	1,017.1	857.8	643.7	620.4	647.7	762.8	981.7	1,075.6	1,323.2	1,697.7	1,570.7
201-300	448.6	373.3	253.9	238.4	277.6	357.7	372.0	433.8	644.5	602.7	689.2
301-400	242.6	200.7	139.1	143.4	156.0	206.7	229.4	257.8	368.2	388.6	361.2
401-500	155.7	132.7	94.7	96.8	95.7	114.6	140.2	151.2	211.6	251.7	277.0
501-600	111.9	98.2	60.1	60.3	62.9	87.4	103.5	103.1	138.9	166.9	199.6
601-700	98.8	75.5	47.7	38.4	41.5	60.9	65.8	72.2	90.2	134.7	147.8
701-800	68.4	52.8	32.0	26.6	32.0	47.9	51.5	47.4	77.9	91.3	110.4
801-900	54.2	32.0	17.9	16.0	21.3	29.1	37.3	37.5	52.2	67.8	67.3
901-1000	37.8	20.5	13.2	8.4	14.6	23.6	23.6	25.9	33.0	46.7	59.0
1001-1100	25.8	4.2	3.1	2.3	4.8	11.4	16.4	13.5	20.3	35.9	49.4
1101-1200	13.7				3.2	4.6	6.8	3.5	6.3	20.1	22.9
1201-1300	<0.1						0.1			5.5	5.8
Total	**7,172.90**	**8,393.60**	**6,515.70**	**6,113.70**	**6,170.80**	**7,710.10**	**9,449.80**	**10,465.20**	**12,484.20**	**14,048.10**	**14,389.50**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Top 100	11,622.3	10,956.2	9,156.4	8,628.9	10,054.5	10,781.3	11,886.7	12,798.8	12,487.4	12,079.8	14,815.6
101-200	1,556.9	1,303.5	988.2	992.3	1,183.0	1,403.2	1,483.3	1,584.9	1,567.2	1,457.7	1,395.6
201-300	637.6	500.3	451.2	436.1	536.5	554.8	633.9	676.4	786.4	604.3	574.5
301-400	368.3	298.9	253.7	264.3	289.9	348.9	370.8	424.7	393.7	397.0	260.9
401-500	221.3	183.1	156.1	137.6	162.9	199.9	216.3	237.2	241.7	211.7	184.0
501-600	154.0	113.9	81.9	102.1	110.2	140.7	158.2	182.6	175.6	137.5	97.9
601-700	115.7	73.9	53.9	56.1	76.4	107.1	117.0	124.8	120.6	85.9	52.7
701-800	73.9	50.5	28.4	28.9	44.5	70.3	111.0	85.5	75.7	46.7	20.1
801-900	52.2	27.6	22.0	19.1	24.3	42.9	48.9	57.0	45.6	23.8	
901-1000	45.0	18.3	9.5	10.2	9.1	23.6	28.7	104.9	26.9	3.1	
1001-1100	22.2	1.9				2.8	81.3	35.9	6.0		
1101-1200	6.4						9.3	1.8			
Total	**14,875.80**	**13,528.10**	**11,201.30**	**10,675.60**	**12,491.30**	**13,675.50**	**15,145.40**	**16,314.50**	**15,926.80**	**15,047.50**	**17,401.30**

such as the 5-year approach by DeAngelo et al (2004) appears to be a useful addition when comparing just two annual earnings periods.

Table 4.11 exhibits the cross-sectional distribution of real earnings in 1979 and 2000; this includes both dividend payers and non-payers. The choice of category size is somewhat arbitrary but nonetheless provides a method of comparing two different periods of time. In 1979, there are relatively few firms in the large earnings categories, only 24 industrials earned £50m or greater. By far the largest group is those companies with earnings greater than zero but less than £10m; some 1063 firms inhabit this space or 83% of all industrials. There were also relatively high numbers of observations of firms earning between £10m and £24.9m and firms with zero/negative earnings. Clearly most of the market in 1979 was comprised of relatively small firms.

By 2000, there has been an increase in the number of industrials with large earnings. There were 54 earning £50m or greater. A considerable decline in the number of industrials compared to 1979 was discovered in the lowest positive earnings category, although this remained the dominant category in terms of number of firms with 550. There was a virtual tripling of firms that posted zero/negative earnings in 2000. This was increased still further when AIM stocks were introduced, although the number of positive earners increased by a similar amount. The proportion of firms with zero/negative earnings is higher on AIM though compared to the main market, as one would expect from fledgling stocks.

When the actual real earnings of each group are considered, the three firms in 1979 with earnings in excess of £250m accounted for 16.1%, or £1,157.7m, of total real positive earnings. The largest group, with 23% of total earnings, was those 1063 firms with earnings greater than zero but less than £10m. No category was particularly dominant overall though. By 2000 a different story emerges, the ten firms with earnings greater than £250m made up 50% of the total positive earnings. The firms with earnings greater than or equal to £100m accounted for 69% of the total. This lends further evidence to the conclusion that earnings have become more concentrated. The category of the lowest earners showed the greatest decline, accounting for just 7.2% of the total, or £1,313.3m, in 2000.

Table 4.11: Cross-Sectional Distribution of Industrials Real Earnings in 1979 and 2000.

Real Earnings (1979 base)	Number of Firms			Real Earnings (£m, 1979 base)			Real Earnings as % of Total Positive Real Earnings		
	1979	2000 (ex. AIM)	2000 (inc. AIM)	1979	2000 (ex. AIM)	2000 (inc. AIM)	1979	2000 (ex. AIM)	2000 (inc. AIM)
Greater than £250m	3	10	10	1,157.7	8,916.6	8,916.6	16.1%	50.0%	49.8%
£100m to £249.9m	4	22	22	629.5	3,438.2	3,438.2	8.8%	19.3%	19.2%
£75m to £99.9m	8	10	10	708.8	895.1	895.1	9.9%	5.0%	5.0%
£50m to £74.9m	9	12	12	556.6	721.3	721.3	7.7%	4.0%	4.0%
£25m to £49.9m	36	45	45	1,226.9	1,542.4	1,542.4	17.1%	8.7%	8.6%
£10m to £24.9m	76	65	66	1,233.4	989.8	1,010.6	17.2%	5.6%	5.6%
>£0m to £9.9m	1063	550	672	1,669.9	1,313.3	1,371.3	23.2%	7.4%	7.7%
Zero or Negative	78	239	359	N/A	-1,752.5	-2,091.1	N/A	-9.8%	-11.7%
Total Pos. Earnings	**1199**	**714**	**837**	**7,182.9**	**17,816.8**	**17,895.6**	**100.0%**	**100.0%**	**100.0%**
Total All Earnings	**1277**	**953**	**1196**	**N/A**	**16,064.3**	**15,804.4**	**N/A**	**90.2%**	**88.3%**

A number of similarities occur between the UK evidence presented here and the US evidence collected by DeAngelo et al (2004). The high proportion of firms paying relatively small earnings, particularly in 1978/9, and the low number of firms in the largest categories accounting for a significant proportion of aggregate industrial earnings are particularly striking. In 2000, 26 firms were responsible for 63.4% of the total US industrial earnings. The proportion of total earnings in 1978 by the small earners was nowhere near as large as in the UK however. Medium to large earners were more significant in the US. An interesting discovery was the huge increase in US negative earnings in 2000 compared to 1978, from just 1.4% in the latter to 59.5% in the former. Whilst UK figures were unavailable in 1979, in 2000 negative earnings were only 11.7% of total positive earnings even after including the greater proportion of loss-making AIM stocks.

Table 4.12 displays the number of firms in the various earnings categories across all years between 1979 and 2000. It could have been assumed from Table 4.11 that there was a linear increase in the number of firms with earnings between the first and last years of the sample. This has not been the case. There are distinct periods between 1981-82, 1992-4 and 1999-00 where there have been dips in the number of industrials with positive earnings. These match up quite closely with the periods identified as recessions by Benito and Young (2001) and where there was an increase in the incidence of non-paying firms.

Table 4.13 uses the same earnings categories as Table 4.11 but distinguishes between payers of dividends and non-payers, and the proportions of earnings attributable to each. From Panel A, in 1979 it is clear that dividend payers dominate the earnings distribution. No industrial that earned £10m or greater failed to pay a dividend. There were a few incidences of non-payment amongst firms that had earned more than zero but less than £10m, but still 97.4% of this category paid dividends (Table 4.14 shows this was typical between 1979 and 2000). The non-payers were thus clustered mainly in the zero/negative earnings group where dividend payers made up just 39.7%.

By 2000 there are incidences of non-payers further up the earnings scale but these are still very scarce. The non-payers remain concentrated in the low or negative earnings

Table 4.12: Real Earnings of Industrials between 1979 and 2000 (inclusive of USM and AIM, 1979 £s).

Values indicate the number of firms within any particular real earnings category for a given year.

Real Earnings	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Greater than £250m	3	3	2	4	4	5	4	7	7	8	10
£100m to £249.9m	4	5	4	3	3	4	9	11	13	14	15
£75m to £99.9m	8	5	3	4	7	9	8	3	12	17	15
£50m to £74.9m	9	13	12	12	11	17	16	20	24	27	26
£25m to £49.9m	36	32	26	30	28	24	39	44	46	43	36
£10m to £24.9m	76	70	58	54	52	60	64	62	69	79	87
>£0m to £9.9m	1063	909	839	860	925	1060	1052	1022	994	1078	1086
Zero or Negative	78	221	367	367	337	200	227	196	186	137	142
Total Pos. Earns	**1199**	**1037**	**944**	**967**	**1030**	**1179**	**1192**	**1169**	**1165**	**1266**	**1275**
Total All Earnings	**1277**	**1258**	**1311**	**1334**	**1367**	**1379**	**1419**	**1365**	**1351**	**1403**	**1417**

Real Earnings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Greater than £250m	12	10	7	7	9	11	11	11	8	11	10
£100m to £249.9m	14	18	20	16	23	18	22	29	28	20	22
£75m to £99.9m	20	15	5	11	9	14	13	7	12	11	10
£50m to £74.9m	23	15	15	15	14	14	14	13	20	15	12
£25m to £49.9m	39	41	34	33	37	38	42	48	38	40	45
£10m to £24.9m	78	67	61	51	69	75	74	77	86	77	66
>£0m to £9.9m	1004	867	773	754	800	865	898	952	879	766	672
Zero or Negative	197	262	320	335	264	238	261	268	308	350	359
Total Pos. Earns	**1190**	**1033**	**915**	**887**	**961**	**1035**	**1074**	**1137**	**1071**	**940**	**837**
Total All Earnings	**1387**	**1295**	**1235**	**1222**	**1225**	**1273**	**1335**	**1405**	**1379**	**1290**	**1196**

Table 4.13A: Proportions of Real Earnings Distributed between Dividend Payers and Non-Payers in 1979 and 2000.

Real Earnings (1979 base)	1979			2000 (ex. AIM)			2000 (inc. AIM)		
	Payers	Non Payers	% Payers	Payers	Non Payers	% Payers	Payers	Non Payers	% Payers
Greater than £250m	3	0	100.0%	10	0	100.0%	10	0	100.0%
£100m to £249.9m	4	0	100.0%	21	1	95.5%	21	1	95.5%
£75m to £99.9m	8	0	100.0%	9	1	90.0%	9	1	90.0%
£50m to £74.9m	9	0	100.0%	12	0	100.0%	12	0	100.0%
£25m to £49.9m	36	0	100.0%	45	0	100.0%	45	0	100.0%
£10m to £24.9m	76	0	100.0%	63	2	96.9%	63	3	95.5%
>£0m to £9.9m	1035	28	97.4%	478	72	86.9%	559	113	83.2%
Zero or Negative	31	47	39.7%	69	170	28.9%	81	278	22.6%
Total	**1202**	**75**	**94.1%**	**707**	**246**	**74.2%**	**800**	**396**	**66.9%**

Table 4.13B: Real Earnings Distributed between Dividend Payers and Non-Payers in 1979 and 2000.

Real Earnings (1979 base)	1979			2000 (ex. AIM)			2000 (inc. AIM)		
	Payers	Non Payers	% Payers	Payers	Non Payers	% Payers	Payers	Non Payers	% Payers
Greater than £250m	1,157.7	0	100.0%	8,916.6	0	100.0%	8,916.6	0	100.0%
£100m to £249.9m	629.5	0	100.0%	3,189.2	249.0	92.8%	3,189.2	249.0	92.8%
£75m to £99.9m	708.8	0	100.0%	814.4	80.8	91.0%	814.4	80.8	91.0%
£50m to £74.9m	556.6	0	100.0%	721.3	0	100.0%	721.3	0	100.0%
£25m to £49.9m	1,226.9	0	100.0%	1,542.4	0	100.0%	1,542.4	0	100.0%
£10m to £24.9m	1,233.4	0	100.0%	957.2	32.6	96.7%	957.2	53.4	94.7%
>£0m to £9.9m	1,669.8	10.0	99.4%	1,212.8	100.5	92.3%	1,260.2	111.1	91.9%
Zero or Negative	N/A	N/A	N/A	-632.7	-1,111.9	36.1%	-639.1	-1,452.0	30.6%
Total	**N/A**	**N/A**	**N/A**	**16,720.6**	**-656.9**	**104.1%**	**16,762.2**	**-957.7**	**106.1%**
Total Positive Earn.	**7,182.9**	**10.0**	**99.9%**	**17,353.9**	**462.9**	**97.4%**	**17,401.3**	**494.3**	**97.2%**

Table 4.14: Proportion of Industrial Dividend Payers by Number of Firms Ranked on Real Earnings between 1979 and 2000 (1979 £s).

Values indicate the proportion of firms within a real earnings category that paid a dividend within any given year.

Real Earnings	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Greater than £250m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£100m to £249.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£75m to £99.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£50m to £74.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£25m to £49.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£10m to £24.9m	100.0%	100.0%	100.0%	100.0%	100.0%	98.3%	100.0%	98.4%	100.0%	100.0%	100.0%
>£0m to £9.9m	97.4%	94.1%	94.8%	94.0%	94.9%	92.3%	94.0%	93.0%	95.2%	95.0%	94.0%
Zero or Negative	39.7%	34.8%	50.4%	44.4%	43.0%	33.5%	35.7%	36.7%	39.8%	36.5%	39.4%
Total Pos. Earns	**97.7%**	**94.8%**	**95.3%**	**94.6%**	**95.4%**	**93.0%**	**94.7%**	**93.8%**	**95.9%**	**95.7%**	**94.9%**
Total All Earnings	**94.1%**	**84.3%**	**82.8%**	**80.8%**	**82.5%**	**84.3%**	**85.3%**	**85.6%**	**88.2%**	**90.0%**	**89.3%**

Real Earnings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Greater than £250m	100.0%	100.0%	100.0%	100.0%	88.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
£100m to £249.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	96.4%	100.0%	95.5%
£75m to £99.9m	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%
£50m to £74.9m	100.0%	100.0%	100.0%	100.0%	100.0%	92.9%	100.0%	100.0%	100.0%	100.0%	100.0%
£25m to £49.9m	100.0%	100.0%	100.0%	93.9%	97.3%	97.4%	97.6%	100.0%	100.0%	97.5%	100.0%
£10m to £24.9m	97.4%	97.0%	96.7%	100.0%	100.0%	100.0%	100.0%	98.7%	100.0%	98.7%	95.5%
>£0m to £9.9m	92.2%	91.5%	92.5%	92.6%	91.8%	92.5%	92.5%	91.8%	90.0%	87.5%	83.2%
Zero or Negative	35.0%	28.2%	30.3%	37.0%	34.5%	30.7%	28.0%	25.7%	18.2%	24.9%	22.6%
Total Pos. Earns	**93.3%**	**92.6%**	**93.4%**	**93.5%**	**92.9%**	**93.5%**	**93.7%**	**93.1%**	**91.7%**	**89.6%**	**85.9%**
Total All Earnings	**85.0%**	**79.6%**	**77.1%**	**78.0%**	**80.3%**	**81.8%**	**80.8%**	**80.2%**	**75.3%**	**72.0%**	**66.9%**

brackets and are a larger proportion compared to 1979. This is magnified further by the inclusion of AIM companies.

Panel B shows the real amounts of earnings attributable to payers and non-payers. The earnings of non-payers in 1979 barely even register at a tiny 0.1%. In 2000, this figure is a little higher but still only around the 2% to 2.5% level of positive earnings. In terms of zero/negative earnings firms, the dividend payers make up a slightly larger percentage than is proportionate to the number of firms but non-payers are still responsible for at least 64% of negative earnings, and 70% when AIM is also included.

A comparison of these results with those reported by DeAngelo et al (2004) finds in 1978 US high earnings firms were all dividend payers, much like UK industrials in 1979. However, there were more observations recorded of non-payers in the small to medium earnings firms in the US. Given that only around 65% of firms were payers compared to 94% in the UK this is probably as expected. By 2000 though there were non-payers in every earnings category and more than half of the firms earning less than £50m failed to pay a dividend. Clearly non-payment of dividends has been less of an issue for US investors than in the UK. In terms of total earnings, US non-payers were still dwarfed by dividend payers in 1978 and in 2000 non-payers made a loss in aggregate. The UK evidence was consistent with this.

In summary, the UK evidence points to a concentration of earnings amongst large dividend payers. This concentration has increased between 1979 and 2000. Lintner (1956) found that earnings were the primary determinant of dividends and the concentration of both dividends and earnings together found in this study supports this. Given that more firms failed to pay dividends as more incidences of negative earnings were recorded, this further endorses Lintner's conclusion. DeAngelo et al (1992) report that losses are an important factor in firms failing to pay dividends and again the UK results appear consistent with this view. Whilst there have been more firms posting negative earnings and also not paying dividends, the increase in dividends and earnings by high earners completely dominates this effect in aggregate.

4.4.4 Listing and Dividend Status of Payers in 1979

Table 4.15 shows dividend payers in 1979 and their dividend and listing status in 2000. Firms are ranked according to their dividend size in 1979 using the same classification as in Table 4.5. If the firms were still in existence at the end of 2000 they were classified as either dividend payers or non-payers. In cases where firms were no longer trading they were classified, using codes from the LSPD, as either delisted due to financial distress, delisted due to acquisition or delisted due to other reasons (see footnote to Table 4.15 for possible reasons).

It is apparent that relatively few dividend payers in 1979 were still in existence in 2000. Only 25.6% of the sample survived, with 257 out of the 308 industrials continuing to pay dividends in 2000. Nearly all of the non-payers were firms that in 1979 paid less than £1m. Of the firms that were not trading in 2000, the vast majority had been acquired. Just 10.8% of industrial payers in 1979 delisted due to financial distress, whilst 4.5% ceased trading for other reasons. Once more though, most of the firms that were not in existence in 2000 were small dividend payers, particularly those that were delisted due to financial distress.

Towards the foot of Table 4.15 there are figures showing the proportion of dividends attributable to each category. Although there were only 21.4% of industrials paying dividends in both 1979 and 2000, they were large payers. These firms accounted for 56.2% of all dividends in 1979 and 70.1% of total dividends in 2000. The payers in 1979 but non-payers in 2000 made up just 1.2% of aggregate dividends in 1979. Similarly small proportions were found for firms delisted due to distress and other reasons. Acquired firms were significant payers at 38.8% of all dividends in 1979.

The UK findings presented here are very similar to US evidence collected by DeAngelo et al (2004). Around one-fifth of US industrials paid dividends in both 1978 and 2000 but these firms accounted for 62% of all payments in 1978 and 84.1% in 2000. Delistings due to acquisitions accounted for 57.4% of payers in 1978 (compared to 59.1% of UK payers in 1979) and delistings due to financial distress were 11.0% (10.8% in UK findings). Again most of the firms lost from the sample were relatively small payers.

Table 4.15: Listing and Dividend Status of Industrial Dividend Payers in 1979.

Real Dividend Payment (1979 £'s)	No. of Dividend Payers in 1979	Paid Dividends in 2000	Listed Non-Payers in 2000	Delisted due to Financial Distress	Delisted due to Acquisition	Delisted due to Other Reasons*
Greater than £100m	3	3	0	0	0	0
£50-£99.9m	7	4	0	0	3	0
£40-£49.9m	3	2	0	0	1	0
£30-£39.9m	7	5	0	0	1	1
£20-£29.9m	10	6	1	0	3	0
£10-£19.9m	46	22	0	0	23	1
£5-£9.9m	58	22	2	1	33	0
£1-£4.9m	221	51	1	14	149	6
Less than £1m	847	142	47	115	497	46
Total No. of Firms (% of 1979 Total)	**1202 (100.0%)**	**257 (21.4%)**	**51 (4.2%)**	**130 (10.8%)**	**710 (59.1%)**	**54 (4.5%)**
Total 1979 Divs. (% of indus. total)	**3,539.0 (100.0%)**	**1,987.3 (56.2%)**	**43.8 (1.2%)**	**57.0 (1.6%)**	**1,372.0 (38.8%)**	**78.9 (2.2%)**
Total 2000 Real Dividends (% of indus. total)	**8,385.4 (100.0%)**	**5,877.6 (70.1%)**				

* Other reasons included voluntary liquidation where value remained for shareholders, change of listing to a foreign country, enfranchisement and quotation cancellation/suspension for unknown reasons.

As DeAngelo et al (2004) point out there is a considerable difference between delistings due to acquisitions and delistings due to financial distress in terms of the total industrial dividend payment. In the case of distress, firms are lost from the sample and their dividends go with them. This is not necessarily the case with acquired companies though. In situations where a dividend paying acquirer purchases a dividend paying industrial using its own shares, the number of shares in issue will rise after the acquisition is completed. Assuming the acquiring firm at least maintains the dividend per share then at worst a portion of the dividends 'lost' by the removal of the acquired firm will be 'returned' by the additional shares in issue by the acquiring firm. Thus acquisitions pose less of a threat to aggregate dividend payments than firms being lost due to financial distress.

4.5 Conclusion

Whilst there has been a decline in dividend paying firms in the UK between 1979 and 2000, the total dividends paid by industrials have actually increased. Most of the dividend payers lost from the market have been relatively small, whilst those large payers have continued to grow their dividends, more than compensating for the effect of the former. This has lead to a greater concentration of dividends amongst relatively few firms. It was also found that earnings became more concentrated amongst those payers during the same period. This is consistent with Lintner (1956) who found earnings were the primary determinant of dividends. Furthermore, all of the findings about greater aggregate payments and an increased concentration of dividends and earnings support the US evidence presented by DeAngelo et al (2004). Indeed the concentration of dividends is found to be greater in the UK than in the US.

The overall conclusions surrounding the dividend changes are not altered when annual data periods are used, however this analysis does provide additional information. It is particularly suited to more variable measures such as the number of dividend payers in a given year and total earnings. There was a long period during the sample when, if a snapshot approach had been used, it would have been possible to argue that dividend-paying industrials, in number, were actually increasing. Changes in the concentration of dividends, by contrast, occurred very steadily with the minimum concentration in 1979 and the maximum in 2000. The annual approach also showed an increased number of non-paying industrials was found around recessionary periods in the early 1980s and 1990s consistent with Benito and Young (2001).

When the listing status in 2000 of dividend payers in 1979 was analysed it was discovered that nearly 60% of 1979 payers had been acquired. This suggests that whilst numbers of payers declined there was the distinct possibility that many of the dividends remained, at least partially, as a result of new combined entities. Only 11% of 1979 payers were lost to distress and just 4% moved to become non-payers in 2000. Overall, the talk of the demise of dividends seems premature.

Chapter 5 – The Dividend Payout Ratio, Earnings and Stock Returns

5.1 Introduction

Whilst an extensive body of work has examined the relationship between dividend yield and equity returns, there has been relatively little coverage of the dividend payout ratio and its role in asset pricing and forecasting market behaviour. With the aggregate US payout ratio at a historic low at the beginning of the twenty-first century market commentators have begun to consider the implications of such a dividend policy. The origins of the work on payout policy can be traced back to Miller and Modigliani (1961) who introduced their 'dividend irrelevance' theorem, which said that the value of a firm was completely independent of the proportion of earnings retained by that firm. Arnott and Asness (2003) applied this logic to the aggregate market using the constant-growth valuation model of Gordon (1962).

$$R = \frac{D}{P} + G \qquad \text{Equation 5.1}$$

$$R = \frac{D}{E} \cdot \frac{E}{P} + G \qquad \text{Equation 5.2}$$

The expected return on the market, R, is equal to the sum of dividend yield, D/P, and the expected constant dividend growth, G, (see Equation 5.1) or alternatively, the product of the payout ratio, D/E, and earnings yield, E/P, plus the constant growth term, G (see Equation 5.2). Arnott and Asness (2003) consider the effect of a permanent downward shift in the payout ratio. Under Miller and Modigliani's (1961) assumptions, if there has been no change in earnings there can be no change in the value of those earnings and so the earnings yield remains fixed. This implies that for the expected return to remain constant, the shortfall from the lower payout ratio has to be accounted for by an increase in the expected growth in dividends. This reinforces the idea behind the theory that higher levels of company retained earnings leads to higher levels of earnings growth. Under the assumption that the payout ratio is held constant, the growth term could equally be the growth rate of earnings as dividends. All of this theory, however, is underpinned by the premise that perfect capital markets exist.

The conventional 'market' view is that higher retained earnings would lead to the exploitation of more positive NPV capital projects and subsequent higher earnings by companies. However, Arnott and Asness (2003) found no evidence to support this view using US data from 1871 to 2001. Indeed the reverse was true with low payout ratios being positively correlated with low subsequent 10-year real earnings growth. They found this was robust to using a 5-year time period as opposed to 10-years, and controlling for mean reversion in earnings, the bond yield-curve slope and the earnings yield. Out of sample tests failed to diminish the effects either. This was a clear contradiction of previous financial theory.

Ibbotson and Chen (2003) find that during the period of 1926-2000, historical dividend growth has underestimated historical earnings growth due to the decline in payout ratio from 47% to 32%. In looking forward, they argue that the estimates for future aggregate returns should not be affected by the payout ratio as this merely influences the means by which investors receive their gains, either through dividends or capital increases. Thus (using the Gordon, 1962 model) a low dividend yield has to be offset by higher expected earnings growth. This higher expected growth is also used to explain the high P/E ratio. It is argued that mispricing is not possible within an efficient markets framework and, that as the equity premium is assumed constant over both the period of estimation and the future it cannot be a function of a lower rate of return.

Pursuing a rather different line, Ilmanen (2003) finds a high level of correlation between the earnings yield and a trailing three-year average of inflation. It is suggested that this is surprising since earnings yield is a real variable and higher inflation should be accompanied by higher growth rates. It could be due to inflation impacting real earnings prospects (steady, low, positive inflation was found to the best conditions). Alternatively it creates irrational money illusion that causes stocks to be undervalued (overvalued) when inflation is high (low) or inflation causes the expected real return on bonds to rise and thus the expected real return on stocks to rise to maintain a rational inflation-related risk premium. Ilmanen (2003) argues that low inflation may sustain the currently high P/E ratio in the US market but that if high returns are to be achieved they will probably have to be gained through the difficult process of high real earnings growth given that expansion of the multiple is unlikely from current levels.

All three of these recent studies adopt earnings growth as the relevant growth term in Gordon's constant growth model as opposed to dividend growth. The argument for choosing this method focuses on the decline in the historic payout ratio in the US. Ibbotson and Chen (2003) find that in 2000 this stood at a historical low of 32% compared to an average between 1926-2000 of 59%. They suggest that if dividend growth was used in Gordon's model this would understate the profitability of US firms.

The aim of this chapter is to investigate the relationship between the payout ratio and real earnings growth in the UK market. In particular, does the evidence support the conventional view that higher levels of retained profits lead to superior growth in earnings or does it lend credence to the US work of Arnott and Asness (2003) with a positive relationship between future earnings growth and payout ratio? Given Lintner's (1956) finding that the primary determinant of dividends is earnings, the possibility of the payout ratio being a predictor of both UK and US future real dividend growth is also investigated, thus extending the previous work in this area. Finally, the usefulness of the payout ratio in explaining future stock returns is assessed. Whilst being able to anticipate future changes in earnings and dividends is interesting in itself, the stock market is a discounting machine and thus any future growth may already have manifested itself in prices. For the payout ratio to be an effective investment tool for the market practitioner it should offer some predictive ability for future returns. To this extent it is also compared to more conventional valuation techniques such as dividend and earnings yield.

The remainder of this chapter is organized as follows. Section 5.2 describes the data and methodology employed. Section 5.3 reports the empirical results from the UK analysis. Section 5.4 describes the comparable results for the US. Section 5.5 concludes.

5.2 Data and Methodology

The approach used in this study is very similar to that adopted by Arnott and Asness (2003) so that direct comparisons can be drawn between the US and UK evidence. An index is chosen to represent the aggregate UK market. Using the earnings yield data for the index, a history of the 12-month trailing earnings in index points can be estimated. This series is then divided through by the UK Retail Price Index (RPI) and thus a real earnings series is created for the index. In addition, using the same methodology except substituting dividend yield for earnings yield, a real dividend series is generated. Historical data now exists for the calculation of earnings and dividend growth values.

An important issue with this type of analysis is that the index composition of firms will vary over time. Thus the growth experienced is different from the purchase of a portfolio of stocks that are then held for a long period of time. It is more akin to the growth experienced by an investor who purchases units in a tracker fund. As 'poor-performing' stocks are ejected from the index, 'high-performing' companies take their place. Furthermore, rebalancing occurs as stocks are acquired and new listings enter the market. Arnott and Asness (2003) suggest that as larger and more profitable firms replace those firms ejected from the index it leads to an increase in the divisor of the index. This divisor also applies to the total earnings of the index and thus the earnings per share is also revised downwards. The upshot of the earnings per share being dragged down is that it fails to keep pace with the growth experienced by the economy as a whole (GDP growth).

The choice of index that is most suitable for this analysis is somewhat more difficult in the UK than in the US. There is a long-run data series in the US for the S&P 500 with prices, returns, dividends and earnings. Unfortunately there is no comparable measure with all of these variables in the UK. A widely quoted broad index is the FTSE All-Share Index. This market-capitalization weighted index has prices and dividend yields available from April 1962 onwards but there is no earnings data available until 1994. This is primarily due to some financials such as insurers and merchant banks not being required to disclose earnings. However an index starting in April 1962 containing just industrial stocks (including Oil & Gas) has the full complement of prices, dividends and earnings, namely the FT Actuaries 500 Share Index (hereafter called FT 500). This index ran until December 1993 when, as part of a revision of the sector indices in the UK, it ceased. It was replaced though by a 'Non-Financials' index with values matching up exactly with the FT 500. This enables a data period for continuous monthly prices, earnings and dividends to be constructed from April 1962 to December 2001 inclusive using the Indices file from the London Share Price Database (LSPD). The vast proportion of results reported in this study has originated from this data set and is referred to as the 'main sample'.

A second data source is also utilized in this study that offers a long-run series for prices, dividend yields and returns. The Barclays Equity Index (BEI) is part of the Barclays Equity-Gilt Study (EGS) (2003) and is calculated on a value-weighted, annual basis from 1899-2002. Given the lack of indices available in the UK market prior to the 1960s, the BEI has been calculated retrospectively. From 1962 onwards the index uses FTSE All-Share values, between 1935-62 values are taken from the FT-30 Index (for many years the UK benchmark) and pre-1935 values are based on the largest 30 stocks by market capitalization. Whilst this is not ideal as an index series it does provide a method of offering qualified corroboration or contradiction for any conclusions based on dividend yield or dividend growth from the FT 500 data over a longer period of time. All the methodology for calculating the dividend series remains as previously discussed.

5.3 UK Results

5.3.1 Earnings Growth and Payout Ratio

The payout ratio throughout this study is defined as the ratio of one-year trailing dividends to one-year trailing earnings (consistent with Arnott and Asness 2003). Between the period of 1962-2001 this has averaged 51.4% with a maximum of 87.3% in July 1966 and a minimum of 32.0% in May 1975. This compared to US figures of an average of 48.9% over the same period, with a maximum of 76.4% in December 1991 and a minimum of 29.9% in September 2000. It is widely accepted that dividends are less variable than earnings and as such it is the latter that causes much of the volatility in the ratio. Periods of dividend controls that were in force in the UK during the 1960s and 1970s[1] may have distorted the payout ratio from what it otherwise would have been

[1] See Hansen and Goudie (1988) for a full description of the dividend controls in the UK between 1966-1979.

since this legislation capped the growth rate of dividends[2]. Dividend controls were also present, in various guises, in the US between August 1971 and April 1974 according to Baker and Wurgler (2004b). They found these had a high degree of success in suppressing dividend payouts. Thus the issue of controls is not just UK specific.

Figures 5.1A and 5.1B present two plots of real earnings growth against payout ratio, one for ten-year growth and the other for five-year. In both cases there is a positive relationship between payout ratio and earnings growth. Panel A of Table 5.1 documents the monthly regressions for real earnings growth using payout ratio as the independent variable. Whilst the significance of the payout variable is not as strong as US evidence reported by Arnott and Asness (2003)[3], it is nevertheless consistent in that it exhibits the 'wrong' sign according to traditional theory.

Given that industrial 'growth' stocks are often valued on high multiples of both current and future earnings it seems plausible that when the aggregate market trades on a low earnings yield (i.e. high price-earnings ratio) that high future growth is also likely. Panel B of Table 5.1 shows the results of using earnings yield as an explanatory variable of future earnings growth. Whilst the sign is 'correct' in as much as the lower the earnings yield the greater the future real earnings growth, the results are modest in their significance. The earnings yield coefficient is insignificant on the 10-year growth regression and the adjusted-R^2 values are lower than both the regressions using the payout ratio.

Panel C of Table 5.1 shows the effects of using both the payout ratio and earnings yield as explanatory variables for future earnings growth. In the 10-year model the payout ratio retains its significance and the positive coefficient. By contrast the sign on the earnings yield variable changes, thus becoming positive. The 5-year growth model shows both payout ratio and earnings yield retaining their previous signs but both variables also lose their statistical significance. However, the lower adjusted-R^2 value

[2] The evidence as to whether controls did affect the payout ratio is somewhat mixed. Chui et al (1992) suggest the impact on the payout ratio is dependent on the allowable growth rate. A low rate would almost certainly suppress the payout but a rate above the average growth rate may encourage managers to pay higher dividends to 'keep up' with the controls. Overall they find no change in the equilibrium rates of return during dividend controls.

[3] See Tables 1 and 3 on pages 74-75 of Arnott and Asness (2003).

Figure 5.1A

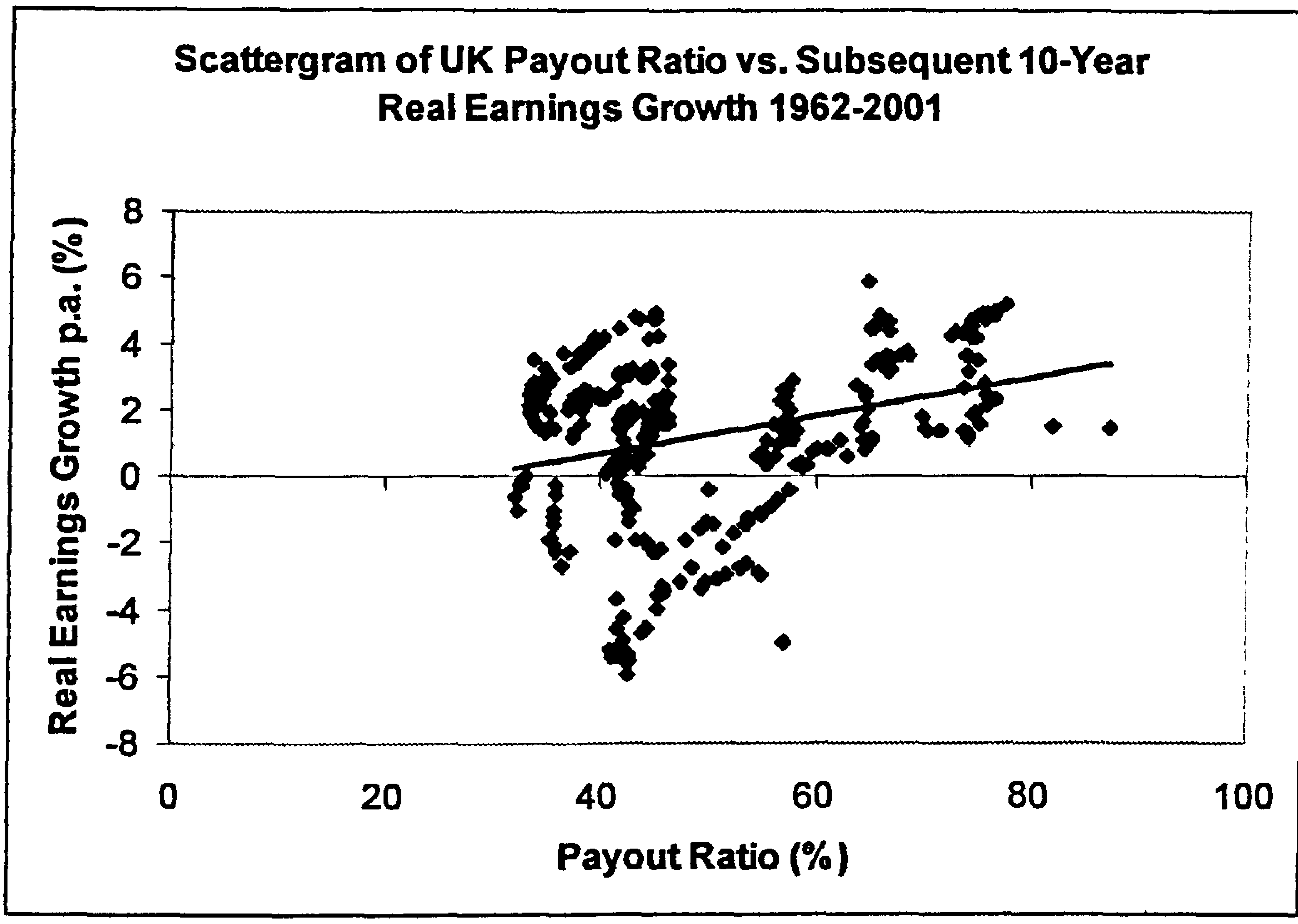

Figure 5.1B

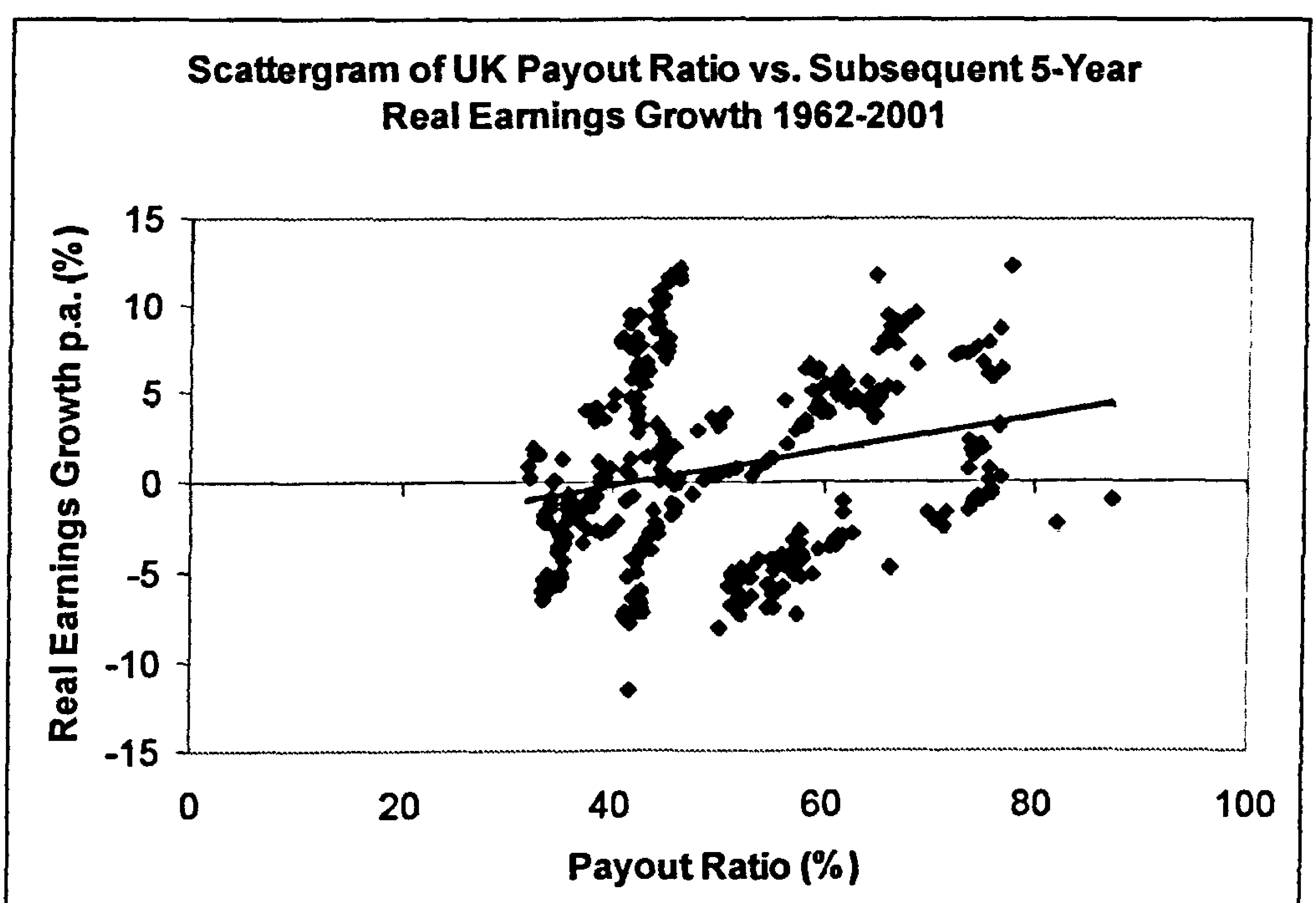

Table 5.1: Subsequent Real Earnings Growth as a Function of Payout Ratio and Earnings Yield 1962-2001.				
A. 10 and 5 year subsequent real earnings growth (SRE) as function of payout ratio (PR)				
	Constant			Adj. R^2
SRE10	-0.016 (-1.54)	0.057 PR (3.13)**		8.5%
SRE5	-0.043 (2.00)*	0.100 PR (2.57)*		5.2%
B. 10 and 5 year subsequent real earnings growth (SRE) as function of earnings yield (EY)				
SRE10	0.018 (2.77)**	-0.052 EY (-1.04)		0.7%
SRE5	0.033 (2.79)**	-0.241 EY (-2.79)**		4.0%
C. 10 and 5 year subsequent real earnings growth (SRE) as function of payout ratio (PR) and earnings yield (EY)				
SRE10	-0.052 (-1.97)*	0.097 PR (3.07)**	0.149 EY (1.14)	11.7%
SRE5	-0.023 (-0.48)	0.077 PR (1.22)	-0.082 EY (-0.61)	5.1%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
** Significant at the 99% level
* Significant at the 95% level

on this regression compared to that of the model with payout ratio alone causes this model to be rejected.

Overall, the evidence presented here supports the previous findings by Arnott and Asness (2003) albeit with lower significance levels. The positive coefficient of payout ratio is not consistent with previous theory that higher retained earnings lead to higher earnings growth. Furthermore, the price the market is prepared to pay for current earnings has only limited ability to predict future real earnings growth.

5.3.2 Dividend Growth and Payout Ratio

In the background to this study it was described how a number of US researchers had focussed on using earnings growth as the growth term in Gordon's model as opposed to dividend growth. This was based on the decline in the payout ratio over time and thus dividend growth would understate the true profitability of the market. The UK market however has not seen the same decline in the payout ratio that the US market has experienced. In April 1962 the payout ratio stood at 51.3% and in December 2001 it was virtually unchanged at 52.1%. Indeed the culture of dividends appears more firmly entrenched in the UK. For example, Benito and Young (2001) find that around three-quarters of all UK firms paid dividends in 1999 whereas Fama and French (2001) find this figure is only around one-fifth in the US. The importance of dividends in the UK encourages the consideration of using dividend growth as the growth term in Gordon's model. There are no comparable results for this in the US studies mentioned earlier.

Figures 5.2A and 5.2B present scatter diagrams of subsequent five and ten-year real dividend growth against payout ratio. The contrast with Figure 5.1 is very marked indeed. There is a clear negative correlation between payout ratio and dividend growth in both the shorter and longer scenarios. Panel A of Table 5.2 reports the results of the regressions with highly significant negative coefficients in both cases. The explanatory power of these is also much higher than the comparable earnings growth regressions in Table 5.1.

Panel B of Table 5.2 tests if dividend yield is able to explain future dividend growth, in the same way that earnings yield and future earnings growth was investigated in Table 5.1. Both regressions display positive coefficients for dividend yield, the opposite sign compared to when earnings yield was used to explain real earnings growth. The adjusted-R^2 values are relatively low compared to the regressions where payout is the independent variable in Panel A.

When the payout ratio and dividend yield variables are used together the payout ratio maintains its negative coefficient with a high level of statistical significance. The sign changes on the dividend yield variable but is not significant. Overall, payout ratio is again an important variable in explaining real growth; however the differing signs between real dividend and earnings growth is a very interesting outcome. Whilst the earnings growth defied conventional theory, dividend growth very much supported it. Why this should have occurred is indeed very puzzling.

Figure 5.2A

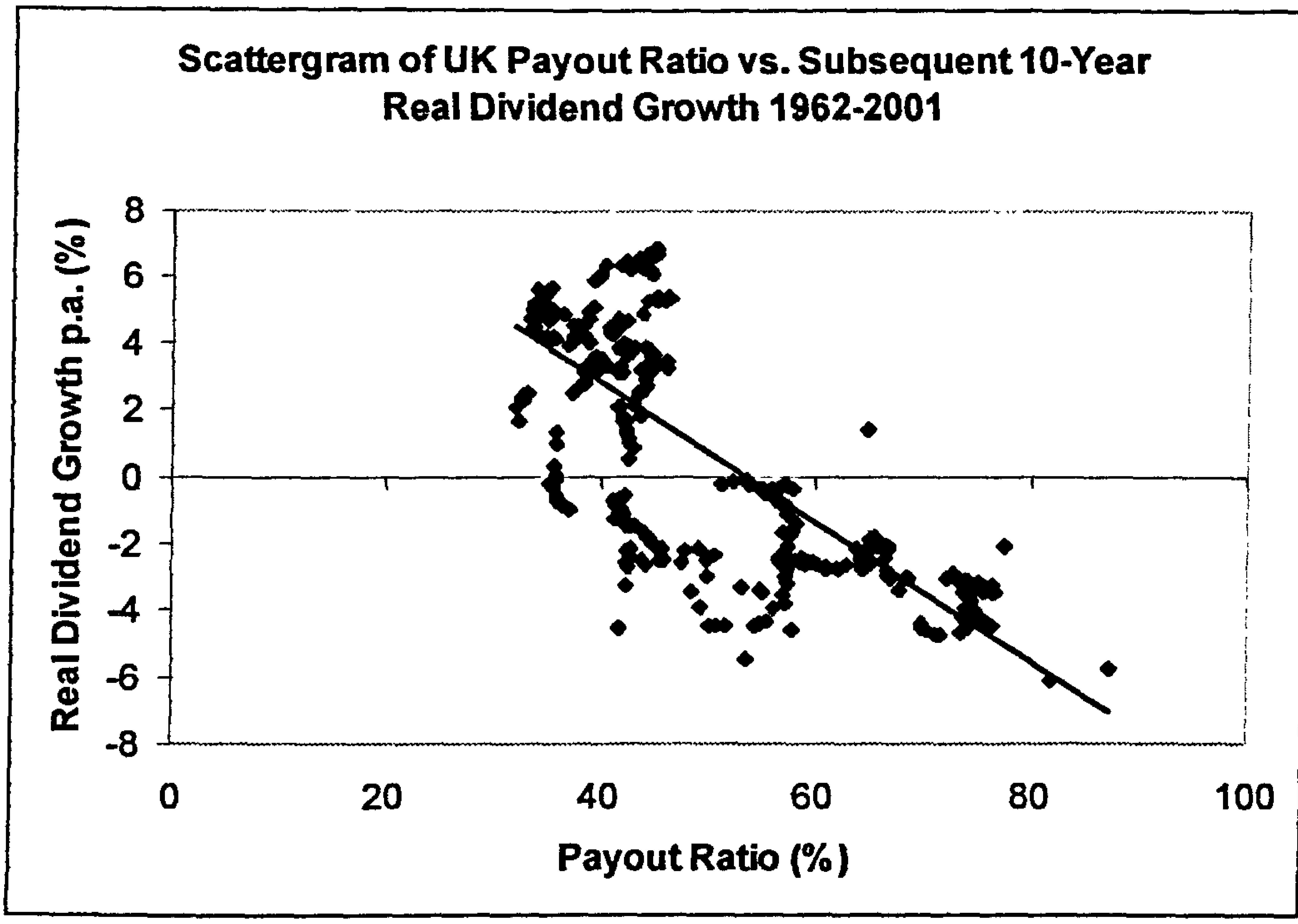

Figure 5.2B

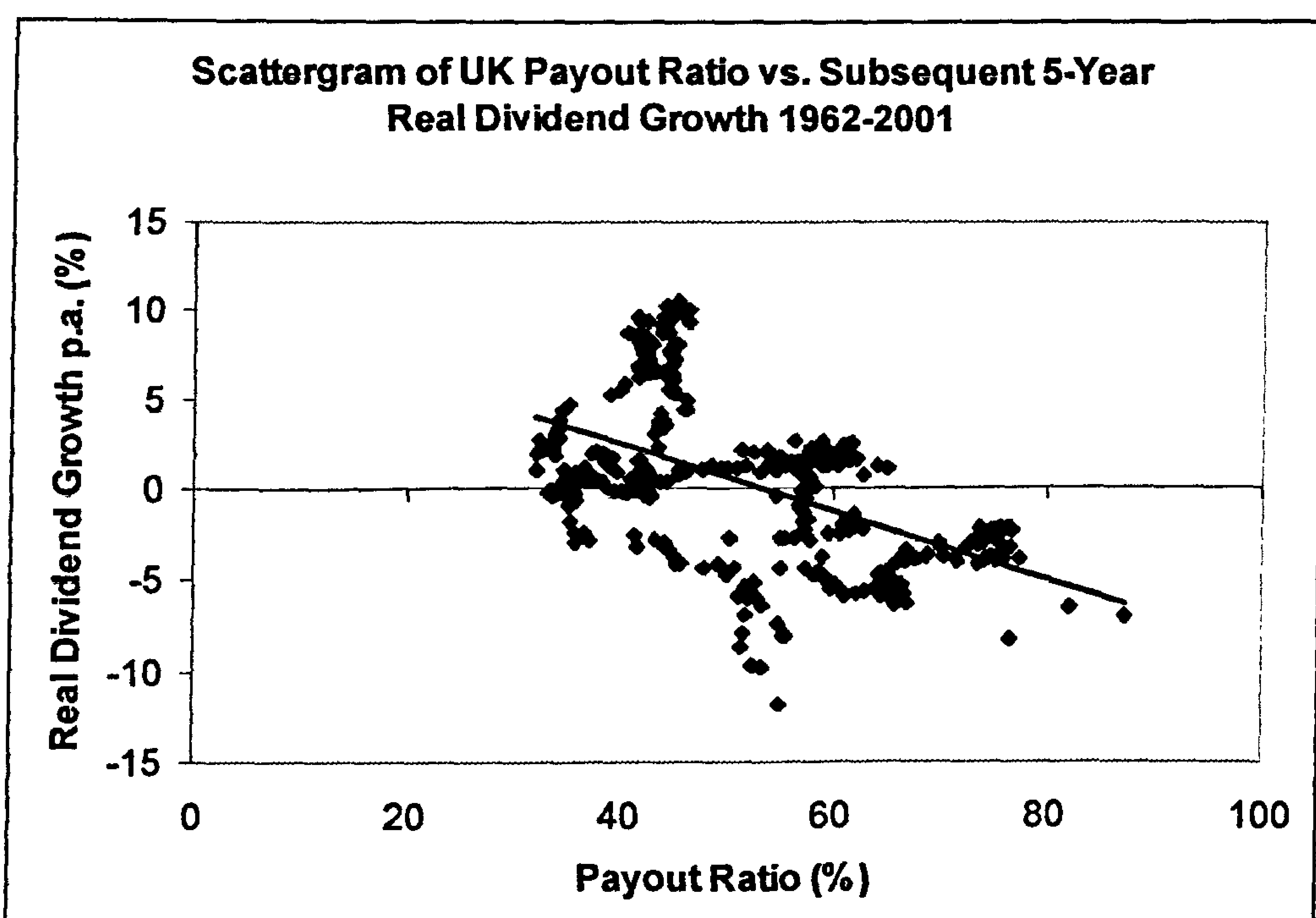

Table 5.2: Subsequent Real Dividend Growth as a Function of Payout Ratio and Dividend Yield 1962-2001.

A. 10 and 5 year subsequent real dividend growth (SRD) as function of payout ratio (PR)				
	Constant			Adj. R^2
SRD10	0.111	-0.208 PR		56.8%
	(12.12)**	(-14.59)**		
SRD5	0.099	-0.185 PR		26.5%
	(6.30)**	(-7.14)**		
B. 10 and 5 year subsequent real dividend growth (SRD) as function of dividend yield (DY)				
SRD10	-0.024	0.628 DY		4.2%
	(-1.44)	(1.85)		
SRD5	-0.017	0.430 DY		1.0%
	(-0.88)	(1.24)		
C. 10 and 5 year subsequent real dividend growth (SRD) as function of payout ratio (PR) and dividend yield (DY)				
SRD10	0.123	-0.214 PR	-0.174 DY	57.0%
	(7.95)**	(-14.97)**	(-0.80)	
SRD5	0.123	-0.199 PR	-0.369 DY	27.2%
	(4.56)**	(-7.12)**	(-1.23)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
** Significant at the 99% level
* Significant at the 95% level

5.3.3 Payout Ratio and Returns

Whilst the notion of explaining future earnings or dividend growth based on payout ratio is in itself interesting there is a commonly held underlying belief that this growth should in someway be linked to returns. If growth in profitability and dividends is unrelated to returns then it is of no concern to investors when making investment decisions and there is little value in attempting to forecast it. Arnott and Asness (2003) demonstrated the positive relationship between earnings growth and payout ratio but it was, quite logically, assumed this growth was positively related to returns. Prior to their study, however, it was also logically assumed that lower payout ratios lead to higher earnings growth. Thus this section considers the relationship that has existed in the UK between payout ratio and subsequent returns.

Unfortunately there is very little total return data for the main sample and thus to construct a returns series requires some assumptions along the lines of those used in calculating the earnings and dividends series. Given that the total earnings (dividends) of the market over the previous year was assumed to be the earnings (dividend) yield multiplied by the index level, the same is assumed for returns purposes. It is also assumed that dividends are reinvested at the end of twelve-month periods for return periods in excess of one year. This is likely to underestimate total returns compared to immediate reinvestment of dividends but given the data available, this is the best means of calculating this type of return and is consistent with the annual returns method suggested by Fama and French (1998).

Thus, in estimating the returns on the index, twelve month returns were initially calculated using the formula below (Equation 5.3), where R_n is the nominal 12 month return, P_1 and P_2 are the index levels at the start and end of the twelve month period respectively and d_2 is the dividend yield at the end of the period expressed as a decimal. The formula reads as the ratio of, the sum of the final index level and the dividends paid over the year in index points, to the initial index level.

$$R_n = [P_2(1+d_2) \div P_1] - 1 \qquad \text{Equation 5.3}$$

The real return for the twelve-month period is then calculated by subtracting the change in inflation over the period from the nominal return. The product of the annual real returns followed by taking the appropriate root gives rise to the long-run returns[4]. Thus the returns are quoted annually compounded with dividends reinvested at the end of every twelve months.

Since 1994 total return series have been available for all of the major indices in the UK. This provides a means of comparing the method used in this study with the standard returns calculated by the index provider (in this case FTSE). Between 1995-2001, using monthly values, the average nominal 12-month return as stated by FTSE is 10.60% on the non-financial index, whilst the average return using Equation 3 is 10.36%. The correlation between the annual returns, calculated on a monthly basis, is

[4] For the 3-year return the cube root is taken, for the 5-year return the fifth root is taken, etc.

0.998. As all returns calculated on the main sample are on the same basis it seems unlikely that this relatively small difference would in itself generate entirely misleading conclusions.

Table 5.3 describes the relationship between payout ratio and subsequent returns. There are significant negative coefficients on the payout ratio variable in both the 10-year and the 5-year specifications. The explanatory power of both regressions is good, particularly on the 10-year model. It is concluded that in the UK, higher retained earnings have led to higher real returns during the latter part of the twentieth century.

Table 5.3: Real Returns as a Function of Payout Ratio 1962-2001.

A. 10 and 5 year subsequent real returns (SRR) as function of payout ratio (PR)

	Constant		
SRR10	0.295 (23.49)**	-0.457 PR (-17.63)**	74.0%
SRR5	0.240 (6.01)**	-0.326 PR (-3.82)**	18.6%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
** Significant at the 99% level

5.3.4 Dividend Yield, Earnings Yield and Returns

This section explores the impact of dividend yield and earnings yield on real returns. Dividend yield is viewed as being particularly relevant as this appears in the initial version of Gordon's model. Data covering a longer time scale is also now utilized to see if a relationship was in evidence prior to the relatively recent period of 1962-2001, with return periods of 1, 3, 5 and 10 years analysed.

Panel A of Table 5.4 presents the regression results using monthly data from the main sample. In all four cases real returns are positively and significantly related to dividend yield. As the length of return studied increases so the coefficients of dividend yield become smaller and the values of the constants increase. This is consistent with ten-year real returns being less variable than one-year returns. Panel B provides annual results from the main sample for dividend yield rather than the monthly data used in Panel A.

Table 5.4: Subsequent Real Returns as a Function of Dividend Yield 1962-2001.			
A. 10, 5, 3 and 1 year subsequent real returns (SRR) as function of dividend yield (DY) (monthly data)			
	Constant		Adj. R^2
SRR10	-0.071 (-2.66)**	2.800 DY (5.35)**	24.0%
SRR5	-0.105 (-2.47)*	3.717 DY (4.54)**	21.9%
SRR3	-0.158 (3.44)**	4.941 DY (6.18)**	23.7%
SRR1	-0.266 (-3.37)**	7.753 DY (4.58)**	20.1%
B. 10, 5, 3 and 1 year subsequent real returns (SRR) as function of dividend yield (DY) (prefix of 'A' indicates annual data used from main sample)			
ASRR10	-0.066 (-1.53)	2.599 ADY (4.12)**	26.9%
ASRR5	-0.088 (-1.19)	3.279 ADY (2.70)**	22.6%
ASRR3	-0.164 (-2.18)*	4.969 ADY (4.61)**	30.3%
ASRR1	-0.419 (-2.73)**	11.077 ADY (3.88)**	37.3%
C. 10, 5, 3 and 1 year subsequent real returns (SRR) as function of earnings yield (EY) (monthly data)			
SRR10	-0.054 (-3.06)**	1.120 EY (7.00)**	57.5%
SRR5	-0.028 (-1.08)	0.988 EY (4.83)**	22.9%
SRR3	-0.038 (-1.26)	1.127 EY (5.05)**	17.3%
SRR1	-0.063 (-1.07)	1.579 EY (2.66)**	10.4%
All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction ** Significant at the 99% level * Significant at the 95% level			

This is to provide a like-for-like comparison with the long-run dataset used next in Table 5.5. Finally, Panel C, by way of a contrast, presents the same regressions as Panel A but with earnings yield replacing dividend yield. Unlike dividend growth and earnings growth, the signs on the two yield variables are the same and statistically significant. The earnings yield variable has higher explanatory power for long-run returns whilst dividend yield explains more of short-term returns.

Table 5.5: Subsequent Real Returns as a Function of Dividend Yield 1900-2001.			
A. 10, 5, 3 and 1 year subsequent real returns (BSRR) as function of dividend yield (BDY) 1900-2001#			
	Constant		Adj. R^2
BSRR10	-0.047 (1.78)	2.231 BDY (4.87)**	21.3%
BSRR5	-0.114 (-2.30)*	3.721 BDY (3.79)**	28.4%
BSRR3	-0.164 (-3.62)**	4.861 BDY (5.70)**	27.9%
BSRR1	-0.323 (-3.37)**	8.581 BDY (4.44)**	26.0%
B. 10, 5, 3 and 1 year subsequent real returns (BSRR) as function of dividend yield (BDY) 1962-2001#			
BSRR10	-0.053 (-1.24)	2.438 BDY (3.66)**	30.0%
BSRR5	-0.065 (-0.93)	2.908 BDY (2.35)*	21.9%
BSRR3	-0.122 (-1.73)	4.168 BDY (3.83)**	27.1%
BSRR1	-0.323 (-2.48)*	8.984 BDY (3.77)**	31.9%
C. 10, 5, 3 and 1 year subsequent real returns (BSRR) as function of dividend yield (BDY) 1900-1961#			
BSRR10	-0.022 (-0.61)	1.560 BDY (2.27)*	6.6%
BSRR5	-0.169 (-2.90)**	4.814 BDY (4.33)**	34.3%
BSRR3	-0.219 (-3.20)**	5.952 BDY (4.13)**	28.3%
BSRR1	-0.298 (-2.67)**	7.778 BDY (3.18)**	16.5%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
Prefix of 'B' indicates source of data is Barclays EGS
** Significant at the 99% level
* Significant at the 95% level

Table 5.5 shows long-run regression results using dividend yield to explain real returns. They are sub-divided into three periods, with a full period from 1900-2001, a similar period to the main sample of 1962-2001 and an out of sample period from 1900-1961. Once more significantly positive relationships pervade the regressions, thus it appears the dividend yield-real return relationship has been in existence for a considerable time. Furthermore, this holds for both the shorter and longer period returns. The relationship between dividend yield and returns is analogous to that found for individual securities by, amongst others, Morgan and Thomas (1998) and Christie (1990).

5.4 US Results

Previously in this study the relationship between payout ratio and real earnings growth in the UK has been examined using the method adopted by Arnott and Asness (2003). The findings were similar to their US evidence albeit not as resoundingly conclusive. Using the same approach, additional relationships were found in the UK using these variables along with dividend growth, dividend yield, earnings yield and returns. It therefore seems reasonable to test these additional relationships on the US data obtained from Shiller (2000; updated from aida.econ.yale.edu/~shiller/data.htm). Throughout this section the methodology is the same as used previously, including the method for calculating returns.

Table 5.6 considers the relationships between real dividend growth and both payout ratio and dividend yield. Four periods are analysed in an effort to provide the best possible comparisons. These are a period the same as the UK main sample (1962-2001), the period covering the entire Barclays EGS study (1900-2001), the out of sample period (1900-1961) and the main period of Arnott and Asness' (2003) tests (1946-2001). Panels A and B show results for payout ratio and subsequent 10 and 5 year real dividend growth which are very different to the UK findings. The negative relationship is only present in five of the eight regressions and is significant in just one case. This is accompanied by low or near-zero explanatory power in virtually all regressions.

The use of dividend yield as a variable in predicting dividend growth fares little better. Again explanatory power is low in all but the most recent 10-year periods, where a significant positive relationship exists. The 5-year regressions offer no discernable pattern and the conclusion is drawn that there is no relationship between payout ratio or dividend yield and dividend growth over this time frame.

Table 5.6: US Real Dividend Growth as a Function of Payout Ratio and Dividend Yield 1900-2001.

A. US 10 year subsequent real dividend growth (USRD) as function of payout ratio (UPR)#

		Constant		Adj. R^2
1962-2001	USRD10	0.043 (4.70)**	-0.077 UPR (-4.03)**	13.1%
1900-2001	USRD10	0.022 (2.35)*	-0.021 UPR (-1.29)	1.5%
1900-1961	USRD10	0.022 (1.60)	-0.021 UPR (-1.04)	1.2%
1946-2001	USRD10	0.003 (0.16)	0.023 UPR (0.71)	0.6%

B. US 5 year subsequent real dividend growth (USRD) as function of payout ratio (UPR)#

1962-2001	USRD5	-0.003 (-0.25)	0.017 UPR (0.70)	0.1%
1900-2001	USRD5	0.011 (0.77)	-0.001 UPR (-0.05)	0.0%
1900-1961	USRD5	0.017 (0.76)	-0.011 UPR (-0.32)	0.0%
1946-2001	USRD5	-0.045 (-2.30)*	0.123 UPR (3.12)**	11.2%

C. US 10 year subsequent real dividend growth (USRD) as function of dividend yield (UDY)#

1962-2001	USRD10	-0.030 (-4.42)**	0.898 UDY (5.77)**	25.7%
1900-2001	USRD10	0.001 (0.14)	0.171 UDY (1.09)	0.6%
1900-1961	USRD10	-0.000 (-0.03)	0.152 UDY (0.68)	0.2%
1946-2001	USRD10	-0.018 (2.51)*	0.788 UDY (4.83)**	19.3%

D. US 5 year subsequent real dividend growth (USRD) as function of dividend yield (UDY)#

1962-2001	USRD5	0.004 (0.42)	0.058 UDY (0.27)	-0.0%
1900-2001	USRD5	0.025 (2.39)*	-0.323 UDY (-1.29)	0.9%
1900-1961	USRD5	0.042 (1.97)*	-0.584 UDY (-1.51)	1.7%
1946-2001	USRD5	-0.006 (-0.67)	0.591 UDY (2.77)**	5.1%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
Prefix of 'U' indicates source of data is US
** Significant at the 99% level
* Significant at the 95% level

Table 5.7 provides an insight into the usefulness of utilising the payout ratio to explain returns. Panels A and B show regressions with subsequent returns explained by payout ratio. It is noticeable there are differing signs on the payout coefficients between the 10 and 5-year return periods and low explanatory power in both models. These findings are very different to the strong results presented for the UK market. Perhaps the difference reflects the divergence between typical payouts in the UK and US? It is interesting to note that despite the positive relationship found between the payout ratio and earnings growth by Arnott and Asness (2003), that payout ratio has a negative relationship with real returns over subsequent ten-year periods. This relationship is consistent with the UK results, however with no obvious link between payout ratio and dividend growth in the US, it is much harder to explain.

In order to complete the comparison between UK and US evidence it is necessary to review the usefulness of dividend yield and earnings yield in explaining returns in the US. Table 5.8 contains results for dividend yield using the same four return periods used earlier, namely 10, 5, 3 and 1 years. In each of the sixteen regressions dividend yield has a positive relationship with returns. It is noted that it is better at explaining the longer return periods than the shorter. This is particularly true of the 1962-2001 period, again possibly due to the changes in dividend payments by firms. It differs from the UK findings where dividend yield was found to have similar explanatory properties for both one and ten-year horizons.

Table 5.9 reports the same periods as used in Table 5.8 but with earnings yield as the independent variable. The results are very similar to dividend yield, with all sixteen regressions showing the existence of a positive relationship. Once more the explanatory power is better for the long-run periods than the short. It therefore seems to matter little which US yield measure is chosen in attempting to forecast returns. Also, this only appears suitable for long return horizons.

In attempting to reconcile the differences found between the UK and US markets the obvious major difference is the culture of dividends that was stated at the outset. An additional factor may be the relative composition of the indices chosen. For example,

Table 5.7: US Real Returns as a Function of Payout Ratio 1900-2001.				
A. US 10 year subsequent real returns (USRR) as function of payout ratio (UPR)#				
		Constant		
1962-2001	USRR10	0.211 (4.24)**	-0.300 UPR (-2.86)**	10.5%
1900-2001	USRR10	0.106 (7.15)**	-0.066 UPR (-2.90)**	3.5%
1900-1961	USRR10	0.108 (5.36)**	-0.066 UPR (-2.40)*	4.4%
1946-2001	USRR10	0.139 (3.62)**	-0.116 UPR (-1.53)	1.9%
B. US 5 year subsequent real returns (USRR) as function of payout ratio (UPR)#				
1962-2001	USRR5	0.054 (0.96)	0.031 UPR (0.28)	-0.1%
1900-2001	USRR5	0.048 (1.92)	0.038 UPR (0.95)	0.4%
1900-1961	USRR5	0.036 (1.03)	0.051 UPR (1.04)	0.9%
1946-2001	USRR5	0.067 (1.49)	0.041 UPR (0.49)	0.0%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
Prefix of 'U' indicates source of data is US
** Significant at the 99% level
* Significant at the 95% level

the FTSE-All Share Index, used in the latter part of the Barclays EGS data, is currently heavily weighted in financials, pharmaceuticals and oils. By contrast there is very little weighting in information technology and volume automobile manufacturing. There is no current UK listed comparable with say either Microsoft or Intel, or, General Motors or Ford. Perhaps the industrial differences, and the accompanying different growth rates, could explain the variation in results.

5.5 Conclusion

This chapter has investigated the role that the payout ratio, dividend yield and earnings yield have in explaining future real returns, real dividend growth and real earnings growth in the UK market, and provided a comparison with the US market. Evidence is found in the UK that a positive relationship exists between real earnings growth and payout ratio, or to put it differently, higher retained earnings are not found

Table 5.8: US Real Returns as a Function of Dividend Yield 1900-2001.

A. US 10 year subsequent real returns (USRR) as function of dividend yield (UDY)#

		Constant		Adj. R^2
1962-2001	USRR10	-0.094 (-3.32)**	4.086 UDY (6.81)**	28.6%
1900-2001	USRR10	-0.007 (-0.44)	1.532 UDY (4.69)**	13.8%
1900-1961	USRR10	-0.032 (-1.45)	1.765 UDY (4.22)**	17.6%
1946-2001	USRR10	-0.070 (-3.47)**	3.591 UDY (9.19)**	43.5%

B. US 5 year subsequent real returns (USRR) as function of dividend yield (UDY)#

1962-2001	USRR5	0.018 (0.39)	1.421 UDY (1.28)	2.1%
1900-2001	USRR5	-0.013 (-0.61)	1.799 UDY (4.04)**	9.1%
1900-1961	USRR5	-0.106 (4.13)**	3.258 UDY (6.56)**	22.5%
1946-2001	USRR5	-0.033 (-1.14)	3.039 UDY (5.09)**	20.3%

C. US 3 year subsequent real returns (USRR) as function of dividend yield (UDY)#

1962-2001	USRR3	0.062 (1.38)	0.291 UDY (0.26)	-0.1%
1900-2001	USRR3	0.005 (0.19)	1.475 UDY (2.59)**	3.9%
1900-1961	USRR3	-0.083 (1.90)	2.926 UDY (3.58)**	10.5%
1946-2001	USRR3	-0.005 (-0.15)	2.420 UDY (3.14)**	9.5%

D. US 1 year subsequent real returns (USRR) as function of dividend yield (UDY)#

1962-2001	USRR1	0.010 (0.16)	2.038 UDY (1.15)	1.6%
1900-2001	USRR1	-0.031 (-0.62)	2.602 UDY (2.32)*	3.8%
1900-1961	USRR1	-0.113 (-1.25)	3.926 UDY (2.27)*	5.5%
1946-2001	USRR1	-0.032 (-0.67)	3.219 UDY (2.86)*	6.0%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
\# Prefix of 'U' indicates source of data is US
** Significant at the 99% level
* Significant at the 95% level

to lead to higher earnings growth. The introduction of earnings yield as a variable did not affect the result. This does not support conventional theory but is consistent with findings in the US market by Arnott and Asness (2003). When real dividend growth is substituted for real earnings growth it is discovered that a highly significant negative relationship has existed with payout ratio. Higher retained earnings have lead to higher real growth in subsequent dividends. This is very different from the earnings growth findings and is consistent with conventional theory.

Given the previous findings of studies by, amongst others, Keim (1985), Christie (1990) and Morgan and Thomas (1998), dividend yield was also considered an important variable in explaining returns. Analysis using the main data sample found this to be both significant and positively related to real returns over return horizons of 1, 3, 5 and 10 years. The use of an annual data set covering the entire last century confirmed these findings. Earnings yield was also found to been positively correlated with returns between 1962-2001.

When US data was analysed it was found that unlike the UK evidence, there was no obvious link between payout ratio and real dividend growth. Dividend yield was also found to be insignificant in forecasting future dividend growth. Both dividend yield and earnings yield were found to have some ability to predict returns although this was generally limited to subsequent average 10-year returns.

In conclusion, at the time of writing the dividend yield on the UK FTSE Non-Financials index is 2.95% and the payout ratio is 44%. The former is a considerable amount below the average between 1962-2001 of 4.5% whilst the payout ratio is also below the average. The relatively low dividend yield does not bode well for future returns matching the exceptional returns seen in the last two decades of the twentieth century.

Table 5.9: US Real Returns as a Function of Earnings Yield 1900-2001.

A. US 10 year subsequent real returns (USRR) as function of earnings yield (UEY)#				
		Constant		Adj. R^2
1962-2001	USRR10	-0.036 (-1.69)	1.232 UEY (5.97)**	25.6%
1900-2001	USRR10	-0.029 (2.31)*	1.146 UEY (8.43)**	28.2%
1900-1961	USRR10	-0.034 (-2.23)*	1.145 UEY (6.58)**	31.5%
1946-2001	USRR10	-0.026 (-1.51)	1.266 UEY (7.92)**	34.6%
B. US 5 year subsequent real returns (USRR) as function of earnings yield (UEY)#				
1962-2001	USRR5	0.043 (1.47)	0.347 UEY (1.06)	1.0%
1900-2001	USRR5	0.011 (0.50)	0.743 UEY (2.86)*	5.4%
1900-1961	USRR5	-0.025 (-0.83)	1.010 UEY (2.95)**	10.4%
1946-2001	USRR5	0.015 (0.63)	0.921 UEY (3.63)**	11.3%
C. US 3 year subsequent real returns (USRR) as function of earnings yield (UEY)#				
1962-2001	USRR3	0.062 (2.10)*	0.149 UEY (0.45)	-0.0%
1900-2001	USRR3	0.021 (0.75)	0.648 UEY (1.86)	2.5%
1900-1961	USRR3	0.017 (-0.37)	1.051 UEY (1.88)	5.3%
1946-2001	USRR3	0.023 (0.91)	0.844 UEY (2.97)**	6.5%
D. US 1 year subsequent real returns (USRR) as function of earnings yield (UEY)#				
1962-2001	USRR1	0.045 (1.01)	0.489 UEY (0.83)	0.5%
1900-2001	USRR1	0.031 (0.75)	0.705 UEY (1.38)	0.8%
1900-1961	USRR1	0.033 (0.47)	0.716 UEY (0.91)	0.6%
1946-2001	USRR1	-0.004 (-0.11)	1.237 UEY (2.80)**	4.6%

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction
Prefix of 'U' indicates source of data is US
** Significant at the 99% level
* Significant at the 95% level

Chapter 6 – Earnings Declines and Dividend Policy

6.1 Introduction

In an extensive study of payout policy in the US, Brav et al (2005) report that a major factor in dividend policy is one of 'dividend conservatism'. Managers recognize that the market responds asymmetrically to dividend increases and decreases. As a result there is considerable reluctance to cut dividends unless it is a last resort whilst dividend increases are typically fairly modest. They report that dividend conservatism extends into the domain of non-payers in so much as many firms exhibit a reluctance to initiate payments since once committed it is much harder to return to zero-dividend status. Brav et al (2005) observe that only firms with stable and sustainable increases in earnings consider increasing dividends. An interesting extension of this idea is what happens to firms that have a track record of both consistent earnings and dividend payments but then suffer a downturn in profitability? Are managers astute enough to recognize when this is only temporary in nature and to communicate this to shareholders via dividend policy, or do they seek to preserve the firm's cash reserves in case the downturn persists?

DeAngelo et al (1992) use US data for 1980-85 to investigate the dividend policy of firms that reported a poor earnings performance after sustained dividend distributions and profitability. They cite work by Miller and Modigliani (1961), arguing that dividend changes for firms with a track record of profitability can be more reliably viewed as a significant change in dividend policy rather than a continuation of previous policy. DeAngelo et al (1992) discovered that around half of all firms with ten or more years of prior positive dividends and earnings cut dividends in the initial loss year. This compared to just 1% of non-loss firms cutting dividends. They find that analysing the unusual accounting items accompanying bottom line earnings is able to explain more of the dividend decisions by firms. An exceptional item is viewed as having only a transitory impact on profitability and thus a dividend reduction is less likely. This finding is particularly important given that Collins et al (1997) document a dramatic increase in the US between 1953-93 in both the percentage of firms reporting unusual items and the size of the items relative to net income.

Burgstahler and Dichev (1997) investigate the existence of earnings management by US firms to both avoid earnings decreases and losses. They discover that earnings changes of just below zero occur less frequently than would be expected relative to increases slightly greater than zero. Furthermore, far fewer observations of overall earnings just below zero are recorded relative to expectations than is the case for slightly positive earnings. They argue that earnings management to avoid losses is both pervasive and economically significant. This is consistent with Hayn (1995), who suggests that firms whose earnings are expected to be marginally negative partake in earnings management to help them into positive territory. Degeorge et al (1999) report a hierarchy for earnings; managers attach most importance to avoiding losses, the emphasis then moves to achieving increases in quarterly earnings and finally to beating analysts' forecasts. Barth et al (1999) find that firms with a history of sustained earnings growth are valued at higher multiples of earnings than firms without such a track record. The multiples increase almost monotonically with the number of years of consistent growth, providing managers with an incentive to smooth earnings. In summary, this literature implies that previously profitable firms will do their utmost to avoid having to report losses. Further, those firms that do report losses will have clearly experienced a genuinely disappointing earnings performance. This makes a firm's dividend decision surrounding a reported loss of particular interest.

If dividend policy reflects managers' views of profitability then there is a possibility that this can be used to predict future earnings. Lintner (1956) finds that dividends are only increased when management believes that earnings have permanently increased. Modigliani and Miller (1959) and Miller and Modigliani (1961) hypothesize that a dividend cut is indicative that future earnings are likely to be disappointing. Watts (1973) found evidence of a positive relationship between current dividends and future earnings for 310 firms for the period 1946-1967, but the statistical significance of these results was very low. Healy and Palepu (1988) discovered that firms initiating dividend payments experienced rapidly increasing earnings both prior to the first dividend and for two years afterwards. However, for firms omitting dividends they find that earnings decline in the year of the omission but then increase substantially in future years. This is the opposite of the informational content of dividends hypothesis. DeAngelo et al (1992) find that a dividend cut is a significant factor in improving the ability to predict future earnings using current earnings. This holds despite the use of different earnings measures such as operating income, operating cash flow or the use of net income combined with unusual accounting items. Bernatzi et al (1997) discover that firms that cut dividends have experienced declining earnings in both the year of the cut and in the previous year also. Consistent with Healy and Palepu (1988), they find that earnings significantly increase in the year after the dividend cut. However, it is noted that firms that raise dividends are less likely to experience a future earnings decline compared to firms that merely maintain dividends. Skinner (2004) reports that the relationship between current earnings and future earnings is stronger for dividend paying firms than for non-paying firms, and is particularly strong for large dividend payers.

The aim of this chapter is to investigate the dividend policy of UK firms that have a history of both profitability and dividend payments but that then suffer a relatively poor financial performance. In particular the financial characteristics of firms are investigated to determine the factors involved in dividend setting. The UK has traditionally exhibited a much higher incidence of payment among firms than in the US, as demonstrated in Chapter 4, and thus it is hypothesized that a lower propensity to cut dividends exists relative to the evidence presented by DeAngelo et al (1992). In addition to studying the factors influencing dividend policy, the informational content of the dividend change is also analysed. If the dividend-signalling hypothesis is valid one would reasonably expect that firms that raised dividends, or at least maintained their payments, despite falling profits would be forecasting a stronger future performance to investors than a company that cut its payment, or in the worst case made an omission.

The remainder of the paper is set out as follows. Section 6.2 describes the data sources used in the study, the sample selection criteria and the methodology employed. Section 6.3 reports the empirical findings. Section 6.4 concludes.

6.2 Data and Methodology

Most of the study utilizes a 'loss' sample; this contains non-financial, non-utility (industrial) firms that had at least seven consecutive years of positive earnings and dividends prior to the initial loss year. The firms were initially identified using the

London Share Price Database (LSPD); the full data set was then obtained for each individual firm from the FAME database. In total, the primary sample contains 108 firms that fulfilled the earnings and dividends criteria and posted an initial loss during 1996-2000. Firms with incomplete track records were not included in the sample.

To create a standardized time frame for firms in the loss sample, year 0 will be deemed to refer to the initial loss year, with the years prior to the loss being denoted as a negative value and the years after the loss as positive values (i.e. year –1 is the accounting year before the initial loss year and year 1 is the accounting year after the initial loss year). Given that the data used is of an annual nature, the calendar year of the loss is assumed to be three months after the financial year-end (to allow for the preparation of accounts and subsequent dissemination to the market). Thus for firms with financial accounting periods ending in January through September, the end of the accounting year and the calendar year of the loss will be the same. For firms with a financial year-end in October, November or December however, the loss year is the subsequent calendar year, e.g. for a financial year-end of 30th November 1997, the loss year is defined as 1998. Throughout this study the profits (losses) for the periods in question are defined as profits (losses) after exceptional items, interest, taxation, extraordinary items and minority interests, but excluding dividends. Any other profit measures used, e.g. operating profits, are explicitly stated in the text. DeAngelo et al (1992) use income after extraordinary items and discontinued operations in their US study as the standard profitability measure.

The distribution of the 108 firms within the loss sample was found to be relatively even across the five years with the following breakdown: 1996, 23 firms; 1997, 21 firms; 1998, 17 firms; 1999, 27 firms; 2000, 20 firms. No industry was found to be excessively dominant in this sample. Using the FTSEA Industry Codes, the largest representations were made by business support services with 11 firms and engineering (general) with 8 firms.

A 'non-loss' sample was also created in the same way as the loss sample, however firms must also have had positive earnings throughout the 1996-2000 period (firms that delisted or were acquired are still eligible for both samples). Firms are only included in the sample after the seven years of previous earnings and dividends have been completed. Thus some firms may be included in the sample for the full five years whilst others may only appear for one year.

Dividend reductions were initially identified from the LSPD (taking into account share-splits). These were then individually checked against the appropriate annual report using LexisNexis. A dividend reduction was classified as a decrease in the total dividend paid for the full year. Thus a maintained interim dividend but a reduced final dividend would count as a reduction. The total payout for the financial year of the firm must equal zero for an omission to have occurred. All dividends are compared on a basis net of tax since this alleviates any problems relating to the UK Finance Act 1999.[1]

The use of annual data throughout the study is consistent with DeAngelo et al (1992) and also with Lintner (1956), who found that dividends were considered on an annual basis. Whilst every effort has been made to provide a comparison with US results, the qualifying period prior to inclusion in both of the samples is shorter than in US studies. It was found that a criterion requiring 10 years prior positive earnings and dividends did not provide sufficient firms for the primary loss sample. This is due to there being fewer stocks listed in the UK compared to the US and to the decline in dividend paying firms described earlier.

6.3 Empirical Findings

6.3.1 A Comparison between Loss Making and Profitable Firms

Table 6.1 presents the number and proportion of dividend cuts amongst both the primary loss sample and the secondary non-loss sample. Whilst there were 31 instances of dividend cuts in the loss sample, there were just 25 in the non-loss sample. This difference is magnified on a percentage basis to 29% versus only 2%. Indeed 11 firms (10%) making an initial loss omitted dividends entirely, whilst another 9 firms paid an interim dividend but then omitted the final payment. There was, by contrast, just one

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[1] In the UK, prior to the Finance Act 1997, all tax-exempt investors were able to reclaim the dividend tax credit paid on their behalf by firms. After 2nd July 1997, pension funds and institutions were no longer allowed to reclaim the credit although individual investors still could. The Finance Act 1999, introduced on 6th April 1999, however virtually eliminated this and as such all dividends have subsequently been received net of tax.

omission in the non-loss sample. Of the 21 initial dividend reductions in the non-loss sample just 3 were made in the first year of declining earnings during 1996-2000.

Table 6.1: Number of Reductions in Regular Dividends for (1) 108 Firms With at Least One Annual Loss During 1996-2000, and (2) 289 Firms With Positive Earnings Throughout 1996-2000.

Each dividend reduction was first identified from LSPD and then checked against the annual report of each individual firm using LexisNexis. The dividend reduction count includes both dividend cuts to a still-positive level and also omissions. Omissions are classed as no dividend payments throughout the entire financial year of the individual firm (both interim and final). There were nine observations amongst loss firms of dividend reductions where an interim dividend was paid but the final dividend was omitted. For the 108 firms in the loss sample, the dividend reductions are for the *initial* loss year during 1996-2000. For the 289 firms in the non-loss sample *all* incidences of dividend reductions are reported during 1996-2000 (beginning with the first year that the firm had positive dividends and earnings for the prior seven years). The 25 reductions in this sample were for 21 different firms. A loss is defined as a negative profit for the year in question after exceptional items, interest, taxation, extraordinary items and minority interests, but excluding dividends.

	Number of Firm-Years	Number (Percent) of Cases With	
		Dividend Reductions	Dividend Omissions
Loss Firms	108	31 (28.7%)	11 (10.2%)
Non-Loss Firm Years	1131	25 (2.2%)	1 (<0.1%)

This initial evidence points to losses being a very significant factor in dividend reductions. Given that all the firms considered had been profitable and paid dividends, this marked a significant change in policy. The findings are consistent with DeAngelo et al (1992), although they found that around half of firms experiencing an initial loss cut their dividends. The lower propensity to cut distributions in the UK is not unexpected given the stronger culture of dividend paying relative to the US.

Table 6.2 shows that the overall level of earnings is important in dividend decisions. Firm years are ranked according to the return on equity (ROE), calculated as the profit for the period divided by shareholders' funds in the previous year. The pooled sample shows that the greater the magnitude of the loss in terms of ROE, the more likely a dividend reduction is. Of those firms with a ROE of less than –20%, 43.6% of firms cut dividends. This compared to 18.8% of firms where the ROE was between 0% and -5%. It is also noticeable that the lower the ROE within the profitable firms, the greater the propensity to cut dividends that exists. For firms with an ROE between 0% and 5% it was found that 7.4% cut dividends, while only 0.6% of companies with an ROE in excess of 20% cut dividends. There is significant corroboration with the findings of

DeAngelo et al (1992) within these results; the main difference is their finding that a higher proportion of the firms in the lowest negative ROE category cut dividends.

Table 6.2: Number of Dividend Reductions According to Return on Equity: Pooled Sample of (1) 108 Initial Loss Years During 1996-2000 for the 108 Firms in the Loss Sample and (2) 1,131 Firm-Years During 1996-2000 for the 289 Firms in the Non-Loss Sample.

Each dividend reduction was first identified from LSPD and then checked against the annual report of each individual firm using LexisNexis. The return on equity is calculated as the profit for the period standardized by shareholders' funds for the previous year. The table shows the proportion of firm years in which a reduction occurred, i.e. in 43.6% of the years where ROE < -20% a dividend reduction was recorded.

Return on Equity	No. of Reductions	Percent of Category	Total Firm-Years
-20% or lower	17	43.6%	39
-20% to -10%	5	21.7%	23
-10% to -5%	3	21.4%	14
-5% to 0%	6	18.8%	32
0% to 5%	4	7.4%	54
5% to 10%	9	5.0%	180
10% to 20%	9	2.2%	409
20% or greater	3	0.6%	488

Table 6.3 provides a logit analysis of firms' dividend decisions using a pooled sample of the 108 firms from the loss sample and 206 firms from the non-loss sample that have at least one year of declining profits between 1996 and 2000, but whose profits still remain positive. The dependent variable equals zero if the dividend is reduced, and one otherwise. A loss dummy is included in some specifications; this takes a value of one if the firm is a member of the loss sample, and zero otherwise. The remaining independent variables are the profit for the period and the change in profit. Both of these variables are standardized by shareholders' funds in the year prior to the event year.

The loss dummy variable is strongly negative in every specification of the model, indicating that losses increase the chance of a dividend reduction, regardless of the other variables used. It is the most significant variable as the remaining variables lose their statistical significance when included in specifications containing the loss dummy. The

Table 6.3: Logit Analysis of the Dividend Decision for Pooled Sample of (1) 108 Firms With at Least One Annual Loss During 1996-2000, and (2) 206 Firms with at Least One Year of Declining Profits, but Whose Profits Remain Positive Throughout 1996-2000.

The dependent variable equals zero if the firm announced a reduction in its regular dividend, and one otherwise. The loss dummy equals one if the firm reports a loss in the year under study, and zero otherwise. The profit for the period and the change in profit are standardized by the value of shareholders' funds in the prior year. For firms in the loss sample, the event year is the first year during 1996-2000 that the firm reported a loss. For firms in the non-loss sample, the event year is the first year during 1996-2000 that the firm reported a decline in profit. Firms are only eligible for either of the samples if they have at least seven years of positive dividends and earnings prior to the event year.

	Coefficient (*t*-statistic)						
Constant	4.62 (6.51)**	4.65 (6.06)**	4.85 (6.59)**	4.51 (5.46)**	2.08 (4.80)**	2.38 (10.89)**	2.84 (10.70)**
Loss Dummy	-3.72 (-5.01)**	-3.36 (-4.29)**	-3.37 (-4.47)**	-3.46 (-4.17)**	-	-	-
Profit For Period	-	1.63 (2.92)**	-	2.80 (1.51)	5.39 (2.17)*	3.58 (5.19)**	-
Change in Profit	-	-	1.58 (2.29)*	-1.43 (-0.67)	-1.95 (-0.77)	-	2.93 (4.70)**
Pseudo R^2	19.8%	22.3%	21.5%	22.4%	11.6%	11.3%	7.9%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

pseudo R-squared[2] is also greater when comparing their individual specifications. Distributions are also positively related to the level of profitability, thus a small loss has a lower probability of an accompanying dividend cut than a large loss. The effect of the change in profitability appears less certain though. Whilst strongly positively related in the individual specification, it loses its statistical significance when combined with profitability and the sign of the coefficient becomes negative. This suggests that much of the explanatory power of the change in profitability is encompassed within the actual profit level. Given the findings in Tables 6.1 and 6.2, it is of little surprise that these results are similar to those of DeAngelo et al (1992).

6.3.2 The Magnitude of Losses and the Dividend Decision

Table 6.4 displays the mean and median levels of standardized earnings in the years surrounding the event year for dividend reducers and non-reducers from the loss sample. The *t*-statistic, in the rightmost column, tests for equality of the means. In year –1 there is a difference of around 2-3% in mean earnings between the more profitable

[2] All pseudo R^2 values are calculated using Estella (1998).

non-reducers compared to the less profitable reducers. In the loss year (year 0), the gap expands considerably to around 15% on both the mean and median measures. The *t*-statistic also becomes significant at the 95% level. This result adds further weight to the belief that losses are important in dividend setting.

Table 6.4: Average Standardized Earnings for 108 Firms with an Initial Loss Year During 1996-2000 by Dividend Policy.

Standardized earnings in year *t* are the level of profit for that period divided by shareholders' funds in the prior year. The sample is restricted to firms with at least 7 years positive dividends and earnings prior to the initial loss year during 1996-2000. There are 108 observations in years −1 and 0 (31 reducers and 77 non-reducers). This declines to 104 observations in year 1 (30 reducers and 74 non-reducers) and 97 in year 2 (30 reducers and 67 non-reducers) due to delistings.

	Mean and Median Standardized Earnings for		
Year Relative to Initial Loss in Year $t = 0$	Dividend Reducers	Non-Reducers	*t*-statistic
- 1	10.9%	13.3%	-1.61
	9.1%	12.1%	
0	-32.9%	-17.2%	-2.70**
	-25.0%	-10.9%	
1	-5.5%	6.1%	-2.03*
	1.1%	11.1%	
2	-0.0%	8.4%	-2.05*
	1.9%	5.3%	

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

In year 1, the non-reducers become profitable again (on average), albeit less so than prior to the loss year, suggesting that managers were generally correct in their assessment that the loss was only temporary. There remains a considerable disparity in profitability compared to those firms that reduced dividends, as evidenced by the *t*-statistic. These are still loss making on a mean basis and barely profitable on a median basis. It is noticeable that these reducing firms have still experienced a considerable improvement in profitability compared to the loss year, though this improvement continues into year 2 also. This is consistent with the US findings of Healy and Palepu (1988), DeAngelo et al (1992) and Bernatzi et al (1997). Even in year 2, however, the profitability is still low and considerably less than the non-reducing firms. DeAngelo et al (1992) argue that the dividend reduction reflects low levels of profitability not just in the year of the dividend cut but in future years also, i.e. the dividend reduction does not only reflect year-on-year earnings changes. The evidence presented in Table 6.4 tends to support this conclusion. Perhaps the year-on-year improvement in earnings after a dividend reduction is due to managers, having already found that trading has been poor for the year and that a cut is inevitable, deciding to bury all the bad news in one year rather than letting the problems persist into subsequent accounting periods. This could severely depress profits in the year of the dividend reduction but provide an easy benchmark to surpass in the following year and thus prove the firm has 'turned the corner'.

The summary findings of Table 6.4 are tested more formally using logit regressions in Table 6.5. As in Table 6.3, the dependent variable is the dividend decision in year 0. It takes the value of zero if a dividend reduction occurred, and one otherwise. Profits in years –1 through +2 (standardized by shareholders' funds in year –1) are the independent variables in the various specifications.

Table 6.5: Logit Analysis of the Decision to Reduce Dividends During an Initial Loss Year Following Seven or More Years of Positive Dividends and Earnings.

The dependent variable has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. Year 0 is defined as the time of the firm's initial loss during 1996-2000. PFP(t) refers to the profit for the period of year t standardized by the value of shareholders funds in year –1. There are 108 observations in years –1 and 0 (31 reducers and 77 non-reducers). This declines to 104 observations in year 1 (30 reducers and 74 non-reducers) and 97 in year 2 (30 reducers and 67 non-reducers) due to delistings.

	Coefficient (t-statistic)			
Constant	0.31 (0.73)	0.82 (1.68)	0.62 (1.24)	0.72 (1.36)
PFP(-1)	4.92 (1.49)	6.25 (1.73)	6.54 (1.82)	5.50 (1.41)
PFP(0)	-	2.73 (2.96)**	2.27 (2.30)*	2.95 (2.70)**
PFP(1)	-	-	1.50 (1.61)	0.67 (0.59)
PFP(2)	-	-	-	1.51 (1.04)
Pseudo R^2	2.3%	11.3%	12.5%	15.5%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

It is found that profits in the year prior to the loss, whilst positively related to the dependent variable (i.e. lower profits equals greater probability of dividend cut), explain very little of the dividend decision and are not statistically significant in any of the models. Greater losses in year 0 also increase the probability of a dividend cut in year 0, and this is statistically significant in each specification. There is also considerable improvement in the pseudo R^2 value following the introduction of year 0 losses. In the two years following the loss year, the relationship between profitability and the dividend decision in year 0 remains the same as earlier but again is not significant. It thus appears that the loss year makes the most important contribution to the dividend decision. DeAngelo et al (1992) find that the loss year is important but also the earnings in year 1 are significant, and hence the UK results differ in this case.

6.3.3 The Impact of Unusual Accounting Items on Dividend Decisions

Lintner (1956) describes how management increase dividends only when they believe earnings have permanently increased. The reverse of this statement would imply that dividends are only cut when it is believed that earnings are likely to be depressed for a considerable period. This would suggest that an analysis of unusual accounting items in the loss year, for what were previously profitable companies, might shed light on the dividend decision. It would be presumed that these are likely to be only temporary fluctuations in the long-term profitability of firms.[3]

Table 6.6 considers two of these unusual accounting items, namely exceptional items and extraordinary items. Mean and median figures are presented for each of the items in year 0 ranked according to the dividend decision made by the firm. Panel A standardizes the values by shareholders' funds in year -1, while Panel B standardizes the values by the absolute amount of the profit for the period (loss) in year 0. The median values for the extraordinary items in both Panels A and B are all equal to 0%. In fact there were very few observations of extraordinary items within the loss sample; only 7 firms out of 108 reported extraordinary items during the initial loss year. As a result only the exceptional items will be discussed from here onwards.

Panel A of Table 6.6 shows that there is little difference in terms of the exceptional items between reducers and non-reducers. The *t*-statistic of –0.5 is statistically insignificant. When the figures are related to their respective profit values (shown at the

[3] It is noted that of the 108 firms in the loss sample, 85 had negative values for exceptional items, 16 had a zero value for exceptional items, and only 7 had positive values.

Table 6.6: Unusual Income Items for 108 Firms with an Initial Loss Year During 1996-2000 by Dividend Policy.

The profit for the period in year *t* is the level of profit for that period divided by shareholders' funds in the prior year. Exceptional and extraordinary items are standardized by the value of shareholders' funds in the prior year (Panel A) or the absolute value of the profit for the period in year 0 (Panel B). The sample is restricted to firms with at least 7 years positive dividends and earnings prior to the initial loss year during 1996-2000.

	Mean and Median Values for		
	Dividend Reducers	Non-Reducers	*t*-statistic
Profit for Period	-32.9%	-17.2%	-2.70**
	-25.0%	-10.9%	
A. Unusual Income Items Standardized by Shareholders' Funds			
Exceptional Items	-22.6%	-19.8%	-0.50
	-13.8%	-12.7%	
Extraordinary Items	0.2%	-2.6%	1.60
	0.0%	0.0%	
B. Unusual Income Items Standardized by Absolute Value of Earnings			
Exceptional Items	-103.8%	-414.5%	1.88
	-54.8%	-113.7%	
Extraordinary Items	-7.1%	-9.9%	-0.28
	0.0%	0.0%	

N.B. ** denotes significant at 99% level

top of Table 6.6), it is apparent that the mean exceptional items of non-reducers (–19.8%) are larger than the mean loss (–17.2%). Therefore, many of the non-reducers would have been profitable had it not been for the unusual items. Exceptional items for dividend reducers however, were –22.6%, some 10% less than the profit for the period of –32.9%. Thus, many of the dividend reducers would have posted losses irrespective of unusual items. These findings are consistent with the US evidence collected by DeAngelo et al (1992) for special items.

Panel B of Table 6.6 shows that the value for exceptional items relative to absolute profits is large. They are also considerably greater for non-reducers than reducers at 414.5% versus 103.8% on a comparison of means. This confirms the results of Panel A in that unusual items play a more significant role in the losses of non-reducers than for dividend reducing firms.

Table 6.7 reports logit regressions of the dividend decisions made by firms in the loss sample in year 0 using profits in years –1, 0 and 1 as explanatory variables. As in previous regressions, the dependent variable is the dividend decision that takes the value of zero if the dividend is reduced, and one otherwise. The specifications reported are consistent with DeAngelo et al (1992) except that the only unusual items are the exceptional items.

Table 6.7: The Impact of Unusual Items and Earnings on the Decision to Reduce Dividends by Firms with an Initial Loss During 1996-2000 Following Seven or More Years of Positive Dividends and Earnings.

The dependent variable has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. Year 0 is defined as the time of the firm's initial loss during 1996-2000. PFP(*t*) refers to the profit for the period of year *t* standardized by the value of shareholders funds in year –1. Exceptional items are standardized by the value of shareholders' funds in year –1. There are 108 observations in years –1 and 0 (31 reducers and 77 non-reducers). This declines to 104 observations in year 1 (30 reducers and 74 non-reducers).

	Coefficient (*t*-statistic)	
Constant	0.92	0.74
	(1.86)	(1.46)
PFP(-1)	4.78	5.04
	(1.32)	(1.38)
PFP(0)	4.84	4.21
	(2.72)**	(2.26)*
PFP(1)	-	1.15
		(1.21)
Exceptional Items	-2.52	-2.35
	(-1.57)	(-1.40)
Pseudo R^2	13.9%	14.5%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

Despite the inclusion of exceptional items, the size of the loss is still a statistically significant factor in the dividend decision in year 0. As earlier, the profits in years –1 and +1 are positively related to the decision not to reduce dividends, but not significant. The exceptional items have the opposite relationship in year 0, but this is found to be not significant. A comparison based on pseudo R^2 values with Table 6.5 shows that the specification with the dividend decision based on just profits in years –1, 0 and 1 has a value of 12.5%; the inclusion of the exceptional items increases the pseudo R^2 to 14.5%. There is thus some degree of agreement with the findings of Modigliani and Miller (1959) and DeAngelo et al (1992) that the inclusion of exceptional items does improve the ability to explain dividend decisions compared to profitability alone.

6.3.4 The Role of Debt and Sales in Dividend Reductions

The work of DeAngelo et al (1992) is extended to include other variables that have been suggested in the literature as influencing dividends. Debt is one variable that would logically appear to be a consideration when managers are making a dividend decision. DeAngelo and DeAngelo (1990) find that for firms with multiple annual losses, debt covenants are a factor in dividend policy. Fama and French (2001) discover that *former* payers of dividends are more highly indebted than *current* payers of dividends. Benito and Young (2001) show that a high degree of leverage is associated with dividend omission by UK firms. The effect of leverage is even more strongly linked to the propensity to cut dividends. They argue that, "dividend cutting is a stronger indicator of financial fragility than is dividend omission".

Table 6.8 presents a logit analysis of the dividend decision in year 0 with, as previously, the dependent variable equalling zero if the dividend was cut, and one otherwise. Independent variables utilized are the level of profits in years –1 to +2, exceptional items, and two measures of debt, namely the liquidity ratio and the gearing ratio. The liquidity ratio is a short-term measure of debt, calculated as the difference between current assets and stocks & works in progress, all divided by current liabilities, i.e. the more indebted the firm is, the *lower* the liquidity ratio. For an overall measure of a firm's debt position, the gearing ratio is employed. The gearing ratio is calculated as the sum of short-term loans & overdrafts and long-term liabilities, all divided by shareholders' funds, i.e. the more indebted the firm is, the *higher* the gearing ratio.

As earlier, the size of the loss in year 0 increases the likelihood of a dividend reduction and is statistically significant. The liquidity ratio, whilst not significant at the 95% level, does exhibit a positive relationship, as hypothesized, in all specifications that it is used. However, it provides only a relatively small increase in the overall explanatory power of the regression. Similar findings are observed for the gearing ratio, with negative relationships throughout, consistent with greater indebtedness increasing the propensity to cut dividends. The evidence tends to support Benito and Young's (2001) conclusion that higher levels of debt increase the probability of a dividend cut. The exceptional items retain the negative coefficient identified in Table 6.7, which remains consistent with these items being viewed as temporary by managers.

Table 6.8: Logit Analysis of the Decision to Reduce Dividends During an Initial Loss Year Following Seven or More Years of Positive Dividends and Earnings using Profitability, Debt Variables, Exceptional Items and Change in Turnover.

The dependent variable has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. Year 0 is defined as the time of the firm's initial loss during 1996-2000. PFP(*t*) refers to the profit for the period of year *t* standardized by the value of shareholders funds in year –1. The liquidity ratio is defined as the difference between current assets minus the value of stocks & work in progress all divided by current liabilities. The gearing ratio is defined as the sum of short-term loans & overdrafts and long-term liabilities all divided by shareholders' funds (both ratios take values only from year 0). Exceptional items are standardized by the value of shareholders' funds in year –1.

	Coefficient (*t*-statistic)			
Constant	-0.12	0.13	0.85	0.37
	(-0.15)	(0.14)	(1.56)	(0.39)
PFP(-1)	5.30	7.66	3.79	4.91
	(1.33)	(1.70)	(0.93)	(1.04)
PFP(0)	2.69	3.54	4.61	8.94
	(2.43)*	(2.67)**	(2.45)*	(3.07)**
PFP(1)	0.63	0.44	0.27	-0.05
	(0.56)	(0.34)	(0.24)	(-0.04)
PFP(2)	1.49	0.97	1.74	1.17
	(1.04)	(0.34)	(1.17)	(0.75)
Liquidity Ratio	0.90	0.75	-	0.80
	(1.17)	(0.94)		(0.95)
Gearing Ratio	-	-0.28	-	-0.17
		(-0.67)		(-0.36)
Exceptional Items	-	-	-2.11	-5.27
			(-1.24)	(-2.32)*
Pseudo R^2	17.9%	20.1%	17.2%	26.5%

N.B. ** denotes significant at 99% level
     * denotes significant at 95% level

Studies such as those by Barbee et al (1996) and Leledakis and Davidson (2001) have found evidence of higher returns to firms with high sales-to-price ratios (SPR). These firms typically have low margins (calculated as the sales for the year divided by the profits over the same period) or are loss-making. For example, consider two firms, both trading on a multiple of ten times earnings, the first firm has margins of 10% and thus has a SPR of 1, the second firm has margins of 2% and thus has a SPR of 5. Based on the evidence of previous studies, it might be expected that the second firm would return a greater amount in the future. If it were able to raise its margins to the level of the first firm then it is very likely that shareholders would experience abnormally high returns.

Table 6.9 further investigates the ratio of profits to turnover by reworking Table 6.5 using profit margins rather than profits standardized by shareholders' funds. The results show that margins in years –1 and 0 are both positive and statistically significant in all specifications where the variables are included. This seems reasonable given that if a firm has demonstrated that it could earn a sizeable margin just a year before the loss, it would seem that the dip in profitability is more likely to be temporary than a firm with high costs that is only achieving 'wafer thin' margins. There is also a positive coefficient for the margin in year 1 although this is not significant. By year 2 the margin variable has little relevance to the model. Comparing the pseudo R^2 values with the equivalents from Table 6.5 shows considerably greater explanatory power for each specification when using the margin variables.

Table 6.9: Logit Analysis of the Decision to Reduce Dividends During an Initial Loss Year Following Seven or More Years of Positive Dividends and Earnings using Margin Variables.

The dependent variable has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. Year 0 is defined as the time of the firm's initial loss during 1996-2000. The margin in year *t* is the profit of the period in year *t* divided by the turnover of the firm in the same year. There are 108 observations in years –1 and 0 (31 reducers and 77 non-reducers). This declines to 104 observations in year 1 (30 reducers and 74 non-reducers) and 97 in year 2 (30 reducers and 67 non-reducers) due to delistings.

	Coefficient (*t*-statistic)			
Constant	-0.37 (-0.81)	0.12 (0.24)	0.16 (0.32)	-0.01 (-0.01)
MGN(-1)	0.33 (2.88)*	0.38 (3.14)**	0.33 (2.78)**	0.37 (2.94)**
MGN (0)	-	0.09 (2.76)**	0.08 (2.36)*	0.10 (2.56)*
MGN (1)	-	-	0.06 (1.84)	0.06 (1.45)
MGN (2)	-	-	-	-0.01 (-0.20)
Pseudo R^2	11.0%	18.5%	20.2%	23.3%

N.B. ** denotes significant at 99% level
 * denotes significant at 95% level

Table 6.10 contains the same margin variables as Table 6.9 but also includes the additional explanatory variables used in Table 6.8. Despite the additional variables, the margin coefficients remain positive and statistically significant in both the year prior to the loss and the year of the loss itself. The debt variables and the exceptional items

Table 6.10: Logit Analysis of the Decision to Reduce Dividends During an Initial Loss Year Following Seven or More Years of Positive Dividends and Earnings using Margin Variables, Debt Variables and Exceptional Items.

The dependent variable has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. Year 0 is defined as the time of the firm's initial loss during 1996-2000. The margin in year *t* is the profit of the period in year *t* divided by the turnover of the firm in the same year. The liquidity ratio is defined as the difference between current assets minus the value of stocks & work in progress all divided by current liabilities. The gearing ratio is defined as the sum of short-term loans & overdrafts and long-term liabilities all divided by shareholders' funds (both ratios take values only from year 0). Exceptional items are standardized by the value of shareholders' funds in year –1.

	Coefficient (*t*-statistic)					
Constant	-0.56	-0.33	-0.63	0.17	-0.08	-0.42
	(-0.64)	(-0.33)	(-0.73)	(0.28)	(-0.12)	(-0.41)
MGN(-1)	0.35	0.39	0.37	0.41	0.46	0.45
	(2.78)**	(2.90)**	(2.87)**	(2.99)**	(3.18)**	(3.08)**
MGN (0)	0.09	0.11	0.12	0.12	0.17	0.16
	(2.40)*	(2.64)**	(2.45)*	(2.72)**	(2.92)**	(2.81)**
MGN (1)	0.06	0.05	0.06	0.05	0.05	0.05
	(1.41)	(1.16)	(1.41)	(1.15)	(1.21)	(1.22)
MGN (2)	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02
	(-0.17)	(-0.34)	(-0.31)	(-0.33)	(-0.62)	(-0.61)
Liquidity	0.69	0.57	0.58	-	-	0.39
Ratio	(0.78)	(0.62)	(0.66)			(0.43)
Gearing	-	-0.20	-	-0.24	-0.29	-0.26
Ratio		(-0.58)		(-0.68)	(-0.73)	(-0.65)
Exceptional	-	-	-1.26	-	-2.15	-2.07
Items			(-0.98)		(-1.54)	(-1.48)
Pseudo R^2	23.9%	25.7%	24.9%	25.3%	27.9%	28.0%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

retain their respective signs from previous regression equations; however they add relatively less explanatory power to these models compared to the standard profit specifications in Table 6.8. Overall, the evidence presented in this study shows that there is a higher level of risk associated with low margins in the form of an increased possibility of a dividend cut. Whether the dividend risk is adequately priced is not a consideration in this study but it does highlight an issue surrounding high sales-to-price stocks. The extension of the work by DeAngelo et al (1992) through the incorporation of additional independent variables has increased the ability to explain dividend decisions.

6.3.5 The Informational Content of Dividend Policy

The hypothesis that dividends contain information about future earnings was first proposed by Modigliani and Miller (1959) and Miller and Modigliani (1961). It was reasoned that if managers raised dividends, this inferred that the future prospects of those firms were likely to be better than firms where managers had reduced dividends. Watts (1973) found, using a random sample, a weakly positive relationship that explained little of the variation between dividends and future earnings. Healy and Palepu (1988) discovered some evidence consistent with the information hypothesis in that firms initiating dividends experienced significant earnings growth in the two years following the initiation. Perversely, however, they also report that for firms omitting dividends, earnings also increase in the years after omission. Bernatzi et al (1997) find only limited support for the information hypothesis. They observe that firms that increase dividends show no unexpected earnings growth and that the size of the dividend increase is not important either. Consistent with Healy and Palepu (1988), firms that cut dividends in year 0 show significant increases in earnings in year 1. DeAngelo et al (1992) also find similar results to Healy and Palepu (1988) but they argue that it is not year-on-year earnings changes that are important but that the overall level of earnings of reducers is lower than that of non-reducers.

Table 6.11 tests whether the inclusion of unusual accounting items and the dividend decision is able to improve the ability to predict future earnings. The dependent variable in the ordinary least squares (OLS) regressions is the profit in year 1, and the independent variables are the profits in year 0, exceptional items and a dividend dummy that takes the value of zero if dividends were reduced during the loss year, and one otherwise. All *t*-statistics have been adjusted using the White (1980) correction.

Year 0 profits are found to have a positive relationship with year 1 profits but the coefficient is not significant and the explanatory power of the regression is low. Following the introduction of the dividend dummy, the adjusted R^2 value does improve but remains low. The dividend dummy has a positive coefficient in every specification, but is only significant in one. Exceptional items also improve the explanatory power of the model by a small increment but the statistical significance of the coefficients is low again. The negative relationship with future profitability is consistent with the temporary nature of these items, i.e. a large negative exceptional item in year 0 depresses the overall profits in that year but is unlikely to occur in the following year

Table 6.11: OLS Regressions of Future Earnings on Current Earnings, Exceptional Items and Changes in Dividends for Firms with an Initial Loss During 1996-2000.

The profit for the period and exceptional items in year 0 are standardized by shareholders' funds in year −1. The dependent variable is the profit for the period in year 1, which is also standardized by shareholders' funds in year −1. The dividend dummy has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. The sample is reduced to 104 observations since four firms were lost from the sample in year 1. All *t*-statistics have been adjusted using the White (1980) correction.

	Coefficient (*t*-statistic)			
Constant	0.08	0.00	-0.06	0.00
	(2.30)*	(0.05)	(-1.25)	(0.09)
PFP(0)	0.23	0.18	-	0.36
	(1.55)	(1.32)		(1.79)
Exceptional Items	-	-	-0.04	-0.26
			(-0.28)	(-1.31)
Dividend Dummy	-	0.09	0.12	0.07
		(1.85)	(2.07)*	(1.25)
Adjusted R^2	3.4%	4.8%	2.3%	7.4%

N.B. * denotes significant at 95% level

and so profits return to more normal levels. Whilst the relationships observed in these regressions are consistent with DeAngelo et al (1992), the statistical significance of the variables and the explanatory power is much reduced, and thus only limited corroboration can be offered.

Table 6.12 uses alternative variables to represent the profitability of the firm in year 0, consistent with those of DeAngelo et al (1992). By using variables that are not bottom line profits it may provide a more stable estimate of the profitability of the firm, as one-off write-downs are not included. On comparison with Table 6.11, it is found from the OLS regressions that the operating income provides greater explanatory power as an individual variable than the profit for the period. Operational cash flow, by contrast, provides less explanatory power. The dividend dummy variable retains its positive coefficient across all specifications, although it is not statistically significant in any scenario. A comparison of adjusted R^2 values shows that the final specification of Table 6.11 containing profits in year 0, exceptional items and the dividend dummy, with a value of 7.4%, is greater than any of the specifications in Table 6.12. This is consistent with DeAngelo et al (1992).

Table 6.12: OLS Regressions of Future Earnings on Current Operating Income, Operating Cash Flow and Changes in Dividends for Firms with an Initial Loss During 1996-2000.

Current operating income and current operating cash flow are values for year 0, standardized by shareholders' funds in year –1. The dependent variable is the profit for the period in year 1, which is also standardized by shareholders' funds in year –1. The dividend dummy has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. The sample is reduced to 104 observations since four firms were lost from the sample in year 1. All *t*-statistics have been adjusted using the White (1980) correction.

	Coefficient (*t*-statistic)					
Constant	0.00	-0.03	-0.03	-0.08	0.01	-0.03
	(0.07)	(-0.87)	(-0.56)	(-1.32)	(0.25)	(-0.47)
Current Operating Income	0.29	0.24	-	-	0.32	0.27
	(1.50)	(1.14)			(1.50)	(1.16)
Current Operating Cash Flow	-	-	0.21	0.15	-0.04	-0.05
			(1.09)	(0.78)	(-0.20)	(-0.24)
Dividend Dummy	-	0.06	-	0.09	-	0.06
		(1.02)		(1.86)		(1.05)
Adjusted R^2	6.1%	6.2%	2.3%	3.7%	5.2%	5.4%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

Table 6.13 uses the profit and dividend dummy variables from Table 6.11 but also includes the liquidity ratio and the gearing ratio, as in Table 6.8. It is anticipated that the higher the level of debt that a firm has, the lower future bottom line profitability will be due to larger interest payments. The OLS regressions show that the short-term measure of debt, the liquidity ratio, has very little impact on future earnings, regardless of the specification. As in previous models, the dividend dummy retains a positive coefficient but generally without any statistical significance. By far the most important variable in the specifications is the gearing ratio, which has a highly significant negative coefficient. This is consistent with lower gearing (i.e. lower debt) predicting higher future profitability. The inclusion of the gearing variable causes the prior year's profit to become almost entirely irrelevant to the model. It is also noticeable that the specification with the greatest explanatory power contains just the gearing ratio and the dividend dummy. The adjusted R^2 of this specification is 9.7% and is greater than any of the values shown in Tables 6.11 or 6.12, although still considerably lower than the best specifications of DeAngelo et al (1992). It thus appears that the overall level of debt is a factor that affects the future profitability of firms, following a loss year.

6.4 Conclusion

Table 6.13: OLS Regressions of Future Earnings on Current Earnings, Liquidity Ratio, Gearing Ratio and Changes in Dividends for Firms with an Initial Loss During 1996-2000.

The profit for the period and exceptional items in year 0 are standardized by shareholders' funds in year –1. The dependent variable is the profit for the period in year 1, which is also standardized by shareholders' funds in year –1. The liquidity ratio is defined as the difference between current assets minus the value of stocks & work in progress all divided by current liabilities. The gearing ratio is defined as the sum of short-term loans & overdrafts and long-term liabilities all divided by shareholders' funds (both ratios take values only from year 0). The dividend dummy has a value of zero if the firm reduced its dividend during the initial loss year, and one otherwise. The sample is reduced to 106 firms in some instances since data for the gearing ratio was unavailable for two firms. The *t*-statistics in the first specification have been adjusted using the White (1980) correction; this was not necessary for the remaining specifications.

	Coefficient (*t*-statistic)					
Constant	0.07 (1.97)*	-0.06 (-1.20)	0.12 (3.18)**	0.06 (1.21)	0.07 (1.09)	0.07 (1.09)
PFP(0)	0.23 (1.52)	-	0.03 (0.28)	-	0.00 (0.02)	0.00 (0.03)
Liquidity Ratio	0.00 (0.86)	0.00 (0.28)	-	-	-	-0.00 (-0.19)
Gearing Ratio	-	-	-0.09 (-3.12)**	-0.09 (-3.14)**	-0.09 (-2.99)**	-0.09 (-2.98)**
Dividend Dummy	-	0.11 (2.04)*	-	0.06 (1.13)	0.06 (1.08)	0.06 (1.08)
Number of Observations	108	108	106	106	106	106
Adjusted R^2	2.6%	2.3%	8.6%	9.7%	8.8%	7.9%

N.B. ** denotes significant at 99% level
* denotes significant at 95% level

It is found that losses in the UK are a very important condition for dividend reductions in firms that previously had long track records of positive earnings and dividends. Around 29% of firms in the loss sample cut dividends in the initial loss year, whilst only 2% of firms in the non-loss sample reduced their dividends. Dividend omissions are almost entirely confined to firms posting losses. Approximately 10% of the loss sample omitted dividends in the first loss year; by contrast there was just one incidence of omission amongst 1130 firm years in the non-loss sample. These findings are consistent with those for the US reported by DeAngelo et al (1992), although they find a higher level of dividend cutting within the loss sample at around 50% of all firms. The lower propensity to reduce dividends in the UK relative to the US is consistent with the stronger culture of dividend payments.

Although losses were found to be important in dividend reductions, over two-thirds of firms that posted an initial loss did not cut their dividends. Other variables were thus also investigated in an attempt to improve the ability to explain managers' dividend decisions. It is found that the size of the loss plays an important factor in the decision to reduce dividends, although some evidence also suggests that if losses are caused or exacerbated by exceptional items then the probability of a dividend cut is reduced compared to when exceptional items are not a drag on profits. This inferred that managers viewed unusual accounting items as being consistent with merely a temporary decline in profitability.

Evidence demonstrated that the more heavily indebted a firm was, the greater the propensity to reduce dividends during the initial loss year. This supports the US findings of Fama and French (2001) and the UK results presented by Benito and Young (2001). Further, profit margins were also considered in the dividend decision. These were observed to have very significant explanatory power in both the year of the loss and the year preceding the loss, with lower margins increasing the likelihood of a dividend reduction. Indeed, margins were found to provide a better explanation of the dividend decision than the equivalent profit measures standardized by shareholders' funds.

Dividend reducing firms were discovered to be associated with lower future earnings compared to non-reducers, although the statistical significance of the results was found to be less than that reported by DeAngelo et al (1992). There was also evidence of the rebound in profitability in the years after a dividend cut as previously described by Healy and Palepu (1988) and Bernatzi et al (1997). Exceptional items were observed as being negatively related to future earnings, albeit with little explanatory power, consistent with these unusual items being of a temporary nature. Finally, the overall indebtedness of a firm was found to be very significant in predicting the level of future profits. Higher debt levels led to lower profitability in future periods.

Chapter 7 – Dividend Signalling when Consistent Earnings Growth Ends

7.1 Introduction

Much of the previous research into dividend signalling has focused on initiations of payments. For example, Healy and Palepu (1988) find that firms initiating dividends experience rapidly increasing earnings in the subsequent two years. Michaely et al (1995) observe the existence of positive excess returns for firms after the initiation. However, Lipson et al (1998) find no evidence of increasing earnings after dividend initiations while Venkatesh (1989) reports a decline in the overall volatility of returns when firms commence dividend payments. Dyl and Weigand (1998) find that firm risk and earnings volatility decreases after a dividend initiation. However, the earnings per share of initiating firms were found to be no higher one-year after the first payment.

Jensen and Johnson (1995) report a statistically significant drop in median earnings and sales prior to a dividend cut but find that both rebound in the subsequent year. Woolridge and Ghosh (1986) postulate that dividend cuts may not be bad for investors if the company has lots of profitable investment opportunities but has little available cash and expensive external financing costs. For firms making a dividend reduction while reporting higher earnings and/or releasing a statement by management alluding to significant future growth opportunities, they find that earnings increase substantially in the following two years. Skinner (2004) describes that a loss is more likely to be attributable to special accounting items and also more likely to reverse for large dividend payers than is the case for small dividend payers. Nissim and Ziv (2002) report that, after controlling for the expected future changes in earnings, dividend changes are positively related to earnings changes for two years after the dividend change.

Joos and Plesko (2004) consider the existence of dividend signalling by studying a group of loss-making firms with negative cash flows. They argue that sending a dividend signal for these firms is particularly expensive compared to loss-making firms with positive cash flows. It is discovered that the predictive power of the dividend increases is indeed greater for the negative cash flow firms, consistent with the cost of signalling hypothesis. DeAngelo et al (1996) investigate the signalling content of dividend decisions for US firms that suffer a decline in earnings after having previously grown for at least nine years. Little evidence is found to support the signalling hypothesis, with this being ascribed to managers making relatively small commitments to dividend increases, causing the signal to be unreliable, and the over optimism of managers regarding the future prospects of the firms after the growth period has ended.

Abeyratna et al (1996) found that UK firms that increased both dividends and earnings displayed positive abnormal excess returns around the announcement day whilst firms with declines in both dividends and earnings showed negative excess returns. For firms emanating mixed signals, no abnormal returns were found. Gunasekarage and Power (2002) studied UK non-financials during 1989-1993, discovering that firms with both declining dividends and earnings suffered very negative excess returns in the *preceding* twelve months. Firms with declining earnings but either unchanged or increased dividends still exhibited negative excess returns in the previous year but these were much smaller than the dividend reducers. Gunasekarage and Power (2002) argue that the initial dividend cut was consistent with firms adjusting their corporate finance policies to improve future performance rather than a negative signal to the market. They reject the signalling hypothesis since firms that both increased their dividends and earnings became less profitable in subsequent years.

Despite the failure of DeAngelo et al (1996) to find evidence of dividend signalling after the end of a period of sustained growth, it remains likely to be a significant event for shareholders. Barth et al (1999) find that firms with increasing patterns of earnings have high price-earnings (P/E) ratios relative to other firms after controlling for growth and risk. The effect increases almost monotonically with the number of years of sustained growth. These higher multiples were found to decrease dramatically when the sustained period of growth ends and thus an incentive exists for managers to maintain steadily increasing earnings. Ghosh et al (2003) build on this work by considering whether P/E ratios are higher for firms that achieve sustained earnings growth combined with sustained revenue growth, rather than just earnings growth alone. They argue that revenue management is far harder to detect than cost management and, as such, revenue growth is of a higher quality and deserving of a greater value. It is indeed found that P/E ratios are higher when accompanied by revenue growth and that earnings persistence is also greater. Higher returns are also attributed to revenue-driven growth firms compared to cost-cutting firms. However, when growth ceases the subsequent returns for revenue-driven firms are lower than other firms.

Burgstahler and Dichev (1997) investigate the use of earnings management to avoid earnings decreases and losses. They discover that earnings changes of slightly less than zero occur less frequently than would be expected, whilst increases of slightly greater than zero were found more regularly than anticipated. Furthermore, the longer the period over which sustained growth had occurred, the relatively fewer incidences of earnings changes just below zero compared to just above that are found in subsequent periods. This is consistent with firms managing earnings to obtain the higher multiples described by Barth et al (1999).

The aim of this chapter is to build on the work presented in Chapter 6 by considering the validity of the dividend-signalling hypothesis from a different perspective. A sample of firms is to be analysed that have the characteristics of reporting an earnings decline following a sustained period of annual earnings growth combined with regular dividend payments. From an investor's perspective the year of the earnings decline almost inevitably represents a disappointing outcome and thus shareholders have an interest in knowing if this depression in profitability is temporary or indicative of future performance. Bernstein (2005) argues that it is far harder to manipulate cash dividends than accounting earnings and therefore it seems plausible that dividend policy may contain some additional information compared to profits alone. As a final test the stock performance of the sample is investigated using the dividend decision in the year of the decline as the basis of portfolio formation.

The remainder of the chapter is organized as follows. Section 7.2 describes the data sources used and the sample selection criteria. Section 7.3 reports the empirical results. Section 7.4 concludes.

7.2 Data and Methodology

This study utilizes a sample of 82 non-financial, non-utility firms listed in the UK with a decline in annual earnings (denoted as Year 0) between 1995-2000 following at least five annual increases. Firms were initially identified from the London Share Price Database (LSPD); the full dataset was then obtained from the FAME database. The accuracy of the decline in earnings and the dividends paid by the sample firms were confirmed by viewing the individual annual reports using LexisNexis. Firms were not included in the sample if they exhibited changing accounting year-ends due to the difficulties in measuring growth across non-uniform periods. Throughout the study, earnings are defined as profits after exceptional items, interest, taxation, extraordinary items and minority interests but excluding dividends.

The use of annual data throughout the study is consistent with Lintner (1956) who discovered that managers considered dividends on an annual basis. In a previous US study, DeAngelo et al (1996) used firms that had at least nine years of consecutive growth before an initial decline during 1980-87. It was discovered that this criteria of sustained growth was too strict for the chosen time frame in the UK and led to an insufficiently large sample of firms. A number of potential reasons exist to explain this finding. Firstly, there was a fairly severe recession in the UK in the early 1990's that brought a lot of trends in earnings growth to an end before this study began. Secondly, the number of quoted companies in the UK is considerably less than the US. Finally, the number of firms with trends in earnings growth is to some degree a function of inflation. The observations are based purely on nominal growth; thus for two periods where real growth in corporate profits is running at the same level but one has inflation of 10% and the other just 1% it would not seem unreasonable to expect more strings of nominal profit growth in the higher inflationary environment.

The time distribution of the initial earnings declines is as follows: 1995 has 6 firms (7.3% of the sample); 1996 has 5 firms (6.1%); 1997 has 11 firms (13.4%); 1998 has 13 firms (15.8%); 1999 has 30 firms (36.6%); and 2000 has 17 firms (20.7%). The sample firms are taken from a broad range of industry classifications although the most frequent categories are engineering (10 firms), business support services (9 firms), electronic equipment (5 firms) and food processors (5 firms).

7.3 Empirical Results

7.3.1 Summary Statistics for Sample Firms

Table 7.1 presents a number of summary statistics for the sample firms. Consistent with studies such as Lakonishok and Lev (1987) and Jensen and Johnson (1995) the median is used as the measure of central tendency due to apparent non-normality problems. Four categories of firms are shown in Table 7.1 based on their dividend policy in Year 0: all firms, those firms that increased their dividends, those firms that did not increase dividends (including reducers) and finally dividend reducers only. In many instances in this chapter non-increasers are referred to as a group rather than just the dividend reducers since (a) there are relatively few observations of firms that cut dividends in Year 0 (see Table 7.2), and (b) the median dividend increase for a non-increasing firm was around 10% in Year –1, thus a maximum of no increase in Year 0 arguably represents a significant change in dividend policy, particularly given the past history of earnings growth for these firms.

Panel A shows that the average compound growth rate in earnings from Years –6 to –1 was the same for all categories at 26.4% per annum. However, the growth rate was considerably higher than this in Years –3 to –1 at around 50% for all firms. In Year 0, by definition, all firms had negative earnings growth but non-increasers, and particularly dividend reducers, had a more severe decline. All of the firms that did not decrease dividends remained profitable in Year 0 although five of the seven dividend reducers posted a loss. Whilst the median firm, reported an increase in earnings in Year 1, by Year 3 profitability had declined again (no values are reported for reducers due to the majority of firms having posted a loss and thus making any values meaningless). This contrasts with DeAngelo et al (1996) who report that for firms whose profits growth ceases in Year 0, their earnings in Year 3 are roughly the same as Year 1.

Panel B reports the sales growth of firms over the same period as earnings. In the epoch of Years –6 to –1, sales growth was 14.9% for increasers compared with 20.6% for non-increasers. Between Years –3 and –1, these values were 26.0% and 31.8% respectively. In each case, sales growth is substantially below the corresponding

Table 7.1: Descriptive Statistics for Dividend Increasing and Non-Increasing Sample Firms.

The sample contains eighty-two firms that report an annual decline in earnings after annual growth over at least the previous five years. All figures reported are median values. Growth measures are annually compounded rates. Capital expenditures are standardized by shareholders' funds in Year –1.

	All Firms	Dividend Increasers	Dividend Non-Increasers	Dividend Reducers
A. Earnings Growth				
Year –6 to -1	26.4%	26.4%	26.4%	26.4%
Year –3 to -1	49.5%	49.5%	49.9%	56.6%
Year –1 to 0	-27.3%	-22.0%	-60.0%	-252.8%
Year 0 to +1	6.2%	4.8%	7.0%	N/A
Year 0 to +3	-9.8%	-11.2%	-2.9%	N/A
B. Sales Growth				
Year –6 to -1	15.0%	14.9%	20.6%	22.9%
Year –3 to -1	26.0%	26.0%	31.8%	19.5%
Year –1 to 0	5.0%	5.5%	-1.8%	1.9%
Year 0 to +1	4.7%	6.1%	-9.5%	-14.4%
Year 0 to +3	5.4%	5.5%	-4.4%	-22.9%
C. Capital Expenditure				
Year –3 to -1	0.118	0.118	0.122	0.073
Year –1 to 0	0.135	0.136	0.113	0.084
Year 0 to +1	0.114	0.115	0.052	0.031
D. Firm Age				
Yrs Since Listing	24	24	23.5	23

earnings growth suggesting that the increase in the latter was, in hindsight, unsustainable with margins unable to expand further. From Year –1 to Year 0, sales continue to grow for dividend increasers, albeit at a greatly reduced rate, whilst a small decrease is observed for non-increasers. In the years subsequent to Year 0, sales for dividend increasers continue to grow at 5.5% while sales fall for non-increasers, particularly for dividend reducers.

Capital expenditure for the sample firms is displayed in Panel C. Dividend reducers spent less on capital expenditure prior to Year 0 than other firms although this did increase in Year 0. Capital expenditure for dividend increasing firms stayed fairly level across the studied period although it declined for non-increasing firms in the year after the earnings decline. This lower spend on capital expenditure is consistent with the findings of Jensen and Johnson (1995) for dividend cutting firms. It also supports their explanation for the results of Yoon and Starks (1995) who report that analysts significantly reduce their long-term growth forecasts for firms that cut dividends.

Panel D displays the median firm age of sample firms since listing. This variable is clearly bounded at the lower level by the number of years of data required for a firm to be accepted into the sample. Furthermore, the LSPD only goes back as far as 1955 for a sample of firms and to 1975 for all firms, as such the values reported here are only an approximation of the true age. With the average age being around 24 years since listing though, it does at least point to these firms generally not just being new lists at the beginning of the five years of annual earnings increases required to qualify for the sample. The majority of the firms would appear to have been listed for a considerable period.

Finally, Figure 7.1 shows the breakdown of firms by market capitalization decile at the end of the month prior to the Year 0 earnings announcement. The majority of the dividend increasing firms reside in the larger deciles, with few observations in deciles 6-10. Non-increasing companies are spread fairly evenly across all deciles.

7.3.2 Dividend Decisions in Year 0

Table 7.2 reports the dividend decisions of the sample firms in Year 0. All dividend changes are based on the total annual dividend payment by individual firms. Thus a firm that paid an interim dividend of 2 pence and a final dividend of 10 pence one year, and interims and finals of 4 pence and 8 pence respectively the following year, would have paid 12 pence in total in both years and thus be unchanged overall. Only regular distributions are included; special dividends are ignored.

Panel A of Table 7.2 shows that over three-quarters of the firms with declining earnings increased dividends at an average rate of around 8%. Eleven of the 82 firms maintained their dividends whilst seven firms cut dividends. In the latter group, the cuts were sizeable however, with the average dividend being more than halved.

Panels B and C report the actual sterling and percentage size increases of the 64 dividend increasing firms. DeAngelo et al (1996) report that many US firms consistently change dividends by a "rounded off" dollar amount, and as such dollar (actual sterling in our study) comparisons are probably more informative in terms of signalling content than percentage changes. On this basis, managers looked relatively cautious, with over half making a smaller increase and only 27% feeling sufficiently confident to make a bigger actual sterling increase. On a percentage basis, the conservatism is even more apparent with 88% making a smaller percentage increase than the previous year.

Table 7.2: Dividend Changes in Year of Initial Earnings Decline after Consistent Earnings Growth for at least Five Years.

All dividends refer to split-adjusted regular dividends as reported by LSPD and checked using the annual report service from LexisNexis.

A. Dividend Change Incidence

	No. of Firms	Percent of Cases	Percentage Change in Per-Share Dividend Payment	
			Mean	Median
Full Sample	82	100.0%	2.0%	5.3%
Dividend Increased	64	78.0%	8.9%	8.0%
Dividend Unchanged	11	13.4%	0.0%	0.0%
Dividend Cut	7	8.5%	-58.3%	-65.5%

B. Actual Sterling Size of 64 Dividend Increases

	No. of Firms	Percent of Cases
Larger Actual Sterling Increase than in Previous Year	17	26.6%
Same Actual Sterling Increase as Previous Year	11	17.2%
Smaller Actual Sterling Increase than in Previous Year	36	56.3%

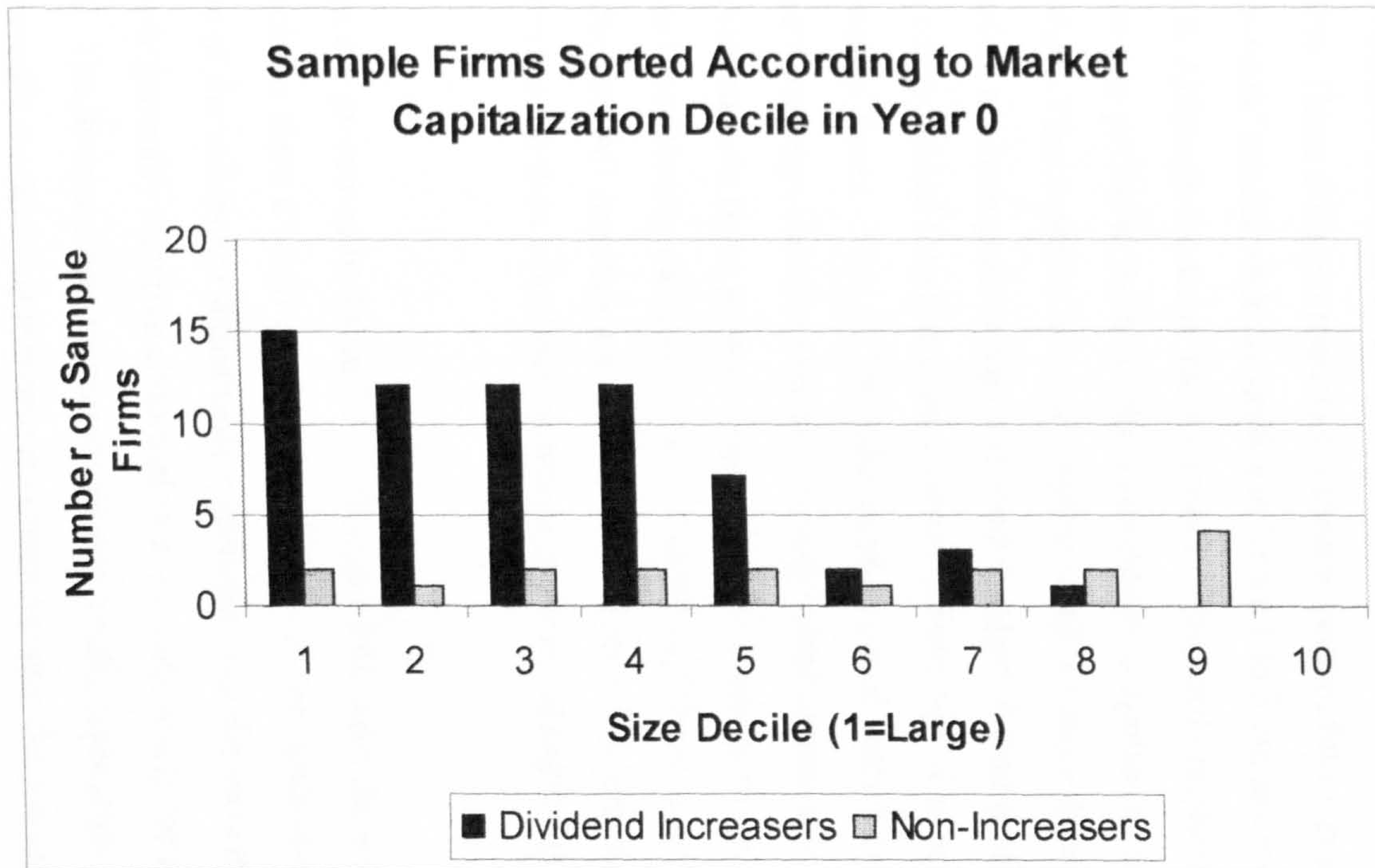
C. Percentage Size of 64 Dividend Increases

	No. of Firms	Percent of Cases
Larger Percentage Increase than in Previous Year	8	12.5%
Same Percentage Increase as Previous Year	0	0.0%
Smaller Percentage Increase than in Previous Year	56	87.5%

NB. All firms that reduced dividends or left dividends unchanged had increased dividends in the previous year.

Compared to the US results of DeAngelo et al (1996), it is found that a greater percentage of UK firms increased dividends in Year 0 but the increases were generally of a slightly smaller average size both on an actual sterling and percentage basis. More firms also cut dividends and these reductions were of a slightly greater magnitude.

Figure 7.1


Sample Firms Sorted According to Market Capitalization Decile in Year 0
Number of Sample Firms
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
Size Decile (1=Large)
Dividend Increasers
Non-Increasers

7.3.3 Dividend Changes and Future Profitability

If dividends convey information to investors about future prospects, it would be reasonable to expect that those companies increasing payments are implying positive news. This section thus tests the hypothesis that the 64 dividend increasing firms in Year 0 had favourable earnings surprises over the three subsequent years after the initial earnings decline. Three different models are used to predict future profitability. The first is the 'random-walk' model whereby profits in Years 1 to 3 are assumed to be equal to those in Year 0. Although the term 'random-walk' is typically applied to movements in a variable from one period to the next, the terminology is applied as used by DeAngelo et al (1996) where Year 0 profits are projected forward for more than one year. The remaining models are both growth-adjusted models where future profits are predicted as Year 0 levels compounded forward at the historic growth rate of either earnings or sales calculated between Years –5 to –1. The sales model is used since Lipson et al (1998) argue that recent earnings changes may be a noisier variable than sales. For the five incidences where sample firms posted a loss in Year 0 it has been assumed in the growth-adjusted models that the loss *decreased* at the historic rate in the years following the earnings decline. All earnings are standardized by shareholders' funds in Year –1. Abnormal earnings are then calculated as actual earnings minus the predicted level of earnings.

The findings are presented in Table 7.3. In the year following the earnings decline, dividend increasers show a small increase in earnings on the random-walk model although none of the values are statistically significant. For the growth-adjusted models the results show generally negative abnormal profits, particularly for the earnings growth model. The dividend non-increasers show a small increase in earnings in Year 1 on the random-walk model. This increase is consistent with Jensen and Johnson (1995) who report that dividend reducers have a significant rebound in earnings after a dividend cut, although these findings are of lesser magnitude and significance. In the three years following the earnings decline, the dividend increasers have exclusively negative earnings surprises. These are significant for all of the growth-adjusted models and in one of the random-walk models. The only group of firms with above expected earnings were those that made no dividend increase in Year 0 relative to the random walk model. As discussed in Section 4, this group of firms suffered a precipitous decline in earnings compared to the dividend increasers and therefore the benchmarks for these firms in Years 1 to 3 were set at a very low level. Nonetheless this result is still the opposite of what would be expected from signalling theory. The other significant point to note is the very large underperformance of earnings relative to the earnings growth model. This implies that investors who extrapolated the historical growth during the 'good times' of Years –5 to –1 were overly optimistic. It is clearly not easy for firms that suffer a decline in earnings after a period of sustained earnings growth to begin

Table 7.3: Abnormal Future Earnings for the Median Firm Subsequent to an Annual Earnings Decline after Consistent Earnings Growth over at least Five Years.

Abnormal future earnings are calculated as the difference between the firm's earnings over the one or three years subsequent to the initial decline (Years 1, 2 and 3) and predicted earnings, divided by shareholders' funds in Year –1. To be included a firm must have complete data available until at least Year 2. The random-walk model predicts that earnings are equal to earnings in Year 0. The earnings growth-adjustment model predicts that earnings are equal to Year 0 earnings compounded forward at the historical growth rate in earnings between Years –5 and –1. The sales growth-adjustment model predicts that earnings are equal to Year 0 earnings compounded forward at the historical growth rate in sales between Years –5 and –1. The values in parentheses are test statistics for Wilcoxon nonparametric tests.

Sample Category (# firms; # with complete data for 3-yr model)	Random-Walk Model		Earnings Growth-Adjustment Model		Sales Growth-Adjustment Model	
	1-Yr	3-Yr	1-Yr	3-Yr	1-Yr	3-Yr
A. All Firms that Increase Dividends (n = 64; 61)	0.005 (0.12)	-0.022 (-2.55)*	-0.043 (-2.65)*	-0.140 (-5.86)**	-0.016 (-1.62)	-0.081 (-4.98)**
B. Actual Sterling Increase at Least as Large as Previous Year (n = 28; 28)	0.021 (0.91)	-0.010 (-1.28)	-0.006 (-0.71)	-0.110 (-3.46)**	0.002 (0.00)	-0.073 (-2.46)*
C. Actual Sterling Dividend Strictly Larger than Previous Year (n = 17; 17)	0.026 (0.69)	-0.010 (-1.30)	-0.041 (-1.07)	-0.287 (-3.34)**	-0.005 (-0.45)	-0.176 (-2.63)*
D. No Dividend Increase in Year 0 (n = 18; 14)	0.009 (0.46)	0.030 (1.48)	-0.022 (-0.72)	-0.078 (-1.04)	-0.006 (-0.37)	-0.035 (-0.60)

* Significant at the 95% level
** Significant at the 99% level

increasing earnings again in the short term. The results in the UK are generally consistent with DeAngelo et al (1996) although the underperformance relative to the earnings growth adjustment model is particularly exaggerated here.

Table 7.4 presents a more formal approach to the possibility of dividend changes having informational content. Six specifications of regression equations are displayed utilizing independent variables such as the historical earnings and sales growth rates, Year −1 profits, exceptional items in Year 0 and three measures of the dividend signal in Year 0. The dividend variables include a dummy variable that takes the value of one if the dividend was increased, and zero otherwise, a dividend percentage change variable and finally another dummy variable that takes the value of one if a larger actual sterling increase occurred in Year 0 relative to Year −1, and zero otherwise. The dependent variable in all specifications is abnormal earnings in Years 1 through 3 as calculated by the random walk model. If dividends are useful signals, then the dividend variables should have positive coefficients. These should persist, despite the inclusion of the profit and sales variables, if dividends contain additional information other than that already conveyed by both the current and previous earnings announcements.

The results in Table 7.4 do not offer any support for the signalling hypothesis. Regardless of the dividend signal variable chosen, all have negative coefficients although none is statistically significant at the 95% level. The inference is that rather than being a communication to shareholders about future profitability, a dividend increase is at best of no importance in indicating subsequent performance and indeed may be a contrarian indicator. DeAngelo et al (1996) also find little support for the signalling hypothesis, although they report less strongly negative findings. Of the other explanatory variables included in the regressions both the historical earnings and sales growth rates have negative relationships with future abnormal earnings, thus implying that the fastest growing firms performed more poorly in the future than their slower growing compatriots suggesting some degree of mean reversion in firm performance. However, it is clear that the historical sales growth variable adds considerably more explanatory power to the regressions than the equivalent earnings variable whilst also being statistically significant. The negative coefficient on the exceptional items variable is consistent with these charges being temporary in nature. Finally, variance inflation factors (VIFs) are shown in Table 7.4 for each specification. All of the VIFs are below

Table 7.4: Regressions of Abnormal Future Earnings on Historical Earnings Growth, Historical Sales Growth, Current and Past Earnings, Exceptional Items and Dividend Signals.

To be included in the sample a firm must have complete data available until at least Year 2. Abnormal future earnings are calculated using the random-walk model detailed in Table 7.3. Abnormal future earnings, Year –1 and 0 earnings and Year 0 exceptional items are all standardized by shareholders' funds in Year –1. The historical growth rate in both sales and earnings is the geometric average calculated between Years –5 and –1. Both dividend dummy variables take the value of 1 if the dividend was increased, and 0 otherwise. *T*-statistics appear in parentheses and these have been adjusted using the White (1980) correction. The variance-inflation factor (VIF) for the i^{th} independent variable is calculated as, $VIF_i = 1 \div (1\text{-}R_i^2)$ where R_i is the multiple correlation coefficient when the i^{th} independent variable is estimated using the remaining independent variables in the model.

	Estimated Coefficient (*t*-statistic)					
Constant	0.97 (1.60)	6.31 (2.18)	1.94 (1.35)	6.71 (2.16)	0.20 (0.32)	5.49 (2.20)
Historical Earnings Growth Rate	-0.71 (-1.01)	-	-0.55 (-0.82)	-	-0.19 (-0.41)	-
Historical Sales Growth Rate	-	-5.19 (-2.17)	-	-5.02 (-2.13)	-	-4.72 (-2.21)
Year –1 Profits	-0.13 (-2.11)	-0.12 (-3.05)	-0.13 (-2.11)	-0.12 (-3.03)	-0.14 (-2.32)	-0.12 (-3.22)
Exceptional Items	-0.67 (-1.40)	0.07 (0.10)	-0.45 (-0.74)	-0.11 (-0.16)	-1.43 (-2.37)	-0.73 (-1.18)
Alternative Measures of Year 0 Dividend Signal						
Dividend Increase Dummy	-0.36 (-1.96)	-0.45 (-1.64)	-	-	-	-
Year 0 Dividend Change (%)	-	-	-1.39 (-1.49)	-0.93 (-1.51)	-	-
Dummy for Large Actual Sterling Div. Incr. in Year 0	-	-	-	-	-0.89 (-1.51)	-0.51 (-1.48)
Adjusted R^2	11.6%	37.7%	12.6%	37.1%	17.5%	38.5%
Variance Inflation Factors						
Historical Earnings Growth Rate	1.02	-	1.02	-	1.07	-
Historical Sales Growth Rate	-	1.02	-	1.03	-	1.09
Year –1 Profits	1.01	1.01	1.01	1.01	1.00	1.01
Exceptional Items	1.12	1.11	1.11	1.11	1.02	1.01
Dividend Increase Dummy	1.11	1.11	-	-	-	-
Year 0 Dividend Change (%)	-	-	1.12	1.12	-	-
Dummy for Large Actual Sterling Div. Incr. in Year 0	-	-	-	-	1.06	1.07

2.0 suggesting that problems with multicollinearity are unlikely to be present (see Belsey et al, 1980).

Given the negative relationship observed between the dividend signal and future profitability surprises, the question remains about whether a dividend increase by managers represents their general positive opinion of future business prospects or is used to appease shareholders who are disappointed by the change in profitability of the company? A further possibility exists in that by raising the dividend managers in these companies increase the chances of holding on to their jobs. Kaplan and Reishus (1990) find that managers who cut dividends by 25% or more face an increased chance of losing their jobs compared to those who do not.

If it is assumed that managers act in good faith when making a dividend increase then presumably they are also surprised at the lack of positive abnormal future earnings. Barbee et al (1996) suggest that annual sales may be a better indicator of future profitability than earnings since they are less susceptible to temporary occurrences such as short-term pricing policies. Managers often talk about a strong future order book and therefore they may be signalling that they have plenty of business opportunities ahead. The fact that they may not have accurately calculated or planned for future costs would be consistent with Table 7.1 whereby sales continue to grow in both Year 0 and in Years 1 through 3 despite earnings continuing to decline.

7.3.4 Long-run Stock Returns

The previous section presented mixed evidence on the dividend-signalling hypothesis, but there remains the possibility that returns may be influenced by the dividend decision in Year 0. Studies such as those by Foster et al (1984) and Bernard and Thomas (1989) have found evidence for 'post-earnings-announcement drift'. In this scenario, when a firm makes a surprising quarterly earnings announcement prices continue to travel in the same direction for the next three quarters. Michaely et al (1995) find evidence of positive drift in prices after the initiation of dividends and negative drift after omissions of payments. They observe that these conditions persist for over a year. Given the significant event in a firm's life in Year 0, it is hypothesized that the dividend decision may influence future returns in a positive manner.

The calculation of long-run returns is fraught with difficulties as highlighted by, amongst others, Barber and Lyon (1997), Lyon et al (1999) and Boehme and Sorescu (2002). Previous studies in the area of dividend signalling such as Woolridge and Ghosh (1986) and DeAngelo et al (1996) have calculated returns relative to a benchmark index. However, Barber and Lyon (1997) suggest that this leads to misspecified test statistics.

The best choices for examining long-run returns appear to be calendar-time portfolio abnormal returns, which control well for cross-sectional dependence but fail to represent the true investment experience, and buy-and-hold abnormal returns (BHARs) using control firms, which represent the investment experience but suffer from cross-sectional dependence. The latter is favoured in this study since they are more directly comparable with previous work and give a true investment feeling, however the problems associated with this method are acknowledged. Control firms are selected based on size and momentum. Specifically, matched companies are chosen from those with market capitalisations of between 60% and 140% of the sample firms prior to the event month of Year 0, with the final selection made on the firm with the closest 12-month 'pre-event' momentum to the sample firm (see Mitchell and Stafford, 2000). Momentum controlling may be particularly important since DeAngelo et al (1996) show that returns between Year –1 and Year 0 are strongly negative for firms with a history of earnings growth prior to an earnings decline in Year 0. Chan et al (1996) find that firms with low 1-year momentum continue to experience the same momentum for the following six months. The actual BHAR is calculated using the following formula:

$$BHAR_{i\tau} = \prod_{t=1}^{\tau}[1+R_{it}] - \prod_{t=1}^{\tau}[1+E(R_{it})] \qquad \text{Equation 7.1}$$

where R_{it} is the month t return of the sample firm, $E(R_{it})$ is the expected return from the sample firm based on the control benchmark and τ is the number of months (either 12, 24 or 36). All calculations are made assuming equally-weighted portfolios whilst the t-statistics are adjusted for skewness. The statistical significance of the test statistics are calculated using the bootstrapping methodology of Lyon et al (1999) using a resample size of $n/2$.

Table 7.5 presents the results for long-run returns. In the year after the announcement all firms have small negative excess returns that are statistically indistinguishable from zero (at the 5% level). For both the two-year and three-year horizons after the earnings decline, all of the abnormal returns are positive, however they are again small in magnitude and not statistically different from zero in all cases.

The finding that returns are insignificantly different from zero over the three years after an earnings decline is consistent with DeAngelo et al (1996). However, the lack of excess returns for non-dividend-increasing firms contrasts with the evidence presented

Table 7.5: Post-Announcement Buy-and-Hold Abnormal Returns.
Buy-and-hold abnormal returns (BHAR) are calculated by subtracting the BHAR of the control firm from the BHAR of the sample event firm. The control firm is selected on the basis of similar size and pre-event momentum. All BHARs are calculated on an equally-weighted basis beginning at the end of the event month. *T*-statistics are shown in parentheses and are adjusted for skewness. The significance levels are calculated following the bootstrapping methodology described by Lyon, Barber and Tsai (1999).

Post-Announcement Horizon	Average Cross-Sectional Abnormal Return		
	All Firms	Dividend Increasers	Dividend Non-Increasers
1-Year	-0.021	-0.017	-0.035
	(-0.35)	(-0.26)	(-0.24)
2-Years	0.060	0.072	0.018
	(0.61)	(0.62)	(0.11)
3-Years	0.016	0.004	0.058
	(0.15)	(0.01)	(0.31)

by Woolridge and Ghosh (1986) who find that firms that cut dividends have significantly positive returns in the following year. The negative returns in the year after the earnings decline could conceivably be consistent with post-earnings-announcement drift; however the effect is very small indeed. It appears there is little to be gained for investors by reacting to the dividend signal in Year 0.

7.4 Conclusion

This chapter has investigated the existence of dividend signalling by firms that have suffered a decline in earnings after a period of sustained earnings growth. It is found that over three-quarters of firms increased their dividends despite the fall in earnings. Less than 10% of companies cut their payments to shareholders but the average reduction amounted to more than half of the previous dividend. This was consistent with non-dividend-increasing firms suffering a 60% decline in average earnings against a 21% fall for dividend increasing firms. Compared to findings in the US by DeAngelo et al (1996), it was discovered that a larger proportion of firms increased their dividends in the UK but by a smaller average amount. Capital expenditure in the year after the earnings decline for non-increasers, particularly dividend reducers, was noticeably lower than past expenditures, consistent with Jensen and Johnson (1995).

The usefulness of dividend signals was investigated by studying future unexpected earnings. Dividend signalling variables had a negative relationship with future surprises in earnings, completely in contradiction of the signalling hypothesis. It was also noticeable that, on average, firms showed no sign of returning to their previous growth rates of earnings after the year of earnings decline (Year 0). The following three years showed a general trend of zero to negative growth in earnings. By contrast, sales increased in subsequent years for firms raising their dividends in Year 0 whilst non-dividend-increasing firms saw a decline in sales, in line with the signalling hypothesis. It suggests that managers may have an ability to predict future revenue streams but they are less adroit at calculating or anticipating future costs. A further point of note is that the growth rate of sales prior to Year 0 was not recaptured afterwards. This is consistent with the earlier findings regarding earnings. Investors who extrapolated these past growth trends would have suffered considerable disappointment.

Finally, the long-run stock returns of the sample firms were investigated. In the year subsequent to the earnings decline, all firm categories posted negative abnormal returns that were consistent with 'post-earnings-announcement drift'. These excess returns were very small in magnitude though and not statistically different from zero. In the two and three-year post-announcement returns, all firm categories had positive abnormal returns, but these were also small in magnitude and insignificant. It is thus concluded that the dividend signal in Year 0 offered no guide to future returns for investors.

Chapter 8 – Dividend Resumptions, Signalling and Stock Returns

8.1 Introduction

Under the dividend-signalling hypothesis, dividend initiations and omissions are generally considered to be important events. When a firm initiates a dividend payment, it creates a benchmark against which investors can clearly measure subsequent performance. This can be viewed in contrast to reported earnings, which are widely regarded as being subject to management (e.g. see Burgstahler and Dichev, 1997). It is often concluded that when managers make a commitment to initiate a dividend (with the exception of special payments), they intend to make the distribution not for just one year but rather for the foreseeable future. Therefore, it is suggested that managers initiating dividend payment view the firm's outlook to be positive, since to reverse the decision later would almost certainly attract negative reactions from shareholders and other interested parties. This is consistent with Lintner (1956) who reports that managers believe that firms should avoid raising dividend payments that may have to be rescinded in the future. Following this logic further, a dividend omission is a clear acknowledgement by a firm's management that the financial condition of the firm is not in the best of order. Since some investors rely on income as a way of meeting their ongoing liabilities, this is unlikely to be well received. Indeed, Lintner (1956) suggests that firms drop their dividend only as a 'last resort'.

What makes dividend initiations and omissions particularly interesting from the perspective of a financial researcher is the binary nature of the decision. A monetary dividend change can be more ambiguous. For example, consider a firm that pays a dividend of £10.00 in year 0, £11.00 in year 1 and £12.05 in year 2. It would be possible to make a case for differing signals in year 2 depending on one's viewpoint. Firstly the dividend is increased in year 2 which is positive; secondly the percentage change from years 1 to 2 is lower than from years 0 to 1, which is negative, and finally the actual pound sterling increase is more in year 2 than year 1 which is positive. Whilst in practice most observers would conclude this was a net positive decision for the firm, it illustrates the difference between a simple initiation or omission compared to a nominal pecuniary change. It suggests intuitively that a binary decision may reasonably be considered to be a stronger signal from managers to the market.

Given the clear-cut nature of initiations and omissions, there have been a number of studies investigating various aspects of financial performance surrounding these signals. Dividend initiations have been investigated by, amongst others, Asquith and Mullins (1983), Dyl and Weigand (1988), Healy and Palepu (1988), Michaely et al (1995) and Lipson et al (1998). Dividend omissions have been examined by, amongst others, Healy and Palepu (1988), DeAngelo et al (1992) and Michaely et al (1995). Despite this body of research there is one area that has received comparatively little attention, namely that of exclusively examining dividend resumptions by former payers (for a notable exception see Boehme and Sorescu, 2002, who study long-run stock returns of dividend resuming firms).

There are reasons to believe that a resumption of dividends by a former payer may have a different implication for future performance than an initiation by a firm that has never previously paid a dividend. Benito and Young (2001) find that UK firms that were former payers have exhibited historically low returns on capital employed, high levels of interest gearing and less investment opportunities and actual investment than firms that have never paid a dividend. Fama and French (2001) find that US firms that were former payers tended to be distressed, have low earnings and few investments whereas firms that had never paid were more profitable and with greater growth opportunities. In addition to the financial characteristics, former payers have a label of having previously failed to maintain dividend payments. This may affect the actions of the managers of such firms, compared to firms that have never paid dividends and thus have an unblemished record regarding dividend cuts. Further, firms make specific mention of dividend resumptions in their annual reports. For example, "As a demonstration of the Board's confidence in the company's future we are pleased to announce a dividend for the year of 0.25p" (Corporate Services Plc Annual Report 1994) and, "To reflect not only the improved performance in 1994 but also confidence in the future, the directors recommend a dividend of 1.0p for the year" (Fisher (James) Plc Annual Report 1994).

The aim of this chapter is to extend the work of Chapters 6 and 7 by investigating whether former payers use a dividend resumption to signal to investors that future profitability is likely to be favourable. If the US findings of Brav et al (2005) extend to the UK then the dividend resumption should be a very powerful signal. They observe that dividend conservatism is pervasive amongst the firms they surveyed with many non-payers unwilling to initiate payments since the flexibility to reduce the dividend in the future is very limited. Furthermore, they report that many firms that already pay dividends wish they did not and, given the chance again, would not commence distributions. In the case of a firm that has omitted a dividend they have already taken the most difficult step by disappointing shareholders. To subsequently give up their zero-dividend status by recommencing payments, and risk the markets asymmetric dividend response one more, it seems plausible that managers should be particularly confident about the future prospects of the firm. When a company to takes such an important step it is anticipated the stock may be rewarded with positive excess returns going forward.

The remainder of this chapter is organized as follows. Section 8.2 outlines the data and methodology. Section 8.3 reports the empirical findings. Section 8.4 concludes.

8.2 Data and Methodology

The sample of firms consists of UK companies that were former payers of dividends, over the period 1992-2000. A firm was categorized as a former payer if it had paid a regular (i.e. interim or final but not special payments) dividend at some time during 1988-2000 and then in subsequent financial year(s) omitted to pay a regular dividend for the entire year. Firms were initially identified using the London Share Price Database (LSPD) and then individual firm data was collected from FAME and LexisNexis. Throughout the study annual data is used since, according to Watts (1973), dividends are set based on yearly earnings rather than interim periods.

Firm years of former dividend paying stocks were also additionally classified as being a dividend omission year if a dividend was paid at some point during the previous financial year. A firm year was classified as a dividend resumption year if payments were initiated with a *final* dividend after paying no dividend in the previous financial year. Firms are ignored that began paying dividends again with an interim payment since the FAME database does not report interim accounts. It is therefore difficult to sensibly examine changes to a company's financial characteristics when the dividend change is not contemporaneous with the accounting data.

Consistent with other studies in this area, such as DeAngelo et al (1996) and Nissim and Ziv (2002), only industrial firms (i.e. non-financial, non-utility firms) are considered. Furthermore, companies are excluded that have irregular accounting periods and those with incomplete data available[1]. A total of 528 firm years are found to satisfy our criteria of which 74 are dividend resumption years and 134 are dividend omission years.

Table 8.1 presents summary statistics for the dividend-resuming firms in the sample. Panel A displays the profile of resumptions of dividends for the sample companies. There is clearly a bias towards the earlier years of the study period; this is probably attributable to the recession of the early 1990s that caused the proportion of dividend paying firms to drop markedly (see Benito and Young, 2001). By the mid-1990s a number of firms were able to repair their balance sheets and commence payments again. Panel B shows the distribution of firms by market capitalization decile in the month of the announcement that dividends are to recommence. There are very few large firms that resume payments, whilst over two-thirds of our sample firms are in the lower half of the market deciles. Larger firms would be expected to have sufficient financial strength to withstand a couple of difficult trading years without omitting payments, and thus they have no need to make dividend resumptions.

8.3 Empirical Findings

8.3.1 The Dividend Resumption Decision

To establish the conditions necessary for a resumption in dividend payments by former payers it is worth considering the reasons why these companies became former payers in the first place. DeAngelo and DeAngelo (1990) study firms with three or more

[1] Consistent with Nissim and Ziv (2002), firm years are also excluded from the sample if the value of shareholders' funds is less than 10% of total assets in the year prior to the dividend decision in year 0. This is done because the paper utilises many variables that are standardized by the book value in this year, and thus negative or small positive values are likely to lead to erroneous results.

Table 8.1: Summary Statistics for Dividend Resuming Firms.

Dividend resuming firms are classified into the year that the dividend announcement was made. Size deciles are allocated on the market capitalization of the firms at the end of the announcement month relative to all firms listed in the LSPD in the same month.

A. Resumptions of Dividends by Calendar Year

Year	No. of Resumptions	% of Sample	Year	No. of Resumptions	% of Sample
1992	6	8.1%	1997	4	5.4%
1993	8	10.8%	1998	6	8.1%
1994	14	18.9%	1999	5	6.8%
1995	17	23.0%	2000	1	1.4%
1996	13	17.6%			

B. Dividend Resumptions by Market Capitalization Decile (whole sample 1992-2000)

Size Decile	No. of Resumptions	% of Sample	Size Decile	No. of Resumptions	% of Sample
1 (Large)	1	1.4%	6	12	16.2%
2	2	2.7%	7	11	14.9%
3	5	6.8%	8	15	20.3%
4	7	9.5%	9	10	13.5%
5	5	6.8%	10 (Small)	6	8.1%

loss-making years in succession and find a high level of dividend cuts. DeAngelo et al (1992) investigate the dividend policy of firms with a history of positive earnings and dividends. They observe that half of the firms that suffer a loss year cut dividends and 15% go further and omit payments entirely. Amongst firms that did not post a loss, only 1% cut dividends whilst a negligible number omitted dividends. The essence of the findings is that a loss year does not guarantee a dividend cut but a loss is a virtual necessity for a dividend reduction to take place, and even more so for an omission.

Table 8.2 reports the level of profitability in the form of return on equity for former payers and the number of corresponding dividend resumptions. This sample contains 329 firm years. The number of profitable years (171) is roughly equal to the number of loss making years (158); however there are just 7 incidences of dividend resumptions in unprofitable years compared to 67 resumptions in profitable periods. Furthermore there is a general trend that the greater the level of profitability, the greater the incidence of dividend recommencement. In much the same way as DeAngelo et al (1992) find that a loss does not guarantee a dividend cut for current payers, comparable evidence is observed here for former payers. A profitable year does not guarantee a dividend resumption; however a profitable year is a major factor in the decision to resume payments. This serves to reinforce the notion of 'stickiness' in dividend policy.

Table 8.2: Incidences of Resumptions of Dividend Payments by Former Payers Ranked According to Return on Equity during 1992-2000.

Return on equity is calculated as the profit for the period divided by shareholders' funds in the previous year. The profit for the period is earnings after exceptional items, interest, taxation, extraordinary items and minority interests but excluding dividends. All dividend resumptions were verified using the annual report service from LexisNexis. Firm years were only included in the sample if no dividends were paid during the previous financial year.

Profitability	Firm Years	Number of Resumptions	Percentage of Firm Years
< –30%	79	2	2.5%
–30% to –20%	21	0	0.0%
–20% to –10%	24	2	8.3%
–10% to 0%	34	3	8.8%
0% to 10%	71	19	26.8%
10% to 20%	51	24	47.1%
20% to 30%	16	11	68.8%
> 30%	33	13	39.4%
TOTAL	**329**	**74**	**22.5%**

The behaviour of former payers is further investigated by estimating a logit regression relating dividend resumptions or non-resumptions to key financial variables. The same pooled sample of firm years is used as in Table 8.2, with the dependent variable taking the value of one if payments were resumed and zero otherwise. Independent variables used include profitability, a loss dummy and the number of financial years the firm has spent as a former payer (*YAFP*). It is hypothesized that if dividends are sticky then firms that have recently omitted payments may be more inclined to recommence more rapidly than firms that have a long history of non-payment and whose shareholders have grown accustomed to this policy.

The results in Table 8.3 show that the level of profitability is an important factor in the resumption of dividends; however when the specification also includes a loss dummy it is the latter that has the greater statistical significance. This suggests the overriding factor in the dividend decision is whether the firm was profitable rather than the rate of return on assets. Again, this finding is consistent with DeAngelo et al (1992) who report that a loss is the dominant factor in dividend reductions rather than the magnitude of the loss. The *YAFP* variable has the negative coefficient expected for a sticky dividend policy in most specifications; however it is not significant in any equation and in the single explanatory variable model it has the 'wrong' sign. It is concluded that this is not an important factor in the dividend decision.

Table 8.3: Logit Analysis of the Decision to Resume Dividend Payments for Former Payers During 1992-2000.

Firm years were only included in the sample if no dividends were paid during the previous financial year. The independent variable takes the value of zero if the firm did not recommence paying dividends, and one otherwise. Years as former payers (YAFP) are calculated as the number of full financial years since the last dividend payment was made, excluding the dividend omission year itself. The profit for the period is standardized by shareholders' funds in the prior year. The loss dummy takes the value of zero if the firm was profitable, and one otherwise. Pseudo R^2 values are calculated using the method of Estella (1998).

	Coefficient (*t*-statistic)						
Constant	-0.358	-1.032	-0.182	-1.260	-0.641	-0.440	-1.262
	(-1.22)	(-4.12)	(-0.66)	(-5.46)	(-3.27)	(-2.81)	(-8.40)
YAFP	-0.104	-0.088	-0.090	0.009	-	-	-
	(-1.28)	(-1.11)	(-1.12)	(0.12)			
Profit for	1.097	3.115	-	-	1.026	-	2.989
Period	(1.79)	(5.25)			(1.71)		(5.22)
Loss	-2.046	-	-2.689	-	-2.013	-2.632	-
Dummy	(-3.99)		(-6.38)		(-3.94)	(-6.31)	
Pseudo R^2	21.2%	15.7%	19.9%	0.0%	20.7%	19.5%	15.3%

8.3.2 Dividend Resumptions & Future Profitability

A key question regarding the information content of dividends and dividend resumptions concerns the extent to which the latter signals future profitability. The premise that dividend changes convey information about companies' future profitability has received support from, amongst others, Nissim and Ziv (2002) using dividend changes, Healy and Palepu (1988) for dividend initiating firms, and Joos and Plesko (2004) for loss-making firms with negative cash flows. However other studies such as those by DeAngelo et al (1996) for firms where sustained earnings growth has ended, Bernatzi et al (1997) for dividend changes, and Dyl and Weigand (1998) and Lipson et al (1998) for dividend initiating firms, have found evidence inconsistent with the signalling hypothesis. Our contribution to this body of work is to examine the relationship between dividend resuming firms and future profitability.

Nissim and Ziv (2002) observe that in order to gauge whether dividend policy conveys information, future profitability has to be estimated from values available in the dividend decision year. These estimates usually consist of a random-walk or growth-adjusted model with unexpected earnings being recorded as the difference between actual and anticipated earnings. Nissim and Ziv (2002) show that no evidence of signalling is found using these models; however, the introduction of previously omitted correlated variables leads to a positive relationship between dividend changes and subsequent earnings changes. They also find a significant positive relationship between dividends and future earnings when the *levels* of earnings are used rather than the *changes* used in many previous studies.

The resumption of dividend payments would appear to be a potentially powerful signal under the dividend information hypothesis. Former payers have typically experienced losses in the past that have caused the original omission and thus it could reasonably be expected that a dividend recommencement reflects managers' views that these firms are destined to be profitable for the foreseeable future. Certainly there seems little incentive for managers to begin making payments if they believe they are unsustainable since Kaplan and Reishus (1990) find that managers that cut dividends by at least 25% face a higher probability of losing their jobs compared to those who do not.

The value of dividend resumptions as a signal is investigated using models based on those proposed by Nissim and Ziv (2002). Instead of using dividend change variables however, a dummy variable is utilized, DR_0, to represent the decision to recommence payments and also a separate dummy variable, DO_0, to denote if a dividend omission took place. The return on equity, *ROE*, is also included as an explanatory variable since previous research has shown it to be positively correlated with dividend changes but negatively correlated with future earnings[2]. Specifically, Panel A of Table 8.4 displays the results of estimating Equation 8.1:

$$(E_\tau - E_{\tau-1})/B_{-1} = \alpha_0 + \alpha_1 DR_0 + \alpha_2 DO_0 + \alpha_3 ROE_{\tau-1} + \varepsilon_\tau \qquad \text{Equation 8.1}$$

[2] See Freeman et al (1982) and Fama and French (2000) for more information.

for $\tau = 1, 2$ and 3, where τ is the number of financial years after the dividend decision in year 0, $ROE_{\tau-1}$ is calculated as $E_{\tau-1}/B_{\tau-1}$ where E denotes earnings after exceptional items, interest, taxation, extraordinary items and minority interests but excluding dividends and B is the value of shareholders' funds[3]. All test statistics reported are heteroskedasticity-robust White (1980) t-statistics.

Table 8.4: Regressions of Future Earnings Changes for Former Payers, Dividend Omitting Firms and Dividend Resuming Firms.

E_τ denotes earnings in Year τ relative to the dividend event year (Year 0). B_τ is the value of shareholders' funds in Year τ. DR_0 is a dummy variable that equals one if the firm resumes payment of dividends in Year 0, and zero otherwise. DO_0 is a dummy variable that equals one if the firm omits payment of dividends entirely in Year 0, and zero otherwise. ROE_τ is calculated as E_τ/B_τ. For each of the regressions, the first row reports the coefficient with White's (1980) t-statistic reported in parentheses below.

A. $(E_\tau - E_{\tau-1})/B_{-1} = \alpha_0 + \alpha_1 DR_0 + \alpha_2 DO_0 + \alpha_3 ROE_{\tau-1} + \varepsilon_\tau$

	α_0	α_1	α_2	α_3	Adj. R^2
$\tau = 1$	-0.711	0.740	0.893	-0.105	0.1%
	(-1.06)	(1.10)	(1.38)	(-3.34)	
$\tau = 2$	0.161	-0.278	-0.408	-0.097	3.0%
	(1.04)	(-1.65)	(-1.84)	(-2.56)	
$\tau = 3$	0.480	-0.601	-0.599	-0.243	1.0%
	(0.76)	(-0.94)	(-0.83)	(-2.36)	

B. $(E_\tau - E_{\tau-1})/B_{-1} = \alpha_0 + \alpha_1 DR_0 + \alpha_2 DO_0 + \alpha_3 ROE_{\tau-1} + \alpha_4(E_0 - E_{-1})/B_{-1} + \varepsilon_\tau$

	α_0	α_1	α_2	α_3	α_4	Adj. R^2
$\tau = 1$	-1.392	0.111	2.211	-0.367	3.024	42.8%
	(-1.78)	(0.22)	(1.91)	(-2.02)	(1.70)	
$\tau = 2$	0.261	-0.123	-0.693	-0.064	-0.588	27.2%
	(1.61)	(-0.86)	(-2.24)	(-1.29)	(-1.63)	
$\tau = 3$	0.846	0.015	-1.766	-0.163	-2.664	40.7%
	(1.36)	(0.03)	(-1.55)	(-1.32)	(-1.64)	

The results in Panel A show that in year 1, there is a positive coefficient on α_1 consistent with the signalling hypothesis; however in years 2 and 3 the coefficients are negative. None of these coefficients are statistically significant. The coefficient on the dividend omission variable, α_2, is also positive in year 1 but negative in years 2 and 3. The positive change in earnings in the year after omission is consistent with the results of Jensen and Johnson (1995) for dividend cutting firms; however they find the earnings growth continues into year 2 also.

[3] Shareholders' funds are set at the actual level reported by the company or 10% of total assets, whichever is the greater, consistent with Nissim and Ziv (2002).

Panel B reports the results of the estimation of the same model as in Panel A except a term is also included to control for the earnings change in year 0, $(E_0 - E_{-1})/B_{-1}$. The addition of this variable adds materially to the explanatory power of the regressions. As before though, both α_1 and α_2 are positive in the year immediately after the dividend decision and negative in year 2. In year 3, α_1 is almost zero whilst α_2 remains negative. The positive relationship between earnings changes and both the resumption and omission variables in year 1 are consistent with Nissim and Ziv (2002) although they find a higher level of significance for their dividend increase/decrease variables. In year 2 however they find a positive coefficient for earnings increases and a weak negative relationship for the dividend decrease variable.

The results of this section suggest that dividend resumptions do not signal future profitability for firms. Indeed the suggestion is that these firms tend to underperform in terms of profitability in the years subsequent to a dividend recommencement. In fact, of the 74 dividend resuming companies 13 report losses one year after the resumption, 20 report a loss in the second year after the resumption, and 30 firms fail to be profitable in the third year after recommencement. These observations are clearly not consistent with Lintner's (1956) finding that managers believe that dividend increases should be accompanied by permanent, non-transitory increases in earnings. The results certainly do not support the US observations of Brav et al (2005) that only firms with stable and sustainable increases in earnings raise dividends. Perhaps UK manager attitudes are different to their US counterparts and are more willing to gamble with dividend policy. This may be particularly true of former dividend payers where additional pressures could exist to quickly restore credibility following the prior omission.

A further possible explanation for these results is that managers are too optimistic for the future of their firms. They see that profitability has improved since the time when the dividend was initially omitted and attribute this change in fortune to their own skill. To highlight this improved performance to investors, dividend payments are resumed. If however the firm simply recovered due to greatly enhanced industry conditions then management skill may have been a relatively small factor in the turnaround of company profitability (this may be particularly true for commodity type businesses). When industry conditions decline again, management is unable to maintain profitability levels thus explaining the results reported earlier.

An alternative view is that many of the firms in the sample are relatively small and as such are less likely to market leaders in their chosen field. This may entail less pricing power and an inability to maintain a consistent level of profitability compared to a larger rival with an associated history of continuous dividend payments. The evidence presented for dividend omissions does suggest that the year when dividends are initially foregone may be the worst the firm has to endure. This is consistent with the accounting notion that bad news should be reflected in earnings when it is anticipated. It also supports the findings of Healy and Palepu (1988) and Bernatzi et al (1997) who observe earnings increases in the years after a dividend reduction.

8.3.3 Stock Returns and Dividend Resumptions

A number of different studies have considered the impact of dividend policy on stock returns. These have included, amongst others, dividend changes and stock returns around announcement days (e.g. Aharony and Swary, 1980), long-run returns for dividend initiating firms (e.g. Michaely et al, 1995 and Boehme and Sorescu, 2002), and returns to dividend reducing/omitting firms (e.g. Woolridge and Ghosh, 1986 and Jensen and Johnson, 1995).

In recent years a number of papers have questioned past methods of estimating long-run returns. A general consensus has emerged that calculating this type of return is fraught with difficulties. For example, Barber and Lyon (1997) find that calculating returns relative to a benchmark index leads to misspecified test statistics. Fama (1998) considers the evidence for a large number of long-run pricing anomalies and argues that many are unreliable due to being reported using equally weighted portfolios rather than value-weighted or alternatively are very dependent on the time frame chosen for the study. Indeed one of those anomalies that is referred to is pertinent to this study, namely that of dividend initiations.

In this chapter it is examined whether a historical pattern of excess returns following dividend resumptions exists similar to that observed by others in the US for dividend initiations. Consistent with Chapter 7, an approach is followed as suggested by Lyon et al (1999) and subsequently used by Boehme and Sorescu (2002) for a sample of combined dividend initiating and resuming firms. For each sample firm, a control firm is also selected based on size and momentum in the month prior to the dividend announcement in year 0. Matched firms first have to be between 60% and 140% of the market capitalization of the sample firm with the control firm then selected as that with the closest 12-month pre-event momentum to the sample firm (see Mitchell and Stafford, 2000). For each sample firm a buy-and-hold abnormal return (BHAR) is calculated using Equation 8.2:

$$BHAR_{i\theta} = \prod_{t=1}^{\vartheta}[1+R_{it}] - \prod_{t=1}^{\vartheta}[1+E(R_{it})] \qquad \text{Equation 8.2}$$

where R_{it} is the month t return of the sample firm, $E(R_{it})$ is the expected return from the sample firm based on the control benchmark and θ is the number of months. All calculations are made assuming both equally weighted portfolios and value weighted[4] portfolios. This is important given the number of small firms highlighted in Table 8.1 in this sample. All t-statistics are adjusted for skewness whilst the statistical significance of the test statistics are calculated using the bootstrapping methodology of Lyon et al (1999) using a resample size of $n/2$.

Table 8.6 reports the results of the long-run returns for the dividend-resuming firms. From the equally weighted portfolio a positive return is found for post-announcement horizons of 1, 2 and 3-years; however none of these is significant at the 95% level. In contrast, from the value-weighted portfolio there is a negative return in all three horizons, again though none are significant at the 95% level. The lower returns for value weighted-portfolios are consistent with Boehme and Sorescu (2002) although they do not report negative returns.

8.4 Conclusion

This chapter has investigated the 'information content of dividends hypothesis' by examining firms that are resuming dividend payments after an interruption. It was hypothesized that a resumption of dividend payment should be a powerful positive

[4] Value-weighted portfolios are calculated by standardizing the sample firms by the total value of firms by market capitalization quoted on the LSPD at the end of the particular announcement month.

Table 8.5: Post-Announcement Buy-and-Hold Abnormal Returns for Dividend Resuming Firms.

Buy-and-hold returns (BHAR) are calculated by subtracting the BHAR of the control firm from the BHAR of the sample event firm. The control firm is selected on the basis of similar size and pre-event momentum. BHARs are calculated on either an equally weighted basis, or a value-weighted basis, beginning at the end of the event month. *T*-statistics are shown in parentheses and are calculated adjusted for skewness. The significance levels are calculated following the bootstrapping methodology described by Lyon, Barber and Tsai (1999).

Post-Announcement Horizon	Average Cross-Sectional Abnormal Return: Equally Weighted	Average Cross-Sectional Abnormal Return: Value Weighted
1-Year	0.053	-0.122
	(0.58)	(-1.68)
2-Years	0.176	-0.242
	(1.02)	(-1.82)
3-Years	0.120	-0.024
	(0.61)	(-0.04)

signal to investors since managers would only commence payments again if they were particularly confident about the outlook for future profitability. It was found that the decision to resume dividends by former payers is largely dependent on whether the firm has a profitable year or not, but that the level of profitability is of secondary importance. However, a profitable year does not guarantee the recommencement of dividends. This is consistent with the observations made by DeAngelo et al (1992) that a loss is a virtual necessity for a dividend cut or omission but that a loss does not guarantee a dividend cut. It confirms the existence of 'stickiness' within firms' dividend policies.

Using earnings changes, no significant evidence is found that dividend resumptions lead to higher future profitability. When earnings levels are used, it is discovered that future earnings are actually *lower* after a dividend resumption for the following two years. Dividend omitting firms do experience a rebound in earnings in the year subsequent to the end of payments consistent with the 'big bath' theory and the evidence of Healy and Palepu (1988) and Bernatzi et al (1997). A study of the post-announcement stock returns of dividend resuming firms finds no evidence of significant outperformance of control firms matched on size and momentum, either on an equally weighted or value weighted basis.

Chapter 9 – Conclusion

This thesis has investigated a number of different aspects of dividend policy in the United Kingdom and considered the implications for shareholders. The topics studied have included investment strategies based on dividend yield and the payout ratio, the changing patterns of dividend payments, the payout ratio as an investment metric, the factors influencing dividend policy at the individual firm level and the validity of the dividend-signalling hypothesis. Much of the previous literature on dividends has been carried out using US data. This thesis builds on this body of work by examining the UK market that is shown to have very different attitudes towards the payment of dividends.

The first empirical topic investigated in Chapter 3 was the application of a high dividend yield strategy using the components of benchmark UK indices. Firms were sorted into portfolios with annual rebalancing consistent with the approach of O'Higgins and Downes (1992). It was observed that such a strategy was initially profitable when compared to equally-weighted portfolios of all stocks. The excess returns failed to survive, however, when the risk of the strategy was considered and transaction costs were accounted for. As an extension to previous work, a high payout filter was added to the stock screening process. This produced higher returns compared to pure dividend strategies but once again failed to survive the risk-adjustment process. A final strategy included the formation of zero-dividend portfolios. Previous research by Keim (1985) and Morgan and Thomas (1998) has reported that non-paying firms exhibited similar long-term average returns to the highest yielding firms. Portfolios of zero-dividend firms produced generally higher returns than current dividend payers, and also generally performed better than the high yield strategy. When payment history was considered, former payers of dividends generated the highest returns and these were far in excess of those firms that had never paid a dividend. It is suggested this is because former payers have, or are currently, enduring some financial stress and thus investors require a higher expected return for bearing this risk. All of these excess returns failed to survive risk-adjustment though.

Chapter 4 studied the trends in dividend payments in the UK between 1979 and 2000. It was found that whilst the proportion of payers had declined over the period of study, around two-thirds of all quoted firms still paid a dividend in 2000 compared with little more than 20% in the United States. In addition the total aggregate real dividend payment more than doubled over the same period as a concentration of dividends took place amongst the largest payers. This effect was similar to the US evidence of DeAngelo et al (2004) but considerably stronger. In tandem with the concentration of dividends, a concentration of earnings was also found amongst the largest payers. This supported the observations of Lintner (1956) who found that earnings were the primary determinant of dividends. When the listing status in 2000 of dividend payers in 1979 was analysed it was discovered that nearly 60% of 1979 payers had been acquired. This suggests that whilst numbers of payers declined there was the distinct possibility that many of the dividends remained, at least partially, as a result of new combined entities. Only 11% of 1979 payers were lost to distress and just 4% moved to become non-payers in 2000. It is concluded that the demise of dividends is some distance away.

The focus of Chapter 5 was to examine the role that the payout ratio, dividend yield and earnings yield play in explaining future real returns, real dividend growth and real earnings growth. Contrary to conventional wisdom, but consistent with Arnott and Asness (2003), it was observed that the payout ratio was positively related to subsequent real earnings growth. This throws doubt on the widely held view that firms choosing to retain earnings grow their businesses faster than those that distribute large portions of profits to shareholders. When the relationship between payout ratio and real dividend growth was studied, a strong negative correlation was observed. Higher retained earnings resulted in higher subsequent growth in dividends. This was very different from the earnings growth findings and supportive of the conventional view. Some evidence was found of the payout ratio being negatively related to future stock returns in the UK however when this analysis was replicated using US data there was no relationship reported at all. The usefulness of the payout ratio as an asset allocation metric is thus somewhat doubtful.

Chapter 6 investigated the dividend decisions of a sample of firms that had a history of profitability and dividend payments but then suffered an earnings decline. Firms were sorted according to whether they remained profitable for the financial year or whether they reported a loss. It was observed that a loss was a virtual prerequisite for a dividend reduction with nearly a third of all loss-making firms cutting dividends compared to just

2% from the non-loss sample. These results were consistent with the US findings of DeAngelo et al (1992) although the UK firms showed a lower propensity to cut dividends relative to their US counterparts; this supports the observations of a stronger UK dividend culture made in Chapter 4. Whilst a loss was a major factor in the dividend decision, over two-thirds of loss-making companies did not cut dividends. Additional factors outside of profitability were clearly influencing managers' decisions when setting dividends. It was noted that managers viewed losses caused by exceptional items as temporary and these were negatively related to the probability of a dividend cut. Other factors that affected the dividend decision were the level of debt, high leverage increased the chance of a reduction, and profit margins, low margins also raised the probability of a cut. In terms of dividend policy signalling the future prospects of the sample firms there was mixed evidence presented. Dividend reducers had lower future profitability than non-reducers, however, the reducers did exhibit a rebound in profitability in subsequent years consistent with the earlier work of Healy and Palepu (1988).

The dividend-signalling hypothesis was extended further in Chapter 7 by examining a sample of firms that have exhibited sustained earnings growth before reporting a decline in profits. It was noted that relatively few companies cut dividends, only 10%, but the average reduction was over 50%. This was consistent with a decline in earnings of over 60% for these firms. In terms of dividend signalling, this was initially studied by considering the future profitability of firms in the years after the earnings decline. The signalling variables, however, were found to have a negative relationship with future earnings surprises; this was completely in contradiction of the signalling hypothesis. Barbee et al (1996) argue, though, that sales may be a better measure of profitability since they are not subject to the same short-term fluctuations that can afflict earnings. It was reported that sales increased in subsequent years for dividend increasers whilst declining for non-increasers. In both cases, earnings and sales, the firms failed to recapture their past growth trends subsequent to the first earnings decline. The stock returns of the firms, irrespective of the dividend decision, were generally negative in the year following the earnings decline, although not significantly so. In the two years following this, small insignificant positive excess returns were found. It is concluded that the dividend signal at the time of the earnings decline offered no guide to future stock returns for investors.

The final investigation into the informational content of dividends is reported in Chapter 8. This study focuses on a group of firms that has received comparatively very little attention; namely dividend resuming firms. It was hypothesized that the recommencement of payments should be a very powerful signal from an informational standpoint. Given the US survey evidence of Brav et al (2005) that dividend conservatism is pervasive and that only those firms with stable and sustainable earnings increases raise their dividends, it appeared highly unlikely that managers would risk reinitiating a payment unless they were especially confident of the future. It was found that the decision to recommence payments was largely dependent on whether the firm was profitable, with the level of profitability of secondary importance. A profitable year did not guarantee a resumption of dividends though. This reinforces the findings of Chapter 6 where a 'stickiness' was observed in dividend policy. In that case there was reluctance amongst payers to cut dividends despite a loss year, in this scenario there is similar reluctance from non-payers to move away from zero-dividend status. From a signalling standpoint, no evidence was found that a recommencement of dividends leads to higher future profitability. In fact when earnings levels were used, profits were actually lower two years after resumption. Indeed nearly a third of the reinitiating firms failed to even make a profit in the second year after the recommencement, rising to around 40% by the third year. A study of the post-announcement stock returns of dividend reinitiating firms finds no significant returns, either positive or negative, in the following three years. It is thus concluded from Chapters 6, 7 and 8 that the evidence in favour of the signalling hypothesis is mixed at best whilst there is no support for the notion that it can be used by investors to generate superior stock performance.

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