

CEO Incentives and Payout Policy: Empirical Evidence from Europe

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Abstract: We investigate how corporate payout policy is influenced by CEO share ownership and CEO stock option holdings for 1,754 publicly listed firms from the UK, Germany, France, Italy, the Netherlands, and Spain, over the period from 2002 to 2009. Similar to the findings for US firms, our results show that CEO stock option holdings are associated with lower dividend payments. This finding suggests that as CEOs accumulate more stock options as part of their equity-based compensation in European firms, they are reluctant to make dividend payments which would lead to a decline in the values of their stock option holdings. In contrast, we do not find any consistent evidence of CEO stock options driving the recent increase in share repurchase activity in European firms. Furthermore, we observe that the fraction of share repurchases in total payout increases as the CEO stock option holdings increase. Finally, our results do not show any significant impact of CEO share ownership on corporate payout policy.

1. Introduction

There has been a considerable rise in share repurchase activity among US corporations since 1980s. For instance, the ratio of corporate expenditures on share repurchase programs to total earnings increased from 4.8 percent in 1980 to 41.8 percent in 2000 in US firms (Grullon and Michaely (2002)). Recently we observe that European firms seem to follow a similar track and have been increasingly engaging in share repurchase activity. Until 1980s many European countries prohibited share repurchase as a payout policy. However, there have been some regulatory changes starting in 1980s which have made it possible for European countries to use share repurchase as an alternative payout policy to cash dividends. Eije and Megginson (2008) report that the fraction of European companies paying dividends has declined over the period 1989-2005. However, they observe that the total value of share repurchases has increased in Europe and it has accounted for over half of the total value of cash dividends. Additionally, Young and Yang (2011) report that share repurchase activity in the UK firms has been increasing over time with the aggregate amount rising from £636 million in 1998 to almost £28 billion in 2006.

Another parallel development to this recent surge in share repurchases in Europe has been the convergence of CEO compensation packages towards the US model of CEO compensation with a greater emphasis on stock-based compensation¹. Even though CEOs receive relatively lower compensation in Europe than those in US, there has still been an increase in convergence in terms of structure of compensation. Fernandes et al. (2012) use CEO compensation data from 14 countries in 2006 and report that the US pay premium is economically modest. They also explore the factors contributing to the convergence CEO pay

¹ See, for instance, Cheffins (2003), Gomez-Mejia and Werner (2008), Croci et al (2012), and Fernandes et al. (2012).

practices internationally. Their results highlight the fact that many of their firms in their non-US sample compete in the global market for capital, customers, and managerial talent. Their findings show that there is not a significant difference in CEO pay between US firms and non-US firms exposed to international markets. These findings are consistent with the anecdotal evidence on globalization of CEO compensation. For instance, Damian Carnell, a London-based principal at Towers Perrin, who specializes in executive compensation in Europe, says: "Big companies are starting to realize that they are in an international market for staff. When you have a multibillion-dollar market cap, you don't want to get a second- or third-choice CEO. Paying a really skilled CEO a lot of money can still be a bargain in the long run." ²

In this paper, we aim to shed a light on the relationship between CEO incentives and payout policies in Europe. In particular, we focus on how CEO compensation can influence firms' choice of payout policy, i.e. dividend payment or share repurchase. Thus, we aim to advance our understanding about the extent to which the recent surge in share repurchases in Europe can be explained by changes in CEO compensation packages. The extant literature provides inconclusive evidence on the relationship between managerial incentives and payout policy. While there has been some studies investigating how executive compensation, in particular equity-based compensation, can influence corporate payout decisions for US companies, there has been no research examining how CEO incentives, that is, equity based compensation, can play a role in determining corporate payouts in European companies³. Recent studies show that equity based compensation is becoming a major part of CEO compensation packages in Europe (Crocì et al. (2012), Fernandes et al. (2012)). Thus, it is

² "Spreading the Yankee Way of Pay", April 17, 2001, Business Week.

³ Among others see, for instance, Fenn and Liang (2001).

important to improve our understanding of the implications of CEO compensation packages for payout decisions in European firms.

Previous research (e.g. Lambert et al. (1989), Jolls (1998), Fenn and Liang (2000), Kahle (2002)) suggests that employee/executive stock options can play an important role in influencing the decision to repurchase stock rather than increase dividends. Firstly, the value of stock options declines when a stock goes ex-dividend. Thus, executive stock options create incentives for the execution of repurchases rather than the payment of dividends. Secondly, managers might prefer to use repurchased shares to fund employee/executive stock option plans rather than issuing new stock to avoid diluting earnings per share.

As part of managerial incentives, managerial shareholdings as well as stock option holdings can influence corporate policies. Management stock ownership can, in fact, align the interests of managers and shareholders and affect payout policies. The existing evidence on this issue is quite mixed. For instance, Rozeff (1982), Jensen et al (1992), and Noronha et al. (1996) find a negative relationship between insider ownership and dividend payout. In contrast, Fenn and Liang (2001) report that management stock ownership has a positive impact on payouts by firms that have potentially the greatest agency problems. In Hu and Kumar's (2004) study, CEO ownership is significantly negatively related to dividend payments while Sharma (2011) does not report any statistical significant effects of CEO ownership on dividends, repurchases, and total payout.

We aim to contribute to this literature by using a more comprehensive measure of CEO incentives that includes both CEO share ownership and equity based compensation, i.e. stock option holdings, to investigate the relationship between CEO incentives and payout decisions. For our empirical analysis, we use a sample of 1,754 publicly listed firms (for a

total of 7,390 firm/year observations) from the UK, Germany, France, Italy, the Netherlands, and Spain over the period from 2002 to 2009.

Our findings show that CEO stock option holdings are associated with lower levels of dividend payments. This finding suggests that as CEOs accumulate more stock options as part of their equity-based compensation in European firms, they seem to make dividend payments which would lead to a decline in the values of their stock option holdings. Further, we do not find any evidence of CEO stock options driving the recent increase in share repurchase activity in European firms. We observe that the fraction of share repurchases relative to total payout increases as the CEO stock option holdings increase. Finally, our results do not show any significant impact of CEO share ownership on corporate payout policy in our sample firms.

The remainder of the paper is organized as follows. Section 2 reviews prior studies including recent trends in corporate payout policies and the links between managerial incentives and payout decisions. Section 3 describes our sample while Section describes the variables used in the empirical analyses. Section 5 presents our empirical results. Finally, Section 6 concludes.

2. Literature review

2.1. Recent trends in corporate payout policies

Fama and French (2001) provide evidence on a declining propensity to pay dividends. They report that the number of US firms paying dividends has declined considerably over the last twenty five years. One explanation for this finding is the increase in the number of firms with low cash flow and high growth opportunities during the 1990s. These firms tend to use

their cash holdings to take advantage of their growth opportunities rather than distributing it to their shareholders as dividends. However, Fama and French (2001) find that once they control for these firm specific characteristics, they still observe that firms continue to pay dividends at a decreasing rate.

Denis and Osobov (2008) examine dividend policies in six developed countries including the US, Canada, the UK, Germany, and Japan over the 1994-2002 period and their findings support those from Fama and French (2001) documenting a declining propensity to pay dividends but with a lower intensity than that of the US. Eije and Megginson (2008) report that the fraction of European companies paying dividends has declined over the period 1989-2005. However, they observe that the total value of share repurchases has increased in Europe and it has accounted for over half of the total value of cash dividends. Furthermore, there has been a decline in the propensity to pay cash dividends while the propensity to repurchase shares has steadily increased during the sample period. Ferris et al. (2006) investigate the dividend payments in the UK firms and document a similar but relatively less pronounced trend of declining dividend payments than that of US companies. They conclude that a shift in catering incentives most likely explains the declining propensity to pay dividends over the 1998–2002 period. Thus, managers appear to opportunistically modify corporate payout policies when investor sentiment favors the payment of dividends.

More recently, Ferris et al. (2009) investigate patterns in dividend payments across 25 countries over 1994-2007. They examine whether the recent decline in the number of dividend-paying firms in the US is also common to firms in other countries. During their sample period, the percentage of sample firms paying dividends declines from 72 to 55. However, they do not examine share repurchase behaviour during their sample period. In this paper, we focus on companies from the UK, France, Germany, Italy, the Netherlands, and

Spain to investigate whether dividend and stock repurchase policies could be explained by CEO incentives during the period from 2002 to 2009.

2.2. Management compensation and corporate payout policies

Lambert et al. (1989) argue that executive stock options might provide executives with incentives to reduce dividend payments. Since US executive stock options are generally not dividend-protected, their values, like those of all call options, are negatively related to future dividend payments. They examine the relation between the initial adoption of stock options for executives and subsequent changes in corporate dividend policy. Their findings show that dividend payments are reduced relative to expected levels following the adoption of executive stock options. Thus, the presence of stock options in an executive's compensation package provides an incentive for the executive to reduce corporate dividends. This finding is consistent with the hypothesis that dividend payments, *ceteris paribus*, reduce the value of the executive stock options, and thereby increases the cost to the executive of paying dividends.

Fenn and Liang (2001) also find that there is positive and significant relationship between repurchases and management stock options suggesting that stock options could explain the rise in repurchases at the expense of dividends. They examine how stock options affect the dividend/repurchase choice, but not the impact of stock options on total payout.

Kahle (2002) examines the effect of stock options on the firm's decision to repurchase stock, the actual repurchases made, and the market reaction to the announcement of a repurchase. Differently from previous researchers, in her empirical analysis she includes both executive stock options and other employee stock options. She reports that her findings

support the signalling and free cash flow hypotheses, that is, firms are more likely to repurchase shares than to increase dividends when recent stock performance has been poor or when free cash flow is high.

Furthermore, she tests two relevant hypotheses: the option-funding hypothesis and the substitution hypothesis. According to the option-funding hypothesis, firms use share repurchases as a way to fund the exercise of employee stock options. The substitution hypothesis emphasizes the differences between executive stock options and employee stock options in terms of incentives each can create. Employee stock options would create incentives for firms to repurchase shares to avoid the earnings dilution that could be caused by option exercise. Yet, executive stock options would create an incentive for executives not to pay dividends, since dividend payments would reduce the value of both exercisable and unexercisable options held by executives. Her findings provide support for both the option-funding hypothesis and the substitution hypothesis.

Jolls (1998) also examines firms' choice between dividend increases versus stock repurchases. For her empirical analysis, she uses option grants in the preceding year as a measure of employee options outstanding, and also includes executive options outstanding. She documents that executive stock options, rather than employee options, play a role in determining share repurchase behaviour. Her findings provide support for the substitution hypothesis, but not for the option-funding hypothesis.

Hu and Kumar (2004) report a negative relationship between executive stock options and both the likelihood and level of dividend payments. However, they show that total payouts are not affected by executive options.

Cuny et al. (2009) also examine the relationship between executive stock options and total corporate payout. Their findings show that higher executive stock options lead to a

lower total payout, *ceteris paribus*. Moreover, they find some evidence that firms increase payouts through repurchases in order to offset earnings per share dilution that occurs due to usage of director stock options. Overall, incentives from not having dividend protection for options appear to dominate those from antidilution, leading to a lower level of total payout as director options increase.

Sharma (2011) investigates the impact of board characteristics, i.e., board independence, tenure of independent directors, number of busy directors, and equity incentives of independent directors, on a firm's propensity to pay dividends using US data from 944 companies in 2006. His results provide evidence of positive relation between the propensity to pay dividends and 1) board independence, and 2) director tenure. Further, he reports a negative relation between the propensity to pay dividends and 1) busy directors, and 2) equity compensation. His findings show that equity based compensation received by independent directors has a significant impact on dividend payout, total payout and share repurchases.

Recently, Young and Yang (2011) investigate the relationship between corporate repurchases and the presence of earnings per share (EPS) performance conditions in executive compensation in UK firms. Their findings show that managers' stock repurchase decisions are influenced by the EPS related incentives provided by executive compensation. Thus, EPS conditions in bonus and option plans are significantly important for UK managers' stock repurchase decisions. They find no evidence that EPS-driven repurchases lead to investment myopia. Thus, their main focus is on share repurchases and they do not consider how executive compensation can influence firms' dividend payments. In particular, the impact of executive stock option holdings or LTIP option holdings on dividend payments in UK firms is left unexplored. In this study we complement Young and Yang (2011) by

considering not only share repurchases but also dividend payments that could be influenced by CEO compensation. In our empirical analysis we highlight the importance of CEO stock option holdings accumulated through equity-based compensation in determining the level of dividend payments and total payouts as well as the level of share repurchases in UK firms. Furthermore, our sample includes not only UK companies but also continental European firms.

As stated above, if executive stock options are not dividend protected then stock options provide executives with incentives to reduce dividend payments (e.g. Lambert et al., 1989, Fenn and Liang, 2001). For our sample of European firms, based on our search through annual reports, we have not come across any evidence of dividend protection for CEO stock options. Hence, we expect CEO stock option holdings to have a negative impact on the level of dividend payments.

2.3. Management stock ownership and corporate payout policies

Easterbrook (1984), Zwiebel (1996), Fluck (1999), and Myers (2000) emphasize the potential monitoring role of regular dividend payments which could lead to a decline in agency problems. For instance, firms with high dividend payments are more likely to raise equity financing in external capital markets which would provide monitoring for those firms' management. Additionally, Jensen (1986) argues that dividend payments help reducing agency problems that arise from presence of free cash flows.

While distributions of cash through payouts can be used by companies to mitigate agency problems, management stock ownership (including CEO stock holdings) can also align the interests of executives with those of shareholders. It can be argued that managers

with larger stakes in their companies are more likely to behave like shareholders and to pursue their shareholders' interests.

Ex ante, it is unclear whether we should expect a positive or a negative relationship between management stock ownership and corporate payouts. In the spirit of the outcome model of La Porta et al. (2000), the incentive-alignment effect produced by a higher management ownership should lead to larger payouts. In other words, based on this model we would expect managerial ownership to be positively associated with dividends and stock repurchases. On the other hand, in line with the La Porta et al.'s (2000) substitute model, payouts and managerial ownership could be seen as alternative governance mechanisms. In this scenario, we would predict a negative relationship between managerial ownership and payouts.

The relationship between ownership by managers and payout policy has been studied empirically. For instance, Rozeff (1982), Jensen et al (1992), and Noronha et al. (1996) report that companies with lower insider ownership choose larger dividend payments.

Fenn and Liang (2001) find that management stock ownership has a positive impact on payouts by firms that have potentially the greatest agency problems, i.e. those firms with low management stock ownership and few investment opportunities or high free cash flow. However, they do not observe any significant relationship between management stock ownership and payouts for those firms with relatively low agency costs. They interpret these findings as management stock ownership mitigating agency costs at firms with serious free cash flow problems.

Hu and Kumar (2004) show that the fraction of shares held by a CEO is significantly negatively related to both the likelihood and the level of dividend payments. In contrast, they

report that CEO ownership is not a determinant of total payout. Sharma (2011) replicate some of the analysis of Hu and Kumar (2004) without finding any statistical significant effects of CEO ownership on dividends, repurchases, and total payout.

In this paper, we use CEO ownership as a proxy for management stock ownership. In light of the prior theoretical and empirical literature, we do not have precise *ex ante* expectations regarding the effects of CEO ownership on payouts.

3. Data and sample selection

We construct our sample by obtaining CEO stock option holdings and CEO share ownership data for European firms from *BoardEx*, a leading business networking service that provides in-depth information on executive compensation and executive share ownership⁴. There has been a considerable improvement in the coverage of publicly listed European firms from the UK, Germany, France, Italy, the Netherlands, and Spain in *Boardex* since 2000. Thus, following Croci et al. (2012) our empirical analysis uses *Boardex* data for the period from 2001 to 2008. Since in our regressions we use lagged values of CEO stock option holdings and CEO share ownership data to build some of the independent variables, we focus on the payout policy of European companies for the period 2002-2009.

To build the other variables we need, we complement the *Boardex* data with market and accounting data from *Thomson Datastream* and *Worldscope* respectively. We exclude observations with valid data from *Boardex* but without available data from *Datastream* and *Worldscope*. Following previous studies, we also exclude firms from financial sectors (SIC

⁴ Fernandes et al. (2012) use *Boardex* data for the non-US companies in their sample, while Croci et al. (2012) employs CEO compensation data for continental European companies from *Boardex*.

6000-6999) and utilities (SIC 4900-4949) since regulatory rules and restrictions can influence payout policies of firms in those industries. The largest dataset we use consists of an unbalanced panel of 1,754 firms and 7,390 firm-year observations. The number of firm-year observations for each country varies and the majority of the observations come from the UK. To be specific, there are 5,457 firm-year observations from the UK, 956 firm-year observations from France, 366 firm-year observations from Germany, 307 firm-year observations from the Netherlands, 236 firm-year observations from Italy, and 68 firm-year observations from Spain.

4. Variable definitions

4.1. Payout variables

Payout to shareholders can be either cash dividends or stock repurchases. In this paper, we focus on dependent variables that are based on cash dividends, stock repurchases and total payout, defined as the sum of dividends and stock repurchases. Following previous literature (e.g. Fenn and Liang (2001), Kahle (2002), Grullon and Michaely (2002)), we scale our payout variables by earnings and market value of equity. Alternatively, we use total assets as deflator to test the robustness of our empirical results. An additional payout variable we use is the ratio between stock repurchases and total payout.

Table 1(A) contains detailed descriptions of the payout variables, including indications of the specific Worscope items used.⁵

⁵ It is worth mentioning that we winsorize 1% (0.5% in each tail of the distribution) of the observations of all the dependent and independent variables in order to reduce the impact of outliers on our findings.

4.2. CEO stock-based incentives

CEO stock-based incentives consist mainly of stock and options. For a particular firm-year, the CEO is defined as the top executive (generally the CEO, the Executive Chairman or the MD) with the largest total compensation within the firm. Option incentives are calculated as the sum of unexercised exercisable options and unexercised unexercisable options divided by total shares outstanding. CEO stock incentives are computed as number of shares owned (excluding options) divided by total number of shares outstanding. Since stock and options held by a CEO at the end of a fiscal year may affect the CEO's payout decisions during the subsequent year, in our models we use lagged values of both CEO incentives variables as determinants of payouts. Precise definitions of the two CEO incentives variables are presented in Table 1(A).

4.3. Other firm-specific characteristics

Following previous research, we control for the effects of operating income, growth opportunities, firm size, leverage, retained earnings, cash holdings, volatility of operating income, volatility of stock return and past firm stock return on payout policies in our empirical analysis. We use lagged values of these independent variables to mitigate potential reverse causality and endogeneity biases. Detailed descriptions of these control variables can be found in Table 1(B).

We expect operating income scaled by total assets to be positively related to payouts since more profitable firms can distribute more cash through dividends and repurchases. We control for growth opportunities, defined as the market-to-book ratio, because companies

with more available investment opportunities are less likely to use cash through payouts. Firm size, measured as the natural logarithm of total assets, is used as a proxy for external financing costs (e.g. Fenn and Liang (2001), Cuny et al. (2009)). If we assume external financing costs are lower for larger firms, then payouts would be positively related to size.

Leverage, proxied by the book value of debt divided by the book value of assets, can also have an impact on a firm's payout decision. High levels of leverage can signal the presence of financial distress. We would expect that firms with high levels of leverage experience high financing costs. Further, leverage can act as a substitute for payouts to shareholders as it can alleviate the agency costs of free cash flow. Thus, firms with high leverage may tend to pay out less in the form of dividends or share repurchases. According to this view, leverage and payouts in the form of dividends or share repurchases can be substitutes for curbing CEO incentives to predate, and a negative relationship between cash dividends or share repurchases and leverage is predicted. Additionally, higher leverage might simply proxy for more credible, more stable, and more profitable firms that can afford to pay dividends and do share repurchases. This view implies that leverage and payouts will be complements so a positive relationship between payouts and leverage should be observed.

DeAngelo et al. (2006) suggest that earned capital can be a proxy for the life cycle stage at which a firm currently finds itself since it can measure the extent to which the firm is self-financing or relying on external capital resources. Thus, a firm with low retained earnings would be expected to be in capital infusion stage, while a firm with high retained earnings would be more mature with considerable level of cumulative profits, and thereby, it would be self-financing and likely to pay dividends. Eije and Megginson (2008) find that the fraction of retained earnings in a European firm's total equity is not significantly correlated with the likelihood to pay cash dividends, which is contrary to U.S. evidence shown in DeAngelo et al. (2006) and international evidence presented in Denis and Osobov (2008).

Following prior studies, we use the fraction of retained earnings relative to total equity to test whether this life-cycle variable explains cross-sectional variation in the level of dividend payments and share repurchases.

We control for cash holdings scaled by total assets. Cash-rich firms are more likely to engage in dividend payments and stock repurchases than counterparts with smaller piles of cash. Another significant determinant of payout policy is the volatility of firm performance (e.g. Jagannathan et al. (2000), Grullon and Michaely (2002), Chay and Suh (2009)). We contend that such volatility should be negatively associated with the amount of cash that is paid out. Moreover, when choosing between dividends and repurchases, more volatile performance should increase firm propensity to opt for the more flexible repurchases. We use two measures of firm performance volatility: the volatility of operating income and the volatility of stock return. We also attempt to control for recent market conditions by adding the lagged stock return to the set of controls.

Finally, in all regression models we include industry, year and country dummies. Coefficients for these controls are not reported in the tables.

5. Descriptive statistics and empirical results

5.1. Descriptive statistics

Table 2(A) and Table 2(B) report summary statistics for our CEO incentives, payout and firm-specific control variables for European firms.⁶ We use CEO stock and stock options holding as a percentage of total shares outstanding as our measures of CEO stock incentives. CEOs, on average, own 3.7 % of shares in their firms in our sample of European firms.

⁶ Pearson correlation coefficients for all pairs of the independent variables can be found in Appendix A.

Average CEO stock option holding is 0.6 %, which is lower than the average CEO stock ownership. The median for CEO stock option holdings and stock ownership is 0.01 %.

As our measure of dividend payments we use the ratio of dividend payments to earnings, the ratio of dividend payments to market value of the firm, the ratio of dividend payments to total assets. The average value for the ratio of dividend payments to earnings (market value) is 56% (2.53%) for European firms, while the median value of the ratio of dividend payments to earnings (market value) is 33% (1.83%). Further, the average for the ratio of share repurchases to earnings (market value) is 12% (0.66%). Total payouts average 71% (3.3%) of earnings (market value). When payouts are scaled by total assets rather than market values, averages and medians for payout variables are slightly smaller. Finally, the average value of the ratio between share repurchases and total payout is 15% while the median of this variable is zero.

Table 3 presents averages values of the payout variables for the fiscal years of our sample period. The most significant trend that can be highlighted over the sample period is the large increase in the fraction of repurchases in total payout. The average value of this fraction was 10% in the period 2002-2005 whereas it was 17.63% in the period 2006-2009. By comparing average values in the first sub-period with those in the second sub-period, we can conclude that over the sample period there was a decrease in dividend payments (at least if earnings and total assets are used as deflators) and a strong increase in stock repurchases. The findings for total payout are quite mixed.

5.2. CEO stock incentives and the level of dividend payments and share repurchases

The empirical results from regressions for all the dependent variables are reported in Tables 4(A), 4(B), 5(A), 5(B), 6(A) and 6(B). The one –sided tobit regression model, which is censored at zero, is used when the dependent variables are dividend, share repurchase, and total payout ratios. We use the two-sided tobit regression model, which is censored at zero and one, for the ratio between share repurchases and total payout.

Our results in the first two columns of Table 4(A) show that the impact of CEO incentives on *Dividends/Earnings* changes depending on whether we are considering CEO share ownership or CEO stock option holdings. As reported in the table, we do not find any significant impact of CEO share ownership on the level of dividend payments. Thus, our results do not support the notion that CEO share ownership could lead to a higher or lower levels of dividend payments or share repurchases in our sample of continental European firms and UK firms. In contrast, our findings show that CEO stock option holdings have a significant and negative impact on the level of dividend payments. This negative relationship is economically larger for continental European companies as indicated by the negative and significant coefficient for the interaction term *Dummy continental company* \times *CEO stock option holdings*. These findings are consistent with the hypothesis that CEO stock options could discourage dividend payments. Thus, our results support the results from Fenn and Liang (2000) for US firms that CEOs that hold more stock options are reluctant to pay dividends.

One can argue that the relationship between dividend payments and CEO stock options can be influenced by the endogeneity issue. For instance, reverse causality can lead to a negative relationship between dividend payments and CEO stock options. As Huddart and Lang (1996) suggest an increase in dividend payments can lead to an increase in stock prices, which could provide incentives for CEOs to exercise more stock options. Thus,

causality could possibly run from dividend payments to stock options. If this reverse causality exists, then we would find a negative relationship between share repurchases and CEO stock options. As share repurchases increase, stock prices increase leading to CEOs exercising more of their stock options. Thus, our results would indicate a negative relationship between share repurchases and CEO stock option holdings. However, we do not find a negative relationship between share repurchases and CEO stock option holdings as it is presented in the first two columns of Table 4(B). Consequently, we can conclude that our findings about the relationship between dividend payments and CEO stock option holdings do not seem to suffer from reverse causality problem.

The third and fourth columns of Table 4(A) report estimation results for *Total Payout/Earnings*. We observe that the coefficient estimate for CEO share ownership is negative but insignificant. This finding is not consistent with the results from Fenn and Liang (2001), who report a positive impact of share ownership on total payout. Similar to the findings for *Dividends/Earnings*, we observe that CEO stock option holdings have a negative and significant impact on *Total Payout/Earnings*. Thus, those firms with high CEO stock option holdings reduce their total payouts as well as dividend payments. The decrease in dividend payments do not seem to be balanced by increasing share repurchases. In the fourth column of Table 4(A), the coefficient estimate for the interaction variable (*Dummy continental company* \times *CEO stock option holdings*) is negative but insignificant, suggesting that CEO stock option holdings do not have a significantly different impact on total payouts in continental Europe.

Table 4 (B) reports our tobit estimation results for *Share repurchases/Earnings* and *Share repurchases/Total payout*. The coefficient estimate for CEO share ownership is negative and insignificant for both dependent variables. Hence, we do not find any evidence

that CEO share ownership has a significant impact on share repurchases. In the first column of Table 4(B), we observe that the coefficient estimate for CEO stock option holdings is positive but insignificant. In the third column of the table, we find that the fraction of share repurchases in total payout significantly increases as CEO stock option holdings increase. These results suggest that even though firms reduce their dividend payments as CEO stock options holdings increase, they do not seem to substitute share repurchases for dividend payments and increase their share repurchases. The increase in the fraction of share repurchases in total payout in response to an increase in CEO stock option holdings seems to arise from a decrease in dividend payments, and thereby a decrease in total payouts rather than an increase in the amount of share repurchases.

While the conclusions above are valid for the overall sample of observations, a slightly different conclusion can be drawn for firms from continental Europe by analysing the estimates for the interaction term *Dummy continental company* \times *CEO stock option holdings*. The coefficient estimate for the interaction term is positive and significant both in the second and in the fourth columns of Table 4(B). These findings suggest that the positive relationship between CEO stock option holdings and the fraction of repurchases in total payout is economically larger in continental Europe. They also indicate that such relationship is partly the consequence of the positive effect of CEO stock options on share repurchases.

As Lambert et al. (1989), Jolls (1998), Fenn and Liang (2001), and Kahle (2002) suggest, executive stock options can have an impact on corporate payout decisions. They argue that firms that pay dividends would experience a decline in their stock price on the ex-dividend date, which would lead to a reduction in the option value if stock options are not dividend protected. In our sample of UK and continental European firms, we have checked the annual reports of 20 percent of the observations for each country to see whether

companies have dividend protection for their executive stock options. We have not found any evidence of existence of dividend protection. Our results are consistent with the notion that CEOs with higher stock option holdings reduce their dividend payments in an attempt to protect the values of their option holdings in the absence of dividend protection.

On the whole, the findings described above are confirmed if payouts are scaled by market value and total assets instead of earnings (see Tables 5(A), 5(B), 6(A), and 6(B)). There are the following exceptions to this conclusion. First, in the second column of Tables 5(A) and 6(A), the coefficient for the interaction term *Dummy continental company* \times *CEO stock option holdings* is negative but not statistically significant. This shows that the relationship between CEO stock option holdings and *Dividends/Market value* or *Dividends/Total assets* is not economically larger in continental Europe. Second, *Dummy continental company* \times *CEO stock option holdings* is not significantly related to share repurchases in Table 6(B), showing that holdings of options by CEOs in continental Europe do not affect the level of share repurchases.

6. Conclusion

In this paper we investigate the CEO stock incentives for corporate payout policy. We test the impact of CEO share ownership and stock option holdings on the level of dividend payments, share repurchases, total payout, and share of repurchases in total payout. For our empirical analysis we use a unique data set, that is, a sample of firms from Europe including the UK, France, Germany, Italy, the Netherlands, and Spain over the period 2002 to 2009.

We do not find any significant impact of CEO share ownership on payout policy. In contrast, our results indicate that a higher level of CEO stock option holdings is related to a

lower level of dividend payments, while we do not consistently observe a significant relationship between CEO stock options and share repurchases. Previous researchers, including Fenn and Liang (2001) and Lambert et al. (1989), report that companies with executive stock options cut down dividend payments and replace share repurchases with dividend payments. In our study, we do not find any significant evidence of CEO stock option holdings having a positive impact on share repurchases, but we observe that an increase in CEO stock options lead to a decline in dividend payments and total payout levels. Further, we find that the fraction of share repurchases relative to total payout increases as CEO stock option holdings increase. This finding is explained by the negative impact of CEO stock option holdings on dividend payments.

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Appendix A: pairwise Pearson correlation coefficients

	<i>CEO stock ownership</i>	<i>CEO stock option holdings</i>	<i>Operating income</i>	<i>Growth opportunities</i>	<i>Firm size</i>	<i>Leverage</i>	<i>Retained earnings</i>	<i>Cash</i>	<i>Volatility of operating income</i>	<i>Volatility of stock return</i>	<i>Stock return</i>
<i>CEO stock ownership</i>	1										
<i>CEO stock option holdings</i>	-0.031	1									
<i>Operating income</i>	-0.005	-0.247	1								
<i>Growth opportunities</i>	0.076	0.111	-0.185	1							
<i>Firm size</i>	-0.272	-0.423	0.378	-0.238	1						
<i>Leverage</i>	-0.123	-0.164	0.133	-0.603	0.396	1					
<i>Retained earnings</i>	-0.013	-0.183	0.515	-0.289	0.321	0.09	1				
<i>Cash</i>	0.102	0.176	-0.429	0.344	-0.344	-0.439	-0.204	1			
<i>Volatility of operating income</i>	0.105	0.286	-0.549	0.339	-0.437	-0.308	-0.441	0.397	1		
<i>Volatility of stock return</i>	0.093	0.207	-0.408	0.05	-0.395	0.001	-0.318	0.225	0.37	1	
<i>Stock return</i>	0.044	0.035	0.165	0.256	0.0001	-0.221	0.065	0.014	-0.057	-0.193	1

CEO stock ownership is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged.

Table 1(A): Definitions for payout and CEO incentives variables

<i>Variable</i>	<i>Definition</i>
<i>Payout variables</i>	
<i>Dividends / earnings</i>	<i>Common dividends paid (item WC05376) over earnings, times 100. Earnings are defined as net income after preferred dividends (item WC01706) plus deferred domestic income tax (item WC18188, if available) plus deferred foreign income tax (item WC18189, if available)</i>
<i>Dividends / market value</i>	<i>Common dividends paid (item WC05376) over firm market capitalization (item WC08001), times 100</i>
<i>Dividends / total assets</i>	<i>Common dividends paid (item WC05376) over total assets (item WC02999), times 100</i>
<i>Share repurchases / earnings</i>	<i>Cash paid out through repurchases (item WC04751) over earnings, times 100. Earnings are defined as net income after preferred dividends (item WC01706) plus deferred domestic income tax (item WC18188, if available) plus deferred foreign income tax (item WC18189, if available)</i>
<i>Share repurchases / market value</i>	<i>Cash paid out through repurchases (item WC04751) over firm market capitalization (item WC08001), times 100</i>
<i>Share repurchases / total assets</i>	<i>Cash paid out through repurchases (item WC04751) over total assets (item WC02999), times 100</i>
<i>Total payout / earnings</i>	<i>Sum of 'Dividends / earnings' and 'Repurchases / Earnings'</i>
<i>Total payout / market value</i>	<i>Sum of 'Dividends / market value' and 'Repurchases / market value'</i>
<i>Total payout / total assets</i>	<i>Sum of 'Dividends / total assets' and 'Repurchases / total assets'</i>
<i>Share repurchases / Total payout</i>	<i>Cash paid out through repurchases (item WC04751) over total payout (if positive)</i>
<i>CEO incentives</i>	
<i>CEO stock ownership</i>	<i>Common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date (item WC05301 times item WC05576 times 1000)</i>
<i>CEO stock option holdings</i>	<i>Common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date (item WC05301 times item WC05576 times 1000)</i>

Table 1(B): Definitions for other firm-specific variables

<i>Variable</i>	<i>Definition</i>
<i>Operating income</i>	<i>Lagged value of operating income plus depreciation and amortization (item WC018155), over total assets (item WC02999)</i>
<i>Growth opportunities</i>	<i>Lagged value of total assets (item WC02999) minus book value of equity plus firm market capitalization (item WC08001), over total assets. Book value of equity is defined as total assets minus total liabilities (item WC03351) minus preferred stock (item WC03451, if available)</i>
<i>Firm size</i>	<i>Lagged value of the natural logarithm of the real value of total assets (item WC02999) expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year</i>
<i>Leverage</i>	<i>Lagged value of total liabilities (item WC03351), over total assets (item WC02999) minus book value of equity plus market capitalization (item WC08001). Book value of equity is defined as total assets minus total liabilities (item WC03351) minus preferred stock (item WC03451, if available)</i>
<i>Retained earnings</i>	<i>Lagged value of retained earnings (item WC03495) over book value of equity. Book value of equity is defined as total assets minus total liabilities (item WC03351) minus preferred stock (item WC03451, if available)</i>
<i>Cash</i>	<i>Lagged value of cash and equivalents (item WC02001) over total assets (item WC02999)</i>
<i>Volatility of operating income</i>	<i>Standard deviation of 'Operating income' in the past four fiscal years (excluding the current year)</i>
<i>Volatility of stock return</i>	<i>Standard deviation of monthly stock returns (source: Datastream) in the past two fiscal years (excluding the current year)</i>
<i>Stock return</i>	<i>Firm stock return (source: Datastream) in the previous fiscal year</i>

Table 2(A): Descriptive statistics for CEO incentives and payout variables

	<i>Obs</i>	<i>Mean</i>	<i>Median</i>	<i>Std deviation</i>
<i>CEO incentives</i>				
<i>CEO stock ownership</i>	7390	0.037	0.001	0.09
<i>CEO stock option holdings</i>	7390	0.006	0.001	0.011
<i>Payout variables</i>				
<i>Dividends /earnings</i>	5274	55.967	32.583	103.417
<i>Dividends/market value</i>	7390	2.53	1.827	3.174
<i>Dividends/total assets</i>	7390	1.903	1.305	2.359
<i>Share repurchases /earnings</i>	5274	12.466	0	38.815
<i>Share repurchases/market value</i>	7390	0.664	0	2.146
<i>Share repurchases/total assets</i>	7390	0.612	0	129.451
<i>Total payout/earnings</i>	5274	70.89	38.068	125.465
<i>Total payout/market value</i>	7390	3.3	2.133	4.56
<i>Total payout/total assets</i>	7390	2.622	1.515	125.465
<i>Share repurchases/total payout</i>	5343	14.606	0	27.902

CEO stock ownership is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dividends /earnings* is common dividends paid over earnings, times 100. Earnings are defined as net income after preferred dividends plus deferred domestic income tax plus deferred foreign income tax. *Dividends/market value* is common dividends paid over firm market capitalization, times 100. *Dividends/total assets* is common dividends over total assets, times 100. *Share repurchase /earnings* is cash paid out through repurchases over earnings, times 100. *Share repurchase/market value* is cash paid out through repurchases over firm market capitalization, times 100. *Share repurchase/total assets* is cash paid out through repurchases over total assets, times 100. *Total payout /earnings* is the sum of *dividends / earnings* and *share repurchases / earnings*. *Total payout / market value* is the sum of *dividends / market value* and *share repurchases / market value*. *Total payout/total assets* is the sum of *dividends / total assets* and *share repurchases / total assets*. *Share repurchases/total payout* is cash paid out through repurchases over total payout. The variables *CEO stock ownership* and *CEO stock option holdings* are lagged.

Table 2(B): Descriptive statistics for other firm-specific variables

	<i>Obs</i>	<i>Mean</i>	<i>Median</i>	<i>Std deviation</i>
<i>Operating income</i>	7390	0.079	0.107	0.168
<i>Growth opportunities</i>	7390	1.734	1.378	1.145
<i>Firm size</i>	7390	12.307	12.168	2.299
<i>Leverage</i>	7390	0.385	0.372	0.214
<i>Retained earnings</i>	7390	-0.484	0.253	2.977
<i>Cash</i>	7390	0.154	0.094	0.173
<i>Volatility of operating income</i>	7390	0.066	0.029	0.117
<i>Volatility of stock return</i>	7390	0.123	0.107	0.065
<i>Stock return</i>	7390	0.092	0.054	0.538

Operating income is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged.

Table 3: Mean values of the payout variables by fiscal year

	2002	2003	2004	2005	2006	2007	2008	2009
<i>Dividends/earnings</i>	71.408	63.786	57.982	50.151	47.8	40.519	62.227	67.351
<i>Dividends/market value</i>	3.09	2.721	2.075	1.955	1.816	1.973	3.983	2.78
<i>Dividends/total assets</i>	2.124	2.032	1.902	1.912	1.916	1.885	1.927	1.661
<i>Share repurchases/earnings</i>	10.542	10.553	9.76	10.617	14.498	15.407	17.811	6.803
<i>Share repurchases/market value</i>	0.533	0.592	0.466	0.513	0.637	0.804	1.254	0.328
<i>Share repurchases/total assets</i>	0.455	0.512	0.464	0.61	0.797	0.912	0.772	0.223
<i>Total payout/earnings</i>	84.365	76.424	70.531	62.731	63.96	58.987	82.706	77.063
<i>Total payout/market value</i>	3.771	3.404	2.622	2.551	2.502	2.904	5.326	3.205
<i>Total payout/total assets</i>	2.675	2.596	2.433	2.654	2.869	2.979	2.788	1.939
<i>Share repurchases/total payout</i>	7.147	9.804	9.844	13.367	17.016	20.099	20.514	12.885

Dividends/earnings is common dividends paid over earnings, times 100. Earnings are defined as net income after preferred dividends plus deferred domestic income tax plus deferred foreign income tax. *Dividends/market value* is common dividends paid over firm market capitalization, times 100. *Dividends/total assets* is common dividends over total assets, times 100. *Share repurchases/earnings* is cash paid out through repurchases over earnings, times 100. *Share repurchases/market value* is cash paid out through repurchases over firm market capitalization, times 100. *Share repurchases/total assets* is cash paid out through repurchases over total assets, times 100. *Total payout/earnings* is the sum of *dividends/earnings* and *share repurchases/earnings*. *Total payout/market value* is the sum of *dividends/market value* and *share repurchases/market value*. *Total payout/total assets* is the sum of *dividends/total assets* and *share repurchases/total assets*. *Share repurchases/total payout* is cash paid out through repurchases over total payout.

Table 4(A): Tobit estimation results for Dividends/Earnings and Total payout/Earnings

	<i>Dividends/Earnings</i>	<i>Dividends/Earnings</i>	<i>Total payout/Earnings</i>	<i>Total payout/Earnings</i>
<i>CEO share ownership</i>	0.802 (0.04)	1.774 (0.09)	-11.292 (-0.51)	-11.13 (-0.5)
<i>CEO stock option holdings</i>	-795.446*** (-3.22)	-715.26*** (-2.84)	- 657.937** (-2.42)	- 641.397** (-2.26)
<i>Dummy continental company × CEO stock option holdings</i>		-1848.146** (-2.03)		-298.39 (-0.4)
<i>Operating income</i>	141.053*** (4.41)	141.897*** (4.44)	146.02*** (4.06)	146.267*** (4.06)
<i>Growth opportunities</i>	-9.623*** (-3.52)	-9.621*** (-3.52)	-13.051*** (-4.02)	-13.064*** (-4.02)
<i>Firm size</i>	4.69*** (3.22)	4.782*** (3.27)	8.045*** (4.78)	8.065*** (4.78)
<i>Leverage</i>	-1.917 (-0.11)	-2.688 (-0.16)	-19.006 (-0.97)	-19.17 (-0.98)
<i>Retained earnings</i>	11.403*** (5.05)	11.415*** (5.05)	10.219*** (4.80)	10.223*** (4.80)
<i>Cash</i>	-6.759 (-0.33)	-6.495 (-0.32)	74.227*** (2.89)	74.314*** (2.9)
<i>Volatility of operating income</i>	-169.649*** (-4.13)	-170.522*** (-4.15)	-187.160*** (-4.28)	-187.37*** (-4.29)
<i>Volatility of stock return</i>	-174.202*** (-3.01)	-172.548*** (-2.98)	-209.416*** (-3.04)	-208.958*** (-3.03)
<i>Stock return</i>	-18.424*** (-4.22)	-18.656*** (-4.27)	-20.663*** (-4.31)	-20.716*** (-4.32)
Observations	5274	5274	5274	5274
Log pseudolikelihood	-27501.361	-27499.748	-29196.468	-29196.427
Pseudo R ²	0.012	0.011	0.009	0.009

Dividends/earnings is common dividends paid over earnings, times 100. Earnings are defined as net income after preferred dividends plus deferred domestic income tax plus deferred foreign income tax. *Total payout / earnings* is the sum of *dividends / earnings* and *share repurchases / earnings*. *CEO stock ownership* is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the

number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Table 4(B): Tobit estimation results for Share repurchases/Earnings and Share repurchases/Total payout

	<i>Share repurchases/Earnings</i>	<i>Share repurchases/Earnings</i>	<i>Share repurchases/Total payout</i>	<i>Share repurchases/Total payout</i>
<i>CEO share ownership</i>	-14.889 (-0.70)	-15.357 (-0.72)	-24.453 (-1.27)	-25.362 (-1.3)
<i>CEO stock option holdings</i>	230.621 (0.99)	143.833 (0.57)	628.313*** (2.80)	495.773** (2.1)
<i>Dummy continental company × CEO stock option holdings</i>		1082.318* (1.89)		2086.208*** (2.89)
<i>Operating income</i>	127.402*** (4.26)	126.112*** (4.22)	-47.195* (-1.83)	-48.711* (-1.88)
<i>Growth opportunities</i>	-3.511 (-1.06)	-3.45 (-1.04)	2.272 (0.79)	2.246 (0.79)
<i>Firm size</i>	12.066*** (8.99)	11.963*** (8.88)	8.023*** (7.64)	7.874*** (7.52)
<i>Leverage</i>	-36.566** (-2.26)	-35.887** (-2.21)	-44.533*** (-3.36)	-43.731*** (-3.31)
<i>Retained earnings</i>	-0.061 (-0.06)	-0.091 (-0.08)	-5.346*** (-4.13)	-5.339*** (-4.11)
<i>Cash</i>	117.142*** (6.01)	116.738*** (5.99)	96.499*** (6.15)	95.931*** (6.15)
<i>Volatility of operating income</i>	-124.431*** (-2.69)	-123.008*** (-2.64)	92.279** (2.59)	94.567*** (2.65)
<i>Volatility of stock return</i>	-120.087** (-2.26)	-122.604** (-2.29)	35.324 (0.91)	32.342 (0.84)
<i>Stock return</i>	-2.079 (-0.57)	-1.831 (-0.5)	-1.066 (-0.35)	-0.743 (-0.24)
Observations	5274	5274	5343	5343
Log pseudolikelihood	-11.313499	-11312.107	-11315.9	-11309.305
Pseudo R ²	0.03	0.03	0.033	0.033

Share repurchases/earnings is cash paid out through repurchases over earnings, times 100. *Total payout/earnings* is the sum of *dividends/earnings* and *share repurchases/earnings*. *CEO stock ownership* is the number

of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Table 5(A): Tobit estimation results for Dividends/Market value and Total payout/Market value

	<i>Dividends/Market value</i>	<i>Dividends/Market value</i>	<i>Total payout/Market value</i>	<i>Total payout/Market value</i>
<i>CEO share ownership</i>	0.369 (0.52)	0.385 (0.54)	0.535 (0.58)	0.518 (0.56)
<i>CEO stock option holdings</i>	-36.225*** (-4.29)	-34.682*** (-4.02)	-29.089*** (-2.80)	-30.917*** (-2.89)
<i>Dummy continental company × CEO stock option holdings</i>		-37.344 (-1.18)		39.408 (1.05)
<i>Operating income</i>	16.218*** (15.65)	16.236*** (15.68)	17.904*** (12.94)	17.887*** (12.94)
<i>Growth opportunities</i>	-0.721*** (-6.91)	-0.721*** (-6.91)	-0.807*** (-5.40)	-0.806*** (-5.40)
<i>Firm size</i>	0.135*** (3.05)	0.136*** (3.08)	0.375*** (6.30)	0.373*** (6.25)
<i>Leverage</i>	1.857*** (3.82)	1.845*** (3.8)	1.746*** (2.76)	1.762*** (2.79)
<i>Retained earnings</i>	0.452*** (5.08)	0.452*** (5.08)	0.45*** (5.94)	0.45*** (5.94)
<i>Cash</i>	0.576 (0.96)	0.583 (0.97)	4.009*** (4.82)	3.995*** (4.8)
<i>Volatility of operating income</i>	-9.454*** (-5.56)	-9.477*** (-5.57)	-6.612*** (-3.16)	-6.572*** (-3.14)
<i>Volatility of stock return</i>	-10.010*** (6.09)	-9.972*** (6.07)	-14.397*** (-6.69)	-14.442*** (-6.7)
<i>Stock return</i>	-0.199* (-1.79)	-0.203* (-1.83)	-0.251* (-1.67)	-0.246 (-1.64)
Observations	7390	7390	7390	7390
Log pseudolikelihood	-14658.44	-14657.506	-17.203.345	-17.202.689
Pseudo R ²	0.112	0.112	0.08	0.08

Dividends/market value is common dividends paid over firm market capitalization, times 100. *Total payout/market value* is sum of *dividends/market value* and *share repurchases/market value*. *CEO stock ownership* is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common

shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Table 5(B): Tobit estimation results for Share repurchases/Market value

	<i>Share repurchases/Market value</i>	
<i>CEO share ownership</i>	0.49 (0.41)	0.461 (0.38)
<i>CEO stock option holdings</i>	12.569 (0.93)	6.852 (0.49)
<i>Dummy continental company</i> × <i>CEO stock option holdings</i>		89.969** (2.1)
<i>Operating income</i>	10.151*** (7.51)	10.101*** (7.51)
<i>Growth opportunities</i>	-0.307* (-1.81)	-0.307* (-1.81)
<i>Firm size</i>	0.719*** (9.86)	0.712*** (9.78)
<i>Leverage</i>	-1.508* (-1.86)	-1.466* (-1.81)
<i>Retained earnings</i>	0.032 (0.67)	0.032 (0.66)
<i>Cash</i>	6.207*** (6.35)	6.165*** (6.3)
<i>Volatility of operating income</i>	-2.455 (-1.27)	-2.307 (-1.19)
<i>Volatility of stock return</i>	-12.303*** (-5.06)	-12.448*** (-5.12)
<i>Stock return</i>	0.137 (0.71)	0.15 (0.78)
Observations	7390	7390
Log pseudolikelihood	-7702.4227	-7699.4641
Pseudo R ²	0.073	0.074

Share repurchases/market value is cash paid out through repurchases over firm market capitalization times 100. *CEO stock ownership* is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market,

over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Table 6(A): Tobit estimation results for Dividends/Total assets and Total payout/Total assets

	<i>Dividends/Total assets</i>	<i>Dividends/Total assets</i>	<i>Total payout/Total assets</i>	<i>Total payout/Total assets</i>
<i>CEO share ownership</i>	0.571 (0.94)	0.572 (0.94)	0.575 (0.67)	0.559 (0.65)
<i>CEO stock option holdings</i>	-26.755*** (-4.70)	-26.732*** (-4.57)	-23.266** (-2.58)	-24.986*** (-2.66)
<i>Dummy continental company × CEO stock option holdings</i>		-0.552 (-0.02)		36.618 (1.21)
<i>Operating income</i>	15.758*** (18.85)	15.758*** (18.86)	20.432*** (15.57)	20.416*** (15.57)
<i>Growth opportunities</i>	0.274*** (3.10)	0.274*** (3.10)	0.519*** (2.92)	0.519*** (2.92)
<i>Firm size</i>	0.044 (1.41)	0.044 (1.41)	0.295*** (5.43)	0.293*** (5.37)
<i>Leverage</i>	-1.525*** (-4.65)	-1.526*** (-4.65)	-2.233*** (-4.19)	-2.218*** (-4.15)
<i>Retained earnings</i>	0.286*** (4.79)	0.286*** (4.79)	0.303*** (4.19)	0.304*** (4.19)
<i>Cash</i>	1.327*** (2.78)	1.327*** (2.77)	5.033*** (6.27)	5.019*** (6.25)
<i>Volatility of operating income</i>	-6.501*** (-5.37)	-6.502*** (-5.37)	-5.711*** (-3.11)	-5.67*** (-3.09)
<i>Volatility of stock return</i>	-13.186*** (-12.93)	-13.185*** (-12.92)	-19.565*** (-11.67)	-19.609*** (-11.68)
<i>Stock return</i>	-0.393*** (-4.70)	-0.393*** (-4.70)	-0.602*** (-4.22)	-0.598*** (-4.19)
Observations	7390	7390	7390	7390
Log pseudolikelihood	-12186.611	-12186.611	-15.937.383	-15.936.504
Pseudo R ²	0.188	0.188	0.113	0.113

Dividends/total assets is common dividends over total assets, times 100. *Total payout/total assets* is the sum of *dividends/total assets* and *share repurchases/total assets*. *CEO stock ownership* is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying

options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Table 6(B): Tobit estimation results for Share repurchases/Total assets

	<i>Share repurchases/Total assets</i>	
<i>CEO share ownership</i>	0.199 (0.17)	0.179 (0.15)
<i>CEO stock option holdings</i>	11.258 (0.84)	7.93 (0.56)
<i>Dummy continental company</i> × <i>CEO stock option holdings</i>		52.454 (1.51)
<i>Operating income</i>	10.947*** (8.04)	10.92*** (8.01)
<i>Growth opportunities</i>	0.198 (0.98)	0.198 (0.98)
<i>Firm size</i>	0.712*** (9.53)	0.708*** (9.46)
<i>Leverage</i>	-2.321*** (-3.00)	-2.297*** (-2.97)
<i>Retained earnings</i>	0.015 (0.27)	0.014 (0.27)
<i>Cash</i>	6.204*** (6.22)	6.182*** (6.18)
<i>Volatility of operating income</i>	-2.405 (-1.26)	-2.32 (-1.21)
<i>Volatility of stock return</i>	-13.345*** (-5.78)	-13.434*** (-5.8)
<i>Stock return</i>	-0.112 (-0.58)	-0.105 (-0.54)
Observations	7390	7390
Log pseudolikelihood	-7561.061	-7559.9487
Pseudo R ²	0.082	0.082

Share repurchase/total assets is cash paid out through repurchases over total assets, times 100. *CEO stock ownership* is the number of common shares held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *CEO stock option holdings* is the number of common shares underlying options (both unexercised exercisable and exercised exercisable) held by the CEO at the end of the previous fiscal year (source: Boardex) over the number of common shares outstanding on the same date. *Dummy continental company* is set to one if the observation is not for a UK company, otherwise it is set to zero. *Operating income* is the sum of operating income, depreciation and amortization, over total assets. *Growth opportunities* is total assets minus book value of equity plus firm market, over total assets. Book value of equity is defined as total assets minus total liabilities minus preferred stock. *Firm size* is the

natural logarithm of the real value of total assets expressed in thousands of GBP. Real values are computed using CPI index data with 2008 as base year. *Leverage* is total liabilities, over total assets minus book value of equity plus market capitalization. *Retained earnings* is retained earnings over book value of equity. *Cash* is cash and equivalents over total assets. *Volatility of operating income* is the standard deviation of *operating income* in the previous four fiscal years. *Volatility of stock return* is standard deviation of monthly stock returns in the previous two fiscal years. *Stock return* is stock return in the previous fiscal year. The variables *CEO stock ownership*, *CEO stock option holdings*, *operating income*, *growth opportunities*, *firm size*, *leverage*, *retained earnings* and *cash* are lagged. Industry and country dummies are always included in the regressions. *t* statistics adjusted for heteroscedasticity and within-firm autocorrelation are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively.