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International Evidence on Payout Ratio, Returns, Earnings and Dividends

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ABSTRACT

Recent US evidence has shown that, contrary to popular wisdom, the greater the proportion of earnings paid out as dividends, the greater the subsequent real earnings growth. We extend previous work by examining whether a similar relationship exists in eleven international markets as well as considering the role payout ratio plays in explaining future real dividend growth and returns. Higher payout ratios do indeed lead to higher real earnings growth, although not to higher real dividend growth. Despite the ability to anticipate earnings growth, we find limited use for this to predict future returns.

In an important recent paper, Arnott and Asness (2003) [hereafter AA (2003)] established the somewhat surprising result that higher aggregate payout ratios for the US are associated with higher future earnings growth, thus offering support for theories that view dividends as signals for earnings expectations or, indeed, for wasteful managerial use of retained earnings. This paper extends the literature in two main ways:

i) We investigate whether similar findings are evident in eleven major international markets.

ii) We extend the analysis to consider the relation between payout ratio and returns, which we believe to be important since returns are the ultimate focus of portfolio managers and investment strategists.

Although the payout ratio has long been of importance to corporate finance researchers (e.g. Lintner, 1956), it has been relatively neglected in the asset pricing and prediction literature (see McManus et al, 2004 and ap Gwilym et al, 2004) despite market fascination with investment strategies based on dividends and earnings[1] (e.g. the 'Dow 10', etc.). AA (2003) redress this omission in the literature by examining the aggregate payout ratio for US stocks since 1871 and its relation to subsequent 10-year real earnings growth; they find a positive coefficient on payout ratio in a simple linear regression for a variety of sub-periods, and suggest that the low payout ratio of 2001 would lead to low earnings growth in the following decade. They report the analysis for 5-year earnings growth and a rolling 30-year period and find that the results are indeed robust. Given that dividends are 'stickier' (more stable over time) than earnings, AA (2003) also examine whether the phenomenon is really reflecting

mean reversion in earnings; a transient drop in earnings would raise the payout ratio and signal a future rebound in earnings, hence implying that dividend policy was not really useful as a predictor. This can be tested empirically (by including past real earnings growth in the regression), but the above hypothesis was comprehensively rejected. Other possible predictor market variables (such as yield-curve slope and earnings yield) are also included, but the inference remains the same: a high payout ratio is associated with high subsequent earnings growth and vice versa. Market strategists are also paying more attention to dividends and payout ratios as we enter an era that many feel may be unexciting for equities (e.g. see IBCA, October 2004). With the global dividend yield having declined from over 5% in the 1980's to under 2% by the late 1990's, and the payout ratio peaking in the early 1990's and remaining low, investors once again are being reminded of the importance of dividends to long-run total returns. Low payout ratios at least allow the possibility of payment hikes, other things being equal.

A primary focus of this paper is whether the US findings extend to other countries. AA (2003) suggest that their findings, "conform to a world in which managers possess private information that causes them to pay out a large share of earnings when they are optimistic … and to pay out a small share when they are pessimistic … Alternatively, the facts also fit a world in which low payout ratios lead to … inefficient empire building …" (p.84). Given different managerial cultures, financial market histories and corporate and individual tax regimes between countries[2] it would be quite remarkable if the US findings were repeated for other countries. To anticipate our results, we report that indeed the findings generally do carry over for our sample of up to 11 countries. Given our data requirements, we are forced to work with 5-year

earnings growth for 8 countries and only 1-year earnings growth for 11 countries. For the 5-year earnings growth data, only Germany has an insignificant payout ratio coefficient, while for the 1-year data the results are more mixed, though only Italy has a negative coefficient. When we include lagged 5-year earnings growth we do find significant evidence of mean reversion, in contrast to AA (2003), though the payout ratio is still important. We extend the analysis to consider the relationship between payout ratio and returns, and report less clear-cut findings, with fewer significant coefficients.

In assessing the historical evidence that expected future earnings growth is fastest when the current payout ratio is high and slowest when the payout ratio is low, AA (2003) apply the Miller and Modigliani (1961) 'dividend irrelevance' theorem which states that the value of a firm is completely independent of the proportion of earnings retained by that firm. Miller and Modigliani's work established that in a frictionless world, when the investment policy of a firm is held constant, its dividend payout policy has no consequences for shareholder wealth. In spite of this, Lintner (1956) found that companies follow deliberate dividend payout strategies.

Several explanations have been suggested which seek to explain the dividend puzzle. One popular theory is that firms can signal future profitability by paying dividends (Bhattacharya, 1979). Recent evidence on this proposition is more mixed, showing that current dividend changes do not help predict firms' future earnings growth (DeAngelo et al, 1996 and Benartzi et al, 1997). Another viewpoint is that dividend policies address agency problems between corporate insiders and outside shareholders, and La Porta et al (2000) look at two such models. In the 'outcome'

model, dividends are paid because minority shareholders pressure corporate insiders to pay out cash and hence strong minority rights should be associated with higher payouts. In the 'substitute' model, insiders interested in issuing equity in the future pay dividends in order to establish a reputation for decent treatment of minority shareholders, hence strong shareholder protection may mean high payouts are not required to establish credibility. The quality of shareholder protection is seen as a proxy for lower agency costs and La Porta et al (2000) find that dividend policies vary across countries in a way consistent with the 'outcome' agency model. They establish a shareholder rights table (see La Porta et al, 1998) in which the US and the UK, the only two common law countries in our sample, score very highly on shareholder protection (with a score of 5 on their table), while among the civil law countries Italy and Germany score very badly (scoring 1), Spain and Japan achieve higher protection ratings (scoring 4) with Portugal and France (scoring 3) and Greece, Switzerland and the Netherlands (scoring 2) somewhere between the two extremes. As we demonstrate in the next section, our descriptive statistics on mean payout ratios are certainly consistent with the findings of La Porta et al (2000).

The remainder of the paper is constructed as follows: Section I describes our data and methodology. Section II presents our empirical findings and Section III concludes.

I. Data and Methodology

For the purpose of this paper, 11 countries are studied: the United States (US), the United Kingdom (UK), France (FR), Germany (GY), Italy (IT), Greece (GR), Spain

(SP), Portugal (PT), Switzerland (SW), Netherlands (NL), and Japan (JP). These were chosen from the 30 OECD nations to represent the industrialized world with the selection made on the basis of the availability of data. The dataset consists of monthly values of dividend yield, earnings yield, the Retail Price Index (RPI) or Consumer Price Index (CPI) (as appropriate), and the stock market index level. The source is DataStream, an online database covering all listed companies on the world's major stock exchanges. For each country, an index is chosen to represent the country's aggregate market. In order to obtain comparable results to AA (2003), the S&P 500 is used as an index for the US. For all countries, except Germany and Spain, the index used is a total market index. For Germany, the DAX 30 Index is used as the total market index had missing earnings yield values. The same problem is encountered for Spain and to correct this, the MADRIDZ Index is used. Both the USA and UK have observations ranging from January 1965 to December 2002, whilst France, Germany, Switzerland, Netherlands and Japan start from January 1973. Italy's first month of data is January 1986 while Spain's is January 1987. Greece and Portugal both start in 1990. All observations end in December 2002.

Following the procedure used by AA (2003), the earnings yield series is used to estimate a history of 12-month trailing earnings in index points for each country. Firstly, the earnings yield series is multiplied by the price series. In order to obtain a real earnings series, the earnings series is divided through by the RPI. The same process is applied to the dividend yield in order to create a real dividend series. The payout ratio is defined as the ratio of one-year trailing dividends to one year trailing earnings. An important issue with these types of indices is that their composition will vary over time. AA (2003) point out that the aggregate earnings per share series is not

the same as the earnings growth on a static portfolio. Higher performing stocks will replace lower performing stocks in the index and each time rebalancing occurs to account for new listings, the divisor of the index will increase. This process will cause the total earnings of the index as well as the earnings per share to decrease and so the end result is that they will not be able to keep pace with the growth experienced by the economy as a whole (GDP growth).

A return series is also constructed for each country's index and this is accomplished consistent with the method used by Fama and French (1998). It is necessary to assume that dividends are reinvested at the end of twelve-month periods for all return periods in excess of one year. The formula used for calculating the return on the index is:

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

where, R_n is the nominal 12-month return, P_1 and P_2 are the respective price levels at the beginning and end of the 12-month period and d_2 is the dividend yield at the end of the period expressed as a decimal. The real return series is then calculated by subtracting the change in inflation over the period from the nominal return. Return horizons of 1, 5, and 10 years are used.

Due to the different data time frames, the study focuses on three matched periods of data. The USA and the UK, which have the most observations available, have three time periods: 1965-2002 (Period 1), 1973-2002 (Period 2), and 1990-2002. France, Germany, Netherlands, Switzerland, and Japan have two time periods: 1973-2002 and 1990-2002. The remaining countries, Greece, Spain, Italy and Portugal only have one

time period: 1990-2002. For the longest time period, all regressions are for a rolling ten years. Thus, for example, those regressions on the UK Total Market Index are of the 10-year Real Earnings Growth (REG) or Real Dividend Growth (RDG) on the payout ratio (PR) over the period 1965 to 2002. The second time period, 1973-2002, uses 5-year REG, or RDG, or Real Returns. Taking France as an example, we regress 5-year Real Returns on the payout ratio to investigate the relationship between those two variables over the 1973-2002 period. Both the 10-year and 5-year periods are consistent with the approach of AA (2003). The last time period of 1990-2002 uses 1-year Real Returns or REG, or RDG as dependent variables. We investigate the explanatory power of the following variables: the payout ratio, dividend yield, earnings yield, lagged dividend and earnings growth on the dependent variables. For the lagged variables, the first time period only uses real earnings or dividend growth lagged by 10-years while the second time period utilises 5-year lags. Univariate and bivariate regressions are run for all countries, in order to understand whether similar conclusions can be reached for different equity markets.

Summary statistics are computed for the payout ratio for all countries over the three time periods and displayed in Table 1. Panel A reveals that the UK has higher statistics than the US for the maximum, minimum, mean and median of the payout ratio. Although the differences are not substantial, this finding confirms that a culture of dividend payout is much more evident in the UK than in the US. Moreover, the compounded annual real growth for Earnings in the UK is much higher at 1.94% than that for the US at 0.44%. The UK also has a higher compounded annual real growth for dividends of 1.45% against 0.33% for the US.

Panel B presents the same statistics and growth rates for the 1973-2002 period. The mean payout ratio ranges from 0.27 for Switzerland to 0.53 for the UK. The highest maximum payout ratio is again observed for the UK at 0.83 and the lowest minimum value for the ratio is for Switzerland at 0.20. The median of the payout ratio ranges between 0.27 and 0.54, with Switzerland noticeably lower than the others. The US has the lowest positive compounded annual real growth for dividends and earnings whilst European countries show higher growth rates. France has the highest with a 5.52% annual real earnings growth rate and a 3.72% annual real dividend growth rate. The remaining European countries have an annual earnings growth rate that ranges between 1.80% and 3.74% while the annual dividend growth rate varies between 1.17% and 2.87%. Japan has negative compounded annual real earnings and dividend growth rates.

Panel C details the findings over the 1990-2002 period. The results support those of Panel B, but four new countries are now added. Portugal has the lowest minimum payout ratio of 0.02. As before, the UK has the highest mean (0.62) and maximum (0.83) for the payout ratio. The mean payout ratios vary between 0.27 and 0.62 and the medians have a very similar range of 0.27-0.60. The US has negative compounded annual real earnings and dividend growth rate over the 1990-2002 period. Both the UK and Italy demonstrate negative annual real earnings growth rate of -0.09% and -0.94% respectively whilst Spain has a negative annual real dividend growth rate of -0.31%. The remaining countries have annual real earnings growth rate ranging from 1.15% (Germany) to 9.43% (Greece). Annual real dividend growth rate ranges from 2.00% (Germany) to 14.25% (Greece)

Although the average payout ratios are not ranked precisely according to the agency rankings of La Porta et al (2000), and indeed this is not the main focus of the present study, there is a general consistency that cannot be ignored. The UK and US have high payouts while Greece, Switzerland and Germany have both low payouts and low shareholder protection. There are less clear patterns for the remaining countries.

II. Empirical Findings

Payout Ratio and Earnings Growth

Table 2 demonstrates the extent to which PR can explain subsequent REG. All three matched data periods are employed, thus utilizing data from all eleven countries. Panel A presents the regression results for 10-year REG for the US and UK. Both countries exhibit positive coefficients on the PR variable with some statistical significance. This is consistent with AA (2003) but inconsistent with the 'traditional' view that higher retentions of earnings leads to higher subsequent growth. The explanatory power of the US regression is reasonable, with an adjusted R^2 value of 28.0%, but the UK R^2 value is markedly lower.

Panel B reports 5-year REG regression results for seven countries. As with Panel A, all PR coefficients are positive, and all but Germany are significant. However, there are considerable differences in the explanatory power of the regressions. The US, UK and Japan have high adjusted R^2 values but this is not true of the remaining countries, particularly Germany and the Netherlands.

Panel C presents the results of one-year REG regressions for 1990-2002 using all eleven countries. Consistent with the previous results, ten of the markets recorded positive PR coefficients, with Italy standing as the lone exception. The explanatory power once again varied from country to country with Germany, Switzerland and Greece having particularly low values. Overall, across various earnings growth horizons and using a number of countries, the evidence clearly points to the existence of a positive relationship between PR and REG.

There is good reason to believe that the ability to explain future earnings growth may be improved by considering the overall valuation of the aggregate stock market as well. For example, at the individual stock level, Barth et al (1999) find that companies with track records of consistent earnings growth achieve higher price-earnings multiples than firms with patchy earnings records. The presumption is that the market anticipates that those consistent performers will continue to deliver stellar earnings growth and thus are more valuable. Given that the aggregate market discounts future prospects, it would be expected that earnings yields (i.e. higher P/E ratios) would be negatively related to subsequent REG.

Table 3 presents results of bivariate regressions containing earnings yield (EY) and PR at the beginning of each period as the explanatory variables for REG. The three matched periods shown in Table 2 are again utilized. Panel A displays the 10-year regression results for the US and UK. The inclusion of EY produces a modest improvement in the explanatory power of the regressions and the negative coefficients for EY are consistent with the earlier hypothesis. Despite the inclusion of EY, PR retains its positive coefficient albeit with reduced statistical significance.

Panel B reports the 5-year regression results across seven countries. As in Panel A, the use of EY results in higher adjusted R^2 values and the coefficients are negative in five of the markets. These are significant for France, Germany and Switzerland. Again, PR retains a positive relationship with REG in all cases and with generally high levels of significance.

Panel C displays the 1-year regression results for all eleven markets. The impact of EY is most noticeable in these equations. A significant improvement in the explanatory power is noted, along with strongly negative coefficients for most countries. PR remains positive for eight of the eleven countries and is statistically significant in the UK, US, France, Netherlands and Spain, although generally the results appear less conclusive than the five-year regressions.

The implication of Table 3 is that the inclusion of EY does not detract in any meaningful way from the positive relationship previously observed between PR and REG. This is consistent with the findings for the US market by AA (2003). Regressions containing EY have improved explanatory ability over PR alone, although this is most noticeable in the shorter 1-year regressions.

A final possibility considered here is that the payout ratio may be merely proxying for depressed or inflated earnings (see AA (2003), p. 76). It is widely accepted that dividends are a much smoother time series than earnings. Therefore in recessionary periods earnings may be low relative to dividends, resulting in a high PR, whereas in a period of high growth the converse may be true. If mean reversion in earnings

occurs then this would be consistent with the observation made earlier; a high PR (i.e. low earnings) results in high subsequent REG whilst a low PR (i.e. high earnings) would lead to low subsequent REG. To attempt to model this, bivariate regressions are run where the independent variables are PR and lagged earnings growth (LEG). These are only run for Periods 1 and 2 since there is an insufficient length of data to use Period 3.

Table 4 presents the results of these bivariate regressions. Panel A reports 10-year REG explained by PR and ten-year lagged earnings growth (LEG_{10}). Both coefficients of LEG_{10} are negative, which is consistent with the theory of depressed earnings mean reverting, although only the US coefficient is significant. The introduction of LEG_{10} has improved the explanatory power a little compared to the univariate regressions but the PR coefficients remain positive. Panel B shows the 5-year REG regression results, using 5-year lagged earnings growth (LEG_5) as an independent variable. This series has the advantage of having more independent observations compared to Panel A. LEG_5 adds enormously to the adjusted R^2 values. All of the coefficients are statistically significant, apart from that of Switzerland, and negative, apart from Japan. Despite this the PR coefficients retain positive signs in five of the seven markets, with many still significant. It is clear that LEG appears to be a very important variable in explaining subsequent REG. This contrasts with the findings of AA (2003), who note that whilst LEG has the anticipated negative sign in their results, the predictive ability of the variable is poor and it fails to materially diminish the role of PR, particularly during 1946-2001.

Payout Ratio and Dividend Growth

In the previous section, the relationship between PR and subsequent REG was considered. The positive relationship defied conventional wisdom but was consistent with the US evidence presented by AA (2003). We extend the previous work by asking whether a similarly unexpected relationship exists between PR and subsequent real dividend growth (RDG). Traditional theory suggests that a high PR would lead to low subsequent RDG and vice versa. For example, a 100% PR would almost certainly result in under investment in ongoing business and lead to zero RDG in the long run. By contrast, a low PR could mean that companies have the ability to return additional cash to shareholders rather than let it accumulate on the balance sheet, even if there is no change in the underlying business, resulting in higher RDG.

Table 5 reports the results of univariate regressions akin to those of Table 2 but with RDG as the dependent variable. Panel A reveals that a negative relationship exists between PR and 10-year subsequent RDG, with both the US and UK coefficients being statistically significant. The adjusted R^2 value is particularly high for the UK but this is not true of the US. Panel B displays the 5-year regression results, with similar findings. Six of the seven countries have negative PR coefficients, with the US again a lone exception. There is some explanatory power for the US, France and Germany but this is not mirrored for the remaining markets. Panel C reports the 1-year RDG regression results. As with the longer growth horizons, a high proportion of these markets show a negative relationship between PR and RDG. Indeed, only the US and France have positive PR coefficients and these are not statistically significant. The explanatory power varies from country to country. Overall, the evidence

presented in Table 5 clearly points to PR and subsequent RDG being negatively related. This is different to the relationship observed between PR and REG in that it concurs with traditional payout theory.

However, there remains the possibility that the overall market valuation plays a part in explaining the relationship between PR and RDG, in the same way that the case was made earlier for PR and REG. Table 6 reports regression results for the three periods using dividend yield (DY) at the beginning of the period as an additional variable to proxy for the overall market valuation. Panel A offers mixed evidence with both PR and DY having the anticipated negative coefficients for the UK market but positive coefficients for the US market. The US also exhibits both these positive coefficients in the 5-year regression results shown in Panel B. However, five of the other markets retain the negative relationship between RDG and PR, whilst DY is also generally negative throughout. The addition of DY has improved the explanatory power of the regressions compared to those where PR was the only independent variable. Panel C confirms the positive relationship between PR and RDG for the US, whilst the remaining countries have negative coefficients with the exception of Japan. DY is strongly negative for all markets apart from the US and UK, again confirming the original hypothesis that higher market valuations are consistent with greater future growth of both earnings and dividends.

To complete the comparison between RDG and REG, Table 7 reports the results of bivariate regressions of subsequent RDG with PR and lagged real dividend growth (LDG) as the explanatory variables. Panel A displays the 10-year regression results where the PR coefficients for both the UK, and surprisingly, the US have negative

signs. LDG_{10} also has a negative coefficient in both cases, consistent with the evidence for LEG_{10} in Table 4, suggesting some tendency for mean reversion. Panel B shows similar findings in the 5-year regression results. The PR variable is negative in all cases apart from the US, whilst LDG_5 is negative for five of the seven markets. As with the regression results in Table 4, the inclusion of the lagged variable adds considerably to the explanatory power compared to the respective univariate regressions.

Rationalizing the Evidence

The observations of a positive relationship between PR and REG and a negative relationship between PR and RDG are only consistent with traditional theory in the case of the latter. It therefore suggests that either the findings in this study are peculiar to the time period used or that there is a flaw in the conventional thoughts surrounding payout policy. Given that AA (2003) demonstrate that PR and REG have been positively linked throughout the 20th century in the US, it suggests though that the observations made earlier using data from 1965-2002 are not untypical. There seems little doubt that some of the negative relationship between PR and REG can be explained through the mean reversion of earnings as revealed in Table 4, though this alone cannot describe the entire relationship. Therefore some additional potential explanation seems appropriate.

Consider an environment where growth prospects are deemed to be favourable by managers in aggregate. Companies in turn retain more of their earnings, since this is widely considered to be the cheapest source of finance, to invest in these perceived

opportunities, and thus PR falls. However, many firms are chasing these projects and an over-optimism among corporate decision makers leads to the overestimation of future returns. The competition in the market creates lower than anticipated margins and the predicted earnings growth fails to materialize. When investment capital is severely limited, PR is high and less capital exists for investment projects. This leads to less capacity, more pricing power, higher margins and greater subsequent REG. The initial scarcity of funds is likely to force managers to invest only where the estimated risk to reward ratio is most favourable.

In the case of dividend growth, there appears to be a considerable amount of mean reversion, as evidenced by Table 7. Managers clearly seek to avoid cutting dividends as this can affect their job prospects (e.g. see Kaplan and Reishus, 1990), therefore the easiest way to regain flexibility in dividend policy is to allow REG to outpace RDG for a few years thus bringing PR back to a more comfortable level. Given the positive relationship found between PR and REG this remains a distinct possibility.

Payout Ratio and Returns

Previously in this paper, the ability of the payout ratio to explain growth in both earnings and dividends has been considered. Whilst interesting in itself, the obvious question for practitioners to ask would surround the possibility of using this evidence to generate returns. The first assumption that is typically made is that higher earnings/dividend growth leads to higher returns. Table 8 assesses the validity of this statement by ranking 5-year periods of REG and RDG on an annual basis and forming Quartiles for the seven countries where data is available for 1973-2002. Quartile 1

contains the lowest six 5-year periods of REG (RDG), Quartile 2 the next lowest seven periods, Quartile 3 the next seven and finally Quartile 4 contains the six highest periods of REG (RDG). The concurrent average annually compounded real return is then reported in Table 8 for each Quartile.

Panel A demonstrates that periods of high REG (Quartile 4) have clearly accompanied higher returns than periods of low REG (Quartile 1), but there is no evidence of a linear increase in returns across Quartiles. Quartile 2 returns were on average higher than Quartile 3 for three of seven markets; however, Quartile 4 returns were always the highest. Panel B reveals that periods of high RDG also accompanied higher returns than low RDG periods. As with REG however, there is no linear relationship with Quartile 2 returns greater than Quartile 3 returns in two countries, and greater than Quartile 4 returns in the Netherlands.

The conclusion of this very simple analysis is that both high REG and RDG have tended to exist in parallel with higher returns. A significant implication of this for practitioners using PR to predict growth is that high PR may lead to high REG but also low RDG. Thus, PR emits a somewhat contradictory signal in terms of returns. Table 9 formalises this by presenting results for regressions akin to those of Tables 2 and 5 but with *subsequent* real returns as the dependent variable and with PR as the independent variable. All the matched periods are utilized as in the previous analysis. Panel A presents the results of 10-year subsequent real return regressions. Both coefficients of PR are negative but only the UK coefficient is significant. The adjusted R^2 value is very low for the US but fairly substantial for the UK. By contrast, Panel B reveals that five of the seven markets have positive coefficients, with only the US

statistically significant. However, the explanatory power of most of these regressions is negligible. Panel C reports results of the 1-year regressions, where 8 of 11 countries have positive PR coefficients. The adjusted R^2 values are generally low, albeit typically higher than those in the 5-year regressions in Panel B. Overall, there is very little evidence to suggest that PR has any ability to predict subsequent aggregate market returns. This is consistent with PR offering contradictory signals for returns based on the predictions for REG and RDG.

III. Conclusion

Whereas there has been a long history of discussing the payout ratio at the firm level in corporate finance, its role in investment strategy and equilibrium asset pricing had been relatively neglected until Arnott and Asness (2003) offered interesting empirical insights into the US experience since 1871 regarding the payout ratio and aggregate real earnings. Surprisingly, the US payout ratio was positively related to real earnings growth. In extending that analysis to a further ten countries, we report that their findings are generally supported by international evidence, though there is more evidence of mean reversion in earnings in countries other than the US. Hence, despite very different institutional, tax and legal environments, leading to highly variable degrees of minority shareholder protection between countries (see La Porta et al, 2000), we still find that substantial reinvestment of retained earnings will not lead to faster future real earnings growth, though it will lead to faster real dividend growth. Unfortunately, these findings do not translate to returns predictability in a persuasive fashion: the results are mixed for different countries and time periods. A higher payout ratio leads to lower returns for the US and UK over 10-year horizons, but

higher US returns and an insignificant impact on UK returns over 5-year horizons. Clearly, predicting real earnings and dividend growth is the easier part: valuing them is quite another matter! Currently the components of the S&P 500 are paying out around one-third of their earnings as dividends, well below the post-World War II average of 50-60%: given our findings this suggests an ominous outlook for earnings growth over the next few years.

Notes

1. Recent articles in the International Herald Tribune (16^{th}-17^{th} October 2004, p. 14) and The International Bank Credit Analyst (October 2004) have begun to change this trend by placing greater emphasis on aggregate payout ratios.

2. A detailed discussion of the different tax structures is available from the authors on request.

References

ap Gwilym, O., Seaton, J., and Thomas, S. 2004. "Dividend Yield Investment Strategies, the Payout Ratio and Zero-Dividend Stocks". Forthcoming, *Journal of Investing*.

Arnott, R.D., and Asness, C.S. 2003. "Surprise! Higher Dividends = Higher Earnings Growth." *Financial Analysts Journal*, vol. 59, no. 1 (January/February):70-87.

Barth M., Elliott, J., and Finn, M. 1999. "Market Rewards Associated with Patterns of Increasing Earnings." *Journal of Accounting Research,* vol. 37, no. 2 (Autumn): 387-413.

Bernartzi, S., Michaely, R., and Thaler, R. 1997. "Do Changes in Dividends Signal the Future or the Past?" *Journal of Finance*, vol. 52, no. 3 (March):1007-1034.

Bhattacharya, S. 1979 "Imperfect Information, Dividend Policy, and the "Bird-in-Hand" Fallacy." *Bell Journal of Economics*, vol. 10, no. 1 (Spring):259-270.

De Angelo, H., De Angelo, L., and Skinner, D. 1996. "Reversal of Fortune: Dividend Policy and the Disappearance of Sustained Earnings Growth." *Journal of Financial Economics*, vol. 40, no. 3 (March):341-371.

Fama, E.F., and French, K.R. 1998. "Value versus Growth: The International Evidence." *Journal of Finance*, vol. 53, no. 6 (December):1975-1999.

Kaplan, S., and Reishus, D. 1990. 'Outside Directorships and Corporate Performance', *Journal of Financial Economics*, vol. 27, no. 2 (October):389-410.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R.W. 1998. "Law and Finance." *Journal of Political Economy*, vol. 106, no. 6 (December):1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R.W. 2000. "Agency Problems and Dividend Policies around the World." *Journal of Finance*, vol. 55, no. 1 (February):1-33.

Lintner, J. 1956. Distribution of Incomes of Corporations among Dividends, Retained Earnings and Taxes. *American Economic Review*, vol. 46, no. 2 (May):97-113.

McManus, I.D., ap Gwilym, O., and Thomas, S.H. 2004. "The Role of Payout Ratio in the Relationship between Stock Returns and Dividend Yield." *Journal of Business Finance and Accounting,* vol. 31, no.9 & 10 (November/December):1355-1387.

Miller, M.H., and Modigliani, F. 1961. "Dividend Policy, Growth, and the Valuation of Shares." *Journal of Business*, vol. 34, no. 4 (October):411-433.

Newey, W.K., and West, K.D. 1987. "A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica*, vol. 55, no. 3 (May):703-708.

Table 1
Summary Statistics

A. Summary Statistics 1965-2002.

	Payout Ratio				Compound Annual Real Growth	
Country	Max	Min	Mean	Median	Earnings	Dividend
US	0.77	0.29	0.50	0.49	0.44%	0.33%
UK	0.83	0.33	0.56	0.58	1.94%	1.45%

B. Summary Statistics 1973-2002.

US	0.77	0.29	0.49	0.46	0.47%	0.52%
UK	0.83	0.33	0.53	0.54	1.85%	1.83%
France	0.69	0.29	0.45	0.44	5.52%	3.72%
Germany	0.69	0.25	0.39	0.38	3.74%	1.17%
Netherlands	0.61	0.29	0.47	0.48	3.30%	2.87%
Switzerland	0.39	0.20	0.27	0.27	1.80%	2.55%
Japan	0.52	0.26	0.39	0.38	-1.35%	-1.64%

C. Summary Statistics 1990-2002.

US	0.77	0.29	0.50	0.44	-0.93%	-0.36%
UK	0.83	0.50	0.62	0.60	-0.09%	0.60%
France	0.52	0.32	0.43	0.43	2.82%	4.72%
Germany	0.51	0.25	0.33	0.31	1.15%	2.00%
Netherlands	0.61	0.43	0.51	0.49	2.90%	4.00%
Switzerland	0.39	0.21	0.27	0.27	3.52%	5.92%
Japan	0.52	0.26	0.40	0.39	-4.50%	-1.88%
Italy	0.66	0.25	0.45	0.47	-0.94%	2.65%
Spain	0.55	0.31	0.43	0.42	1.17%	-0.31%
Greece	0.61	0.12	0.38	0.39	9.43%	14.25%
Portugal	0.68	0.02	0.46	0.48	2.02%	2.90%

Table 2
Subsequent Real Earnings Growth as a Function of Payout Ratio

A. 10-year subsequent real earnings growth as a function of payout ratio (PR) 1965-2002.

Country	Constant		Adjusted R^2
US	-0.08	0.18 PR	28.0%
	(-3.61)	(4.03)	
UK	0.00	0.03 PR	7.4%
	(0.35)	(2.24)	

B. 5-year subsequent real earnings growth as a function of payout ratio (PR) 1973-2002.

US	-0.25	0.54 PR	55.0%
	(-8.27)	(9.23)	
UK	-0.06	0.16 PR	19.0%
	(-2.83)	(3.68)	
France	-0.13	0.42 PR	7.6%
	(-3.97)	(5.92)	
Germany	0.02	0.06 PR	0.3%
	(0.64)	(0.80)	
Netherlands	-0.03	0.15 PR	4.4%
	(-1.72)	(3.91)	
Switzerland	-0.14	0.65 PR	10.7%
	(-3.55)	(4.51)	
Japan	-0.18	0.47 PR	26.4%
	(-4.24)	(4.55)	

C. 1-year subsequent real earnings growth as a function of payout ratio (PR) 1990-2002.

US	-0.31	0.67 PR	15.2%
	(-2.34)	(2.72)	
UK	-0.31	0.52 PR	12.2%
	(-3.13)	(3.13)	
France	-0.85	2.05 PR	36.2%
	(-7.24)	(7.38)	
Germany	-0.15	0.54 PR	2.3%
	(-0.69)	(0.82)	
Netherlands	-0.62	1.30 PR	15.9%
	(-2.65)	(2.70)	
Switzerland	-0.17	0.78 PR	1.7%
	(-0.57)	(0.70)	
Japan	-0.50	1.18 PR	31.9%
	(-5.04)	(4.62)	
Italy	0.21	-0.43 PR	5.8%
	(2.65)	(-2.18)	
Spain	-0.34	0.81 PR	13.3%
	(-2.41)	(2.28)	
Greece	0.07	0.03 PR	-0.5%
	(0.43)	(0.08)	
Portugal	-0.67	1.53 PR	24.9%
	(-4.92)	(-4.81)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 3
Subsequent Real Earnings Growth as a Function of Payout Ratio and Earnings Yield

A. 10-year subsequent real earnings growth as a function of payout ratio (PR) and earnings yield (EY) 1965-2002.

Country	Constant			Adjusted R^2
US	0.03	0.11 PR	-0.22 EY	30.0%
	(0.64)	(1.69)	(-1.36)	
UK	0.01	0.02 PR	-0.05 EY	7.9%
	(0.76)	(0.97)	(-0.62)	

B. 5-year subsequent real earnings growth as a function of payout ratio (PR) and earnings yield (EY) 1973-2002.

US	-0.25	0.52 PR	-0.12 EY	55.1%
	(-8.27)	(6.21)	(-0.51)	
UK	-0.12	0.22 PR	0.21 EY	20.9%
	(-1.91)	(3.04)	(0.77)	
France	-0.03	0.38 PR	-0.96 EY	38.5%
	(-0.75)	(4.37)	(-3.80)	
Germany	0.10	0.09 PR	-1.31 EY	9.0%
	(2.27)	(1.28)	(-2.48)	
Netherlands	0.07	0.01 PR	-0.35 EY	9.8%
	(1.06)	(0.11)	(-1.84)	
Switzerland	0.01	0.57 PR	-1.44 EY	38.1%
	(0.20)	(4.46)	(-4.15)	
Japan	-0.19	0.45 PR	0.54 EY	28.1%
	(-4.65)	(4.78)	(1.25)	

C. 1-year subsequent real earnings growth as a function of payout ratio (PR) and earnings yield (EY) 1990-2002.

US	-0.18	0.68 PR	-2.99 EY	17.5%
	(-0.97)	(2.83)	(-1.29)	
UK	-0.17	0.57 PR	-2.99 EY	24.3%
	(-1.37)	(3.62)	(-2.83)	
France	-0.28	1.25 PR	-3.21 EY	46.1%
	(-1.24)	(3.30)	(-2.60)	
Germany	0.25	0.40 PR	-5.80 EY	16.7%
	(1.06)	(0.68)	(-2.71)	
Netherlands	-0.36	1.28 PR	-4.03 EY	35.1%
	(-1.89)	(3.54)	(-3.90)	
Switzerland	0.58	-0.65 PR	-6.18 EY	21.9%
	(1.95)	(-0.69)	(-4.70)	
Japan	0.23	0.35 PR	-19.91 EY	50.1%
	(1.87)	(1.81)	(-4.94)	
Italy	0.68	-0.54 PR	-7.82 EY	36.6%
	(5.54)	(-2.75)	(-4.62)	
Spain	-0.21	1.02 PR	-2.94 EY	51.0%
	(-1.88)	(3.64)	(-6.34)	
Greece	0.59	-0.08 PR	-6.73 EY	38.7%
	(3.53)	(-0.30)	(-6.33)	
Portugal	-0.55	1.32 PR	-0.27 EY	48.7%
	(-2.72)	(3.04)	(-1.02)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 4
Subsequent Real Earnings Growth as a Function of Payout Ratio and Lagged Earnings Growth

A. 10-year subsequent real earnings growth as a function of payout ratio (PR) and previous 10-year real earnings growth (LEG_{10}) 1975-2002.

Country	Constant			Adjusted R^2
US	-0.03	0.10 PR	-0.60 LEG_{10}	33.1%
	(-1.19)	(1.71)	(-2.41)	
UK	0.01	0.03 PR	-0.10 LEG_{10}	11.0%
	(0.94)	(3.12)	(-0.74)	

B. 5-year subsequent real earnings growth as a function of payout ratio (PR) and previous 5-year real earnings growth (LEG_5) 1978-2002.

US	-0.23	0.50 PR	-0.22 LEG_5	61.6%
	(-6.55)	(7.54)	(-2.21)	
UK	-0.02	0.10 PR	-0.63 LEG_5	56.4%
	(-1.02)	(2.92)	(-8.81)	
France	0.17	-0.17 PR	-1.01 LEG_5	77.0%
	(4.43)	(-2.06)	(-12.17)	
Germany	0.15	-0.20 PR	-0.91 LEG_5	66.0%
	(3.74)	(-1.75)	(-10.52)	
Netherlands	-0.01	0.15 PR	-0.38 LEG_5	26.5%
	(-0.32)	(2.02)	(-3.90)	
Switzerland	-0.05	0.41 PR	-0.07 LEG_5	8.7%
	(-0.60)	(1.40)	(-0.29)	
Japan	-0.62	1.67 PR	1.20 LEG_5	46.4%
	(-5.61)	(5.59)	(4.60)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 5
Subsequent Real Dividend Growth as a Function of Payout Ratio

A. 10-year subsequent real dividend growth as a function of payout ratio (PR) 1965-2002.

Country	Constant		Adjusted R^2
US	0.03	-0.05 PR	7.8%
	(4.01)	(-3.25)	
UK	0.14	-0.21 PR	58.2%
	(8.16)	(-7.22)	

B. 5-year subsequent real dividend growth as a function of payout ratio (PR) 1973-2002.

US	-0.04	0.10 PR	19.6%
	(-3.18)	(4.05)	
UK	0.06	-0.05 PR	2.3%
	(2.82)	(-1.51)	
France	0.11	-0.15 PR	26.1%
	(4.20)	(-2.77)	
Germany	0.12	-0.24 PR	13.7%
	(3.80)	(-3.51)	
Netherlands	0.13	-0.18 PR	5.3%
	(2.43)	(-1.73)	
Switzerland	0.09	-0.17 PR	0.7%
	(2.41)	(-1.21)	
Japan	0.03	-0.10 PR	6.7%
	(1.76)	(-2.50)	

C. 1-year subsequent real dividend growth as a function of payout ratio (PR) 1990-2002.

US	-0.02	0.04 PR	0.5%
	(-0.71)	(0.76)	
UK	0.14	-0.22 PR	8.9%
	(3.27)	(-3.32)	
France	0.02	0.07 PR	-0.5%
	(0.31)	(0.37)	
Germany	0.53	-1.54 PR	38.4%
	(4.24)	(-4.14)	
Netherlands	0.35	-0.62 PR	13.7%
	(3.52)	(-3.15)	
Switzerland	0.71	-2.30 PR	20.9%
	(2.91)	(-2.66)	
Japan	-0.02	-0.01 PR	-0.6%
	(-0.82)	(-0.11)	
Italy	0.66	-1.36 PR	28.5%
	(4.48)	(-4.55)	
Spain	0.07	-0.18 PR	0.6%
	(0.79)	(-0.89)	
Greece	0.75	1.59 PR	57.6%
	(9.35)	(-8.19)	
Portugal	0.61	-1.19 PR	22.9%
	(5.97)	(-6.13)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 6
Subsequent Real Dividend Growth as a Function of Payout Ratio and Dividend Yield

A. 10-year subsequent real dividend growth as a function of payout ratio (PR) and dividend yield (DY) 1965-2002.

Country	Constant			Adjusted R^2
US	-0.03	0.02 PR	0.01 DY	27.9%
	(-2.46)	(0.84)	(5.32)	
UK	0.14	-0.22 PR	-0.11 DY	58.5%
	(5.49)	(-7.61)	(-0.28)	

B. 5-year subsequent real dividend growth as a function of payout ratio (PR) and dividend yield (DY) 1973-2002.

US	-0.05	0.11 PR	0.00 DY	21.0%
	(-3.81)	(4.47)	(1.23)	
UK	0.01	-0.02 PR	0.60 DY	4.7%
	(0.27)	(-0.53)	(1.00)	
France	0.14	-0.04 PR	-1.76 DY	31.2%
	(4.86)	(-0.46)	(-4.43)	
Germany	0.11	-0.04 PR	-2.59 DY	21.3%
	(3.82)	(-0.50)	(-3.16)	
Netherlands	0.26	-0.28 PR	-1.76 DY	26.0%
	(5.23)	(-3.55)	(-3.44)	
Switzerland	0.11	0.29 PR	6.18 DY	47.4%
	(3.59)	(1.86)	(-5.40)	
Japan	0.03	-0.08 PR	-0.27 DY	6.9%
	(1.67)	(-2.01)	(-0.51)	

C. 1-year subsequent real dividend growth as a function of payout ratio (PR) and dividend yield (DY) 1990-2002.

US	-0.02	0.03 PR	0.00 DY	-0.0%
	(-0.72)	(0.38)	(0.18)	
UK	0.16	-0.40 PR	2.68 DY	23.9%
	(3.40)	(-3.92)	(2.82)	
France	0.22	-0.05 PR	-5.12 DY	11.4%
	(2.23)	(-0.30)	(-2.74)	
Germany	0.58	-1.01 PR	-11.57 DY	48.7%
	(5.31)	(-2.90)	(-3.55)	
Netherlands	0.26	-0.28 PR	-1.76 DY	26.0%
	(5.23)	(-3.55)	(-3.44)	
Switzerland	1.24	-2.38 PR	-32.48 DY	59.0%
	(6.52)	(4.60)	(-5.36)	
Japan	0.04	0.02 PR	-8.60 DY	11.6%
	(1.71)	(0.52)	(-2.65)	
Italy	0.67	-0.60 PR	-14.87 DY	11.4%
	(4.76)	(-1.55)	(-2.56)	
Spain	0.05	-0.01 PR	-1.79 DY	4.5%
	(0.62)	(-0.03)	(-1.96)	
Greece	0.75	-1.40 PR	-2.89 DY	58.5%
	(9.12)	(-5.14)	(-1.15)	
Portugal	0.71	-0.77 PR	-10.40 DY	46.9%
	(6.50)	(-5.17)	(-5.29)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 7
Subsequent Real Dividend Growth as a Function of Payout Ratio and Lagged Dividend Growth

A. 10-year subsequent real dividend growth as a function of payout ratio (PR) and previous 10-year real dividend growth (LDG_{10}) 1975-2002.

Country	Constant			Adjusted R^2
US	0.02	-0.02 PR	-0.15 LDG_{10}	13.0%
	(2.89)	(-1.20)	(-1.26)	
UK	0.08	-0.07 PR	-0.26 LDG_{10}	71.5%
	(8.30)	(-3.75)	(-4.28)	

B. 5-year subsequent real dividend growth as a function of payout ratio (PR) and previous 5-year real dividend growth (LDG_5) 1978-2002.

US	-0.04	0.13 PR	-0.64 LDG_5	55.7%
	(-4.26)	(6.40)	(-7.32)	
UK	0.11	-0.14 PR	0.10 LDG_5	16.7%
	(5.11)	(-3.33)	(0.98)	
France	0.15	-0.19 PR	-0.60 LDG_5	31.7%
	(5.85)	(-3.23)	(-5.81)	
Germany	0.19	-0.42 PR	-0.88 LDG_5	44.5%
	(4.38)	(-3.36)	(-6.15)	
Netherlands	0.12	-0.12 PR	-0.18 LDG_5	10.2%
	(2.22)	(-1.04)	(-1.34)	
Switzerland	0.10	-0.22 PR	0.62 LDG_5	23.7%
	(2.32)	(-1.49)	(2.28)	
Japan	0.03	-0.09 PR	-0.20 LDG_5	7.3%
	(1.74)	(-2.02)	(-1.74)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.

Table 8
Average Real Returns Ranked by Concurrent Real Earnings Growth and Real Dividend Growth

A. Average 5-year real returns of quartiles ranked by concurrent 5-year real earnings growth (REG) 1973-2002.

	1 (Low REG)	2	3	4 (High REG)
US	7.37%	8.05%	5.53%	17.02%
UK	7.25%	11.38%	10.50%	13.83%
France	5.56%	12.25%	7.80%	20.80%
Germany	2.48%	1.43%	13.86%	17.32%
Netherlands	5.26%	9.03%	15.25%	21.31%
Switzerland	0.85%	4.95%	14.10%	17.90%
Japan	-6.22%	-1.29%	9.93%	16.09%

B. Average 5-year real returns of quartiles ranked by concurrent 5-year real dividend growth (RDG) 1973-2002.

	1 (Low RDG)	2	3	4 (High RDG)
US	5.15%	7.42%	10.82%	13.80%
UK	3.19%	12.76%	12.34%	14.13%
France	10.65%	8.00%	8.21%	20.17%
Germany	0.71%	6.67%	10.68%	16.69%
Netherlands	0.87%	19.48%	12.32%	16.92%
Switzerland	-0.35%	8.89%	9.91%	19.40%
Japan	-2.43%	-1.28%	7.42%	15.22%

Table 9
Subsequent Real Returns as a Function of Payout Ratio

A. 10-year subsequent real returns as a function of payout ratio (PR) 1965-2002.

Country	Constant		Adjusted R^2
US	0.15	-0.16 PR	3.1%
	(3.28)	(-1.72)	
UK	0.30	-0.39 PR	51.1%
	(10.57)	(-7.06)	

B. 5-year subsequent real returns as a function of payout ratio (PR) 1973-2002.

US	-0.09	0.37 PR	15.7%
	(-1.95)	(4.45)	
UK	0.12	-0.03 PR	-0.2%
	(3.15)	(-0.39)	
France	0.07	0.09 PR	0.3%
	(0.87)	(0.43)	
Germany	0.11	-0.05 PR	-0.1%
	(1.90)	(-0.40)	
Netherlands	0.17	-0.10 PR	0.1%
	(2.22)	(-0.59)	
Switzerland	0.03	0.24 PR	0.5%
	(0.45)	(0.97)	
Japan	-0.02	0.19 PR	0.9%
	(-0.32)	(1.09)	

C. 1-year subsequent real returns as a function of payout ratio (PR) 1990-2002.

US	0.06	0.07 PR	-0.4%
	(0.45)	(0.34)	
UK	-0.41	0.79 PR	11.9%
	(-2.54)	(3.25)	
France	-0.71	1.90 PR	10.8%
	(-2.62)	(2.84)	
Germany	0.35	-0.90 PR	3.5%
	(1.34)	(-1.13)	
Netherlands	-0.32	0.84 PR	2.7%
	(-1.05)	(1.47)	
Switzerland	0.29	-0.65 PR	0.2%
	(0.80)	(-0.49)	
Japan	-0.52	1.23 PR	15.2%
	(-3.12)	(2.78)	
Italy	0.60	-1.20 PR	15.1%
	(2.58)	(-2.47)	
Spain	-0.31	0.94 PR	2.9%
	(-1.04)	(0.93)	
Greece	-0.24	0.92 PR	5.7%
	(-1.44)	(2.12)	
Portugal	-0.31	0.77 PR	5.1%
	(-2.28)	(2.57)	

All t-statistics have been adjusted for overlapping observations using Newey-West (1987) correction.