NBER WORKING PAPER SERIES

INCENTIVES VS. CONTROL: AN ANALYSIS OF U.S. DUAL-CLASS COMPANIES

Paul Gompers
Joy Ishii
Andrew Metrick

Working Paper 10240
http://www.nber.org/papers/w10240

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 2004

Osborne Jackson, Ashton Hawk, and Jason O'Connor provided excellent research assistance. We thank Sanjai Bhagat, John Core, Martin Lipton, Brett McDonnell, Ravi Singh, and conference participants at Fordham Law School and the Penn Institute for Law and Economics for helpful comments. Gompers acknowledges the support of the Division of Research at Harvard Business School. Ishii acknowledges support from an NSF Graduate Research Fellowship. Metrick acknowledges the support of the Rodney L. White Center at the Wharton School. Gompers and Metrick acknowledge the support of National Science Foundation grant SES #0136791. The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research.

Incentives vs. Control: An Analysis of U.S. Dual-Class Companies
Paul Gompers, Joy Ishii, and Andrew Metrick
NBER Working Paper No. 10240
January 2004
JEL No. G3

ABSTRACT

Dual-class common stock allows for the separation of voting rights and cash flow rights across the different classes of equity. We construct a large sample of dual-class firms in the United States and analyze the relationships of insider's cash flow rights and voting rights with firm value, performance, and investment behavior. We find that relationship of firm value to cash flow rights is positive and concave and the relationship to voting rights is negative and convex. Identical quadratic relationships are found for the respective ownership variables with sales growth, capital expenditures, and the combination of R&D and advertising. Our evidence is consistent with an entrenchment effect of voting control that leads managers to underinvest and an incentive effect of cash flow ownership that induces managers to pursue more aggressive strategies.

Paul A. Gompers
Harvard Business School
Harvard University
Cambridge, MA 02138
and NBER
pgompers@hbs.edu

Joy Ishii
Department of Economics
Harvard University
Cambridge, MA 02138
jishii@fas.harvard.edu

Andrew Metrick
Department of Finance
The Wharton School
University of Pennsylvania
Philadelphia, PA 19104
metrick@wharton.upenn.edu

1. Introduction

In the classic analysis of Jensen and Meckling (1976), managerial equity ownership helps to align the interests of the manager and minority shareholders. There, the focus is on the cash flow rights associated with ownership. But managerial equity ownership has implications not only for incentives, but also control. The votes included with equity ownership can create entrenchment, and an entrenched management may be immune to career concerns [Fama (1980) and Holmstrom (1999)], the discipline of the product market [Hart (1983)], monitoring by large shareholders [Shleifer and Vishny (1986)], and value-enhancing takeovers [Jensen and Ruback (1983), Franks and Mayer (1990)].[1] In this situation, managers may expropriate minority shareholders and extract what Grossman and Hart (1988) call the private benefits of control. Although in principle incentives could be provided without giving the control of equity, in practice the vast majority of managerial incentives come from equity ownership [Jensen and Murphy (1990)]

Since theoretical arguments identify both positive (incentive) and negative (control) effects of managerial ownership, an active empirical literature has attempted to disentangle the two effects and identify an optimal level of ownership.[2] The seminal work of Morck, Shleifer, and Vishny (1988) finds that market value is related to insider ownership in a non-monotonic way. For the largest listed firms in 1980, market value is

[1] Shleifer and Vishny (1997) provide a complete survey of these and other corporate governance mechanisms.

[2] Of course, managers cannot do their job – nor gain the benefit of any incentives -- without some form of control over the organization. In this paper, when we refer to control we mean "voting control", as opposed to the "administrative control" enjoyed by all delegated management. Administrative control is always subordinate to voting control.

increasing in board ownership over the range of zero to five percent, consistent with the agency theory. But, consistent with entrenchment, over the range of five to twenty-five percent, market value falls with board ownership. This result has been confirmed in various samples since then. For example, McConnell and Servaes (1990) use a more comprehensive sample of firms and find a similar non-monotonic relationship between ownership and *Q*. Holderness, Kroszner, and Sheehan (1999) find a similar pattern in firms from 1935.

The relationship between inside ownership and firm value has also been explored outside the U.S. La Porta, Lopez-de-Silanes, Sheifer, and Vishny (2002) examine the relationship between control ownership and firm value in 27 countries. They find that higher cash flow ownership by insiders increases firm value. A similar analysis was undertaken by Seifert, Gonenc, and Wright (2002) for the U.S., U.K., Germany, and Japan. They examine a much larger sample of firms than La Porta et al. and find similar results. In all four countries, greater inside ownership of shares leads to higher market valuations.

One constraint in these studies is that the two separate forces – incentives and control – must be identified using only one variable – ownership. An analysis of "dual-class" companies offers a way around this problem. The typical dual-class company offers one class of common stock with superior voting rights and one class of common stock with inferior voting rights. Management and other insiders often hold the superior voting class in greater proportion. Since these firms have equity structures that break the link between cash flow incentives and voting control, determining the ownership structure of dual-class firms allows one to separate the role of these two effects.

Previous studies of dual-class firms suggest that the separation of voting and cash flow ownership may have significant negative implications for firm valuation. Bebchuk, Kraakman, and Triantis (2000) explore the costs of a manager's ability to separate cash flow rights from control rights. They argue that many of the common mechanisms, such as dual-class shares, can lead to large agency costs. They further maintain that the agency costs associated with such structures are an order of magnitude larger than those existing in firms in which insiders own a majority of the shares. One result that has appeared prominently outside the U.S. has been a transfer of value from holders of the inferior class to holders of the superior class. Nenova (2000), Levy (1982), and Zingales (1995) examine the value of voting rights by examining the valuation differential between inferior and superior voting stock in international dual-class firms. In these papers, the superior voting stock trades at a premium to the inferior voting shares. Amoako-Adu and Smith (2001) examine dual-class IPOs and find that the managers of these firms, in general, are perceived to not pursue the interests of shareholders.

In emerging markets, cash flow rights and control rights are often separated through multiple classes of stock or pyramidal ownership structures. Two recent papers exploit this separation with studies in the same spirit as our paper. Lins (2003) examines the relation between management ownership of shares in over one thousand companies in 18 emerging markets. In particular, Lins looks at the effect of separating cash flow and control rights. He finds that when the voting ownership of management is higher than the cash flow ownership, firm value is lower. Claessens et al. (2002) study 1300 firms from eight East Asian countries and find that firm value increases with the cash flow

ownership of the largest shareholder but decreases when the voting ownership exceeds the cash flow ownership.

Because emerging markets have a large potential for agency problems, they are an important source for these studies. Nevertheless, these markets are very different from those in developed countries in terms of legal, regulatory, and institutional factors, so it is difficult to extend the conclusions between them. To determine the relative importance of incentives and control for the largest capital markets, we need to build and analyze a dataset for those markets. That is the primary purpose of this paper. To carry out this task, we collect ownership information of each class of common stock and tabulate the fraction of cash flow rights and the fraction of voting rights that are held by insiders of the firm. We show that in many firms there is a large divergence between these two ownership measures. We then undertake an examination of the relationships among voting ownership, cash flow ownership, firm value, and firm performance.

We find that firm value (as measured by Tobin's *Q*) is increasing in cash flow ownership and decreasing in voting ownership. Both of these effects are non-linear: positive and concave for cash flow and negative and convex for voting. The positive effect of incentives peaks at approximately 33% while the negative impact of voting ownership peaks at approximately 45%. For operating performance, we find that the relationship of ownership and sales growth follows the same patterns: positive and concave with cash flow rights and negative and convex with voting ownership. We again find the same patterns for capital expenditures and for the combined level of R&D and advertising.

These empirical results can be interpreted two ways. One interpretation is causal: the misalignment of incentives leads dual-class firms to invest too little, leading to lower sales growth and valuations. A second interpretation is not causal: the observed patterns of voting and cash-flow ownership are endogenous responses by firms to their different environments. While we do not have any instruments to allow us to distinguish between these two interpretations, we are skeptical of the second. While some part of ownership structure across a broad group of firms is certainly endogenous to other firm characteristics, it is difficult to reconcile our *full* set of results with any plausible model of this endogeneity. To do so would require the same quadratic structure of relationships among all of tests. Also, since our regressions are estimated on industry-adjusted dependent variables for samples that include only dual-class firms, any endogeneity story must work within this sample and not through selection into the dual-class category. The causal story is straightforward, the non-causal story is not. Thus, we will use causal language in some parts of the paper, even though we acknowledge at the outset that we do not make a statistical demonstration of causality.

The rest of the paper is organized as follows. The data construction and summary statistics are presented in Section 2. The effect of cash flow ownership and voting ownership on firm value and performance is examined in Section 3. Section 4 concludes.

2. Data

2.1. Data Formation Procedure

Because no single source provides comprehensive information on companies with dual-class common stock, we collect data from three separate samples and combine them

in our analysis. Our master sample is formed by identifying dual-class companies from the Securities Data Company (SDC), the Center for Research in Security Prices (CRSP), and the Investor Responsibility Research Center (IRRC). Each source has strengths and weaknesses in its identification of dual-class companies.

The SDC sample is compiled from the Global New Issues Database, which tracks corporate new issues activity since 1970. Using a "flag" embedded within this database for new stock issues where the firm already has an existing, separate class of stock, a preliminary list of potential dual-class firmswas formulated. Similarly, we searched the CRSP database to identify companies that had more than one existing class of stock. This was accomplished by identifying companies with more than one seventh and eighth digit suffix to their six-digit root Committee on Uniform Security Identification Procedures number (CUSIP). While the first six digits of a CUSIP (the "issuer number") identify the particular firm that has issued the security, the last two digits (the "issue number") identify particular issues. A third list was assembled using the IRRC's *Corporate Takeover Defenses* texts from 1990 to 2002 (Rosenbaum 1990, 1993, 1995, 1998, 2000, and 2002). In these texts, the existence of a dual-class structure is one of the many takeover provisions that the IRRC identifies.

These three lists provide our sample of potential dual-class firms. While we believe our filters will capture most large firms with dual-class structures, we recognize that some firms will escape our screens. For instance, the SDC filter would miss firms whose second class of stock was either non-trading or issued before 1970, whether trading or non-trading. The CRSP database, meanwhile, is designed to isolate solely dual-class firms for which both classes trade. Finally, the IRRC source, while being able

to identify dual-class firms with trading or non-trading stock, is limited only to stocks in the S&P Super 1500. While these sources sometimes offset each other's weaknesses, some dual-class firms are likely to slip through our data filters—for example, a small dual-class firm whose second class of stock was issued in 1975 but is non-trading.

For each potential dual-class firm, proxy statements were reviewed to remove the firms that were not actually dual class at any time during the available period of electronic reporting (usually 1994-present). In addition, trust funds and some foreign firms with American Depositary Receipts (ADRs) were eliminated from the sample.

Using proxy reports, 10-Ks, and all other available and relevant documentation, all accessed via the SEC research engine LIVEDGAR, data were collected by class on outstanding shares, total ownership, option ownership, and "other" ownership (defined as ownership of warrants, deferred shares, and/or purchase rights). Subtracting option ownership and "other" ownership from total ownership resulted in a figure for the actual common stock ownership, by class, of directors and officers for each year. We also collected dividend data for all firms. First, we coded the dividend information contained in the 10-Ks by class for each firm and year. Second, we identified large, "special" distributions paid out to shareholders in a given year using CRSP.

2.2. Summary Statistics

Table 1 provides a summary of the data on the characteristics of the dual-class firms in 2001 relative to all publicly-traded companies in the CRSP-Compustat merged database. We refer to this full sample of non-dual-class firms as "single-class" firms, while at the same time recognizing that this group will include some dual-class firms that

have escaped our filters. Indeed, some of the differences in the sample must be ascribed to the differential ability of our filters to identify large and small dual-class firms.

The average firm size does not appear to differ substantially between the two samples. Both dual- and single-class firms have about $4 billion in assets and market values of between $2 and $3 billion on average. Differences in size distributions become more apparent when we compare the median firm size (either assets or market values). The median summary statistics emphasize the very high number of small firms in the single-class sample. The median dual-class company has $816 million in assets while the single-class sample has median assets of $187 million. Similarly, dual-class firms have median market values of $656 million versus $151 million for single-class companies.

We also find that the dual-class firms have significantly lower book-to-market ratios on average than do single-class firms. The median book-to-market ratio, however, is not significantly different for the two samples.[3] The differences in average book-to-market ratios are largely due to the high proportion of small single-class companies that have high book-to-market ratios.

We also find that dual-class firms are significantly more levered than single-class firms: the median debt-to-assets ratio for dual-class firms is 0.21 versus 0.09 for single-class companies. A potential explanation for dual-class firms' heavier reliance on debt financing is that investors may be reluctant to purchase the inferior voting stock of these firms, and they may therefore have to rely more heavily on debt financing.

[3] For dual-class companies where only one class of stock trades, we compute market value by assuming that the non-traded stock has the same value per share as the traded stock.

Dual-class firms are, on average, significantly older than single-class firms. We define age as the time (in years) from the firm's CRSP listing date. The average (median) age of dual-class firms in 2001 is 16.30 (12.79) years while the average (median) age for single-class firms is 12.62 (7.75) years.

Finally, we compute the Governance Index (G) of Gompers, Ishii, and Metrick (2003) for the IRRC sample of firms.[4] This index is comprised of 24 distinct corporate-governance provisions, most of which can be interpreted as takeover protections. High values of the index are considered to be firms with high managerial power. We find that the average (median) G of dual-class firms is 7.18 (7.0) while the average (median) G of single-class companies in 2001 is 9.09 (9.0). It is not surprising that the dual-class companies have lower G indexes: since a dual-class structure is perhaps the most powerful antitakeover protection possible, firms with a dual-class structure may find most other protections to be superfluous.

In Table 2, we list the five most common industries in both the dual-class sample and single-class sample. We utilize Fama and French (1997) to classify each four-digit SIC code into one of 48 industry groups as of December 2001. We find that Communications, Business Services, Printing and Publishing, Retail, and Machinery are the five industries with the greatest number of dual-class firms in 2001. This distribution is different from the rest of the population of firms. Business Services is the largest industry for single-class companies, followed by Electronic Equipment, Trading, Pharmaceutical Products, and Retail. The predominance of communications and printing and publishing is not surprising. DeAngelo and DeAngelo (1985) argue that the non-

[4] This index can be computed only for firms in the IRRC subsample.

pecuniary private benefits of consumption may be high in media-related firms and hence may lead founders to establish a dual-class structure in order to preserve control.

In Panel B, we tabulate the ten largest dual-class companies in December 2001 based on market capitalization. Not surprisingly, communication firms make up five of the ten largest dual-class companies. Viacom, Comcast, Cox Communications, Echostar, and HSN were all dual class at the end of 2001. This is consistent with these firms having higher levels of non-pecuniary private benefits of control.

Table 3 shows the number of dual-class companies in each year of the sample from 1994 through 2001. The sample grows substantially over time, from 100 dual-class firms in 1994 to 255 in 1998. A few observations can be made from these statistics. Because LIVEDGAR has very few filings available before 1994, there were not a significant number of observations until then. Furthermore, sharp increases in observations, ranging from roughly 100 to 214 in magnitude, from 1994 to 1997 can be attributed almost entirely to movement in the CRSP/SDC portion of the dataset, as the IRRC portion remained fairly stable during that period. However, a similar spike from 1997 to 1998 is primarily due to an increase in the IRRC subset, as opposed to CRSP/SDC.

It should be noted, however, that this movement in the number of observations is due as much to the nature of the available yearly data in LIVEDGAR as it is to actual changes in the number of dual-class firms in each year. While the number of IRRC-flagged dual-class firms does increase through their editions and spikes significantly in

1998, it can be seen that even that alone cannot account for the movement particular to our dataset.[5]

Table 3 also shows the characteristics of the firm's equity. In Panel A, we show how many of the classes trade on an organized exchange. We see that in each year, only about 20 to 30 percent of the dual-class firms have all classes of common stock trading. This illustrates why our sample is substantially larger than previous dual-class samples that have been analyzed. Previous samples are identified if both classes of shares trade. As we can see in Table 3, this is a minority of the dual-class companies that exist on the public markets. In addition, it is not surprising that in the vast majority of cases in which some classes of common stock do not trade, only the inferior class trades. This is consistent with the dual-class structure being employed to provide increased control to management.

We also note the voting structure of the dual-class firms in Panel A. The most common structure of dual-class firms is a 1:10 voting structure in which the superior voting stock has ten votes for each share while the inferior voting stock has only one. Panel B shows the resulting cash flow ownership and voting ownership patterns for dual-class firms. We tabulate the fraction of cash flow ownership that comes from the superior voting stock and the percentage of cash flow ownership that comes from the inferior voting stock. We assume that cash flow rights are proportional to the ordinary dividends on the shares if they exist. If dividends are not paid, we assume cash flow rights are equal across all classes.

[5] IRRC-flagged dual-class firms totaled: 111 in 1990, 120 in 1993, 123 in 1995, 207 in 1998, 217 in 2000, and 225 in 2002.

Overall, the managers and directors of dual-class firms own a significant fraction of the firm's cash flow rights. On average, 26.7 percent of the cash flow rights are owned by managers and directors. At 22.0 percent, the median ownership is also quite high, with a maximum cash flow ownership of 86.9 percent. This cash flow ownership comes primarily from ownership of the superior voting stock. On average, 16.0 percent of cash flow rights come from the superior voting stock and only 10.6 percent comes from the inferior voting class.

Voting ownership is, not surprisingly, substantially higher than cash flow ownership. Managers and directors of dual-class firms in our sample own, on average, 50.7 percent of the voting rights of the firm. Median inside ownership of voting rights is quite high, 54.2 percent. On average, nearly all of the voting rights ownership comes from the superior voting class stock. 47.1 percent of the voting rights are owned through the superior voting class stock while only 3.7 percent comes from the inferior voting class.

A more complete picture of the ownership structure of these firms can be seen in Table 4 in which we present a cross-tabulation of cash flow ownership and voting ownership. First, voting rights ownership is higher than cash flow ownership, i.e., most firms lie in the southwest quadrant of the table. It is not surprising that the majority of firms in the sample have managerial and director ownership of voting rights that are higher than their ownership of cash flow rights. Note, however, that there are a few dual-class firms in which managers and directors own *less* of the firm's voting rights than they do of the cash flow rights.

3. The Relationship of Incentives and Control with Firm Valuation and Performance

In this section, we explore the relation between firm performance and insider ownership of cash flow rights (incentives) and voting rights (control). In particular, we examine the effect that these ownership variables have on firm value; operating performance as measured by net profit margin, sales growth, and return on equity; and firm investment rates.

In order to examine the non-linear effects of cash flow and voting ownership on performance, we use both the level of ownership as well as the square of the level of ownership. We employed other types of non-linear specifications including the piece-wise regressions of Morck, Shleifer, and Vishny (1988) and found qualitatively similar results. The quadratic specification, however, allows the peak in the relation between cash flow or voting ownership and firm performance to be identified from the data rather than being pre-specified.

3.1. Firm Valuation

Our valuation measure is Tobin's *Q*, which has been used for this purpose in corporate-governance studies since the work of Demsetz and Lehn (1985) and Morck, Shleifer, and Vishny (1988). We follow Kaplan and Zingales' (1997) method for the computation of *Q*. For dual-class firms with an untraded class of stock, we assume that the untraded shares have the same per-share price as the traded shares.[6] We also compute the median *Q* in each year in each of the 48 industries classified by Fama and French

[6] On average, non-traded stock makes up a small part of capital structure, so this assumption does not have a significant quantitative impact on our results.

(1997) and classify all firms into one of these 48 industries based on their four-digit SIC code. We then regress:

$$(1) \qquad Q'_{it} = a + bX_{it} + cW_{it} + e_{it},$$

where Q'_{it} is industry-adjusted Q (firm Q minus industry-median Q), X_{it} is a vector of ownership variables (managerial cash flow ownership and cash flow ownership squared as well as managerial voting rights ownership and voting rights ownership squared) and W_{it} is a vector of firm characteristics. As elements of W, we follow Shin and Stulz (2000) and include the log of the book value of assets and the log of firm age as of December of year t. Morck and Yang (2001) show that S&P 500 inclusion has a positive impact on Q, and that this impact increased during the 1990s; thus, we also include a dummy variable for S&P 500 inclusion in W. Previous work has also argued that younger firms may have more future growth opportunities and, hence, higher Tobin's Q.

We present two regression specifications in Table 5: median Fama-MacBeth and pooled median regressions. Because the distribution of Q for our sample of firms is heavily skewed with some outliers, we employ median regression analysis.[7] Using a variant of the methods of Fama and MacBeth (1973), we estimate annual cross-sections of (1) with statistical significance assessed within each year (by cross-sectional standard errors) and across all years (with the time-series standard error of the mean coefficient). While this method allows for cross sectional correlation, it assumes no correlation in the

[7] We also estimated other forms of robust regression analysis and the results were qualitatively similar to the median regression results.

time-series dimension. In Table 5, we present only the time series means and standard errors of the coefficients.

In addition to the Fama-MacBeth regressions, we estimate a pooled cross-section regression. In this regression approach, the standard errors are calculated using a block bootstrap method that treats each firm as an independent vector. It assumes cross-sectional independence but allows for arbitrary heteroskedasticity and serial correlation.

In the median Fama-MacBeth framework we see that total relationship between firm value and cash flow ownership is positive and concave: the average coefficient on cash flow ownership is positive and significant, and the coefficient on the square of cash flow ownership is negative and significant. Taken together, the results are consistent with the view that ownership of cash flow rights by insiders does indeed align incentives. As the fraction of cash flow ownership increases, the incentives of management become more closely aligned with those of outside shareholders and thus leads to better decisions (from the outside shareholders' perspective) and higher valuations. The positive incentive effects of cash flow ownership, however, are decreasing at higher levels of cash flow ownership. The declining incentive effect may be due to several factors including wealth effects in which the incentive to work hard declines as CEOs become wealthier. Alternatively, the increasing lack of diversification on the part of insiders at high levels of ownership may induce them to pursue less risky strategies than outside investors would.

The total relationship between firm value and voting ownership is negative and convex: the coefficient on voting ownership is negative and significant while the coefficient on its squared term is positive and significant. The result implies that

increases in inside ownership of votes, keeping the level of inside cash flow ownership constant, decreases firm value at a decreasing rate. This is consistent with an entrenchment effect of voting ownership, i.e., the more control that the insiders have, the more they can pursue strategies that are at the expense of outside shareholders. Our results appear to be able to separately identify an incentive effect associated with insider ownership of cash flow rights and an entrenchment effect associated with insider ownership of voting rights. The median pooled regression gives qualitatively similar results but is less statistically significant.[8]

Figure 1 provides a useful benchmark for the reasonableness of these results. From the coefficient estimates in the Fama-MacBeth regressions, we plot the total effect of incentives (cash flow + cash flow^2) and control (voting + voting^2) of changes in levels of voting and cash flow ownership by insiders on firm value. The incentive effect reaches a maximum at around 33 percent ownership of cash flow rights while the entrenchment effect of voting ownership reaches its maximum at around 45 percent. The economic impact of both effects is quite large. As Figure 1 makes clear, going from the minimum value for cash flow and incentives to its maximal effect increases Tobin's *Q* by about 15 percentage points. Voting rights ownership has an effect of similar magnitude. Going from zero to 45 percent inside voting ownership reduces Tobin's *Q* by about 25 percentage points.

The quadratic structure of these point estimates implies that at very high levels, voting ownership appears to be *good* for firm value. One should be cautious in interpreting this part of Figure 1. Since few firms have very high voting ownership, the

[8] The results from estimating this pooled regression including annual dummy variables were also similar.

extrapolation of the total effect is less reliable at these high levels. Also, from a pure statistical perspective, the standard error of the total effect rises with ownership. This standard error is approximately 6 percentage points when voting ownership is 20 percent but rises to 53 percentage points when voting ownership is 100 percent.

3.2. Operating Performance

In this section we explore the relation between the inside ownership of cash flow rights and voting rights and operating performance. In the previous section, we saw that the relationship of firm value and inside cash flow ownership is positive and concave, while the relationship of firm value and inside ownership of voting rights is negative and convex. This section explores whether there are also any detectable effects on the firm's operations.

In Table 6, we examine the firm's net profit margin, sales growth, and return on equity. We again employ the two estimation frameworks that were presented in the previous section: Fama-MacBeth median regressions and pooled cross-sectional median regressions. The dependent variable is adjusted for the median level of performance within the firm's industry. Industries are defined by Fama and French (1997) and we classify all firms based on their four-digit SIC code into 48 industries. We include the firm's Q as an additional regressor to control for differences in the firms' opportunity sets.

The results for both return on equity and net profit margin are insignificant. The most significant results are in the sales growth regressions. There, we find exactly the same qualitative relationship as found for Tobin's Q: The relationship of sales growth to

cash flow ownership is positive and concave, and the relationship of sales growth to voting ownership is negative and convex. Note that the inclusion of Q as a regressor ensures that these results are not merely driven by the relationship of these ownership variables with Q – this is a separate set of relationships that have the same shape.

3.3. Capital Expenditure, Research and Development, and Advertising

The operating results suggest that the alignment of incentives through cash flow ownership increases the willingness of managers to invest and pursue more rapid growth, while voting ownership does the opposite. To directly test how these two effects may affect firm investment behavior, we explore the relationship between voting and cash flow ownership by insiders on capital expenditure and on the combination of R&D and advertising expenditures.

In Table 7 we examine results for the ratios of both capital expenditure to assets and capital expenditure to sales. We again employ the median Fama-MacBeth and pooled cross sectional regression approaches. We find that the relation between capital expenditure and our ownership variables is consistent with those found for Q and for sales growth: positive and concave for cash flow and negative and convex for voting. However, only the (linear) cash flow coefficients are significant.

Some firms may not have significant physical assets. In these firms, investment in future business opportunities usually takes the form of research and development activities or advertising expenditures. While the cost of these activities is typically expensed, they are investments in "soft" assets of the firm. In Table 8, we examine the

relation between insider ownership of cash flows and voting rights and these expenditures.

One complicating factor for this analysis is that some firms do not report R&D or advertising expenditures. In this case, the values will be missing. These firms also sometimes directly indicate that these expenditures are insignificant. In both of these cases, we set the firm's R&D and/or advertising expenses to zero.

The above procedure means that a large number of firms have zero for both advertising and R&D expenditures. Therefore in Table 8 we estimate Tobit regressions of the ratio of R&D and advertising expenses to assets (industry-adjusted) on our ownership variables, firm size, and *Q*. In particular, we specify the dependent variable (R&D plus advertising) to be truncated if it is equal to zero. Since we subsequently make industry adjustments, our estimation procedure uses a different truncation point for each industry.

The results in Table 8 provide the strongest confirmation of the underinvestment hypothesis discussed above. In both regressions, the pattern of the coefficients mirrors those in the *Q*, sales growth, and capital expenditure regressions: positive and concave for cash flow and negative and convex for voting. In the Fama-MacBeth regressions, three out of the four key coefficients are significant.

Taken together, the results in Table 7 and Table 8 are broadly supportive of underinvestment by dual-class firms driving both the valuation and sales growth results found in Tables 5 and 6. In dual-class firms, the alignment of incentives through higher insider cash flow ownership has a positive effect on the level of investment. Control appears to have the opposite effect, i.e., increases in control reduce capital expenditure.

4. Discussion and Conclusion

This paper examines the relation between ownership and firm performance in dual-class companies. Because dual-class structures allow for the separation of cash flow and voting ownership, we can independently identify the impact of incentives and control on firm valuation and performance. We find that cash flow ownership (incentives) has a positive (and concave) relationship with firm valuation while voting ownership (control) has a negative (and convex) relationship with firm value. We find the same qualitative relationships for our ownership variables with sales growth, capital expenditure, R&D and advertising.

It is of course possible that these results are driven by some outside factor: e.g., valuation is driven by some measure of "management quality", and management quality in turn drives the particular form of dual-class structure adopted across firms. While similar arguments are often made to explain the overall (single-class) relationship of ownership to performance, we find this argument to be less compelling in the dual-class context. In particular, it is difficult to tell a logical story that can explain the quadratic relationships of our ownership variables with value, sales growth, capital expenditure, R&D and advertising. The most plausible explanation is that some firms adopt dual-class structures when their original owners are reluctant to cede control; later, these firms are less likely to tap capital markets (so as to avoid diluting control) and thus invest less, grow slower, and are valued lower. Our future work will model this causal chain more formally and directly test its implications.

5. References

Amoako-Adu, Ben, and Brian F. Smith, 2001, Dual-class firms: Capitalization, Ownership Structure and Recapitalization Back into Single Class, Journal of Banking and Finance 25, 1083-1111.

Bebchuk Lucian Arye, Reinier Kraakman, and George Triantis, 2000, *Concentrated Corporate Ownership*, R. Morck, ed., 445-460.

Bertrand, Marianne, and Sendhil Mullainathan, 2003, Managerial Behavior Following Anti-Takeover Legislation, Journal of Political Economy, forthcoming.

Claessens, Stijn, Simeon Djankov, Joseph P.H. Fan, and Larry H.P. Lang, 2002, Disentangling the Incentive and Entrenchment Effects of Large Shareholdings, Journal of Finance 57, 2741-2772.

DeAngelo, Harry, and Linda DeAngelo, 1985, Managerial Ownership of Voting Rights, Journal of Financial Economics 14, 33-69.

Demsetz, Harold, and Kenneth Lehn, 1985, The Structure of Corporate Ownership: Causes and Consequences, Journal of Political Economy 93, 1155-77.

Fama, Eugene, 1980, Agency Problems and the Theory of the Firm, Journal of Political Economy 88, 288-307

Fama, Eugene, and Kenneth French, 1997, Industry Costs of Equity, Journal of Financial Economics, 43, 153-194.

Fama, Eugene F., and James D. MacBeth, 1973, Risk, Return, and Equilibrium: Empirical Tests, Journal of Political Economy, 81, 607-636.

Franks, Julian R., and Colin P. Mayer, 1990, Corporate Ownership and Corporate Control: A Study of France, Germany, and the UK, Economic Policy 10, 191-231.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate Governance and Equity Prices, Quarterly Journal of Economics 118, 107-155.

Grossman, Sanford J., and Oliver D. Hart, 1988, One Share-One Vote and the Market for Corporate Control, Journal of Financial Economics 20, 175-202.

Hart, Oliver, 1983, The Market Mechanism as an Incentive Scheme, Bell Journal of Economics 14, 366-382.

Holmstrom, Bengt R., 1999, Managerial Incentive Problems – A Dynamic Perspective, Review of Economic Studies 66, 169-182.

Holderness, Clifford G., Randall S. Kroszner, and Dennis P. Sheehan, 1999, Were the Good Old Days that Good? Changes in Managerial Stock Ownership Since the Great Depression, Journal of Finance 54, 435-469.

Jensen, Michael C., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, American Economic Review 76, 323-329.

Jensen, Michael, and Kevin Murphy, 1990, Performance Pay and Top Management Incentives, Journal of Political Economy 98, 225-264.

Jensen, Michael, and William Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, Journal of Financial Economics 3, 305-360.

Jensen, Michael, and Richard S. Ruback, 1983, The Market for Corporate Control: The Scientific Evidence, Journal of Financial Economics 11, 5-50.

Kaplan, Steven N., and Luigi Zingales, 1997, Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?, Quarterly Journal of Economics 112, 169-216.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Roberty Vishny, 2002, Investor Protection and Corporate Valuation, Journal of Finance 57, 1147-1170.

Levy, Haim, 1982, Economic Evaluation of Voting Power of Common Stock, Journal of Finance 38, 79-93.

Lins, Karl V., 2003, Equity Ownership and Firm Value in Emerging Markets, Journal of Financial and Quantitative Analysis 38, 159-184.

Loughran, Tim, and Anand Vijh, 1997, Do Long-Term Shareholders Benefit from Corporate Acquisitions?, Journal of Finance 52, 1765-1790.

McConnell, J.J., and H. Servaes, 1990, Additional Evidence on Equity Ownership and Corporate Value, Journal of Financial Economics 27, 595-612.

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1988, Management Ownership and Market Valuation, Journal of Financial Economics 20, 293-315.

Morck, Randall, and Fan Yang, The Mysterious Growing Value of the S&P 500 Membership, Working Paper, University of Alberta, 2001.

Nenova, Tatiana, 2000, The Value of Corporate Votes and Control Benefits: A Cross-Country Analysis, Working Paper, Harvard University.

Rosenbaum, Virginia, *Corporate Takeover Defenses*, (Washington, D.C.: Investor Responsibility Research Center Inc, 1990, 1993, 1995, 1998, 2000, 2002).

Seifert, Bruce, Halit Gonenc, and Jim Wright, 2002, The International Evidence on Performance, Investment, and Equity Ownership by Insiders and Blockholders, European Management Associations Working Paper.

Shin, Hyun-Han, and René M. Stulz, 2000, Firm Value, Risk, and Growth Opportunities, NBER working paper #7808.

Shleifer, Andrei, and Robert Vishny, 1986, Greenmail, White Knights, and Shareholders' Interest, Rand Journal of Economics 17, 293-309.

Shleifer, Andrei and Robery Vishny, 1997, A Survey of Corporate Governance, Journal of Finance 52, 737-783.

Zingales, Luigi, 1995, What Determines the Value of Corporate Votes?, Quarterly Journal of Economics 110, 1047-1073.

Table 1
Summary Statistics

This table gives means and medians (in brackets beneath the mean) of several variables for single- and dual-class firms in 2001. The mean and median of *G,* the Governance Index, are calculated only for the subsamples of single and dual-class IRRC firms. This subsample contains 1052 single-class firms and 85 dual-class firms. For the remaining variables, the statistics are calculated for the full dual-class sample, and the single-class sample consists of all firms in the CRSP-Compustat merged database, excluding the firms identified as dual-class. The calculation of *G* is described in Gompers, Ishii, and Metrick (2003). *Assets* is the book value of assets in millions of dollars (Compustat item 6); *Debt/Assets* is the ratio of long-term debt (item 9) to assets; *SP500* is a dummy variable for inclusion in the S&P 500 as of the end of calendar year 2000; *Age* is firm age in years as of December 2001; *Size* is market value in millions at the end of 2001, where the market value for dual-class firms with non-trading classes is calculated using shares outstanding from proxy statements and assuming equal prices across classes; and *BM* is the ratio of book value [the sum of book common equity (item 60) and deferred taxes (item 74)] to size at the end of 2001. Significant differences for the means are indicated at the five- and one-percent levels by * and ** respectively. The Wilcoxon rank-sum test p-values for the medians are given in brackets in the third column.

	Single-Class	Dual-Class	Difference
G	9.09	7.18	1.91**
	[9.00]	[7.00]	[0.0000]
Assets	4,289.48	4,113.90	175.58
	[187.11]	[816.06]	[0.0000]
Debt/Assets	0.18	0.23	-0.05**
	[0.09]	[0.21]	[0.0001]
SP500	0.08	0.08	0.00
	[0.00]	[0.00]	
Age	12.62	16.30	-3.68**
	[7.75]	[12.79]	[0.0000]
Size	2,208.91	3,113.18	-904.27
	[150.72]	[656.35]	[0.0000]
BM	4.14	0.67	3.47**
	[0.59]	[0.55]	[0.2677]
N	4824	168	

Table 2
Dual-Class Sample

Panel A of this table summarizes the most common industries in the single- and dual-class samples of firms in December 2001, by number of firms. We match four-digit SIC codes to the 48 industries designated by Fama and French (1997). Panel B lists the 20 dual-class firms with the largest market capitalizations at the end of 2001 and their industries, where the market value for dual-class firms with non-trading classes is calculated using shares outstanding from proxy statements and assuming equal prices across classes. The firms are in descending order of market capitalization.

Panel A: Industries

Single-Class	Dual-Class
Business Services	Communication
Electronic Equipment	Business Services
Trading	Printing and Publishing
Pharmaceutical Products	Retail
Retail	Machinery

Panel B: Large Dual-Class Firms

Firm	Industry
Berkshire Hathaway Inc	Insurance
Viacom Inc	Communication
Comcast Corp	Communication
Cox Communications Inc	Communication
Columbia Hospital Corp	Healthcare
Echostar Communications Corp	Communication
Broadcom Corp	Electronic Equipment
Wrigley	Candy and Soda
HSN Inc	Communication
Hershey Foods Corp	Candy and Soda

Table 3
Voting and Ownership Structure

Panel A of this table describes voting arrangements for the sample of dual-class firms between 1994 and 2001. It summarizes the relationship between the superior class and the inferior class with the most votes per share of any inferior class. Panel B summarizes cashflow and voting ownership in the dual-class firms in 2001. *VTOwn* is the total percentage of votes owned by officers and directors across classes, as reported in proxy statements. *CFOwn* is the total percentage of cashflow ownership by officers and directors. Rights to the firm's cashflows are assumed to be proportional to the ordinary dividends of that class if dividend data exists. If dividend data does not exist or if the dividend distribution is not ordinary, cashflow rights are assumed to be equal across classes.

Panel A: Voting Structure

	1994	1995	1996	1997	1998	1999	2000	2001
Number of dual-class firms	100	125	170	214	255	242	245	215
All classes trade publicly	30	44	47	50	49	52	45	42
Some classes do not trade publicly	70	81	123	164	206	190	200	173
Only the inferior classes trade	66	74	107	146	177	165	178	157
Dual-class voting arrangements								
Voting ratio > 1:10	9	11	10	11	11	12	14	13
Voting ratio = 1:10	64	77	97	126	152	144	152	139
Voting ratio < 1:10	27	37	63	77	92	86	79	63

Panel B: Ownership Structure

	Mean	Standard Deviation	Minimum	Median	Maximum
CFOwn	0.267	0.205	0.000	0.220	0.869
Ownership in Superior Class	0.160	0.150	0.000	0.125	0.698
Ownership in Inferior Class(es)	0.106	0.130	0.000	0.054	0.629
VTOwn	0.507	0.292	0.000	0.542	1.000
Ownership in Superior Class	0.471	0.288	0.000	0.501	1.000
Ownership in Inferior Class(es)	0.037	0.069	0.000	0.008	0.519

Table 4
Relationship Between Managerial Voting Ownership and Cash Flow Ownership

The table summarizes cashflow and voting ownership in the dual-class firms between 1994 and 2001. Voting Ownership is the total percentage of votes owned by officers and directors across classes as reported in proxy statements. Cash flow ownership by officers and directors are the rights to the firm's cashflows assuming that they are proportional to the ordinary dividends of that class if dividend data exists. If dividend data does not exist or if dividend distribution is not ordinary, cashflow rights are assumed to be equal across classes.

		Cash Flow																		
		0-5	*5 - 10*	*10 - 15*	*15-20*	*20-25*	*25-30*	*30-35*	*35-40*	*40-45*	*45-50*	*50-55*	*55-60*	*60-65*	*65-70*	*70-75*	*75-80*	*80-85*	*85-90*	*90-95*	*95-100*
	0-5	205	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 - 10	17	13	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10 - 15	6	16	9	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	15-20	10	9	8	22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20-25	7	19	12	18	9	6	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	25-30	2	6	12	7	7	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	30-35	1	11	16	11	9	4	5	0	1	0	0	0	0	0	0	0	0	0	0	0
	35-40	5	14	14	8	17	10	4	2	0	0	1	0	0	0	0	0	0	0	0	0
	40-45	1	12	11	18	7	12	6	4	3	0	0	0	0	0	0	0	0	0	0	0
Voting	45-50	1	1	12	7	9	10	16	3	0	1	3	1	1	0	0	0	0	0	0	0
	50-55	8	2	14	7	9	11	6	12	10	2	3	2	0	0	0	0	0	0	0	0
	55-60	0	0	15	9	17	8	7	7	8	6	10	6	0	0	1	0	0	0	0	0
	60-65	0	1	3	14	11	13	13	8	3	9	9	5	7	1	0	0	0	0	0	0
	65-70	0	3	0	16	16	7	24	9	8	10	5	4	2	1	1	1	0	0	0	0
	70-75	0	0	1	2	20	8	12	11	8	7	6	6	2	9	2	1	0	0	0	0
	75-80	0	3	0	0	1	28	10	14	11	6	1	2	3	0	4	2	0	0	0	0
	80-85	1	7	1	1	0	0	3	6	3	9	17	11	7	3	1	0	0	0	0	0
	85-90	2	4	1	1	2	1	0	4	6	11	14	13	11	14	4	1	0	0	0	0
	90-95	1	1	0	0	0	0	0	1	0	5	19	8	12	13	7	4	1	3	0	0
	95-100	0	1	1	3	0	3	1	4	0	0	6	0	1	4	10	7	7	5	0	0

Table 5
***Q* Regressions**

This table presents median regressions of industry-adjusted Tobin's *Q* on ownership variables and controls between 1994 and 2001. The first column contains the time-series mean coefficients and standard errors from annual, median Fama-MacBeth regressions. The second column shows the coefficients and standard errors from pooled, median regressions. The standard errors are calculated using 5000 repetitions of a block bootstrap that treats each firm as a block. *Q* is the ratio of the market value of assets to the book value of assets: the market value is calculated as the sum of the book value of assets and the market value of common stock less the book value of common stock and deferred taxes. The market value of equity for dual-class firms with non-trading classes is calculated using shares outstanding from proxy statements and assuming equal prices across classes. The market value of equity is measured at the end of the current calendar year and the accounting variables are measured in the current fiscal year. *CFOwn* and *VTOwn* are defined as in Table 3, and *CFOwnSq* and *VTOwnSq* are their respective squares. *Assets* is the log of the book value of assets in millions of dollars, *SP500* is a dummy variable for inclusion in the S&P 500 as of the end of the previous year, and *Age* is the log of firm age measured in months as of December of each year. Industry adjustments are made by subtracting the industry median, where medians are calculated by matching the four-digit SIC codes from December of each year to the 48 industries designated by Fama and French (1997). Significance at the five- and one-percent levels is indicated by * and **, respectively.

	Median Fama-MacBeth	Median Pooled
CFOwn	0.94**	0.90
	(0.24)	(0.71)
CFOwnSq	-1.44**	-1.49
	(0.31)	(1.04)
VTOwn	-1.06**	-0.86
	(0.26)	(0.49)
VTOwnSq	1.17**	1.04*
	(0.27)	(0.50)
Assets	-0.02	-0.00
	(0.01)	(0.02)
SP500	0.44**	0.43*
	(0.06)	(0.19)
Age	-0.04	-0.05
	(0.03)	(0.04)
Constant	0.40	0.28
	(0.28)	(0.31)
N		1282

Table 6
Operating Performance

This table contains the results of median regressions of net profit margin, sales growth, and return on equity on lagged ownership variables and lagged *Q* between 1995 and 2002. Panel A shows the time-series mean coefficients and standard errors from annual, median Fama-MacBeth regressions. Panel B shows the coefficients and standard errors of pooled, median regressions. The standard errors are calculated using 5000 repetitions of a block bootstrap that treats each firm as a block. *CFOwn* and *VTOwn* are defined as in Table 3, and *Q* is defined as in Table 4. Each dependent variable is net of the industry median, which is calculated by matching the four-digit SIC codes of all firms in the CRSP-Compustat merged database in December of each year to the 48 industries designated by Fama and French (1997). Significance at the five-percent and one-percent levels is indicated by * and **, respectively.

Panel A: Median Fama-MacBeth Regressions

	Net Profit Margin	Sales Growth	Return on Equity
CFOwn	-0.078	0.257*	-0.089
	(0.036)	(0.086)	(0.120)
CFOwnSq	0.040	-0.434**	0.062
	(0.047)	(0.104)	(0.170)
VTOwn	0.010	-0.035	-0.125
	(0.026)	(0.031)	(0.061)
VTOwnSq	0.005	0.072*	0.134*
	(0.022)	(0.030)	(0.049)
Q	0.021**	0.018**	0.031**
	(0.005)	(0.004)	(0.005)
Constant	-0.008	-0.062**	0.005
	(0.014)	(0.012)	(0.011)

Panel B: Median Pooled Regressions

	Net Profit Margin	Sales Growth	Return on Equity
CFOwn	-0.033	0.220*	-0.019
	(0.082)	(0.111)	(0.117)
CFOwnSq	-0.015	-0.381*	-0.082
	(0.101)	(0.153)	(0.159)
VTOwn	-0.006	-0.054	-0.112
	(0.057)	(0.074)	(0.077)
VTOwnSq	0.016	0.097	0.134
	(0.048)	(0.073)	(0.069)
Q	0.014**	0.014*	0.027**
	(0.004)	(0.006)	(0.007)
Constant	-0.002	-0.047**	0.002
	(0.012)	(0.013)	(0.016)
N	1167	1166	1153

Table 7
Capital Expenditure

This table contains the results of median regressions of CAPEX/assets and CAPEX/sales on lagged ownership variables and lagged *Q* between 1995 and 2002. Panel A shows the time-series mean coefficients and standard errors from annual, median Fama-MacBeth regressions. Panel B shows the coefficients and standard errors of pooled, median regressions. The standard errors are calculated using 5000 repetitions of a block bootstrap that treats each firm as a block. *CFOwn* and *VTOwn* are defined as in Table 3, and *Q* is defined as in Table 4. Both dependent variables are net of the industry median, which is calculated by matching the four-digit SIC codes of all firms in the CRSP-Compustat merged database in December of each year to the 48 industries designated by Fama and French (1997). Significance at the five-percent and one-percent levels is indicated by * and **, respectively.

Panel A: Median Fama-MacBeth Regressions

	CAPEX/Assets	CAPEX/Sales
CFOwn	0.076*	0.045
	(0.022)	(0.026)
CFOwnSq	-0.071	-0.045
	(0.031)	(0.032)
VTOwn	-0.025	-0.007
	(0.014)	(0.015)
VTOwnSq	0.003	-0.003
	(0.014)	(0.014)
Q	0.003	0.002
	(0.001)	(0.001)
Constant	-0.007	-0.008**
	(0.003)	(0.001)

Panel B: Median Pooled Regressions

	CAPEX/Assets	CAPEX/Sales
CFOwn	0.080*	0.047
	(0.033)	(0.039)
CFOwnSq	-0.075	-0.046
	(0.041)	(0.047)
VTOwn	-0.037	-0.010
	(0.024)	(0.026)
VTOwnSq	0.015	0.001
	(0.023)	(0.025)
Q	0.004*	0.002
	(0.002)	(0.002)
Constant	-0.006	-0.008*
	(0.005)	(0.004)
N	1135	1135

Table 8
R&D and Advertising Regressions

This table presents Tobit regressions of (R&D+Advertising)/Assets on lagged ownership variables and lagged *Q* between 1995 and 2002. The first column contains the time-series mean coefficients and standard errors from annual, Tobit Fama-MacBeth regressions. The second column shows the coefficients and standard errors from pooled, Tobit regressions. The standard errors allow for clustering within firms. *CFOwn* and *VTOwn* are defined as in Table 3, and *Q* is defined as in Table 4. The dependent variable is net of the industry median, which is calculated by matching the four-digit SIC codes of all firms in the CRSP-Compustat merged database in December of each year to the 48 industries designated by Fama and French (1997). Significance at the five-percent and one-percent levels is indicated by * and **, respectively.

	Tobit Fama-MacBeth	Tobit Pooled
CFOwn	0.092*	0.075
	(0.036)	(0.155)
CFOwnSq	-0.059	-0.031
	(0.043)	(0.213)
VTOwn	-0.254**	-0.241
	(0.051)	(0.158)
VTOwnSq	0.225**	0.217
	(0.050)	(0.163)
Q	0.017**	0.007**
	(0.005)	(0.003)
Constant	-0.033*	-0.021
	(0.010)	(0.026)
N		1169

Figure 1

This figure plots the estimated relationship between Tobin's Q and the ownership variables, *CFOwn* and *VTOwn*. It uses the parameters in the first column of Table 5 and holds the control variables fixed at zero.