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## Abstract

We use a sample of U.S. dual-class companies to examine how the divergence between insider voting rights and cash-flow rights affects managerial extraction of private benefits of control. We find that as the divergence widens at dual-class companies, corporate cash holdings are worth less to outside shareholders, CEOs receive higher levels of compensation, managers are more likely to make shareholder-value destroying acquisitions, and capital expenditures contribute less to shareholder value. These findings support the hypothesis that managers with greater control rights in excess of cash-flow rights are prone to waste corporate resources to pursue private benefits at the expense of shareholders. As such, they contribute to our understanding of why firm value is decreasing in the insider control-cash flow rights divergence.

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The separation of ownership and control has long been recognized as the source of the agency problem between managers and shareholders at public corporations (Berle and Means (1932) and Jensen and Meckling (1976)), and its shareholder-value ramification is the subject of an extensive literature.[1] Most of this research focuses on firms where voting or control rights and cash flow rights are largely aligned, but recently some researchers have started to examine companies with alternative ownership schemes such as cross-holding, pyramidal, and dual-class structures. These alternative ownership arrangements, which are common in much of the world, often result in a significant divergence between insider voting rights and cash flow rights. This divergence aggravates the agency conflicts between managers and shareholders, since insiders controlling disproportionally more voting rights than cash flow rights bear a smaller proportion of the financial consequences of their decisions while having a greater ability to forestall, if not block, changes in corporate control that could threaten their private benefits and continued employment at the company. Consistent with this intuition, Claessens, Djankov, Fan, and Lang (2002), Lemmon and Lins (2003), Lins (2003), Harvey, Lins, and Roper (2004), and Gompers, Ishii, and Metrick (2006) document that firm value or stock returns are lower as corporate insiders control more voting rights relative to cash-flow rights.

An important question left unaddressed by prior studies is the channels through which insider control-cash flow rights divergence leads to lower shareholder value. Anecdotal evidence suggests that managerial expropriation of outside shareholders may be at work (see the examples in Johnson et al. (2000a, b)), but there is no systematic evidence linking managerial extraction of private benefits to the control rights-cash flow rights divergence. In addition, the instances provided by Johnson et al. represent rather blatant expropriations of outside shareholders in countries with poor investor protection. It remains to be seen whether acts of managerial malfeasance are observable in countries with superior investor protection such as the U.S., and if

[1] Early studies include Demsetz and Lehn (1985), Morck, Shleifer, and Vishny (1988), and McConnell and Servaes (1990). Becht, Bolton, and Roell (2003) and Morck, Wolfenzon, and Yeung (2005) provide comprehensive reviews of the literature.

so, in what forms they take place. Our study aims to answer these questions by analyzing a sample of U.S. dual-class companies. Using both a ratio and a wedge measure to capture the voting-cash flow rights divergence, we find four distinctive sets of evidence supporting the hypothesis that managers with greater control rights in excess of cash-flow rights are more likely to pursue private benefits at the expense of outside shareholders.

First, we examine how control-cash flow rights divergence impacts a firm's efficiency in utilizing an important corporate resource - cash reserves. Cash on average represents a significant proportion of a firm's total assets.[2] In the presence of asymmetric information, corporate cash holding contributes to firm value by alleviating the underinvestment problem when external financing is costly. However, since it is the most liquid among all corporate assets, cash also provides managers with the most latitude as to how and when to spend it, and its value is the most likely to be influenced by agency conflicts between managers and shareholders. In other words, a dollar of corporate cash holding may not be worth a dollar to outside shareholders, since managers may spend part or all of it on the pursuit of private benefits such as perquisite consumption, empire building, excessive compensation, and subsidizing and sustaining unprofitable projects or divisions.

We use the methodology developed by Faulkender and Wang (2006) to analyze the contribution of one extra dollar of cash to firm value, and find that the marginal value of cash is decreasing in the divergence between insider voting rights and cash-flow rights. This is consistent with the argument that shareholders anticipate that corporate cash holdings are more likely to be misused at companies where insider voting rights are disproportionately greater than cash-flow rights, and therefore place a lower value on these highly fungible corporate assets.

In our second avenue of inquiry, we analyze how the insider control-cash flow rights divergence affects the level of CEO compensation. Executive compensation is among the central issues in the current debate over the effects of weak corporate governance, and exorbitant CEO

[2] The average ratio of cash to the book value of total assets is over 12% at our sample companies.

pay packages have been widely regarded as a major form of private benefits and a symbol of bad governance. Excessive CEO compensation is also a direct way of shifting wealth from shareholders to managers. Consistent with our evidence on the market value of cash, we find that ceteris paribus, excess CEO pay is significantly higher at companies with a wider divergence between insider voting and cash-flow rights.

In a third line of analysis, we evaluate the acquisition decisions made by dual-class companies. Corporate acquisitions represent an ideal setting for our analysis, because they are among the largest firm investments and can lead to heightened conflicts of interest between managers and shareholders. It is well documented that managers sometimes use acquisitions as a channel to extract private benefits at the expense of shareholders.[3] In a multivariate regression framework, we find that as insider control-cash flow rights divergence widens, acquiring companies experience lower announcement-period abnormal stock returns, are more likely to experience *negative* announcement-period abnormal stock returns, and are less likely to withdraw acquisitions that the stock market perceives as shareholder value destroying.[4] These results suggest that as insiders control more voting rights relative to cash-flow rights, they are more likely to make shareholder value-destroying acquisitions that benefit themselves.

Finally, we examine firms' capital expenditure decisions as another channel of empire building and private benefits extraction. We study how insider control-cash flow rights divergence affects the contribution of capital expenditures to shareholder value. We focus on large capital expenditure increases, and evaluate their shareholder wealth effects using the same framework we employed for the analysis of the market value of cash. We find that ceteris paribus, capital expenditures contribute significantly less to shareholder value at firms with a

[3] See Jensen and Ruback (1983), Jarrell, Brickley, and Netter (1988), and Andrade, Mitchell, and Stafford (2001) for comprehensive reviews of the literature at various stages.

[4] We measure the announcement-period cumulative abnormal return (CAR) experienced by each acquirer's inferior-class stock, because the CAR experienced by the superior-class stock is confounded by the private benefits of control that holders of superior-class shares enjoy. Besides, most superior-class stocks are not publicly traded.

greater divergence between insider voting rights and cash flow rights, suggesting that managers at these companies are more likely to make large capital investments to advance their own interests.

We make two major contributions to the literature. First, our results shed direct light on the issue of how insider control-cash flow rights divergence leads to lower shareholder value. We show that misusing corporate cash reserves, demanding excessive remuneration, engaging in shareholder value-destroying acquisitions, and making poor capital expenditure decisions are four possible avenues for corporate insiders to secure private benefits at the expense of outside shareholders. By bridging the gap between ownership structure and firm value through examining specific corporate decisions and policies, our study helps alleviate the often raised concern about spurious correlation in the documented relations between ownership structure and firm value proxied by either Tobin's q or stock returns (Claessens, Djankov, Fan, and Lang (2002), Lemmon and Lins (2003), Lins (2003), Harvey, Lins, and Roper (2004), and Gompers, Ishii, and Metrick (2006)).

Second, our results further our understanding of why superior-voting shares command a premium in the marketplace over inferior-voting shares. The prevailing explanation is that insiders controlling the voting rights extract private benefits from the companies they run (Lease, McConnell, and Mikkelson (1983), DeAngelo and DeAngelo (1985), Zingales (1995), Nenova (2003), and Dyck and Zingales (2004)), but there is no substantive evidence to support the claim. The findings we present in the paper fill this void.

The remainder of the paper is organized as follows. We describe the sample of dual-class companies used for our analyses in Section I. Sections II, III, IV and V present the analyses of the market value of cash, CEO compensation, acquisition decisions, and the market value of large capital expenditures, respectively. Section VI reports results from additional tests including a subsample analysis where insiders hold high voting rights, corrections for sample selection and

endogeneity, a voting premium analysis, and a comparison of agency problems between dual-class companies and single-class companies. Section VII concludes.

## I. Dual-class sample description

We obtain a comprehensive list of dual-class companies that Gompers, Ishii, and Metrick (GIM, 2006) construct from the universe of U.S. public firms over the 1994-2002 period. More than 6% of firms covered by COMPUSTAT have a dual-class structure, and they represent about 8% of the total market capitalization of COMPUSTAT firms. A typical dual-class company has two classes of stock - the superior class, which has multiple votes per share and is not publicly traded, and the inferior class, which has one vote per share and is generally publicly traded. For each class of stock, GIM collect information on the voting rights per share, the dividend rights per share, the number of shares outstanding, and the number of shares held by officers and directors, i.e., insiders, as a group. They use this information to calculate the percentages of voting rights and cash-flow rights controlled by insiders in each company.

We experiment with two measures to capture the divergence between insider voting rights and cash flow rights, or excess control rights hereafter for brevity. The first measure comes from Lemmon and Lins (2003), Lins (2003) and Harvey, Lins, and Roper (2004), and it is equal to the ratio of the percentage of a firm's voting rights controlled by insiders to the percentage of cash-flow rights controlled by insiders. The second measure is used in studies by Claessens, Djankov, Fan, and Lang (2002), Villalonga and Amit (2006), and Gompers, Ishii, and Metrick (2006), and it is defined as the difference between the insider controlled percentages of voting rights and cash-flow rights. Both measures increase with insider voting rights and decrease with insider cash-flow rights, and thus positively capture the degree of the separation of ownership and control due to the dual-class structure. The larger the two measures, the greater the incentives of

insiders to extract private benefits.[5] Since the two measures give us very similar results throughout our analysis, we only present the evidence based on the ratio measure.[6]

## II. Analysis of the market value of corporate cash holdings

### II-A. Model specification and variable definitions

To examine how excess control rights affect the contribution of cash to firm value, we build on the framework developed by Faulkender and Wang (2006), who study the relation between the marginal value of cash and corporate financial policies. They find that the value of an extra dollar of cash decreases with a firm's cash position and leverage, but increases with a firm's financial constraints. We augment their model by introducing the excess control rights measure. Specifically, our regression equation is specified as follows:

$$r_{i,t} - R^{B}_{i,t} = \beta_0 + \beta_1 \times \frac{\Delta Cash_{i,t}}{Mktcap_{i,t-1}} + \beta_2 \times Excess\ control\ rights_{i,t-1} \times \frac{\Delta Cash_{i,t}}{Mktcap_{i,t-1}} + \beta_3 \times Excess\ control\ rights_{i,t-1} + \gamma' X + \varepsilon_{i,t} \quad (1)$$

The dependent variable in equation (1) is the excess return of a firm's inferior-class stock over fiscal year t. Faulkender and Wang calculate excess returns by subtracting the Fama-French size and book-to-market portfolio returns ($R^{B}_{i,t}$) from the raw returns of the inferior-class stock ($r_{i,t}$). A potential problem with this approach is that a firm's market-to-book ratio is endogenous, which could affect the interpretation of our results.[7] Therefore, we alternatively compute excess returns by subtracting the value-weighted industry returns from the raw returns of the inferior-

[5] An implicit assumption commonly made in the insider voting and cash flow rights literature, at least since Morck, Shleifer, and Vishny (1988), is that insiders act as a homogenous unit. Although this assumption is very plausible for most situations, it is possible that insiders can at times have conflicting objectives. This risk can create incentives for some insiders to hold larger voting blocks.

[6] See our earlier working paper (available at SSRN: http://ssrn.com/abstract=961158) for parallel evidence based on the wedge between insider voting rights and cash flow rights.

[7] We thank the referee for pointing this out and suggesting the alternative approach that follows.

class stock, where industries are defined based on the Fama-French (1997) 48-industry classification (see the Appendix for definitions of all variables).

$\Delta Cash_{i,t}$ on the right-hand side of equation (1) is a firm's unexpected change in cash from year t-1 to t, with the firm's cash position at the end of year t-1 as its expected cash level in year t. Since $\Delta Cash_{i,t}$ is scaled by the market value of equity at the end of year t-1 ($Mktcap_{i,t-1}$), its coefficient $\beta_1$ measures the dollar change in shareholder wealth for one dollar change in corporate cash holdings. To test whether excess control rights affect the market valuation of a firm's cash holdings, we interact excess control rights with scaled $\Delta Cash_{i,t}$ and include the interaction term as an explanatory variable. We expect the coefficient of the interaction term $\beta_2$ to be negative, since excess control rights can exacerbate the manager-shareholder conflict and lead to inefficient use of cash. We also include excess control rights as a separate control variable to make sure that the interaction term does not merely pick up the effect of excess control rights itself.

As in Faulkender and Wang (2006), the vector $X$ comprises firm-specific characteristics that can be simultaneously correlated with changes in cash and excess stock returns. These variables measure a firm's financial and investment policies during the past fiscal year, including net financing over year t-1 to t, changes in earnings before extraordinary items plus interest, deferred tax credits, and investment tax credits, changes in total assets net of cash, changes in R&D, changes in interest expense, and changes in dividends.[8] We also follow Faulkender and Wang by including two interaction terms as explanatory variables. The first interaction is between change in cash and a firm's prior cash position, and the second is between change in cash and firm leverage. Faulkender and Wang find that the marginal value of cash decreases with both a company's prior cash holdings and its leverage.

Similar to Dittmar and Mahrt-Smith (2007), we introduce a third interaction term between change in cash and the degree of a firm's financial constraints, since Faulkender and

[8] Similar to the change in cash, these variables are also scaled by the firm's market capitalization at the beginning of the fiscal year.

Wang show that that the marginal value of cash increases with the degree of financial constraint. Following prior studies (Almeida, Campello, and Weisbach (2004), Faulkender and Wang (2006), and Dittmar and Mahrt-Smith (2007)), we use a firm's total payout ratio to measure how financially constrained a firm is. Total payout is defined as the sum of dividends and stock repurchases scaled by book value of total assets. Following Grullon and Michaely (2002), stock repurchases are calculated as the dollar amount spent on the purchase of common and preferred stocks minus any decrease in the redemption value of preferred stock. We create an indicator variable that is equal to one if a firm's total payout ratio is below the annual sample median, and interact it with change in cash.

II-C. Regression results

We match the dual-class sample of Gompers, Ishii, and Metrick (2006) to the COMPUSTAT and CRSP databases to obtain annual financial statement and daily stock return information. Daily stock returns over an entire fiscal year are required to compute annual excess returns. Two consecutive fiscal years of financial statement data are required to construct many of the explanatory variables in equation (1). The final sample consists of 2,440 firm-year observations from 1995 to 2003 for 503 dual-class companies. Table I presents the summary statistics for this sample. Insiders on average hold 66.8% of voting rights and only 39.4% of cash-flow rights, resulting in a significant divergence between their voting rights and cash-flow rights. Indeed, the mean ratio of insider voting rights to cash-flow rights is 2.208, and the median is 1.669.[9] The change in cash scaled by beginning-of-the-year market value of equity has a mean (median) of 3.5% (0.2%). Consistent with Faulkender and Wang (2006), we also find that annual excess stock returns are right skewed, with a mean of 2.9% and a median of -5.5%. There is also

[9] The difference between insiders' voting rights and cash-flow rights has a mean of 27.4% and a median of 26.3%. These summary statistics are very similar to those reported by GIM (2006) for their entire dual-class sample.

substantial variation in excess returns in our sample, as evidenced by the large standard deviation and inter-quartile range.

Table II presents the regression results of the value-of-cash analysis. The dependent variable is alternatively defined as industry adjusted excess returns in column (1) and size and market-to-book adjusted excess returns in column (2). We control for year and industry fixed effects in both regressions, where industries are defined based on the Fama-French (1997) 48-industry classification. Figures in parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and firm-level clustering (Peterson (2007)). We find that the interaction term between excess control rights and the change in cash has a negative and significant coefficient in both columns. This result is consistent with our hypothesis that when insiders control more voting rights relative to cash-flow rights, corporate cash holdings are more apt to be diverted to private benefits and thus are valued less by shareholders. More specifically, based on the coefficient estimates in column (1), ceteris paribus, the marginal value of cash decreases by $0.08 per one standard deviation increase in the ratio of insider control rights to cash-flow rights, Our finding is in line with the evidence in Dittmar and Mahrt-Smith (2007) that an extra dollar of cash is less valuable to shareholders at companies with more anti-takeover provisions and lower institutional ownership, and the evidence in Pinkowitz, Stulz, and Williamson (2006) that the contribution of corporate cash holdings to firm value is lower in countries with poor investor protection. Both studies attribute their findings to managers extracting private benefits from corporate cash holdings at poorly governed firms.

For the control variables, the signs and statistical significances are generally consistent with those reported in Faulkender and Wang (2006). For example, we also find negative and significant coefficients for the interaction between cash level and change in cash and the interaction between leverage and change in cash.

**III. Analysis of CEO compensation**

III-A. Sample and variable description

To test whether a rise in excess control rights leads to greater CEO pay, we match the dual-class firm sample with the ExecuComp database, which provides information on CEO compensation. We exclude firm-year observations in which CEOs have been in office for less than one year, since the compensation to these CEOs is for only part of a fiscal year. We also require firms to have stock return data from CRSP and accounting data from Compustat for each fiscal year with CEO compensation data. The final sample consists of 791 firm-year observations of 150 dual-class companies during the period from 1995 to 2003.

Following prior studies such as Aggarwal and Samwick (1999), Core, Holthausen, and Larcker (1999), and Bertrand and Mullainathan (1999), we use the level of CEO total compensation (ExecuComp variable: TDC1) as the dependent variable in our analysis.[10] The key explanatory variable is excess control rights. The summary statistics in Table III show that the mean and median excess control rights measured by the ratio of insider voting rights to cash-flow rights are close to what we observed in the value-of-cash sample. In terms of total compensation, the average (median) CEO receives $3.542 ($1.679) million a year.

We control for the determinants of CEO compensation previously found in the literature. They include firm size, leverage, Tobin's Q, R&D expenses/sales, capital expenditures/sales, advertising expenses/sales, operating and stock return performance, firm risk, firm age, CEO tenure, and year and industry fixed effects. We measure firm size by the logarithmic transformation of the book value of total assets.[11] We calculate Tobin's Q as the ratio of a firm's market value of total assets over its book value of total assets. We measure a firm's operating performance by its industry-adjusted ROA in a fiscal year, and its stock performance by its market-adjusted abnormal stock return during the fiscal year. We use the standard deviation of

[10] We obtain similar results when we use the log of the level of CEO total compensation as the dependent variable. Using the total compensation of top five executives yields similar results.
[11] We obtain similar results when we use alternative measures of firm size, such as sales and the market value of total assets.

monthly stock returns during past five years from ExecuComp as a proxy for firm risk. Firm age is the number of years since a firm's first appearance in CRSP and CEO tenure is the number of years a CEO has been in office.

III-B. Regression results

Column (1) of Table IV presents coefficient estimates from the CEO compensation regression. We find that the excess control rights measure has a positive and statistically significant effect on CEO compensation, consistent with our hypothesis that managers facing a larger separation of ownership and control enjoy more benefits in the form of higher compensation. This result is also economically significant in that ceteris paribus, CEO compensation increases by $1.054 million as the ratio of insiders' voting rights to cash-flow rights rises by one standard deviation.

For the control variables, we find that CEO compensation is (i) higher when firm size is greater, consistent with larger companies hiring more talented and expensive managers; (ii) lower when leverage is higher, consistent with leverage acting as a governance mechanism alleviating the agency problems between managers and shareholders; and (iii) higher when volatility is greater, suggesting that CEOs of riskier firms are compensated more. These results are in line with extant evidence in the literature. For example, numerous studies, e.g., Borokhovich, Brunarski, and Parrino (1997), Bertrand and Mullainathan (1999), Core, Holthausen, and Larcker (1999), and Fahlenbrach (2004) have documented a positive relation between firm size and CEO compensation, and Fahlenbrach (2004) also finds a positive relation between stock return volatility and CEO compensation.

Given that incentives to award a CEO excessive compensation should be stronger when the CEO is a member of the controlling shareholder group, we re-estimate the compensation

regression in a subsample where CEOs belong to the controlling group.[12] We classify a CEO as a controlling group member if he owns at least 10% of the firm's total voting rights or holds at least 20% of the controlling group's voting rights.[13] If neither condition is satisfied, we read proxy statements to determine whether a CEO is affiliated with controlling shareholders.[14] The subsample of clearly affiliated CEOs includes 570 firm-year observations. We re-estimate the CEO compensation regression in this subsample and report the results in column (2). We find that the excess control rights measure has a stronger effect, both statistically and economically, on CEO compensation (coefficient: 0.639; *p*-value: <0.1%).

## IV. Analysis of acquisition decisions

One private benefit of control emphasized in the literature is empire building, which manifests itself in unprofitable growth through either acquisitions or internal investments. In this section, we examine the relation of excess control rights to acquisition profitability, while the following section explores the relation of excess control rights to the profitability of large capital expenditures.

### IV-A. Sample and variable description

We extract all acquisitions made by U.S. public companies during the 1995-2003 period from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database. We require that (i) the acquisition is completed, (ii) the deal value disclosed in SDC is more than $1 million and is at least 1% of the acquirer's market value of total assets, measured at the fiscal

[12] This issue is not much of a concern for the remaining tests, since private benefits derived from corporate cash, acquisition, and capital investment policies tend to accrue to all controlling shareholders, while excessive CEO compensation only benefits CEOs.

[13] The data provided by Gompers, Ishii, and Metrick does not contain the voting rights owned by each member of the insider group. We hand-collected this information from each company's proxy statement for our compensation sample.

[14] Relationships that qualify a CEO as being affiliated with controlling shareholders include, e.g., immediate family members of controlling shareholders and general partners of controlling entities.

year end immediately before the acquisition announcement, (iii) the acquirer controls less than 50% of target shares prior to the announcement and owns more than 50% of target shares after the transaction,[15] (iv) the acquirer has 210 trading days of stock return data immediately prior to acquisition announcement available from CRSP Daily Stock Prices and Returns file and annual financial statement information available from COMPUSTAT, and (v) no other acquisitions by the same acquirer are announced on the same day. We then merge the resultant acquisition sample with the sample of dual-class companies of Gompers, Ishii, and Metrick (2006) to obtain a sample of 410 acquisitions made by 189 dual-class firms. As we can see from Table V, the distributions of insider voting rights, cash flow rights, and excess control rights for the current sample are similar to those for the value-of-cash and compensation samples.

Our primary dependent variable in this section is the announcement-period abnormal returns experienced by an acquirer's inferior voting-class shares, which we use as a measure of an acquisition's profitability to acquiring shareholders. We calculate abnormal stock returns based on market model residuals. We obtain the announcement dates from SDC's U.S. Mergers and Acquisitions database. We compute five-day cumulative abnormal returns (CARs) during the window encompassed by event days (-2, +2), where event day 0 is the acquisition announcement date.[16] We use the CRSP value-weighted return as the market return and estimate the market model parameters over the period from event day -210 to event day -11. As shown in Table V, the acquirer's five-day CAR has a mean of 1.369% and a median of 0.473%, which are significantly different from zero at the 1% and 5% levels, respectively.

[15] Relaxing this criterion to include acquisitions that do not result in changes in control adds only 11 deals to our sample, since in most U.S. mergers and acquisitions, acquirers own very little of target equity before acquisition announcements and most, if not all, of target shares afterwards. Including these 11 deals in our analysis does not change any of our results.

[16] For a random sample of 500 acquisitions from 1990 to 2000, Fuller, Netter, and Stegemoller (2002) find that the announcement dates provided by SDC are correct for 92.6% of the sample and are off by no more than two trading days for the remainder. Thus, using a five-day window over event days (-2, 2) captures most, if not all, of the announcement effect, without introducing substantial noise into our analysis.

In the acquirer return analysis, we follow Masulis, Wang, and Xie (2007) and control for a wide array of acquirer- and deal-specific characteristics, in addition to year and industry fixed effects. The former group includes firm size, Tobin's Q, ROA, and leverage, while the latter group consists of relative deal size, whether the acquirer and the target are both from high-tech industries, the industry relatedness of an acquisition, and interaction terms between target exchange listing status and method of payment. The regression model is specified as follows:

$$\begin{aligned} CAR = {} & \beta_0 + \beta_1 \times Excess\ control\ rights + \beta_2 \times \log(Total\ assets) + \beta_3 \times Tobin's\ Q + \beta_4 \times ROA \\ & + \beta_5 \times Leverage + \beta_6 \times Relative\ deal\ size + \beta_7 \times High\text{-}tech + \beta_8 \times Relative\ deal\ size \\ & \times High\text{-}tech + \beta_9 \times Diversifying\ acquisition + \beta_{10} \times Public\ target \times Stock\ deal \\ & + \beta_{11} \times Public\ target \times All\text{-}cash\ deal + \beta_{12} \times Private\ target \times All\text{-}cash\ deal \\ & + \beta_{13} \times Private\ target \times Stock\ deal + \beta_{14} \times Subsidiary\ target \times All\text{-}cash\ deal + \varepsilon \end{aligned} \quad (2)$$

IV-B. Regression results

IV-B-1. OLS regression of acquirer returns

Column (1) of Panel A in Table VI presents coefficient estimates from our OLS regression of acquirer returns. We find that the excess control rights have a significant and negative effect on acquirer returns, indicating that managers with more voting rights relative to cash-flow rights on average make worse acquisition decisions for their shareholders. More specifically, ceteris paribus, acquirer five-day CAR decreases by 1.037% as the ratio of insiders' voting rights to cash-flow rights increases by one standard deviation.

For the other explanatory variables, most of their coefficient estimates are consistent with the findings in prior studies such as Moeller, Schlingemann, and Stulz (2004) and Masulis, Wang, and Xie (2007). Specifically, among acquirer characteristics, we observe that (i) firm size has a negative but insignificant effect on acquirer returns, (ii) Tobin's Q has a significantly negative effect on acquirer returns; (iii) ROA has a significantly positive effect on acquirer

returns, suggesting that higher-quality managers make better acquisitions, and (iv) leverage has a significantly positive effect on acquirer returns, suggesting that leverage does have some disciplinary power to deter managers from making bad acquisitions. For deal characteristics, we find that relative deal size has a significantly positive effect on acquirer returns, stock-financed acquisitions of public targets are associated with significantly lower acquirer returns, and stock-financed acquisitions of private targets generate significantly higher acquirer returns.

IV-B-2. Logit regression of acquirer returns

The evidence in column (1) of Panel A only tells us that acquisitions made by managers controlling more voting rights than cash-flow rights generate lower announcement-period abnormal returns, but it is not clear whether these acquisitions tend to generate *negative* abnormal returns and *destroy* shareholder value. To shed more light on this issue, we estimate a logit model in which the dependent variable is equal to one if the acquirer's five-day CAR is negative and zero otherwise, and the independent variables are the same as those in the OLS regression. The estimation results reported in column (2) of Panel A show that the excess control rights have a significant and positive coefficient, suggesting that managers with voting rights in excess of cash-flow rights are more likely to make shareholder value-destroying acquisitions. More specifically, if we hold all other explanatory variables at their respective means, the probability of an acquisition generating negative abnormal returns will increase by 6.26% as the ratio of insiders' voting rights to cash-flow rights rises by one standard deviation.

IV-B-3. Logit regression of deal withdrawal probability

We also examine whether insiders' excess control rights affect a firm's response to the stock market's reaction to an acquisition announcement. Previous studies find that managers are more likely to withdraw acquisitions that generate less favorable market reactions, and that the sensitivity of deal withdrawals to market reactions is lower when acquiring companies have

weaker corporate governance (Luo (2005), Chen, Harford, and Li (2007), Paul (2007), and Kau, Linck, and Rubin (2006)).

We estimate a probit regression in which the dependent variable is equal to one for withdrawn deals and zero otherwise. The key explanatory variables for this analysis are an acquisition's five-day CAR and the interaction term between the five-day CAR and insider excess control rights. We also control for a number of acquirer and deal specific characteristics that, according to prior research, affect deal completion, e.g., relative deal size and whether a deal is hostile, has a competing bid, or has a termination fee in place.

In Panel B of Table VI, we report the coefficient estimates from the logit regression of acquisition withdrawals. We find that the acquirer's five-day CAR has a significantly negative coefficient, suggesting that the more negatively the market reacts to the announcement of an acquisition, the more likely the acquisition is to be withdrawn. More important for our purpose, we find that the interaction term between the five-day CAR and excess control rights has a significantly positive coefficient, suggesting that firms where insiders hold more excess control rights are less responsive to the market's assessment of an acquisition's merits and are more likely to carry through deals that destroy shareholder value.[17]

To see the economic significance of our results, we focus on acquisitions whose announcement-period CARs are in the bottom quartile. Among these poorly received acquisitions, we focus on two subsamples with the highest and lowest excess control rights. The average predicted probability of deal withdrawal is 9.3% when acquirer insiders' excess control rights fall in the bottom quartile of the entire sample of acquisitions we analyze, and 0.6% when acquirer insiders' excess control rights fall in the top quartile. The 8.7% difference in average predicted withdrawal probabilities is significant with a *p*-value of 0.05.

For the control variables, we find that (i) acquirers with higher leverage are less likely to withdraw their proposed deals, (ii) relatively larger deals are more likely to be withdrawn,

[17] These results are robust to excluding acquisitions with positive CARs.

consistent with the evidence reported by Luo (2005), (iii) bids for private targets are less likely to be withdrawn, and (iv) competitive bids and hostile bids are more likely to be withdrawn, consistent with the evidence in Kau, Linck, and Rubin (2006). Overall, the results in Table VI support the hypothesis that as insiders hold more voting rights relative to cash-flow rights, they tend to make shareholder value-destroying acquisitions.

## V. Analysis of the market valuation of capital expenditures

### V-A. Model specification

To examine how the contribution of capital expenditures to shareholder value depends on excess control rights, we employ the same general framework we used for the analysis of the market value of cash holdings. The regression equation is specified as follows:

$$r_{i,t} - R^{B}_{i,t} = \beta_0 + \beta_1 \times \frac{\Delta CapEx_{i,t}}{Mktcap_{i,t-1}} + \beta_2 \times Excess\ control\ rights_{i,t-1} \times \frac{\Delta CapEx_{i,t}}{Mktcap_{i,t-1}} + \beta_3 \times Excess\ control\ rights_{i,t-1} + \gamma' X + \varepsilon_{i,t} \quad (3)$$

The only difference between this model and that used in the value-of-cash analysis is that we replace $\Delta Cash_{i,t}$ with $\Delta CapEx_{i,t}$, the change in a firm's capital expenditures from fiscal year t-1 to fiscal year t.[18] Since $\Delta CapEx_{i,t}$ is scaled by the market value of equity at the end of year t-1 ($Mktcap_{i,t-1}$), its coefficient $\beta_1$ measures the dollar change in shareholder wealth for one dollar increase in capital expenditures. In contrast to corporate cash holdings, the relation between increases in capital expenditures and increases in shareholder value is not necessarily positive. For example, $\beta_1$ could be negative if shareholders believe that a firm's capital expenditures are negative net present value investments. To test whether excess control rights affect the contribution of capital expenditures to shareholder value, we interact excess control rights with

[18] We assume that at the beginning of each fiscal year, the stock market's expectation about a firm's capital expenditures in that year is the firm's capital expenditures in the previous year.

scaled $\Delta CapEx_{i,t}$ and include the interaction term as an explanatory variable in equation (3). We expect the coefficient of the interaction term $\beta_2$ to be negative, since insiders with greater excess control rights are more likely to invest in projects that benefit themselves at the expense of outside shareholders. Note that as in the value-of-cash analysis, we separately control for excess control rights to make sure that the interaction term does not merely pick up the effect of excess control rights alone.

V-B. Sample description

We merge GIM's dual-class sample with the COMPUSTAT and CRSP databases to obtain annual financial statement and daily stock return information. Since we are primarily concerned with large capital expenditure increases, which are also more likely to generate detectable excess stock returns, we include in our analysis only firm-year observations where the percentage increase in capital expenditures from the previous year is at least 5%. The final sample consists of 1,164 firm-year observations from 1995 to 2003 for 427 dual-class companies firms with the information necessary to construct the variables in regression model (2). The annual excess stock return has a mean (median) of 5.1% (-4.9%). The change in capital expenditures scaled by beginning-of-the-year market value of equity has a mean (median) of 7.0% (2.7%).

V-C. Regression results

Table VII presents the regression results of the capital expenditures analysis. The dependent variable is the industry adjusted excess returns in column (1) and the size and market-to-book adjusted excess returns in column (2). We find that the scaled change in capital expenditures has a significantly positive effect on excess stock returns, indicating that on average capital investments add to shareholder value. However, insiders' excess control rights reduce the contribution of capital expenditures to shareholder value, evidenced by the significantly negative

coefficient of the interaction term between excess control rights and the change in capital expenditures. More specifically, based on the coefficient estimates in column (1), ceteris paribus, the contribution of one extra dollar of capital expenditures to shareholder value is lower by $0.27 per one standard deviation increase in the ratio of insider control rights to cash-flow rights. This result indicates that as insider voting rights rise relative to cash-flow rights, dual class firms tend to make less profitable capital investments, consistent with these firms making investment decisions in pursuit of private benefits rather than shareholder wealth maximization.[19]

## VI. Additional analyses

### VI-A. Firms with high insider voting control

To the extent that higher levels of insider voting control could make the extraction of private benefits easier, we focus on firms where insiders own at least 50% of the voting rights. We expect excess control rights to have a stronger effect on corporate cash, compensation, acquisition, and capital investment policies at these companies. We re-estimate the first regression of each of our tests and present excerpts of the results in Table VIII. We find that the coefficients of all four key explanatory variables have the same signs as in Tables II, IV, VI, and VII. In addition, these coefficients are all larger in magnitude and statistically more significant than in the full sample, which confirms our conjecture and echoes the finding by Lemmon and Lins (2003) that the negative effect of insider voting-cash flow rights divergence on firms' stock returns during the Asian financial crisis is stronger when insiders have a greater voting control. This is also consistent with the evidence in Jarrell and Poulsen (1988) that dual-class recapitalizations generate more negative announcement-period abnormal returns when they increase insider control above a critical threshold.

[19] To the extent that high-tech companies and young companies that are still in the growth stage are less likely to overinvest, we repeat our analysis excluding firms in high-tech industries as defined by Loughran and Ritter (2004), firms that have been public for less than 5 years, or both. Our results continue to hold.

VI-B. Sample selection and endogeneity

VI-B-1. Sample selection

Our focus on dual-class companies potentially introduces a sample selection bias into our analyses, since the sample of firms we study is not randomly selected from the population of U.S. public firms. To address this issue, we employ Heckman's (1979) two-step procedure. We first estimate a probit model predicting whether a firm has a dual-class structure. We use Gompers, Ishii, and Metrick's (2006) model specification in which the explanatory variables include two indicator variables for whether a firm's name at IPO contains a person's name and whether the firm is in the media industries at the time of its initial CRSP listing,[20] the state antitakeover law index for the firm's state of incorporation constructed by Gompers, Ishii, and Metrick (2003), the percentile rankings of the firm's IPO-year sales and profits (incomes before extraordinary items available for common shares) relative to other firms with the same IPO year, the percentage of all Compustat firms located in the same region as the firm in the year prior to its IPO, the percentage of all Compustat sales by firms located in the same region as the firm in the year prior to its IPO, and indicator variables for the firm's CRSP listing year and Fama-French industry classification. Gompers, Ishii, and Metrick (2006) argue that these variables capture the magnitude of private benefits that insiders can extract from their companies.[21] The estimation results of the probit model are very similar to those reported by Gompers, Ishii, and Metrick, and thus are not reproduced here (available upon request).[22]

Based on the coefficient estimates from the first-step regression, we then construct an inverse Mills ratio (IMR) and include it as an additional explanatory variable in the regressions of

[20] Media industries are defined as those with SIC codes 2710-11, 2720-21, 2730-31, 4830, 4832-4833, 4840-41, 7810, 7812, and 7820.

[21] See Gompers, Ishii, and Metrick (2006, Section 3) for details.

[22] Specifically, we find that a firm is more likely to have a dual-class structure if it is in the media industries at the time of its initial CRSP listing or its name at IPO contains a person's name. The probability of a firm having a dual-class structure is also positively related to the percentage of all Compustat sales by firms located in the same region as the firm in the year prior to the firm's IPO, and negatively related to the percentile ranking of the firm's IPO-year sales relative to other firms with the same IPO year, and the percentage of all Compustat firms located in the same region as the firm in the year prior to the firm's IPO.

Tables II, IV, VI, and VII. In unreported results, we find that the inverse Mills ratio does not have a significant coefficient in any of the regressions, indicating that the sample selection issue does not appear serious in our study. Not surprisingly, the coefficients of the key explanatory variables are very similar to those reported in previous tables. Therefore, we conclude that our results are robust to the correction for sample selection bias.

VI-B-2. Endogeneity

As is the case for many corporate governance studies and especially studies of ownership structure, endogeneity concerns give us pause in concluding that greater excess control rights lead to more consumption of private benefits. Biases due to endogeneity are notoriously difficult to correct for (Coles, Lemmon, and Meschke (2005) and Larcker and Rusticus (2005)).[23] One form of the endogeneity problem is reverse causality. In our context, it refers to the possibility that managers planning to consume more private benefits reduce their cash-flow rights so as to minimize the fall in the value of their shareholdings as the market capitalizes the cost of these private benefits. At the same time, these insiders could increase their voting rights to tighten their control over their companies, resulting in a higher level of excess control rights. However, this scenario is unlikely, given that our sample companies experience very little year-to-year change in the excess control rights measure. For example, the median year-to-year change is zero for the ratio of insider voting rights to cash flow rights, and the 25$^{th}$ and 75$^{th}$ percentiles of year-to-year changes in the ratio are only -0.026 and 0.057, respectively. To further address the reverse-causality concern, we also replace the annual values of excess control rights with their values in

[23] One commonly used approach in the literature to address the endogeneity problem is the instrumental variable (IV) approach. However, appropriate instrumental variables are very difficult to find (Maddala (1983) and Greene (2002)). Larcker and Rusticus (2005) show that because of this difficulty, the IV approach can easily lead to more biased estimates than simple OLS estimates without any correction for endogeneity.

the first year a firm appears in our sample and obtain qualitatively similar results (available upon request).[24]

The other form of the endogeneity problem is an omitted variable bias. The concern is that some unobservable variable(s) could impact both a firm's control-cash flow rights divergence and managerial extraction of private benefits as reflected in acquirer returns, CEO compensation, and the market values of cash and capital expenditures. One possible factor is the availability of private benefits at a firm. Ceteris paribus, managers will consume more private benefits at firms where the opportunities to do so are greater. At the same time, firms with more private benefits capacity are more likely to have a dual-class structure, contributing to excess control rights (Gompers, Ishii, and Metrick (2006)). Following Gompers, Ishii, and Metrick, we use the explanatory variables in the probit model introduced in section VI-B-1 to capture a firm's private benefits capacity. We obtain qualitatively similar results when we include these variables as additional regressors in our regressions (available upon request).

Another candidate for an omitted variable is management quality. Incompetent managers are more apt to poorly execute important corporate decisions, possibly resulting in shareholder value-destroying acquisitions, inefficient uses of corporate cash holdings, and poor capital investments.[25] At the same time, incompetent managers realizing their own ineptitude would want to hold more voting rights to maintain their control over their companies and retain fewer cash-flow rights to limit their losses from their poor decisions. To examine this possibility, we follow Morck, Shleifer, and Vishny (1990) and measure management quality by industry-

[24] The limited nature of the time-series variation in our excess control rights suggests that a panel data regression with excess control rights as the key explanatory variable may not be valid. Our compensation analysis is susceptible to this concern, while the cash, acquisition, and capital expenditure tests are not. The reason is that the acquisition and capital expenditure samples are not panels, and the key explanatory variable in the cash and capital expenditure tests is not excess control rights, but the interaction between excess control rights and either changes in cash or capital expenditures, which shows substantial time-series variation. We re-estimate the compensation regression with each variable taking the value of its time-series average for each firm. The coefficient estimate of excess control rights is still positive and statistically significant.

[25] Note that there is no compelling reason why incompetent managers should receive higher compensation. This point alone would disqualify management quality as an omitted variable.

adjusted operating performance (ROA) over the previous three years. Our results are robust to this additional control. While we can not completely rule out the possibility of an omitted-variable problem even with all the controls we have implemented, it should be recognized that virtually all empirical studies are susceptible to this concern.

VI-C. Voting premium analysis

Previous research finds that when a dual-class company has both classes of its stock publicly traded, the superior-voting class tends to trade at a premium relative to the inferior-voting class. Zingales (1995) develops a model showing that the voting premium reflects the private benefits of control available to controlling shareholders. Therefore, it is interesting to see whether some of the private benefits we document earlier are related to the observed voting premium. Following Zingales (1995), the voting premium is defined as $(P_A\text{-}P_B)/(P_B\text{-}r\times P_A)$, where $P_A$ is the price of a superior-voting share, $P_B$ is the price of an inferior-voting share, $r$ is the relative number of votes of an inferior-voting share versus a superior-voting share, and the two classes of shares have identical cash-flow rights. In the ensuing analysis, each unit of observation is a firm's "annual voting premium" calculated as the mean daily voting premium for each fiscal year. After excluding cases where two classes of stock have differential cash-flow rights, we obtain a sample of 457 firm annual voting premiums. The overall mean of these annul voting premiums is 3.6%, and the median is 2.4%.

Similar to Zingales's approach of relating CEO compensation to the voting premium, we first estimate the excess or abnormal component of CEO compensation since a portion of CEO pay represents market compensation. The excess compensation is estimated by the residual from a CEO compensation regression where the explanatory variables are the economic determinants of CEO pay previously documented in the literature. These variables include firm size, leverage, Tobin's Q, operating and stock return performance, firm risk, R&D expenses/sales, capital expenditures/sales, advertising expenses/sales, firm age, CEO tenure, and year and industry fixed

effects, but do not include any excess control rights measure. We then estimate a voting premium regression where abnormal or excess compensation scaled by beginning-of-year market value of equity is an explanatory variable. We also follow Zingales (1995) by controlling for firm size, which serves as a proxy for the probability of a control contest, and the relative average trading volume of the superior-voting class versus the inferior-voting class. Requiring dual-class companies to have both classes of shares traded and have compensation data available from ExecuComp leaves us with only 160 firm-year observations. We find that the voting premium is significantly and positively related to excess compensation (coefficient: 2.487; robust t-stat: 2.97), suggesting that abnormally high compensation is a form of private benefits that is reflected in the voting premium.[26] We also find that the voting premium is significantly and negatively related to firm size. Both findings are consistent with the evidence in Zingales (1995).

We also examine whether the voting premium is related to acquirer returns. We obtain a sample of 58 observations when we require dual-class acquirers to have both classes of shares traded. We regress the voting premium on acquirer returns along with firm size and relative average trading volume, and find that the voting premium is negatively related to acquirer returns, but the relation is not statistically significant with a robust t-stat of 0.7. One reason for the low significance level may be the small sample size. Another possibility is that unlike CEO compensation, it is unclear which part of acquirer returns should be considered normal and which part abnormal, and this ambiguity could weaken the statistical power of our test.

### VI-D. Dual-class vs. single-class

A natural extension of our analysis of the agency problems at dual-class companies is to compare dual-class companies with single-class companies and examine whether managerial extraction of private benefits is more rampant at dual-class companies than at single-class

[26] Given that the scaled excess compensation has a standard deviation of 0.0076 or 0.76%, we can compute that ceteris paribus, as the scaled excess compensation increases by one standard deviation, the voting premium will rise by 2.487×0.76%=1.89%, about 9.7% of its standard deviation of 19.42%.

companies. Toward that objective, we repeat our four tests in samples that consist of both dual-class firms and single-class firms. In constructing these samples, we recognize that the two types of companies are substantially different in many aspects and a firm's ownership structure is endogenous (Gompers, Ishii, and Metrick (2006)). As a result, we use a propensity score procedure and select a matching single-class company for each dual-class one.[27] Specifically, we estimate a probit model (same as in Section VI-B-1) to predict whether a firm has a dual-class structure. Based on the coefficient estimates, we compute the predicted probability of a firm having a dual-class structure, i.e., the propensity score. For each dual-class company, we choose the single-class company with the closest propensity score as its matching company.

We re-estimate the first regression of each of our tests in a sample of dual-class companies and matching single-class companies, and present an excerpt of the results in Table IX. The key explanatory variable is the ratio of insider voting rights to cash-flow rights or its interaction with change in cash or capital expenditure. The ratio is of course equal to one for single-class companies. We find that the ratio has a positive coefficient in the CEO compensation regression and a negative coefficient in the acquirer returns regression, its interaction with the change in cash has a negative coefficient, and its interaction with the change in capital expenditure has a negative coefficient, all statistically significant. These results suggest that compared to single-class companies with no divergence between insider voting rights and cash-flow rights, dual-class companies' cash holdings are valued less by their shareholders, their CEOs receive higher excess compensation, their acquisitions generate lower returns for their shareholders, and their capital spending contributes less to shareholder wealth, all pointing to more serious agency problems and greater private benefits to managers at dual-class companies.

## VII. Conclusions

[27] See Deheja and Wahba (1999, 2002) for detailed discussion of the procedure.

We study the financial consequences of the separation of ownership and control in a sample of U.S. dual-class companies. Our evidence is consistent with the hypothesis that insiders holding more voting rights relative to cash flow rights extract more private benefits at the expense of outside shareholders. Specifically, as the insider control-cash flow rights divergence becomes larger, outside shareholders raise the discount on an extra dollar of corporate cash holdings, CEOs receive greater compensation, and managers engage in more inefficient empire building activities in terms of acquisitions and large capital expenditures. These results are consistent with larger excess control rights leading to both greater private benefits of control and reduced market value to outside shareholders. Of course, there are many other forms of private benefits that managers at dual-class firms can pursue, which would make for interesting future research. Another potentially fruitful direction for further inquiry is to extend our analysis to an international context where, compared to the U.S., the dual-class structure is more prevalent and, perhaps more importantly, the divergence between insider voting rights and cash-flow rights is more severe due to the presence of pyramidal and cross-holding ownership structures in addition to the dual-class arrangement.

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Table I. Summary statistics – Analysis of the market value of cash holdings

The sample consists of 2,440 firm-years for 503 dual-class companies from 1995 to 2003. Variable definitions are in the Appendix.

| | Mean | Std. | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| *Firm ownership structure* | | | | | |
| Insiders' cash-flow rights | 0.394 | 0.215 | 0.228 | 0.366 | 0.541 |
| Insiders' voting rights | 0.668 | 0.235 | 0.508 | 0.699 | 0.862 |
| Ratio | 2.208 | 2.064 | 1.309 | 1.669 | 2.342 |
| *Excess stock returns of inferior class during the fiscal year* | | | | | |
| $(r - R^B)$ | 0.029 | 0.771 | -0.328 | -0.055 | 0.226 |
| *Firm characteristics* | | | | | |
| Total assets (in millions) | 2,181 | 7,148 | 161 | 500 | 1,438 |
| Leverage | 0.228 | 0.207 | 0.038 | 0.179 | 0.365 |
| Cash/total assets | 0.123 | 0.161 | 0.016 | 0.053 | 0.171 |
| *(The variables below are scaled by the market value of equity of the inferior class at the end of fiscal year t-1)* | | | | | |
| $Cash_{t-1}$ | 0.321 | 0.533 | 0.034 | 0.116 | 0.354 |
| $\Delta Cash_t$ | 0.035 | 0.440 | -0.035 | 0.002 | 0.054 |
| $\Delta Earnings_t$ | 0.017 | 0.351 | -0.049 | 0.010 | 0.065 |
| $\Delta NetAssets_t$ | 0.240 | 1.157 | -0.049 | 0.080 | 0.367 |
| $\Delta R\&D_t$ | -0.002 | 0.019 | 0 | 0 | 0 |
| $\Delta Interests_t$ | 0.011 | 0.061 | -0.003 | 0 | 0.012 |
| $\Delta Dividends_t$ | -0.002 | 0.020 | 0 | 0 | 0.001 |
| $NetFinancing_t$ | 0.123 | 0.576 | -0.053 | 0 | 0.141 |

Table II. OLS regression analysis of the market value of cash holdings

The sample consists of 2,440 dual-class firm-years from 1995 to 2003. In columns (1), the dependent variable is the industry adjusted excess returns of the inferior-class stock during fiscal year t, and in column (2), it is the size and market-to-book adjusted excess returns of the inferior-class stock during fiscal year t. Variable definitions are in the Appendix. Financial variables, except leverage, are scaled by the market capitalization of the inferior-class stock at the end of fiscal year t-1. In parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and firm clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively. All regressions control for year and industry fixed effects, whose coefficient estimates are suppressed. The coefficient of the intercept is also suppressed.

| | Dependent variable: Annual excess stock returns | |
|---|---|---|
| | (1) | (2) |
| $\Delta Cash_t$ | 1.106[a] | 1.054[a] |
| | *(0.008)* | *(0.010)* |
| $Ratio_{t-1} \times \Delta Cash_t$ | -0.037[c] | -0.040[c] |
| | *(0.067)* | *(0.072)* |
| $Ratio_{t-1}$ | -0.007 | -0.009 |
| | *(0.490)* | *(0.393)* |
| $Cash_{t-1} \times \Delta Cash_t$ | -0.275[a] | -0.262[a] |
| | *(0.000)* | *(0.001)* |
| $Leverage_t \times \Delta Cash_t$ | -0.652[c] | -0.609 |
| | *(0.063)* | *(0.105)* |
| Constrained (dummy) $\times \Delta Cash_t$ | -0.130 | -0.098 |
| | *(0.704)* | *(0.773)* |
| $Cash_{t-1}$ | 0.089[c] | 0.078 |
| | *(0.089)* | *(0.142)* |
| $Leverage_t$ | -0.724[a] | -0.782[a] |
| | *(0.000)* | *(0.000)* |
| $\Delta Earnings_t$ | 0.281[a] | 0.296[a] |
| | *(0.000)* | *(0.000)* |
| $\Delta NetAssets_t$ | 0.033 | 0.034 |
| | *(0.107)* | *(0.121)* |
| $\Delta R\&D_t$ | 2.217 | 2.412 |
| | *(0.133)* | *(0.105)* |
| $\Delta Interests_t$ | -0.240 | -0.147 |
| | *(0.543)* | *(0.708)* |
| $\Delta Dividends_t$ | -0.095 | -0.063 |
| | *(0.382)* | *(0.588)* |
| $NetFinancing_t$ | 0.067 | 0.081[c] |
| | *(0.132)* | *(0.076)* |
| Year fixed effects | Yes | Yes |
| Industry fixed effects | Yes | Yes |
| Number of obs. | 2,440 | 2,440 |
| Adjusted $R^2$ | 15.40% | 14.63% |

Table III. Summary statistics – Analysis of CEO compensation

The sample consists of 791 firm-years for 150 dual-class companies from 1995 to 2003. Variable definitions are in the Appendix.

| | Mean | Std. | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| *Firm ownership structure* | | | | | |
| Insiders' cash-flow rights | 0.297 | 0.190 | 0.142 | 0.271 | 0.421 |
| Insiders' voting rights | 0.566 | 0.267 | 0.357 | 0.599 | 0.801 |
| Ratio | 2.508 | 2.034 | 1.279 | 1.836 | 2.837 |
| *CEO total compensation* | | | | | |
| Total compensation (in $ millions) | 3.542 | 5.948 | 0.931 | 1.679 | 3.484 |
| *Firm characteristics* | | | | | |
| Total assets (in $ millions) | 7,509 | 29,998 | 534 | 1,157 | 2,643 |
| Leverage | 0.171 | 0.159 | 0.031 | 0.131 | 0.267 |
| Tobin's Q | 2.195 | 2.769 | 1.201 | 1.599 | 2.423 |
| R&D/Sales | 0.042 | 0.277 | 0 | 0 | 0.015 |
| CapEx/Sales | 0.100 | 0.434 | 0.025 | 0.044 | 0.071 |
| Advertising expense/Sales | 0.024 | 0.055 | 0 | 0 | 0.019 |
| Industry-adjusted ROA | 0.038 | 0.099 | -0.008 | 0.017 | 0.071 |
| One-year abnormal stock returns | 0.110 | 0.807 | -0.255 | -0.016 | 0.257 |
| Stock return volatility | 0.388 | 0.184 | 0.273 | 0.343 | 0.443 |
| Firm age | 19 | 15 | 7 | 17 | 27 |
| CEO tenure | 12 | 11 | 4 | 9 | 18 |

Table IV. OLS regression analysis of CEO total compensation

The sample for column (1) consists of 791 dual-class firm-years from 1995 to 2003, and the sample for column (2) consists of 570 dual-class firm-years from 1995 to 2003, where CEOs are affiliated with controlling shareholders. The dependent variable is the level of CEO total compensation for both columns. Variable definitions are in the Appendix. In parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and firm clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively. All regressions control for year and industry fixed effects, whose coefficient estimates are suppressed. The coefficient of the intercept is also suppressed.

| | Dependent variable: CEO total compensation | |
|---|---|---|
| | (1) | (2) |
| *Excess control rights:* | | |
| Ratio | 0.519[a] | 0.639[a] |
| | *(0.010)* | *(0.000)* |
| *Control variables:* | | |
| Log(total assets) | 2.579[a] | 2.266[a] |
| | *(0.000)* | *(0.007)* |
| Leverage | -5.322 | -8.241[b] |
| | *(0.110)* | *(0.026)* |
| Tobin's Q | -0.011 | -0.043 |
| | *(0.895)* | *(0.558)* |
| R&D / Sales | 0.491 | 0.422 |
| | *(0.333)* | *(0.373)* |
| CapEx / Sales | -0.341 | -0.189 |
| | *(0.507)* | *(0.748)* |
| Advertising expense / Sales | 4.435 | 2.002 |
| | *(0.386)* | *(0.802)* |
| Industry-adjusted ROA | 2.435 | -0.814 |
| | *(0.506)* | *(0.843)* |
| One-year abnormal stock returns | 0.030 | -0.023 |
| | *(0.916)* | *(0.934)* |
| Stock return volatility | 4.152[b] | 0.847 |
| | *(0.025)* | *(0.688)* |
| Firm age | -0.007 | -0.033 |
| | *(0.716)* | *(0.315)* |
| CEO tenure | -0.055[c] | -0.062 |
| | *(0.068)* | *(0.171)* |
| Number of obs. | 791 | 570 |
| Adjusted $R^2$ | 35.44% | 38.38% |

Table V. Summary statistics – Analysis of acquirer decisions

The sample consists of 410 completed domestic mergers and acquisitions made by 189 dual-class companies between 1995 and 2003. Variable definitions are in the Appendix.

| | Mean | Std. | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| *Firm ownership structure* | | | | | |
| Insiders' cash-flow rights | 0.408 | 0.240 | 0.187 | 0.375 | 0.617 |
| Insiders' voting rights | 0.674 | 0.258 | 0.511 | 0.728 | 0.887 |
| Ratio | 2.135 | 1.471 | 1.222 | 1.569 | 2.593 |
| *Acquirer announcement-period abnormal return* | | | | | |
| CAR(-2,+2) | 1.369% | 10.417% | -3.714% | 0.473% | 5.999% |
| *Acquirer characteristics* | | | | | |
| Total assets (in $ millions) | 1,808 | 4,824 | 237 | 608 | 1,502 |
| Tobin's q | 2.961 | 6.212 | 1.211 | 1.638 | 2.404 |
| ROA | 0.100 | 0.173 | 0.054 | 0.108 | 0.167 |
| Leverage | 0.219 | 0.190 | 0.047 | 0.180 | 0.364 |
| *Deal characteristics* | | | | | |
| Relative deal size | 0.206 | 0.615 | 0.032 | 0.068 | 0.187 |
| Public (dummy) | 0.146 | 0.354 | 0 | 0 | 0 |
| Private (dummy) | 0.405 | 0.491 | 0 | 0 | 1 |
| Subsidiary (dummy) | 0.449 | 0.498 | 0 | 0 | 1 |
| All cash (dummy) | 0.561 | 0.497 | 0 | 1 | 1 |
| Diversifying (dummy) | 0.312 | 0.464 | 0 | 0 | 1 |
| High-tech (dummy) | 0.100 | 0.300 | 0 | 0 | 0 |

Table VI. Regression analysis of acquisition decisions

The sample for Panels A consists of 410 completed domestic mergers and acquisitions (listed in SDC) between 1995 and 2003 made by U.S. dual-class firms. The sample for Panel B consists of 410 completed and 24 withdrawn domestic mergers and acquisitions (listed in SDC) between 1995 and 2003 made by U.S. dual-class firms. In column (1) of Panel A, the dependent variable is the acquirer's five-day cumulative abnormal return (CAR) in percentage points. In column (2) of Panel A, the dependent variable is equal to one if the five-day CAR is negative and zero otherwise. In Panel B, the dependent variable is equal to one if an acquisition is withdrawn and zero otherwise. Variable definitions are in the Appendix. In parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and acquirer clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively. All regressions control for year and industry fixed effects, whose coefficient estimates are suppressed. The coefficient for the intercept is also suppressed.

| Panel A: Analysis of acquirer returns | | |
|---|---|---|
| | Dependent variable: CAR (-2, +2) | Dependent variable: 1 if CAR(-2,+2)<0, 0 otherwise |
| | OLS | Logit |
| *Excess control rights:* | | |
| Ratio | -0.705[a] | 0.183[b] |
| | *(0.006)* | *(0.033)* |
| *Acquirer characteristics:* | | |
| Log(total assets) | -0.426 | 0.124 |
| | *(0.204)* | *(0.213)* |
| Tobin's Q | -0.218[a] | 0.041 |
| | *(0.006)* | *(0.113)* |
| ROA | 7.639[b] | -2.014[b] |
| | *(0.036)* | *(0.016)* |
| Leverage | 7.749[b] | -0.009 |
| | *(0.015)* | *(0.990)* |
| *Deal characteristics:* | | |
| Relative deal size | 4.934[a] | -2.080[a] |
| | *(0.000)* | *(0.004)* |
| High-tech | -2.239 | -0.095 |
| | *(0.244)* | *(0.812)* |
| High-tech × relative deal size | 0.961 | 1.483 |
| | *(0.836)* | *(0.453)* |
| Diversifying acquisition | -0.349 | 0.346 |
| | *(0.780)* | *(0.222)* |
| Public target × stock deal | -6.345[b] | 1.104[b] |
| | *(0.011)* | *(0.038)* |
| Public target × all-cash deal | 2.555 | -1.158 |
| | *(0.299)* | *(0.136)* |
| Private target × all-cash deal | -3.481 | 0.752 |
| | *(0.117)* | *(0.118)* |
| Private target × stock deal | 3.337[c] | 0.009 |
| | *(0.095)* | *(0.984)* |
| Subsidiary target × all-cash deal | -2.453 | 0.617 |
| | *(0.177)* | *(0.132)* |
| Number of obs. | 410 | 410 |
| Adjusted-$R^2$ or Pseudo-$R^2$ | 17.62% | 16.69% |

| Panel B: Logit regression of the probability of an acquisition proposal being withdrawn | |
|---|---|
| | Dependent variable: 1 for withdrawn deals, 0 otherwise |
| CAR(-2,+2) | -0.337[a] |
| | *(0.004)* |
| Ratio × CAR(-2,+2) | 0.165[a] |
| | *(0.008)* |
| Ratio | -0.186 |
| | *(0.559)* |
| *Acquirer characteristics:* | |
| Log(total assets) | 0.249 |
| | *(0.468)* |
| Tobin's Q | 0.076 |
| | *(0.240)* |
| ROA | -0.397 |
| | *(0.879)* |
| Leverage | -3.155[b] |
| | *(0.025)* |
| *Deal characteristics:* | |
| Relative deal size | 2.503[b] |
| | *(0.030)* |
| High-tech | -0.225 |
| | *(0.797)* |
| Diversifying acquisition | -0.118 |
| | *(0.895)* |
| Public target | 0.472 |
| | *(0.677)* |
| Private target | -1.552[c] |
| | *(0.061)* |
| All-cash deal | 0.120 |
| | *(0.824)* |
| Competing bidder | 4.690[b] |
| | *(0.030)* |
| Hostile deal | 3.511[c] |
| | *(0.081)* |
| Termination fee | -1.535 |
| | *(0.323)* |
| Number of obs. | 434 |
| Pseudo-$R^2$ | 51.11% |

Table VII. OLS regression analysis of the market value of large capital expenditure increases

The sample consists of 1,164 dual-class firm-years from 1995 to 2003. In columns (1), the dependent variable is the industry adjusted excess returns of the inferior-class stock during fiscal year t, and in column (2), it is the size and market-to-book adjusted excess returns of the inferior-class stock during fiscal year t. Variable definitions are in the Appendix. Financial variables, except leverage, are scaled by the market capitalization of the inferior-class stock at the end of fiscal year t-1. In parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and firm clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively. All regressions control for year and industry fixed effects, whose coefficient estimates are suppressed. The coefficient of the intercept is also suppressed.

| | Dependent variable: Annual excess stock returns | |
|---|---|---|
| | (1) | (2) |
| $\Delta CapEx_t$ | 0.957[b] | 0.845[c] |
| | *(0.030)* | *(0.061)* |
| $Ratio_{t-1} \times \Delta CapEx_t$ | -0.190[a] | -0.197[a] |
| | *(0.005)* | *(0.006)* |
| $Ratio_{t-1}$ | 0.017 | 0.017 |
| | *(0.204)* | *(0.223)* |
| $CapEx_{t-1}$ | 0.157 | 0.205 |
| | *(0.420)* | *(0.288)* |
| $Leverage_t$ | -1.025[a] | -1.153[a] |
| | *(0.000)* | *(0.000)* |
| $\Delta Earnings_t$ | 0.413[a] | 0.412[a] |
| | *(0.004)* | *(0.002)* |
| $\Delta NetAssets_t$ | 0.003 | -0.010 |
| | *(0.995)* | *(0.816)* |
| $\Delta R\&D_t$ | 6.288[b] | 6.952[b] |
| | *(0.042)* | *(0.027)* |
| $\Delta Interests_t$ | -0.411 | -0.113 |
| | *(0.560)* | *(0.871)* |
| $\Delta Dividends_t$ | -0.075 | -0.068 |
| | *(0.542)* | *(0.623)* |
| $NetFinancing_t$ | 0.148 | 0.193[c] |
| | *(0.209)* | *(0.094)* |
| Year fixed-effects | Yes | Yes |
| Industry fixed-effects | Yes | Yes |
| Number of obs. | 1,164 | 1,164 |
| Adjusted $R^2$ | 8.94% | 10.33% |

Table VIII. Regression results from subsamples with high insider voting control

Panels A - D present excerpts from the regression analyses of the market value of cash, CEO compensation, acquirer returns, and the market value of large capital expenditure increases in subsamples where insiders control at least 50% of the voting rights. The regressions are specified in the same way as those in Tables II, IV, VI, and VII. Panel A uses a sample of 1855 firm-year observations from 1995 to 2003, Panel B uses a sample of 465 firm-year observations from 1995 to 2003, Panel C uses a sample of 311 acquisitions from 1995 to 2003, and Panel D uses a sample of 895 firm-year observations from 1995 to 2003. Variable definitions are in the Appendix. In parentheses are *p*-values based on standard errors adjusted for heteroskedasticity (White (1980)) and firm clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively.

| Panel A: Analysis of the market value of cash – equation (1)<br>(Dependent variable: Annual excess stock returns) | |
|---|---|
| | Coefficient estimate<br>(*p*-value) |
| ΔCash | 0.999[a]<br>*(0.000)* |
| Ratio × ΔCash | -0.063[a]<br>*(0.002)* |
| **Panel B: Analysis of CEO compensation<br>(Dependent variable: CEO total compensation)** | |
| | Coefficient estimate<br>(*p*-value) |
| Ratio | *0.862*[a]<br>*(0.000)* |
| **Panel C: Analysis of acquisition decisions – OLS<br>(Dependent variable: acquirer CAR(-2,+2))** | |
| | Coefficient estimate<br>(*p*-value) |
| Ratio | -1.005[a]<br>*(0.000)* |
| **Panel D: Analysis of the market value of large capital expenditure increases – equation (3)<br>(Dependent variable: Annual excess stock returns)** | |
| | Coefficient estimate<br>(*p*-value) |
| ΔCapEx | 0.960[c]<br>*(0.054)* |
| Ratio × ΔCapEx | -0.207[a]<br>*(0.006)* |

Table IX. Regression results from matched dual-class companies and single-class companies

Panels A - D present excerpts from the regression analyses of the market value of cash, CEO compensation, acquirer returns and the market value of large capital expenditures respectively. The regressions are specified in the same way as those in Table II, IV, VI, and VII. The sample used for each panel consists of observations from 1995 to 2003 for dual-class companies and matched single-class companies based on propensity scores. Panel A uses a sample of 4880 firm-year observations, Panel B uses a sample of 1582 firm-year observations, Panel C uses a sample of 820 acquisitions, and Panel D uses a sample of 2328 firm-year observations. Variable definitions are in the Appendix. In parentheses are *p-values* based on standard errors adjusted for heteroskedasticity (White (1980)) and firm clustering (Peterson (2007)). The symbols [a], [b], and [c] stand for statistical significance based on two-sided tests at the 1%, 5%, and 10% level, respectively.

| Panel A: Analysis of the market value of cash – equation (1)<br>(Dependent variable: Annual excess stock returns) | |
|---|---|
| | Coefficient estimate<br>(*p*-value) |
| ΔCash | 0.929[a]<br>*(0.005)* |
| Ratio[*] × ΔCash | -0.044[b]<br>*(0.031)* |
| **Panel B: Analysis of CEO compensation<br>(Dependent variable: CEO total compensation)** | |
| | Coefficient estimate<br>(*p*-value) |
| Ratio[*] | 0.491[a]<br>*(0.000)* |
| **Panel C: Analysis of acquisition decisions – OLS<br>(Dependent variable: acquirer CAR(-2,+2))** | |
| | Coefficient estimate<br>(*p*-value) |
| Ratio[*] | -0.500[b]<br>*(0.020)* |
| **Panel D: Analysis of the market value of large capital expenditure increases – equation (3)<br>(Dependent variable: Annual excess stock returns)** | |
| | Coefficient estimate<br>(*p*-value) |
| ΔCapEx | 0.711[b]<br>*(0.037)* |
| Ratio[*] × ΔCapEx | -0.111[a]<br>*(0.000)* |

[*] Ratio=1 for single-class companies.

Appendix: Variable Definitions

| Variable | Definitions |
|---|---|
| *Key explanatory variables* | |
| Ratio | Insiders' voting rights / Insiders' cash-flow rights. Source: GIM(2006) |
| Wedge | Insiders' voting rights – Insiders' cash-flow rights. Source: GIM(2006) |
| *Analysis of the market value of cash holdings* | |
| r | Raw returns of the inferior voting-class stock. Source: CRSP |
| $R^B$ | Fama-French (1997) industry value-weighted returns, or Fama-French size and book-to-market matched portfolio returns, Source: Ken French's website. |
| ΔCash | Change in cash (item 1). Source: Compustat. |
| ΔEarnings | Change in earnings before extraordinary items (item 18 + item 15 + item 50 + item 51). Source: Compustat. |
| ΔNetAssets | Change in net assets (item 6 - item 1). Source: Compustat. |
| ΔR&D | Change in R&D (item 46, set to 0 if missing). Source: Compustat |
| ΔInterests | Change in interests (item 15). Source: Compustat |
| ΔDividends | Change in common dividends (item 21). Source: Compustat. |
| NetFinancing | New equity issues (item 108 - item 115) + Net new debt issues (item 111 - item 114). Source: Compustat. |
| Leverage | All debt (item 9 + item 34) / Market value of total assets (item 6 - item 60 + item 25 × item 199). Source: Compustat. |
| *Analysis of CEO compensation* | |
| CEO compensation | Annual total compensation received by a CEO, comprised of salary, bonus, restricted stock awards, stock option grants, long-term incentive payouts, and all others. Source: ExecuComp variable TDC1 |
| Firm size | Log of the book value of total assets (item 6). Source: Compustat. |
| Tobin's q | Market value of assets over book value of asset: (item 6 - item 60 + item 25 × item 199) / item 6. Source: Compustat. |
| Leverage | All debt (item 9 + item 34) / Market value of total assets (item 6 – item 60 + item 25 × item 199). Source: Compustat. |
| R&D / Sales | Item 46 (set to 0 if missing) / item 12 Source: Compustat. |
| Capital expenditure / Sales | Item 128 (set to 0 if missing) / item 12. Source: Compustat. |
| Advertising expenses / Sales | Item 45 (set to 0 if missing) / item 12. Source: Compustat. |

| | |
|---|---|
| Industry-adjusted ROA | ROA (item 13 / item 6) adjusted by industry median ROA. Industries are defined according to Fama-French 48 industry classifications. Source: Ken French's website. |
| One-year abnormal stock return | Buy-and-hold stock returns minus buy-and-hold CRSP value-weighted market returns. Source: CRSP |
| Stock return volatility | Standard deviation of monthly stock returns during past five years. Source: ExecuComp |
| Firm age | The number of years since a firm's first appearance in CRSP. Source: CRSP |
| CEO tenure | The number of years a CEO has been in office. Source: ExecuComp |
| *Analysis of acquisition decisions* | |
| Firm size | Log of the book value of total assets (item 6) Source: Compustat. |
| Tobin's q | Market value of assets over book value of assets: (item 6 - item 60 + item 25 × item 199) / item 6. Source: Compustat. |
| ROA | Net income (item 13) over book value of total assets (item 6) Source: Compustat. |
| Leverage | All debt (item 9 + item 34) / Market value of total assets (item 6-item 60+item 25 × item 199) Source: Compustat |
| Relative deal size | Deal value (from SDC) over acquirer's market value of total assets (item 6 - item 60 + item 25 × item 199) Source: Compustat |
| High-tech deal | Indicator variable: 1 if acquirer and target are both from the high-tech industries defined by Loughran and Ritter (2004), 0 otherwise. |
| Diversifying acquisition | Indicator variable: 1 if acquirer and target do not share a Fama-French industry, 0 otherwise. |
| Public target | Indicator variable: 1 for public targets, 0 otherwise. Source: SDC M&A Database |
| Private target | Indicator variable: 1 for private targets, 0 otherwise. Source: SDC M&A Database |
| Subsidiary target | Indicator variable: 1 for subsidiary targets, 0 otherwise. Source: SDC M&A Database |
| All cash deal | Indicator variable: 1 for purely cash-financed deals, 0 otherwise. Source: SDC M&A Database |
| Stock deal | Indicator variable: 1 for deals at least partially stock-financed, 0 otherwise. Source: SDC M&A Database |
| Competing bidder | Indicator variable: 1 for deals with competing bidders, 0 otherwise. Source: SDC M&A Database |
| Hostile deal | Indicator variable: 1 for hostile deals, 0 otherwise. Source: SDC M&A Database |
| Termination fee | Indicator variable: 1 for deals with termination fee in place, 0 otherwise. Source: SDC M&A Database |
| *Analysis of the market value of large capital expenditure increases* | |
| ΔCapEx | Changes in capital expenditures (item 128). Source: Compustat |

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