

Family control and dilution in mergers

Nilanjan Basu^{*}

Lora Dimitrova^{**}

and

Imants Paeglis^{***}

Current version: April, 2007

JEL classification: G32, G34

Keywords: Family firms, mergers and acquisitions

^{*} Assistant Professor of Finance, John Molson School of Business, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec H3G 1M8, Canada. e-mail: nbasu@jmsb.concordia.ca. Phone: (514) 848-2424, ext. 2913. Fax: (514) 848-4500.

^{**} MSc. Student in Finance, John Molson School of Business, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec H3G 1M8, Canada. e-mail: l_dimitr@jmsb.concordia.ca

^{***} Assistant Professor of Finance, John Molson School of Business, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec H3G 1M8, Canada. e-mail: ipaeglis@jmsb.concordia.ca. Phone: (514) 848-2424, ext. 2904. Fax: (514) 848-4500.

For helpful discussions, we thank Sandra Betton and Dogan Tirtiroglu. We gratefully acknowledge financial support from the Institut de Finance Mathematique de Montreal (IFM²). We remain solely responsible for any remaining errors.

Family control and dilution in mergers

Abstract

We examine the influence of family control on value gains in mergers involving newly public family firms. The spectrum of potential outcomes for founding families (no change in control, dilution, full exit) allows us to observe the influence of the level as well as the change in family ownership on value creation in mergers. We find that founding families with low levels of ownership indulge in value-reducing acquisitions and are more likely to use cash as the medium of exchange (thus avoiding dilution and maintaining their control of the firm). Families with high levels of ownership, on the other hand, make value-creating acquisitions. The dilution of the family's ownership due to the use of stock as the medium of exchange changes the family's incentives and thus influences firm value. Finally, we find that acquisitions of targets with low levels of family ownership are associated with greater value creation. Overall, our results are consistent with the entrenchment of the founding family at low levels of ownership and a better alignment of the interests of the founding family and those of minority shareholders at high levels of ownership.

Family control and dilution in mergers

1. Introduction

Founding families represent a unique group of active, long-term owners, holding concentrated equity positions in their firms. First, their ownership is usually concentrated in the hands of a single individual (as opposed to a group of top managers). Second, founding families are also actively involved in the management and governance of their firms. Third, families maintain a long-term investment horizon since the intergenerational transfer of managerial control is a stated objective of most family firms. Yet, despite their significant presence even in mature public firms and their uniqueness due to the characteristics mentioned above, founding families only recently have started to receive attention in the academic literature. Most of this emerging literature has focused on mature and index-listed family firms (see, e.g., Anderson and Reeb, 2003; Villalonga and Amit, 2006), while the newly public family firms have received very little attention.

It is, however, in the newly public firms that the costs and benefits of family ownership are likely to be more pronounced. First, as pointed out by Schwert (1985), the founder is probably the most important asset of the firm in its formative stages. Second, in its early life, a firm does not yet have an established reputation and has to rely heavily on the reputation of the founding family. Third, in a newly public firm, the founding family is likely to own a significant fraction (majority) of its equity and exert a more significant and direct influence on the firm (either positive or negative) than it would in the mature stages. Fourth, as shown by Paeglis and Tirtiroglu (2005), newly public family firms are less likely to be the subject of monitoring and scrutiny by various financial market participants (such as financial analysts and institutional investors), allowing the founding family a more unhindered control over the firm.

In this paper, we examine the relationship between family control and value creation in mergers that involve newly public firms as either acquirers or targets. Since mergers affect family

ownership and control, they provide a unique opportunity to examine the effects of changes in family ownership on firm value. On one hand, families that are acquirers in cash transactions do not face any dilution or reduction in their control of the firm. Acquirers in stock-financed transactions, on the other hand, face some dilution of their holdings. Thus, cash-financed mergers allow us to observe the direct influence of family ownership on value gains in mergers, while stock-financed ones allow us to examine the relationship between the dilution of family ownership and value creation.

Finally, founding families of targets are left with little or no ownership in the merged entity and therefore experience an almost complete loss of control. If the founding family uses its influence over the firm primarily to derive private benefits of control or otherwise exploit minority shareholders, their loss of control would be seen by the market as a value-creating event. If, on the other hand, the founding family is an asset to the pre-merger firm, their exit would be viewed by the market as a value-destroying event. Thus, the market reaction upon an acquisition announcement will reveal the founding family's influence on the pre-merger value of their firm.

This dispersion in potential outcomes for family ownership (i.e., complete, partial, or no loss of control) provides a rich dataset for us to test the relationship between family ownership and value. We find that family ownership is indeed an important determinant of the returns earned by both acquirers and targets. For cash-financed acquisitions, we find a negative (positive) relationship between ownership and acquirer abnormal returns upon the acquisition announcement for firms with low (high) family ownership.¹ The observed relationship is consistent with the entrenchment of the family at low levels of ownership and an increasing alignment of the interests of the family and the minority shareholders at higher levels of family ownership. For acquirers in stock-financed transactions, we find that the dilution of the family's

¹ Since our results indicate that the negative relationship between ownership and value reaches its peak at around 30% family ownership, from now on, we will refer to the ownership levels below 30% as "low", and those above 30% as "high".

stake results in higher (lower) abnormal returns when the pre-merger ownership is low (high). This suggests that dilution is beneficial at low levels of ownership (as it potentially reduces the entrenchment of the family) and detrimental at high levels of ownership (as it reduces the incentive alignment).

We perform two robustness tests. First, we examine the determinants of the choice of the medium of exchange. We find that an acquirer with a low (high) level of family ownership is more (less) likely to choose cash as the medium of exchange, *ceteris paribus*. These findings imply that families with low levels of ownership are more likely to protect their private benefits of control (which, as reported above, are higher for firms with low levels of family ownership) and therefore less likely to dilute their holdings by choosing stock as the medium of exchange. Firms with a high level of family ownership, due to the better alignment of their interests with those of minority shareholders, are less worried about the maintenance of their control of the firm and therefore less likely to choose cash as the medium of exchange.

Second, since as shown above, the choice of the medium of exchange is a function of family ownership, the relationship between the abnormal returns and family ownership documented above could be driven by a self-selection bias. Therefore, as an additional robustness test, we explicitly control for this possibility using a switching regression model with endogenous switching. Our results are robust to this correction.

Finally, as discussed above, the market reaction upon the announcement of a family-controlled target's acquisition will reveal (and be inversely related to) the founding family's influence on the pre-merger value of the firm. For targets acquired in cash-financed transactions, we find that, at low (high) levels of its pre-merger ownership, the family has a positive (negative) influence on the abnormal returns earned by the target upon the acquisition announcement. In other words, the exit of a founding family with a low level of ownership is seen by the market as a value-creating event, while the exit of a family with a high level of ownership is viewed as a

value-destroying event. Our findings suggest that founding families with low (high) levels of ownership had a negative (positive) impact on the pre-merger value of their firm. Again, this is consistent with the entrenchment of the family at low levels of ownership and a better alignment of the interests of the family and the minority shareholders at high levels of family ownership.

Our paper is related to and contributes to several areas of research. First, a growing body of research examines the unique valuation and control issues associated with family firms (see, among others, Anderson and Reeb, 2003; Villalonga and Amit, 2006). Most of this literature, however, has focused on mature and index-listed family firms.² We fill this gap in the family firm literature by examining newly public family firms.

Second, an even larger body of literature has studied the influence of managerial ownership on the value creation (or lack thereof) in mergers (see, e.g., Lewellen et al., 1985; Hubbard and Palia, 1995). This literature has so far focused almost exclusively on established firms.³ Since these firms have relatively low levels of insider ownership, we have only a limited understanding of the effect of high levels of insider ownership on value gains in mergers. In addition, there is limited evidence on the relationship between family ownership and value creation in mergers.⁴ Our sample of newly public family firms includes a relatively large number of firms with high levels of family ownership.⁵ This allows us to provide a more complete picture of the costs and benefits of highly concentrated ownership.

² To our knowledge, the only paper that examines newly public family firms is Paeglis and Tirtiroglu (2005).

³ For notable exceptions see Field and Mulherin (1999) and Wiggernhorn and Madura (2004).

⁴ The only study on mergers of family firm we are aware of is Ben-Amar and Andre (2006) in which they examine the differences in the market reaction upon the acquisition announcements made by Canadian family and non-family firms. They, however, do not examine the relationship between family ownership and the resulting changes in control, on the one hand, and abnormal returns upon the merger announcement, on the other. In addition, their focus is on family firms as acquirers (i.e., they do not study acquisitions of family-controlled targets).

⁵ For firms used by Lewellen et al. (1985) and Hubbard and Palia (1995), the 80th percentile of insider ownership is between 10 and 12%. In contrast, for firms in our sample the 80th percentile of family ownership is 47.1%.

Finally, another strand of the literature on mergers and acquisitions focuses on issues related to ownership and control. In particular, Amihud et al. (1990) and Martin (1996) have examined the relationship between insider ownership and the likelihood of using stock as the medium of exchange. The use of stock and the resulting changes in control, in turn, should also influence firm value. However, to our knowledge, the above relationship has not been studied in the literature. We provide evidence that changes in insider ownership resulting from the use of stock as the medium of exchange have a significant impact on the value creation in mergers.

The rest of the paper is organized as follows. Section 2 develops the hypotheses that will serve as the basis for our empirical tests. Section 3 reviews the characteristics of our sample, while section 4 describes our methodology and reports results. Section 5 concludes.

2. Theory and hypotheses

Family ownership can influence the firm value in two offsetting ways. First, increasing family ownership should better align the interests of the family with those of minority shareholders, and thus enhance firm value. In particular, Jensen and Meckling (1976) argue that increased managerial ownership leads to a non-linear decrease in the agency costs of equity by reducing incentives to consume perquisites and to expropriate wealth from minority shareholders. In addition, Leland and Pyle (1977) argue that managerial ownership can serve as a positive signal of a firm's value. From now on, we will refer to the positive influence of ownership on firm value as the "incentive alignment effect". Second, increasing ownership may also lead to the family's entrenchment and the use of value-reducing policies without the fear of shareholder activism.⁶ From now on, we will refer to the negative influence of ownership on firm value as the "entrenchment effect". The extent to which one or the other of these two effects will dominate at a particular level of family ownership is an empirical issue.

⁶ See e.g., Stulz (1988), McConnell and Servaes (1990), and Morck et al. (1988).

Since acquirers in cash-financed transactions experience no loss of control, the returns earned by such acquirers are expected to depend on the value generated by the transaction, which, in turn, will be influenced by the extent to which the family's incentives are aligned with those of the minority shareholders as well as the extent of the family's entrenchment. This leads to our first testable hypothesis.

Hypothesis 1: The market reaction upon the announcement of a cash-financed acquisition will reflect the influence of family ownership on firm value. The particular shape of this relationship will depend upon the relative importance of the incentive alignment and the entrenchment effects at various levels of family ownership.

For acquirers in stock-financed transactions, there is some loss of control due to the dilution of their shareholdings. The importance of this dilution and therefore the market reaction to it, will depend on the dominance of either the incentive alignment or the entrenchment of the family at any given level of ownership. In particular, over the range of ownership for which the incentive alignment effect dominates the entrenchment effect, dilution will be detrimental since it leads to a reduction in the alignment of incentives. Over the range of family ownership for which the entrenchment effect dominates the incentive alignment effect, however, we expect the dilution to have a beneficial influence on the firm value. First, any reduction in the level of family's entrenchment should lead to an increase in the firm value. Second, an entrenched family's choice of stock as the medium of exchange can, by itself, signal the family's intention not to expropriate wealth from minority shareholders. In particular, consider a setting in which the market views all founders of firms with a certain level of family ownership as entrenched.⁷ In such a setting, dilution credibly signals that the family's presence in the firm is not motivated primarily by the private benefits of control. This is because the resulting reduction in the family's control over the firm increases the likelihood of the family's ouster (by either minority shareholders or other

⁷ This is likely to be the case for the newly public family firms studied in this paper since the market has not yet had enough time to distinguish between "good" and "bad" founders.

players in the market for corporate control). Therefore, only families that are less likely to expropriate wealth from minority shareholders would choose stock as the medium of exchange. Thus, our second testable hypothesis is as follows.

Hypothesis 2: For stock-financed acquisitions, the relationship between abnormal returns and family ownership observed for cash-financed acquisitions should be at least partially reversed by the dilution effect working in the opposite direction.

We now turn to the discussion of our hypotheses on the target side. In cash-financed transactions, the founding family of the target ends up with no stake in the merged entity. In other words, an acquisition of a family-controlled target in a cash-financed transaction results in a complete loss of control by the founding family and therefore provides evidence on the value of family ownership in the *pre-merger* firm. If the founding family uses its influence over the firm primarily to derive private benefits of control or otherwise exploit minority shareholders, their loss of control would be seen by the market as a value-creating event. If, on the other hand, the founding family is an asset to the pre-merger firm, their exit would be viewed by the market as a value-destroying event.⁸ Therefore, our third hypothesis is as follows.

Hypothesis 3: The market reaction upon the announcement of a cash-financed acquisition of a family-controlled target will reflect the value of family ownership in the pre-merger firm. The particular shape of this relationship will depend upon the relative importance of the incentive alignment and the entrenchment effects at various levels of family ownership.

Finally, there are two potential reasons why the market reaction to a stock-financed acquisition of a family-controlled target may differ from that to a cash-financed one. First, the founding family can become a blockholder in the merged firm and thus improve the monitoring

⁸ For potential reasons why either entrenched or incentive-aligned family would decide to exit their firm, see Klasa (2005), who reports that exits of founding families are largely motivated by personal (e.g., the age of the founder and the absence of family successors) rather than firm characteristics.

of the acquiring firm's management. Second, as discussed by Chang (1998), there are two reasons why the acquisition of a closely-held target may be characterized by a lower level of asymmetric information between the acquirer and the target, and therefore result in a more positive market reaction (as compared to a stock-financed acquisition of a target with dispersed ownership). In particular, the acquirer's managers are more likely to disclose their private information to the founder of their target (who is likely to own a large fraction of the firm's shares) rather than to a large number of dispersed shareholders. Also, the family will evaluate the acquirer's future prospects carefully because a significant proportion of their wealth is likely to be invested in the acquirer's shares after the merger. To put it differently, the founding family's acceptance of the acquirer's stock can be seen as a certification of the value of the offer. Both of these effects (blockholder creation and certification) are likely to increase the value of acquirer's shares which the family will own after the merger. Further, the importance of both of these effects is increasing with the family ownership in the target, *ceteris paribus*. This, in turn, implies that the pure loss-of-control effect observed in the case of cash-financed acquisitions will be at least partially mitigated in the case of stock-financed acquisitions of family-controlled targets. This leads to our fourth testable hypothesis.

Hypothesis 4: In the case of a stock-financed acquisition of a family-controlled target, the loss of control effect observed in the case of a cash-financed acquisition of a family-controlled target will be mitigated by the potential benefits of the target's founding family becoming a blockholder in the merged firm and / or by the family's certification of the acquirer's value, especially in the case of a high family ownership in the target.

3. Data and sample selection

Venture capitalists have been shown to influence (1) the replacement of founders (Hellman and Puri, 2002); (2) the market's perception of surviving founders in venture-backed

firms (Paeglis and Tirtiroglu, 2005); and (3) the post-IPO merger decisions of the venture-backed firms (see, e.g., Masulis and Nahata, 2006). Therefore, to examine the direct influence of family ownership on the value creation in mergers and acquisitions, we exclude venture-backed firms from our sample. Our initial sample, consisting of 722 non-venture-backed US firms that went public between 1993 and 2000, is obtained from the SDC New Issues database. We exclude financial acquirers and targets (defined as firms with SIC codes starting with 6) from our sample and require both the targets and the acquirers to be public firms. We classify the firms as either family or non-family, based on the information in the management sections of IPO prospectuses. We then use the SDC Mergers & Acquisitions database to identify all mergers involving our sample firms that occurred between the time of the IPO and December 31, 2004. We exclude financial acquirers and targets (defined as firms with SIC codes starting with 6) from our sample and require both the targets and the acquirers to be public firms. The acquisition announcement dates are confirmed by searching Factiva (formerly Dow Jones News Retrieval) for up to a year before the announcement date reported in the SDC Mergers & Acquisitions database. This ensures that we have identified the first announcement of a particular merger. Finally, we collect the data on the founding family's pre-merger ownership from the closest proxy statement preceding the acquisition announcement. Our final sample, described in Table 1, consists of 103 acquirers and 118 targets. It is interesting to note that family firms seem to prefer cash as the medium of exchange. In particular, while almost one half of family acquirers chose cash as the medium of exchange, only about one third of non-family firms did so. In the next section we explore this difference in detail.

Table 2 provides summary statistics of the independent variables used in our empirical tests. The average (median) family ownership for acquirers in our sample is 36.2% (37.9%), while the corresponding values for targets are 30.3% (26.7%). The average (median) firm age at the time of acquisition is 29.23 (18) years for acquirers and 17.42 (15) years for targets. The

average (median) market capitalization for acquirers is \$919 (296) million, while the corresponding number for targets is \$217 (94) million.⁹

4. Empirical tests and results

This section describes the testing methodology and reports results for acquirers and targets in Sections 4.1 and 4.2, respectively.

4.1. Family ownership and acquirer returns

4.1.1. Basic results

To better understand the role of family ownership in mergers, we regress the cumulative abnormal returns (CARs) earned by the acquirers upon the acquisition announcement on several explanatory and control variables as described by the following equation:

$$CAR_i = \beta_0 + \beta_1 FAMOWN_i + \beta_2 FAMOWNSQ_i + \beta_3 STOCK_i + \beta_4 FAMSTOCK_i + \beta_5 FAMSTOCKSQ + \beta_6 LMKT_i + \beta_7 LFAGE_i + \beta_8 RELSIZE_i + \varepsilon_i \quad (1)$$

The dependent variable is the CAR over a two-day event window starting on the announcement date.¹⁰ To allow for non-linearity in the relationship between family ownership and value creation in mergers, we use a quadratic specification.¹¹ FAMOWN is the family ownership in the acquiring firm, as reported in the closest proxy statement preceding the acquisition announcement.¹² FAMOWNSQ is family ownership squared. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. FAMSTOCK and FAMSTOCKSQ are constructed by multiplying STOCK with FAMOWN and FAMOWNSQ,

⁹ In comparison, Anderson and Reeb (2003), who study mature and S&P500-listed family firms, report an average family ownership of 17.88% and the average total assets of \$9.6 billion for their sample firms.

¹⁰ We have also used cumulative abnormal returns over various other event windows as dependent variables. The results are qualitatively unchanged.

¹¹ We have also replicated the results reported below using a piecewise specification with the Morck et al. (1988) cut-offs of 5 and 25%. The results are qualitatively unchanged in this alternative specification.

¹² Our measure of family ownership is the percentage of voting rights controlled by the founding family. In these and subsequent tests we have also used the difference between cash flow rights and voting rights as an additional control variable. In addition, we have also replicated all the results excluding firms with the dual class share structure. The results are qualitatively unchanged in these alternative specifications.

respectively. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is defined as the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer.¹³

As discussed above, cash-financed acquisitions provide the cleanest evidence about the influence of family ownership on value gains in mergers since the counteracting effect of dilution is not present. Therefore, the signs of the coefficients β_1 and β_2 will depend only upon the relationship between family ownership and value created or destroyed by the merger. In particular, as described in Section 2, increasing family ownership could be associated with both a better alignment of family's incentives with those of minority shareholders and a greater entrenchment of the founding family. If the entrenchment effect dominates the incentive alignment effect at low levels of family ownership, while the opposite is true at high levels of ownership, we expect β_1 to be negative and β_2 to be positive. If, on the other hand, the incentive alignment effect dominates the entrenchment effect at low levels of ownership, while the opposite is true at high levels of ownership, we expect β_1 to be positive and β_2 to be negative.

Any stock-financed merger, on the other hand, will result in a dilution of the family's control. The coefficients β_4 and β_5 , therefore, are expected to capture the market's perception of the value of the dilution effect due to the use of stock as the medium of exchange. In particular, this dilution effect is expected to have a positive (negative) influence on the value creation for the range in which the entrenchment (incentive alignment) effect dominates. Thus, the signs of the coefficients of β_4 and β_5 are expected to be mirror images of those of β_1 and β_2 .

As discussed in Section 2, there are two interrelated sources of the value gains due to the dilution over the range of ownership in which the founding family is entrenched. First, dilution

¹³ We have also used year dummies as additional control variables to control for the variation in the merger activity across years. The results are qualitatively unchanged in this alternative specification.

reduces the level of family's entrenchment and thus increases firm value. Second, dilution can be seen as a credible signal of the founding family's intentions not to engage in value-reducing activities. The first source of value creation should be present for all stock-financed acquisitions as any value gains are directly related to the level of dilution resulting from a particular merger. The second one, however, is likely to be more pronounced for the very first acquisition announced by the firm after going public. By the time of subsequent acquisitions, any signaling benefits should be at least partially reflected in the stock price and therefore have a minimal impact on the value creation.

To distinguish between the two sources of value gains from dilution discussed above, we report the results for the full sample as well as for the subsample that includes only the first acquisition by each acquirer. For all our tests on the acquirer side (Tables 3 to 5), in columns 1 and 2 we report the results for the full sample, while in columns 3 and 4 we report the results for the subsample that includes only the first acquisition by each acquirer.

The empirical tests of Eq. (1) are reported in Table 3. For cash-financed acquisitions, we find that the coefficient estimate for β_1 is negative, while the coefficient estimate for β_2 is positive for all specifications. Both coefficient estimates are statistically significant at the 1% level. This implies a convex relationship between family ownership and the market reaction upon an announcement of a cash-financed acquisition. In particular, we find that the abnormal returns decrease with family ownership until ownership reaches 28%, and then increase. At its lowest point, the difference in the CARs between family and non-family firms reaches -7.6% . Our results suggest that the founding family makes value-enhancing decisions at high levels of ownership and value-reducing decisions at low levels of ownership.

For stock-financed acquisitions, consistent with our predictions, the signs of the coefficient estimates for β_4 and β_5 are opposite of those for β_1 and β_2 and both are statistically significant at the 1% level. Our results suggest that in stock-financed acquisitions, the value

destruction due to the entrenchment of the founding family (observed for cash-financed acquisitions by firms with low levels of family ownership) is offset by the benefits stemming from the dilution of such entrenchment. At the same time, the value creation due to the alignment of incentives (observed for cash-financed acquisitions by firms with high levels of family ownership) is offset by the reduction in the incentive alignment resulting from the dilution.

If dilution is the underlying factor explaining the difference in the influence of family ownership on the abnormal returns between cash- and stock-financed acquisitions, we expect to observe a statistically significant relationship between the dilution of family's ownership stake and the abnormal returns upon the acquisition announcement. We further examine this conjecture by estimating the following regression:

$$CAR_i = \beta_0 + \beta_1 DILUTION_i + \beta_2 HIGH_i + \beta_3 DILUTION_HIGH_i + \beta_4 STOCK_i + \beta_5 LMKT_i + \beta_6 LFAGE_i + \beta_7 RELSIZE_i + \varepsilon_i \quad (2)$$

DILUTION is a ratio of the difference between family's pre- and post-merger ownership to its pre-merger ownership.¹⁴ The post-merger ownership is obtained from the first proxy statement after the effective date of the merger. Since the influence of dilution is expected to vary with the level of family ownership, we first create a dummy variable, HIGH, that takes on a value of one if before the merger the family controls more than 50% of voting rights, and zero otherwise.¹⁵ We then create an interactive dummy variable, DILUTION_HIGH, by multiplying DILUTION with HIGH.

At low levels of family ownership, dilution is expected to have a positive influence on the abnormal returns since it either reduces the family's entrenchment and / or signals that the family's presence in the firm is not motivated primarily by the private benefits of control.

¹⁴ We have also used the absolute difference between family's pre- and post-merger ownership as our measure of dilution. The results are qualitatively unchanged in this alternative specification.

¹⁵ Our choice of the 50% cut-off is based on a framework similar to Stulz (1988). Beyond that point there is no additional entrenchment of the insiders and any increase in ownership can only better align the interests of majority and minority shareholders. We have also estimated Eq. (2) using two alternative definitions of HIGH (with 45% and 55% ownership cut-offs). The results are qualitatively unchanged in these alternative specifications.

Therefore, we expect the sign of the coefficient β_1 to be positive. At high levels of family ownership, on the other hand, dilution is expected to have a negative influence on the abnormal returns since it reduces the incentive alignment. Consequently, the sign of the coefficient β_3 is expected to be negative.

The results are reported in Table 4. As expected, the coefficient estimate for β_1 is positive in all specifications. It is, however, statistically significant only for the subsample of first acquisitions (columns 3 and 4). Our results suggest that the relationship between the dilution of family ownership and acquirer returns at low levels of family ownership is driven primarily by the signal inherent in the choice of stock as the medium of exchange.

The coefficient estimate for β_3 is negative and statistically significant at the 1% level. The magnitude of the coefficient estimate for β_3 is also economically meaningful. In particular, a 5% dilution in the ownership of families with high pre-merger equity stakes leads to about 1.5% decline in the abnormal returns upon the acquisition announcement. This decline is roughly equal to 75% of the average abnormal return upon the announcement of a stock-financed acquisition for our sample firms. Our results suggest that dilution of families with high levels of ownership due to the use of stock as the medium of exchange results in a negative market reaction. This is consistent with the reduced incentive alignment between founding family and minority shareholders.

As an additional robustness test, we examine the relationship between family ownership and the choice of the medium of exchange by estimating the following logit regression:

$$STOCK_i^* = \beta_0 + \beta_1 FAMOWN_i + \beta_2 FAMOWNSQ_i + \beta_3 LMKT_i + \beta_4 LFAGE_i + \beta_5 RELSIZE_i + \beta_6 CDEAL_i + \varepsilon_i \quad (3)$$

$STOCK^*$ denotes a latent continuous variable that proxies for the propensity to use stock as the medium of exchange. $STOCK$ takes on a value of one if $STOCK^*$ is greater than zero, and zero otherwise. $CDEAL$ is the ratio of acquirer's holdings of cash and marketable securities at the end of the fiscal year preceding the acquisition announcement to the value of the transaction. We

hypothesize that entrenched families are more likely to be interested in preserving their control of the firm and therefore more likely to choose cash as the medium of exchange. Families, for which the incentive alignment effect dominates the entrenchment effect, on the other hand, are more likely to do what is best for the firm, even if it results in some loss of control.¹⁶ Therefore, since our findings above imply entrenchment of families with low levels of ownership and incentive alignment of families with high levels of ownership, we expect the coefficient β_1 to be negative and the coefficient β_2 to be positive.

The results are reported in Table 5. As expected, the coefficient estimate for β_1 is negative, while the coefficient estimate for β_2 is positive. Both coefficient estimates are statistically significant at the 5% level. Our results are also economically significant. In particular, the likelihood of a stock acquisition is declining from 70% for non-family firms to around 40% for firms with family ownership of 40% and then starts increasing. Our results suggest that control considerations influence the choice of the medium of exchange in acquisitions. In particular, families with low levels of ownership, who, as shown above, are more likely to be entrenched, are more likely to avoid dilution and therefore more likely to choose cash as the medium of exchange. Incentive alignment at high levels of family ownership, on the other hand, leads to a lower likelihood of cash as the medium of exchange.

4.1.2. Robustness tests

Since, as shown above, the choice of the medium of exchange is a function of family ownership (and therefore endogenous), the coefficient estimates of STOCK (and interactive dummies based on it) in Eq. (1) may be inconsistent (for details see Appendix). To correct for this

¹⁶ The choice of stock as the medium of exchange in this case indicates that the benefits of using stock (due to, for example, asymmetric information about both the acquirer and the target, or tax considerations) exceed the value loss due to the reduced alignment of the founding family's incentives with those of minority shareholders.

potential self-selection bias we use the switching regression model with endogenous switching.¹⁷

In particular, we estimate the following model:

$$STOCK_i^* = Z_i' \gamma + \varepsilon_i \quad (4.1)$$

$$CAR_{cash_i} = X_i' \beta_1 + u_{1i} \quad (4.2)$$

$$CAR_{stock_i} = X_i' \beta_2 + u_{2i} \quad (4.3)$$

Equation (4.1) is the selection equation as specified by Eq. (3). The sample is then split into two groups based on the medium of exchange. The second-stage equations, Eqs. (4.2) and (4.3), estimated separately for the cash-financed acquisitions and the stock-financed ones, respectively, are specified as follows:

$$CAR_i = \beta_0 + \beta_1 FAMOWN_i + \beta_2 FAMOWNSQ_i + \beta_3 LMKT_i + \beta_4 LFAGE_i + \beta_5 RELSIZE_i + u_i \quad (5)$$

We use CDEAL as an instrumental variable.¹⁸ The model is estimated using the full information maximum likelihood method.¹⁹

The results of the estimation of Eqs. (4.2) and (4.3) are reported in Table 6. We find that for cash-financed acquisitions, even after controlling for the self-selection bias, there is a negative (positive) and statistically significant relationship between family ownership and abnormal returns upon an acquisition announcement at low (high) levels of family ownership. For stock-financed acquisitions, however, neither of the coefficient estimates of FAMOWN and FAMOWNSQ is statistically significant. We test for the equality of the coefficient estimates of FAMOWN and FAMOWNSQ across the two equations using a Wald-test and find that they are statistically significantly different. In addition, the likelihood ratio (LR) test fails to reject the independence of the two equations. Our findings suggest that OLS results reported in previous subsection are not driven by a self-selection bias.

¹⁷ For a detailed discussion of this model, see Maddala (1983). This model has also been used by Dunbar (1995) and Fang (2005).

¹⁸ We have also used the target's market-to-book ratio as an instrument (see Carleton et. al, 1983, who argue that this ratio is positively correlated with the potential capital gains tax liability of target firm shareholders). Our results are qualitatively unchanged in this alternative specification.

¹⁹ For the details of the model estimation, see Appendix.

4.1.3. Summary

Overall, our findings on the acquirer side can be summarized as follows. First, we find that firms with low levels of family ownership make value-reducing acquisition decisions, while firms with high levels of family ownership make value-creating acquisition decisions. We conjecture that this is due to the entrenchment of founding families with low levels of ownership and the incentive alignment at high levels of family ownership. This conjecture is further supported by our finding that firms with low levels of family ownership are more likely to choose cash as the medium of exchange and thus preserve their control of the firm (and the resulting benefits of control). Second, we find that the dilution of family ownership in stock-financed acquisitions has a significant influence on value gains in mergers. In particular, at high levels of family ownership, the dilution affects the nature of the relationship between family control and firm value by decreasing the level of incentive alignment. At low levels of family ownership, dilution seems to serve as a credible signal of the family's intentions not to expropriate wealth of minority shareholders. Our results continue to hold even after correcting for a potential self-selection bias.

4.2. Family ownership and target returns

We now turn to the examination of the relationship between family ownership and abnormal returns for target firms. We do so by estimating Equation (1) for target firms. All variables are target-side counterparts of those defined for Eq. (1).

As discussed earlier, an acquisition of a family-controlled target in a cash-financed transaction results in a complete loss of control by the family. This implies that the market reaction upon a cash-financed acquisition of a family target will reveal the influence of family ownership on pre-merger firm value. In particular, an exit of an entrenched family will be seen by

the market as a value-creating event, while an exit of a family, whose incentives are aligned with those of minority shareholders, is expected to be seen as a value-destroying event. If the entrenchment effect dominates the incentive alignment effect at low levels of family ownership, while the opposite is true at high levels of ownership, we expect β_1 to be positive and β_2 to be negative. If, on the other hand, the incentive alignment effect dominates the entrenchment effect at low levels of ownership, while the opposite is true at high levels of ownership, we expect β_1 to be negative and β_2 to be positive.

For stock-financed acquisitions of family-controlled targets, as discussed in Section 2, there are two effects that could mitigate the pure loss-of-control effect present in the case of cash-financed acquisitions. First, a stock-financed acquisition can be seen as only a partial exit of the family which can become a blockholder in the merged firm and monitor the acquirer's management. Second, by accepting acquirer's stock in exchange for its shares, family is implicitly certifying the value of the acquirer's stock. The magnitude of both of these effects is likely to be increasing with the level of family's ownership. Therefore, we expect the signs of the coefficients of β_4 and β_5 to be mirror images of those of β_1 and β_2 .

The results are reported in Table 7. For cash-financed acquisitions of family-controlled targets, we find that the coefficient estimate for β_1 is positive, while the coefficient estimate for β_2 is negative. Both coefficient estimates are statistically significant at the 5% level. This implies a concave relationship between family ownership and the market reaction upon an announcement of a cash-financed acquisition. In particular, we find that the abnormal returns are increasing with family ownership until the latter reaches 38%, then start decreasing, but stay positive for firms with family ownership below 76%. At its highest point, the difference in the cumulative abnormal returns between family and non-family firms reaches 15.6%. In other words, an exit of an entrenched family is seen by the market as a value-creating event, while an exit of a family, whose incentives are aligned with those of minority shareholders, is seen as a value-destroying

event. Our results suggest that families with high levels of ownership are an asset to their (pre-merger) firms, while families with low levels of ownership are a liability.

For stock-financed acquisitions of family-controlled targets we find that, consistent with our predictions, the signs of the coefficient estimates for β_4 and β_5 are opposite to those for β_1 and β_2 . Neither of the coefficient estimates, however, is statistically significant. Overall, our results on the target side are consistent with our previous findings on the acquirer side and provide an additional evidence of entrenchment of families with low levels of ownership and incentive alignment of families with high levels of ownership.

5. Conclusions

Founding families represent a unique group of active, long-term owners, holding concentrated equity positions in their firms. Using a sample of newly public family firms, this paper examines the influence of this group of investors on value creation in mergers. Our focus on newly public family firms provides a new perspective not only on family firms but also on mergers. First, most of the emerging literature on family firms has focused on mature and index-listed firms, while the newly public family firms have received very little attention. Second, mergers, as corporate control events, provide an ideal setting to examine the relationship between family ownership and firm value. In particular, the spectrum of potential outcomes for families (no change in control, dilution, full exit) allows us to observe the influence of the level and changes in family ownership on value creation in mergers.

Our findings can be summarized as follows. For acquisitions by family firms, low levels of family ownership are associated with value-reducing acquisition decisions. A high level of family ownership, on the other hand, is associated with value-creating acquisition decisions. We conjecture that this is due to the entrenchment of founding families with a low level of ownership and the incentive alignment at high levels of family ownership. This conjecture is further

supported by our finding that firms with low levels of family ownership are more likely to choose cash as the medium of exchange and thus preserve their control of the firm (and the resulting benefits of control). Our results regarding the relationship between family ownership and value creation in mergers continue to hold even after correcting for a potential self-selection bias.

Further examination reveals that the dilution of families in stock-financed acquisitions is an important consideration in mergers. In particular, at high levels of family ownership, the dilution affects the nature of the relationship between family control and firm value by decreasing the level of incentive alignment. At low levels of family ownership, dilution serves as a credible signal of the family's intentions not to expropriate wealth of minority shareholders.

For acquisitions of family controlled targets, we find that the market perceives a full loss of control by the founding family as a value-creating event if the family ownership is low and as a value-destroying event if the family ownership is high. These results provide additional evidence of entrenchment of families with low levels of ownership and the alignment of family and minority shareholder incentives at high levels of family ownership.

Our study contributes to the understanding of family firms in several ways. First, the impact of family ownership on the value gains documented in this paper provides a further piece of evidence that the ownership by the founding family is an important determinant of the value of such firms. Second, prior research on family firms has largely used cross-sectional tests using market-to-book or accounting ratios as measures of value. The use of an event study approach provides a different perspective on this issue. Finally, we provide evidence that newly public family firms differ in significant ways from their mature and index-listed counterparts. In particular, the entrenchment of the family and the alignment of its interests with those of minority shareholders occur at different ownership levels in the two groups. A detailed study of the sources of this difference could further our understanding of the influence of family ownership on the firm value.

Our findings also have implications for the merger literature. Although the change in ownership and control is a natural outcome of stock-financed mergers, the relationship between changes in family ownership and value creation in mergers has not, to our knowledge, received any attention in the literature. Our findings suggest that dilution of family ownership is indeed a significant determinant of value gains and losses in mergers.

Appendix

A potential concern with the OLS estimation of Eq. (4.1) to (4.3) is that the abnormal return upon the acquisition announcement (the dependent variable in Eqs. (4.2) and (4.3)) is a conditional variable, which depends upon the choice of the medium of exchange (STOCK). Taking expectations of Eq. (4.3), we obtain

$$\begin{aligned}
 E[CAR_{it}] &= E[CAR_{it} | STOCK_{it} = 1] \\
 &= E[CAR_{it} | STOCK_{it}^* > 0] \\
 &= E[X_i' \beta_1 + u_{1i} | Z_i' \gamma + \varepsilon_i > 0] \\
 &= X_i' \beta_1 + E[u_{1i} | \varepsilon_i > -Z_i' \gamma]
 \end{aligned} \tag{A1}$$

If u_1 and ε are correlated, the last conditional expectation term in (A1) does not have a zero mean, and OLS estimation of Eqs. (4.2) and (4.3) will generate inconsistent estimates. We therefore use the switching regression model with endogenous switching.

Assuming that the error terms u_1 , u_2 , and ε are normally distributed with zero mean and covariance matrix

$$\Sigma = \begin{pmatrix} \sigma_1^2 & \sigma_{12} & \sigma_{1\varepsilon} \\ \sigma_{12} & \sigma_2^2 & \sigma_{2\varepsilon} \\ \sigma_{1\varepsilon} & \sigma_{2\varepsilon} & \sigma_\varepsilon^2 \end{pmatrix} \tag{A2}$$

we can express the last term of (A1) as follows:

$$E[u_{2i} | \varepsilon_i > -Z_i' \gamma] = \sigma_{2\varepsilon} \left(\frac{\phi(-Z_i' \gamma)}{1 - \Phi(-Z_i' \gamma)} \right) = \sigma_{2\varepsilon} \left(\frac{\phi(Z_i' \gamma)}{\Phi(Z_i' \gamma)} \right), \tag{A3}$$

where ϕ and Φ are the density and cumulative distribution functions of the normal distribution, respectively. The term $\left(\frac{\phi(Z_i' \gamma)}{\Phi(Z_i' \gamma)} \right)$ in (A3) is usually referred to as the inverse Mills ratio. If this term is added to the regression as a right-hand-side variable, we can use OLS to consistently estimate β_2 as well as $\sigma_{2\varepsilon}$. In particular, estimation of the following equations will give us consistent estimates of all the coefficients:

$$CAR_{cash_i} = X_i' \beta_i - \sigma_{1\varepsilon} \left(\frac{\phi(Z_i' \gamma)}{\Phi(Z_i' \gamma)} \right) + \xi_{1i} \quad (\text{A4.1})$$

$$CAR_{stock_i} = X_i' \beta_i + \sigma_{2\varepsilon} \left(\frac{\phi(Z_i' \gamma)}{1 - \Phi(Z_i' \gamma)} \right) + \xi_{2i}, \quad (\text{A4.2})$$

where ξ_{1i} and ξ_{2i} are error terms. The two-step procedure described above, however, is not efficient. We therefore use the following full information maximum likelihood procedure. First, to find good initial estimates for the maximization of the log-likelihood, we run a probit on Eq. (4.1), yielding the estimates of $\left(\frac{\phi(Z_i' \gamma)}{\Phi(Z_i' \gamma)} \right)$ and $\left(\frac{\phi(Z_i' \gamma)}{1 - \Phi(Z_i' \gamma)} \right)$. Second, the inverse Mills ratios estimated above are then used in OLS regressions of (A4.1) and (A4.2) to obtain σ_1^2 , σ_2^2 , $\sigma_{1\varepsilon}$, and $\sigma_{2\varepsilon}$. Finally, we maximize the log-likelihood using the parameters estimated in the first two steps as initial values. With this method, all parameters in (4.1), (4.2), and (4.3) are estimated consistently and asymptotically efficiently.

References

- Amihud, Y., Lev, B., Travlos, N., 1990. Corporate control and the choice of investment financing: the case of corporate acquisitions. *Journal of Finance* 45, 603 – 616.
- Anderson, R., Reeb, D., 2003. Founding-family ownership and firm performance: evidence from the S&P 500. *Journal of Finance* 58, 1301 – 1328.
- Ben-Amar, W., Andre, P., 2006. Separation of ownership from control and acquiring firm performance: the case of family ownership in Canada. *Journal of Business Finance and Accounting* 33, 517 – 543.
- Carleton, W., Guilkey, D., Harris, R., Stewart, J., 1983. An empirical analysis of the role of the medium of exchange in mergers. *Journal of Finance* 38 (3), 813 – 826.
- Chang, S., 1998. Takeover of privately held targets, methods of payment, and bidder returns. *Journal of Finance* 53, 773 – 784.
- Dunbar, C., 1995. The use of warrants as underwriter compensation in initial public offerings. *Journal of Financial Economics* 38, 59 – 78.
- Fang, L., 2005. Investment bank reputation and the price and quality of underwriting services. *Journal of Finance* 60 (6), 2729 – 2761.
- Field, L., Mulherin, H., 1999. Newly public firms as acquisition targets: A comparison with established target firms. Working paper, Penn State University.
- Hellman, T., Puri, M., 2002. Venture capital and the professionalization of start-up firms: empirical evidence. *Journal of Finance* 57 (1), 169 – 197.
- Hubbard, R., Palia, D., 1995. Benefits of control, managerial ownership, and the stock returns of acquiring firms. *RAND Journal of Economics* 26, 782 – 792.
- Jensen, M., Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305 – 360.
- Jensen, M., Ruback, R., 1983. The market for corporate control: the scientific evidence. *Journal of Financial Economics* 11, 5 – 50.
- Klasa, S., 2005. Why do controlling families of public firms sell their remaining ownership stake? Forthcoming in *Journal of Financial and Quantitative Analysis*.
- Leland, H., Pyle, D., 1977. Information asymmetries, financial structure, and financial intermediation. *Journal of Finance* 32 (2), 371 – 387.
- Lewellen, W., Loderer, C., Rosenfeld, A., 1985. Merger decisions and executive stock ownership in acquiring firms. *Journal of Accounting and Economics* 7, 209 – 231.
- Maddala, G., 1983. Limited dependent and qualitative variables in econometrics. *Econometric Society Monographs* No. 3. (Cambridge University Press, Cambridge)

- Martin, K., 1996. The method of payment in corporate acquisitions, investment opportunities, and management ownership. *Journal of Finance* 51 (4), 1227 – 1246.
- Masulis, R., Nahata, R., 2006. Acquirer returns when targets are venture capital backed. Working paper, Vanderbilt University.
- McConnell, J., Servaes, H., 1990. Additional evidence on equity ownership and corporate value. *Journal of Financial Economics* 27, 595 – 612.
- Morck, R., Shleifer, A., Vishny, R., 1988. Management ownership and market valuation: an empirical analysis. *Journal of Financial Economics* 20, 293 – 315.
- Paeglis, I., Tirtiroglu, D., 2005. Founding family: an asset or a liability? Evidence from IPOs. Working paper, Concordia University.
- Schwert, W., 1985. A discussion of CEO deaths and the reaction of stock prices. *Journal of Accounting and Economics* 7, 175 – 178.
- Slovin, M., Sushka, M., 1993. Ownership concentration, corporate control activity, and firm value: evidence from the death of inside blockholders. *Journal of Finance* 48, 1293 – 1321.
- Stulz, R., 1988. Managerial control of voting rights: financing policies and the market for corporate control. *Journal of Financial Economics* 20, 25 – 54.
- Villalonga, B., Amit, R., 2006. How do family ownership, control and management affect firm value? *Journal of Financial Economics* 80, 385 – 417.
- Wiggenhorn, J., Madura, J., 2004. Performance of acquisitions by newly public firms. Working paper, Barry University.

Table 1
Number of acquisitions by year, medium of exchange, and presence of a founding family

Year	Acquirer				Total acquirers	Target				Total targets
	Family		Non-family			Family		Non-family		
	Cash	Stock	Cash	Stock		Cash	Stock	Cash	Stock	
1993	1	0	0	0	1	0	0	0	0	0
1994	1	0	1	2	4	0	0	0	0	0
1995	2	3	0	1	6	3	3	0	3	9
1996	7	4	1	2	14	5	5	0	2	12
1997	7	5	2	3	17	1	11	2	5	19
1998	3	9	3	6	21	7	5	2	1	15
1999	1	2	2	5	10	4	8	2	4	18
2000	1	2	1	4	8	3	5	3	4	15
2001	1	2	3	2	8	6	5	2	2	15
2002	0	1	1	0	2	3	0	0	1	4
2003	4	2	0	2	8	1	1	0	0	2
2004	1	0	1	2	4	6	2	1	0	9
Total	29	30	15	29	103	39	45	12	22	118

Table 2**Summary statistics**

The sample consists of 221 mergers, 103 of which involved a newly public firm as an acquirer and 118 of which involved a newly public firm as a target. FAMOWN is the family ownership in the acquiring firm, as reported in the closest proxy statement preceding the acquisition announcement. MKT is the market capitalization in \$ millions, measured on the 20th trading day preceding the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. FAGE, firm age, is defined as the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. DILUTION is a ratio of the difference between family's pre- and post-merger ownership to its pre-merger ownership. LMKT is the natural log of MKT. LFAGE is the natural log of one plus FAGE. CDEAL is the ratio of acquirer's holdings of cash and marketable securities at the end of the fiscal year preceding the acquisition announcement to the value of the transaction. Medians are shown in parentheses

Panel A: Summary statistics of independent variables

	Acquirer		Target	
	Family	Non-family	Family	Non-family
FAMOWN	0.3624 (0.3790)	0.0000 (0.0000)	0.3025 (0.2674)	0.0000 (0.0000)
MKT	767.9854 (295.9110)	1,121.4870 (311.7510)	225.3727 (115.2633)	195.5247 (69.8822)
RELSIZE	0.4995 (0.1973)	0.5667 (0.3829)	0.2695 (0.1316)	0.4984 (0.2282)
STOCK	0.5085 (1.0000)	0.6591 (1.0000)	0.5357 (1.0000)	0.6471 (1.0000)
FAGE	23.3390 (18.0000)	37.1364 (19.0000)	17.9762 (15.0000)	16.0588 (14.0000)
DILUTION	0.1938 (0.0425)	0.0000 (0.0000)	- -	- -
CDEAL	(0.9173) (0.1779)	(0.4485) (0.1909)	- -	- -

Panel B: Correlation matrix

	FAMOWN	LMKT	LFAGE	STOCK	RELSIZE	DILUTION	
FAMOWN	1						
LMKT	-0.0456	1					
LFAGE	-0.0627	0.2328	1				
STOCK	-0.2036	0.1144	-0.1086	1			
RELSIZE	-0.0770	-0.1227	-0.0499	-0.0518	1		
DILUTION	-0.1151	-0.1544	-0.0870	-0.2761	-0.0425	1	
CDEAL	0.2129	0.2340	-0.0990	-0.2378	-0.2977	-0.1702	1

Table 3**Acquirer returns and family ownership**

Sample includes mergers in which newly public firms are involved as acquirers. The dependent variable is the cumulative abnormal return over a two-day event window starting on the announcement date. FAMOWN is the family ownership in the acquiring firm, as reported in the closest proxy statement preceding the acquisition announcement. FAMOWNSQ is family ownership squared. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. FAMSTOCK and FAMSTOCKSQ are constructed by multiplying STOCK with FAMOWN and FAMOWNSQ, respectively. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. The results for the full sample are reported in columns 1 and 2, while the results for the subsample that includes only the first acquisition by each acquirer are reported in columns 3 and 4. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
FAMOWN	-0.543 (3.87)***	-0.546 (3.97)***	-0.761 (3.23)***	-0.770 (3.36)***
FAMOWNSQ	0.972 (4.15)***	0.977 (4.26)***	1.426 (3.13)***	1.444 (3.18)***
STOCK	-0.087 (3.88)***	-0.087 (3.93)***	-0.101 (3.55)***	-0.102 (3.70)***
FAMSTOCK	0.928 (4.04)***	0.930 (4.04)***	1.208 (3.25)***	1.216 (3.26)***
FAMSTOCKSQ	-1.489 (4.53)***	-1.493 (4.56)***	-2.060 (3.30)***	-2.077 (3.30)***
LMKT	-0.001 (0.15)	-0.001 (0.17)	-0.005 (1.06)	-0.006 (0.95)
LFAGE	-0.002 (0.24)	-0.002 (0.23)	-0.005 (0.47)	-0.005 (0.47)
RELSIZE		-0.001 (0.10)		-0.002 (0.12)
Intercept	0.059 (1.01)	0.063 (0.84)	0.142 (1.75)*	0.149 (1.62)
N	103	102	80	79
Adj R-sq	0.13	0.12	0.12	0.10

Table 4**Acquirer returns and the dilution of family ownership**

Sample includes mergers in which newly public firms are involved as acquirers. The dependent variable is the cumulative abnormal return over a two-day event window starting on the announcement date. DILUTION is a ratio of the difference between family's pre- and post-merger ownership to its pre-merger ownership. HIGH is a dummy variable, that takes on a value of one if before the merger the family controls more than 50% of voting rights, and zero otherwise. DILUTION_HIGH is created by multiplying DILUTION with HIGH. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. The results for the full sample are reported in columns 1 and 2, while the results for the subsample that includes only the first acquisition by each acquirer are reported in columns 3 and 4. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
DILUTION	0.061 (1.30)	0.060 (1.27)	0.112 (1.70)*	0.111 (1.66)*
HIGH	0.064 (1.91)*	0.064 (1.88)*	0.072 (1.93)*	0.070 (1.88)*
DILUTION_HIGH	-0.296 (3.45)***	-0.295 (3.41)***	-0.361 (2.86)***	-0.355 (2.78)***
STOCK	-0.040 (2.22)**	-0.041 (2.26)**	-0.050 (2.38)**	-0.051 (2.40)**
LMKT	-0.002 (0.52)	-0.002 (0.38)	-0.005 (1.13)	-0.005 (0.91)
LFAGE	0.003 (0.34)	0.003 (0.38)	0.007 (0.63)	0.007 (0.68)
RELSIZE		0.003 (0.18)		0.003 (0.19)
Intercept	0.029 (0.55)	0.026 (0.33)	0.055 (0.96)	0.057 (0.69)
N	103	102	80	79
Adj R-sq	0.07	0.07	0.08	0.07

Table 5**The choice of the medium of exchange and family ownership**

Sample includes mergers in which newly public firms are involved as acquirers. The dependent variable takes on a value of one if stock is the medium of exchange, and zero otherwise. The estimation is done using a logistic regression. FAMOWN is the family ownership in the acquiring firm, as reported in the closest proxy statement preceding the acquisition announcement. FAMOWNSQ is family ownership squared. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. FAMSTOCK and FAMSTOCKSQ are constructed by multiplying STOCK with FAMOWN and FAMOWNSQ, respectively. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. CDEAL is the ratio of acquirer's holdings of cash and marketable securities at the end of the fiscal year preceding the acquisition announcement to the value of the transaction. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. The results for the full sample are reported in columns 1 and 2, while the results for the subsample that includes only the first acquisition by each acquirer are reported in columns 3 and 4. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
FAMOWN	-5.881 (2.21)**	-6.166 (2.26)**	-7.719 (2.33)**	-8.310 (2.41)**
FAMOWNSQ	7.822 (2.08)**	8.293 (2.15)**	11.284 (2.26)**	12.035 (2.34)**
LMKT	0.196 (1.31)	0.064 (0.41)	0.131 (0.75)	-0.013 (0.07)
LFAGE	-0.136 (0.57)	-0.127 (0.51)	-0.178 (0.67)	-0.171 (0.62)
CDEAL	-0.366 (2.60)***	-0.438 (2.78)***	-0.206 (1.32)	-0.298 (1.70)*
RELSIZE		-0.671 (1.99)**		-0.793 (2.03)**
Intercept	-1.055 (0.59)	0.994 (0.50)	-0.128 (0.06)	2.218 (0.94)
N	103	102	81	80
Pseudo R-sq	0.09	0.11	0.08	0.11

Table 6**Acquirer returns and the dilution of family ownership controlling for self-selection**

Sample includes mergers in which newly public firms are involved as acquirers. The reported results are for the two second-stage equations, one for the cash-financed acquisitions and the other for stock-financed ones. The dependent variable is the cumulative abnormal return over a two-day event window starting on the announcement date. FAMOWN is the family ownership in the acquiring firm, as reported in the closest proxy statement preceding the acquisition announcement. FAMOWNSQ is family ownership squared. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. The *p*-values for the coefficient equality based on Wald-test as well as the Likelihood Ratio (LR) test of the independence of the two equations are reported in column (3). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	Cash	Stock	<i>p</i> -value
	acquisitions	acquisition	
FAMOWN	-0.509 (2.96)***	0.175 (0.95)	0.004
FAMOWNSQ	0.880 (3.23)***	-0.276 (1.05)	0.001
LMKT	0.010 (0.91)	-0.005 (0.50)	
RELSIZE	0.016 (1.01)	-0.061 (1.82)*	
LFAGE	0.012 (1.04)	-0.019 (1.28)	
Intercept	-0.095 (0.65)	0.059 (0.45)	
LR-test			0.1175
N	43	59	

Table 7**Target returns and family ownership**

Sample includes mergers in which newly public firms are involved as targets. The dependent variable is the cumulative abnormal return over a two-day event window starting on the announcement date. FAMOWN is the family ownership in the target firm, as reported in the closest proxy statement preceding the acquisition announcement. FAMOWNSQ is family ownership squared. STOCK is a dummy variable that takes on a value of one if the medium of exchange is stock, and zero otherwise. FAMSTOCK and FAMSTOCKSQ are constructed by multiplying STOCK with FAMOWN and FAMOWNSQ, respectively. LMKT is the natural log of market capitalization, measured on the 20th trading day preceding the acquisition announcement. LFAGE is the natural log of one plus the number of years between either the year of incorporation or the start of operations, whichever is earlier, and the time of the acquisition announcement. RELSIZE is the value of the target as a fraction of the market capitalization of the acquirer. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
FAMOWN	0.836 (2.30)**	0.861 (2.40)**
FAMOWNSQ	-1.177 (2.14)**	-1.109 (2.09)**
STOCK	0.022 (0.31)	0.039 (0.55)
FAMSTOCK	-0.777 (1.37)	-0.842 (1.49)
FAMSTOCKSQ	1.193 (1.51)	1.176 (1.49)
LMKT	-0.047 (2.67)***	-0.057 (3.72)***
LFAGE	0.121 (3.47)***	0.122 (3.56)***
RELSIZE		-0.020 (0.52)
Intercept	0.379 (2.01)**	0.491 (2.89)***
N	118	114
Adj R-sq	0.18	0.22