The Impact of Dual Class Shares on Takeover Risk and the Market for Corporate Control

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Abstract

Some studies have provided evidence that dual class shares reduce firm market value. Other studies have shown that dual class shares are more common in countries where the proxies for private benefits of control are low. In this paper we explore whether the negative relation between firm market value and dual class shares can be explained by lower takeover probability. For family controlled firms, we find that both the hazard rate of takeover and firm market value decline with dual class shares and firm leverage. We conclude that families entrench themselves by using dual class shares and by manipulating firm capital structure and this translates into lower firm value.

JEL Classification: G32; G34

Keywords: Takeovers, Ownership Structure, Dual Class Shares, Capital Structure, Family Firms, Hazard Functions

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Martin Holmen gratefully acknowledges financial support form the Bank of Sweden Tercentenary Foundation. We express our gratitude to Kristian Rydqvist for supplying some of the data used in this study.

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Extended Abstract

Some studies have provided evidence that dual class shares reduce firm market value. Other studies have shown that dual class shares are more common in countries where the proxies for private benefits of control are low. In this paper we investigate the relationships between the use of dual class shares, entrenchment, ownership structure, the market for corporate control and firm market value. We look at 200 large Swedish non-financial firms listed on the Stockholm Stock Exchange during 1985-2000 to test whether the negative relation between firm market value and dual class shares can be explained by lower takeover probability. The estimated hazard rates of takeover differ significantly between family controlled and non-family controlled firms. Although family controlled firms run a higher risk of takeover, only family controlled firms use dual class shares and financial leverage to reduce the takeover hazard. Regression models with Tobin's q as dependent variable indicate that family control per se is associated with higher Tobin's q but the performance of family firms is significantly reduced by the families' use of dual class shares and financial leverage. We conclude that families entrench themselves by using dual class shares and by manipulating firm capital structure and this translates into lower firm value.

Empirical studies that attempt to measure the private benefits of control generally find that the private benefits of control in Sweden are among the lowest in the world. Still, our results indicate that Swedish families entrench themselves by the use of dual class shares and firm leverage. The traditional proxies for the size of the private benefits of control, the voting premium and the premium paid in negotiated control block transfers, most likely capture pecuniary private benefits of control. The pecuniary private benefits in Sweden are probably small due to high accounting standards, tax compliance, and juridical standards. We therefore interpret our results in terms of non-pecuniary private benefits, ''amenity potential''. Families entrench themselves in order to derive private benefits of control such as status, political influence, and power over people. Thus, the negative relation between dual class shares and firm market value in Sweden does not stem from expropriation of minority shareholders. Instead the negative relation is driven by the fact that dual class shares let the controlling shareholder hang on to control too long.

1. Introduction

Recent financial research has examined the frequency of dual class shares, how dual class shares affect firm market value, and the relation between private benefits of control and the use of dual class shares. La Porta et al (1999), Claessens et al (2000), and Facchio and Lang (2002) show that dual class shares are common in many countries. Claessens et al (2002) document that separation of ownership from control, such as from dual class shares, is associated with lower firm market values. Bebchuk et al (2000) theoretically show how dual class shares and other mechanisms that separate ownership form control, such as pyramids and cross-holdings, increase the potential for private benefits of control. Grossman and Hart (1988) argue that dual class shares are optimal when the private benefits of control are large. However, Dyck and Zingales (2004) show that proxy measures for the private benefits of control are lower in countries where dual class are common. Therefore, the reason for a negative relation between the presence of dual class shares and firm market value remains an empirical question. In this paper, we examine the Swedish market for corporate control to shed light on this issue.

Sweden provides an advantageous venue to explore the impact of dual class shares on takeover activity and firm market value. In La Porta et al's (1999) examination of the 27 richest countries in the world, Sweden ranks first in the use of dual class shares. Furthermore, empirical studies that attempt to measure the private benefits of control generally find that the private benefits of control in Sweden are among the lowest in the world (see Coffee, 2001; Nenova, 2003; Dyck and Zingales, 2004). Finally, Cronqvist and Nilsson (2003) find that firms controlled by shareholders using dual class shares are valued at a discount. Thus, dual class shares are common in Sweden, they do not appear to be associated with pecuniary private benefits of control, but they appear to be associated with lower firm market value. Given these results, the question naturally arises what can explain the negative relation

between dual class shares and firm market value? The main contribution of our study is filling this void.

To shed light on the relation between firm market value and dual class shares we investigate the Swedish market for corporate control. Can the negative relation between firm market value and dual class shares be explained by lower takeover probability, i.e. do controlling shareholders use dual class shares to entrench themselves and therefore hang on to control too long? Cronqvist and Nilsson (2003) suggest that this is part of the explanation but do not perform any formal tests. Jarrell and Poulsen (1988) argue that dual class shares are used as antitakeover mechanisms. They find negative abnormal stock price returns at the announcement of dual class shares recapitalization in the U.S. Zingales (1995) shows how it may be optimal for the controlling owner to use dual class shares when selling the firm. By directly bargaining with the potential buyer over the price of the high voting stock the controlling owner maximizes the proceeds from the sale of control rights.

Other researchers have examined the probability of Anglo-Saxon firms being taken over.[1] Many U.S. studies explicitly investigate the impact of the ownership structure of the firm on the likelihood of being taken over.[2] However, equity ownership cannot discriminate between the alignment of interest effect, which increases the probability that the controlling owner will accept a takeover bid involving a premium, and entrenchment effects, which decrease the probability that the controlling owner will relinquish control. By including the controlling owner's equity fraction as well as the fraction of voting rights in excess of cash flow rights we extend earlier work on the relation between ownership structure and probability of takeovers.

[1] For the U.S. see e.g. Hasbrouck (1985) and Palepu (1986). For U.K. results, see Powell (1997).
[2] See e.g. Walkling and Long (1984), Walkling (1985), Morck et al (1989), Mikkelson and Partch (1989), Ambrose and Megginson (1992, Song and Walkling (1993), Shivdasani (1993) and Comment and Schwert (1995) and Espahbodi and Espahbodi (2003).

Furthermore, little is known about takeover probability and the impact of ownership structure on the likelihood of being taken over outside the Anglo-Saxon countries. The concentrated ownership structure of firms in other countries is very different from the typical dispersed ownership structure in the U.S. and the U.K. (La Porta et al, 1999). Typically, firms outside the Anglo-Saxon countries have a controlling shareholder, often a family that can block any takeovers attempts if they do not accept the terms of the bid.[3] Furthermore, a family-member is often the CEO in the firm. Stulz (1988) argues that when managers control a large fraction of the firm's voting rights, hostile takeovers are very difficult or even impossible. This study will explore how family control impacts the likelihood of the firm being taken over.[4]

Most of the existing financial economics literature on the likelihood of being taken over relies on binary choice models. We take another approach and estimate hazard functions of the takeover event. This has been done in the industrial organization literature by Dickerson et al (2002) and in the statistical literature by Jaggia and Thosar (1995) but as far as we know not in the financial economics literature. We use panel data where a majority of the firms are not taken over during our sampling period. The hazard function approach allows us to investigate whether, given that a firm has not been taken over up to a certain point, changes in particular characteristics (e.g. ownership) of the firm will lead to a change in the probability of takeover.

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[3] Sudarsanam (2003, p. 500) point out that factors such as corporate ownership structure and the absence of one share – one vote limit the incidence of hostile takeovers in many countries outside the U.S. and UK. He argues that "…*negotiated and friendly bids are perhaps the most important, if not the only, bid strategy available…"* All target firms in the non-partial takeovers in our sample have a large shareholder and large shareholders can block a takeover in Sweden. Together with the fact that we only look at successful takeovers suggests that all takeovers in our sample are friendly, i.e. the controlling shareholder did not block the takeover.

[4] There is a growing literature on how family control may affect firm behavior and firm performance: Burkart et al (2003) model the succession in a family firm owned and managed by its founder. When deciding to hire a professional manager or leaving control to his heir, the founder trades off that a professional is a better manager and the separation of ownership of control and resulting agency costs associated with an outside manager. Anderson et al (2003) find that the agency costs of debt are lower is founding family controlled firms. In terms of firm performance, Anderson and Reeb (2002) document that founding family ownership improves firm performance. However, Villalonga and Amit (2004) find that dual class shares, pyramids, and voting agreements reduce the founder premium.

We use an unbalanced panel of 200 large Swedish non-financial firms listed on the Stockholm Stock Exchange 1985-2000. The sample contains 1706 firm years. On average about 70 percent of the Swedish stock market capitalization is included in the sample each year. 47 firms were subject to successful non-partial tender offers.[5]

Our main results are as follows. First, family controlled firms have a higher hazard rate of takeover. Second, families significantly reduce the hazard rate of takeover by the use of dual class shares and firm leverage. Finally, we run fixed effects regression models with firm performance as dependent variable. Firm performance is approximated by Tobin's q. The results are remarkably similar to the estimated hazard rates. Family control per se is associated with higher Tobin's q. However, the performance of family firms is significantly reduced by the families' use of dual class shares. Furthermore, when families increase firm leverage, firm performance declines. We conclude that families entrench themselves by using dual class shares and by manipulating firm capital structure and this translates into lower firm value.

Our results are related to Claessens et al's (2002) results for East Asian firms. They document that dual class shares are associated with lower firm market values and interpret this in terms of entrenchment. Similarly for Sweden, Cronqvist and Nilsson (2003) document that controlling minority shareholders, who rely on dual class shares, are associated with worse firm performance. They argue that this is partly driven by the fact that dual class shares let the controlling shareholder hang on to control too long. Our results suggest that this is indeed the case.

Our results are also related to the literature on the size of the private benefits of control. Empirical studies that attempt to measure the private benefits of control generally find that the private benefits of control in Sweden are among the lowest in the world (see

[5] The relation between dual class shares and the Swedish market for corporate control has been investigated before by e.g. Rydqvist (1996), Doukas et al (2002) and Holmen and Knopf (2004). However, none of these studies investigate the risk of takeover.

Coffee, 2001; Nenova, 2003; Dyck and Zingales, 2004). Morck et al (2004) argue that entrenchment must stem from private benefits of control, i.e. if there are no private benefits of control the controlling shareholder has no incentives to entrench himself. Our results indicate that Swedish families entrench themselves by the use of dual class shares and firm leverage. The voting premium (Nenova, 2003) and the premium paid in negotiated control block transfers (Dyck and Zingales, 2004) most likely capture pecuniary private benefits of control. The pecuniary private benefits in Sweden are probably small due to high accounting standards, tax compliance, and juridical standards. We therefore interpret our results in terms of non-pecuniary private benefits (''amenity potential''[6]). Families entrench themselves in order to derive private benefits of control such as status, political influence, and power over people.

The rest of the paper is organized as follows. The next section outlines the methodology used when hazard rates are estimated. Section 3 describes the sample selection process, the data, defines the variables used in the empirical tests, and provides descriptive statistics. In section 4 we report our empirical results in terms of hazard rates of takeovers and firm performance. Section 5 summarizes and concludes.

2. Methodology

In our empirical investigation we would like to model factors explaining the likelihood of a firm being taken over. The methods developed in the subject of survival analysis appear to be the appropriate tools for our analysis (e.g. Cameron and Trivedi, 1996). Survival analysis deals with the modelling of time-to-event data, also known as transition data (or survival time data or duration data). We consider a time domain for firms, which we can partition into two

[6] The term ''amenity potential,'' suggested by Demsetz and Lehn (1985), refers to non-pecuniary private benefits of control. In our context it means utility to the families that does not come at the expense of firm profits.

mutually-exclusive states at each point in time - the status-quo state and the state of takeover. With the passage of time, firms transit (or do not transit) from one state to the other.

The empirical analysis of the data we have got calls for methods which directly account for the sequential nature of the data, and are able to handle censoring and incorporate time-varying covariates. Ordinary Least Squares (OLS) regressions of survival times and binary dependent variable regression models (e.g. logit, probit) with transition occurrence as the dependent variable have important shortcomings in handling those issues. OLS cannot efficiently utilize information from censored observations. Censored observations in our case are represented by the companies, which have not experienced the event of takeover while remaining at risk of such an event at the end of our observation period. Moreover, since OLS has only a single dependent variable it cannot efficiently handle time-varying covariates.

Finally, there might be clearly a behavioral aspect in the event of takeover we consider. Therefore it would be preferable to formulate the model in terms of transition between alternative states instead of in terms of completed spell lengths.

Binary dependent variable models can overcome most of the problems related to OLS but fail to account efficiently for the differences in time each firm in our sample was subject to takeover risk.

The solution to the problems mentioned above in our context is to model survival times of the firms indirectly, via the "hazard rate of takeover". The hazard rate captures firms' chances of being taken over at each instant (or time period) conditional on survival up to that point.

The unconditional probability of not being taken over from the start of the observation period (t=0) until time $t>0$ for firm i in our sample is equal to $\lambda_i(t)dt$, where $\lambda_i(t)$ is the hazard function defined by the equation

$$\lim_{dt \to 0^+} \frac{\Pr\left[t + dt \geq T_i \geq t \,\middle|\, T_i \geq t\right]}{dt} = \lambda_i(t)$$

and *dt* is an infinitesimal interval of time. Alternatively, $\lambda_i(t)dt$ can be interpreted as an unconditional probability of a firm *i* being taken over in tiny interval of time [*t*, *t*+*dt*].

The (instantaneous) hazard rate function for firm *i* at time $t>0$ is assumed to take the proportional hazards form

$$\lambda_i(t) = \lambda_0(t)\exp(X_{it}'\beta)$$

where $\lambda_0(t)$ is the unknown baseline hazard at time *t* which may take a parametric or non-parametric form[7], and X_{it} is a vector of covariates summarizing observed differences between firms at time *t*; and β is a vector of parameters to be estimated.

Although survival of firms occurs in continuous time, our data calls for the discrete time specification of the model given that the spell length is observed only in one-year intervals. In other words, the underlying continuous durations are only observed in disjoint time intervals $[0 = a_0, a_1)$, $[a_1, a_2)$, $[a_2, a_3)$, … , $[a_{k-1}, a_k = \infty)$. Our covariates (e.g. firms' characteristics) may vary between time intervals but are assumed to be constant within each of them.

In the discrete case, hazard of exit in the *j*th interval is given by

$$h_j(X_{it}) = \Pr\{T \in [a_{j-1}, a_j) \mid T > a_{j-1}\}$$

In our case all intervals have length of one year, so the recorded duration for each firm *i* corresponds to the interval $[t_{i-1}, t_i)$. Firms are recorded as either being taken over during the interval, or as still remaining a potential takeover targets. The former group, contributing completed spell data, are identified using censoring indicator $c_i=1$. For the latter group, contributing right-censored spell data, $c_i=0$. The number of intervals comprising a censored spell is defined here to include the last interval within which the firm is observed.

The log-likelihood can be written in terms of the hazard function as:

[7] Non-parametric specification for the duration dependency of the hazard rate tend to be more reliable than parametric one because it does not tightly constrain the general shape of the baseline hazard function. Moreover, conclusions about the significance of unobserved heterogeneity are more reliably drawn when a flexible specification for the baseline hazard has been used.

$$LogL = \sum_{i=1}^{n} \left\{ c_i \log \left\{ h_{it}(X_{it_i}) \prod_{s=1}^{t_i - 1} [1 - h_s(X_{is})] \right\} + (1 - c_i) \log \left\{ \prod_{s=1}^{t_i} [1 - h_s(X_{is})] \right\} \right\}$$

where the discrete time hazard in the *j*th interval is

$$h_j(X_{ij}) = 1 - \exp\left[- \exp(X_{ij}' \beta + \gamma_j) \right] \text{ with } \gamma_j = \log \int_{a_{j-1}}^{a_j} \lambda_0(\tau) d\tau .$$

This specification allows for a fully non-parametric baseline hazard with a separate parameter for each duration interval[8]. Alternatively, the γ_j may be described by some semi-parametric or parametric function, e.g. *θ(j)*.

If we define an indicator variable y_{it}=1 if firm *i* is taken over during the interval [*t-1*,*t*], y_{it}=0 otherwise, then the log-likelihood can be rewritten in sequential binary response form:

$$\log L = \sum_{i=1}^{n} \sum_{j=1}^{t_i} \{ y_{ij} \log h_j(X_{ij}) + (1 - y_{ij}) \log [1 - h_j(X_{ij})] \}$$

This is one specification of log-likelihood, which we estimate.

Our second specification incorporates a Gamma distributed random variables to describe unobserved (or omitted) heterogeneity between individuals.

The instantaneous hazard rate is now specified as

$$\lambda_i(t) = \lambda_0(t) \varepsilon_i \exp(X_{it}' \beta) = \lambda_0(t) \exp(X_{it}' \beta + \log(\varepsilon_i))$$

where ε_i is a Gamma distributed random variable with unit mean and variance $\sigma^2 \equiv v$, and the discrete-time hazard function is now

$$h_j(X_{ij}) = 1 - \exp\left[- \exp(X_{ij}' \beta + \gamma_j + \log(\varepsilon_i)) \right]$$

The likelihood function of the second model is:

$$LogL = \sum_{i=1}^{n} \log \{ (1 - c_i) A_i + c_i B_i \}$$

[8] This only possible if the interval-specific baseline hazard can be identified meaning that the duration interval should contain events of takeover.

where

$$A_i = \left[1 + v \sum_{j=1}^{t_i} \exp\left[X_{ij}' \beta + \theta(j) \right] \right]^{-(1/v)} \text{ and}$$

$$B_i = \left[1 + v \sum_{j=1}^{t_i - 1} \exp\left[X_{ij}' \beta + \theta(j) \right] \right]^{-(1/v)} - A_i, \text{ if } t_i > 1, \text{ or} = 1 - A_i, \text{ if } t_i = 1$$

where $\theta(j)$ is a function describing duration dependence in the hazard rate. The first model's log-likelihood function is the limiting case as $v \to 0$.

3. Data

In this section we first outline the sample selection process and compare our sample to the population of takeovers on the Stockholm Stock Exchange. In part B we provide descriptive statistics.

A. Sample Selection

We start with an unbalanced panel dataset containing accounting data for 211 large non-financial Swedish firms listed on the Stockholm Stock Exchange1985-2001. The accounting data is collected from the Findata Trust database. The sample contains the waste majority of the largest non-financial public firms during this time-period. Some large firms that were only listed for one or two years before delisting are not included in the sample.

The accounting data is combined with ownership data from Sundqvist (1985-1993) and Sundin and Sundqvist (1994-2001). This source reports the 25 largest owners in all listed firms as of January each year. After the collection of ownership data the sample is reduced to 200 firms and 1706 firm years. Nine firms in the original dataset are dropped since they carry different names in the Findata Trust database and the Sundin and Sundqvist books and we have not been able to track the name changes.

A first rough estimate of takeover activity is also collected from Sundin and Sundqvist (1986-2001) since they report all delistings. However, they do not distinguish between actual takeovers, minority buyouts, and going private transactions. We are only interested in transactions where there have been a change in control, i.e. not the minority buyouts and going private transactions. To separate going private transactions from actual takeovers we use daily newspapers.[9] We also examine the ownership structure of the firm the years preceding the delisting. If a firm is delisted in year *t* since a bidder has acquired 100 percent of the firm's equity and votes, and that investor was not the largest voteholder in the beginning of year *t-1* we define the event as a successful non-partial takeover. If the investor was the largest voteholder in the beginning of year *t-1* we define the event as a going private transaction and do not include it in our sample.

In Sweden, almost all non-partial takeovers are preceded by a public tender offer (Bergström and Rydqvist, 1989). According to Swedish law, any shareholder or group of shareholders in the target, who has 10% of the shares, can block a merger. Therefore, the terms of the tender offer are often negotiated between the bidder and the large shareholders of the target before the public announcement. When the large blockholders have accepted the terms of the bid, a follow-up tender offer is made for all target shares, including the blockholders' shares (Rydqvist, 1993). Most bids are non-partial and are contingent upon 90% of the shareholders accepting the offer. The fact that we only look at successful takeovers suggests that all takeovers in our sample are friendly.

Thus, our hypothesis is not that dual class shares hinder hostile takeovers since hostile takeovers could in principle be blocked already at 10 percent of firm equity. The average controlling shareholder in our sample holds more than 30 percent of firm equity. Instead, our hypothesis is that dual class shares make friendly takeovers more costly. We conjecture that

[9] Part of this data was provided by Kristian Rydqvist.

the risk of a successful non-partial takeover is reduced with the controlling owner's number of excess votes, i.e. number of voting rights in excess of number of cash flow rights.

The bidder is not allowed to discriminate between the controlling shareholder's and the minority shareholders' low voting stock. However, the bidder can discriminate between high voting stock, mainly held by the controlling shareholder, and low voting stock, mainly held by minority shareholders. Therefore, by requiring a larger premium on control rights associated with the high voting stock, the controlling shareholder makes a takeover more costly for the bidder. Zingales (1995) shows how it may be optimal for the controlling owner to use dual class shares when selling the firm. By directly bargaining with the potential buyer over the price of the high voting stock the controlling owner maximizes the proceeds from the sale of control rights.

Our final takeover sample consists of 47 successful non-partial takeovers. In our total sample 24 firms were subject to minority buyouts, three firms went bankrupt and one firm was restructured due to financial distress.

Table 1 panel A summarizes our sample. On average our sample contains roughly 100 firms each year, of which 3 firms are taken over each year. Our sample comprises roughly 70 percent of the Swedish stock market capitalization. However, column 5 indicates that we only include roughly 25 percent of all successful non-partial takeovers on the Stockholm Stock Exchange during this time period.

In panel B the frequency of non-partial takeovers bids on Stockholm Stock Exchange is summarized. On average 13 firms are taken over each year. Thus, roughly five percent of the firms listed on the Stockholm Stock Exchange are taken over each year. In percentage of market value, the number drops to three percent, i.e. three percent of the market value on the Stockholm Stock Exchange is taken over each year. The difference indicates that the typical takeover involves a small firm. In market value terms (column 6 in panel A) our sample on

average comprises more than 50 percent of the takeovers on the Stockholm Stock Exchange during the investigated period.

Our sample contains the large non-financial firms, i.e. takeovers of financial firms and smaller firms are not included. For example, we do not include four big takeovers of banks in 1990, four big takeovers of financial institutions in 1997, and three takeovers of highly valued information technology firms in 2000.[10] As far as we know, the only major non-partial takeover of a large Swedish non-financial firm listed on the Stockholm Stock Exchange not included in our sample is the takeover of Pharmacia by the U.S. pharmaceutical firm Upjohn in 1995. The new Pharmacia was listed in 1993 and then delisted in 1995. Hence, there is only one year of complete accounting data for Pharmacia as a listed firm before delisting. Therefore, Pharmacia was never included in the original sample.

B. Descriptive Statistics

In Table 2 we provide descriptive statistics for the 200 firms and 1706 firm years in our sample. The median controlling shareholder holds 29 percent of the cash flow rights (*Equity*) and almost 50 perrcent of the voting rights (*Votes*). The difference is a result of the high frequency of dual class shares. 79 percent of the firms in our sample have dual class shares (see panel B). On average, the largest shareholder holds 16.6 percent *Excess Votes*, i.e. voting rights in excess of cash flow rights. The median firm has assets with a book value of 1525 million SEK (*Size*), is 47 years old (*Age*), invests an amount equal to 8.5 percent of total assets (*Investment*), generates a return of 12.4 percent return on total assets (*Profitability*), has financed 23.7 percent of total assets with long term debt (*Leverage*), has 56.4 percent of total assets in short term assets (*Liquidity*), and has a *Tobin's q* of 1.146. *Tobin's q* is defined as the

[10] Banks in 1990: Nordbanken, Skånska banken, Wermlandsbanken, Skaraborgsbanken; Financial Institutions in 1997: Stadshypotek, Trygg Hansa, Föreningsbanken, Östgöta Enskilda Bank; Information Technology firms in 2000; Cell, Connecta, Entra Data.

sum of the market value of equity and book value of total debt divided by the book value of total assets.

The sample is split by whether the firm was subject to a successful non-partial tender offer 1985-2000 (47 firms). All firm years (N=425) prior to the successful non-partial takeover are classified as belonging to a takeover target. The median difference test suggests that the controlling owners in takeover targets have more cash flow rights than controlling owners that are not taken over. Given the premium paid in takeovers, the larger the equity stake the more the controlling shareholder has to gain from relinquishing control, ceteris paribus. In the average firm not taken over, the controlling shareholder has more *Excess Votes* than the average controlling shareholder being taken over. This casual observation suggests that dual class shares work as a successful anti-takeover device. The medians are however not statistically different.

The median firm being taken over is larger than the median firm not being taken over.[11] And firms being taken over are older than firms not being taken over. The mean difference in terms *Tobin's q* is driven by extreme values – the median difference suggests no significant difference.

In panel B we report statistics for three binary variables. Two thirds of the firms in our sample have a family, an individual or a group of individuals as controlling shareholder (*Family*). Almost 80 percent of the firms have dual class shares. In 28.2 percent of the firms, the controlling shareholders hold all A-shares and only the B-shares are traded on the Stockholm Stock Exchange. 85 percent of the family firms have dual class shares while roughly 69 percent of non-family firms have dual class shares. The difference is statistically highly significant.

[11] Note that mean differences are tested on the natural logarithm of *Firm Size, Firm Age* and *Tobin's q*. The t-test on the mean differences in the natural logarithm of *Firm Size* indicates that firms being takeover targets are larger than firms not being takeover targets even if average *Firm Size* per se is larger for firms not being takeover targets.

Family are less likely to be taken over according to a simple proportion test. Dual class firms are more likely to be taken over. These statistics indicate that it is not dual class shares per se that work as anti-takeover mechanisms. However, the degree to which the controlling owner separates his ownership of voting rights from his ownership of cash flow rights (*Excess Votes*) might be related to the probability of a successful takeover. Furthermore, if the controlling shareholder holds all A-shares, the firm is also more likely to be taken over. This is consistent with Zingales' (1995) argument that it is easier for the controlling owner to receive an acceptable compensation for his controlling right if the control block is complete.

4. Empirical results

In this section we first estimate the risk of takeovers using the hazard regressions models. We then run fixed effect regressions with Tobin's q as dependent variable to test whether firm market value is related to the same variables that prove to be related to the probability of takeovers.

A. The probability of a takeover

In this section we report the results of estimation of discrete time proportional hazards regression models with the hazard rate of takeover as dependent variable.[12] We include several independent variables. Families most likely hold under-diversified portfolios to a larger extent than non-family owners. They therefore have incentive to sell their control block and diversify their portfolios. However, families most likely derive more private benefits of control than non-family owners. This would suggest that they have less incentive to sell their control block. It is an empirical question whether the incentives to diversify the family's

[12] The models are estimated using pgmhaz8 procedure of STATA 8.2. For each specification, two models are estimated by maximum likelihood methods: (1) the Prentice-Gloeckler (1978) model; and (2) the Prentice-Gloeckler (1978) model incorporating a gamma mixture distribution to summarize unobserved individual heterogeneity, as proposed by Meyer (1990). We estimate fully non-parametric specification for the baseline hazard with four interval-specific baseline hazards.

portfolio is stronger than the incentives to hang on to the private benefits of control. We therefore include a *Family* dummy variable in all estimated models. It is equal to one if a family, an individual or a group of individuals control the firm, and zero otherwise.

Jarrell and Poulsen (1988) argue that dual class shares are used as anti-takeover mechanisms. Furthermore, Zingales (1995) models how the controlling owner can maximize the proceeds from the sale of control by using dual class shares. This means that the takeover is more costly for the potential bidder and a takeover risk is reduced. We therefore include the controlling owner's *Excess Votes* as an independent variable.

Previous studies that examine the relation between the risk of takeovers and ownership structure use the manager's or the largest shareholder's equity fraction. This variable captures both alignment of interest effects and entrenchment effects. Since entrenchment effects should be captured by *Excess Votes*, we include the controlling owner's fraction of cash flow rights (*Equity*) to capture the alignment of interest effect. We also include interaction terms between *Family* and *Non-family* control and *Excess Votes* and *Equity*, respectively. If families derive larger private benefits of control, any entrenchment effects should be more pronounced for families.

Firm Size, *Firm Age*, *Investment* level, *Profitability* (ROA), *Leverage*, and *Liquidity* are included as control variables. These are roughly the same control variables as the variables used by e.g. Palepu (1986), Ambrose and Megginson (1992), and Dickerson et al (2002) when estimating the probability of takeovers.

Table 3 reports the results of estimation of proportional hazards regression models with non-parametric baseline hazard specification. Accounting for the effect of unobserved heterogeneity across firms on the takeover hazard proves to be an appropriate strategy. The likelihood ratio test of the size of the variance of the gamma mixture distribution suggests that unobserved heterogeneity is significant in all model specifications. Although parameters

significance does not change greatly with the inclusion of unobserved heterogeneity, comparison of models reveals that the impact of covariates on the hazard rate of takeover tend to be larger in the models accounting for unobserved heterogeneity. The later result is not unexpected as it is in line with the predictions of econometric theory (e.g. Lancaster, 1990). Non-parametric duration dependency of hazard rate in all models is significant and positive.[13]

According to our results, family-controlled companies experience a greater hazard of takeover relative to other firms; the result is significant in all models where interaction terms between *Family* and *Excess Votes* and *Equity*, respectively, are included. Nevertheless, family-controlled firms are more likely to adopt strategies that decrease the probability of successful takeover. Unlike in other companies, the increase in the wedge between voting power and equity share of ultimate family owners significantly reduces takeover hazard. The *Family*Excess Votes* interaction term is negatively significant.

As suggested by Stulz (1988) and empirically documented in the U.S. by e.g. Palepu (1986), an increase in leverage of Swedish companies works as a successful anti-takeover device. Yet, the comparison of M1 and M2 with M5 and M6 in Table 3 reveal that the negative effect of leverage on the probability of a takeover is driven by the family-controlled firms. The *Family*Leverage* interaction term is negatively significant in M5 and M6. Thus only family controlled firms seem to leverage up to avoid a takeover.

Our results also indicate that a positive effect of an ultimate shareholder's equity stake on takeover hazard (see Model 1 and 2 in Table 3) are driven by non-family controlled firms. The equity stake of family owners does not have any effect on the probability of takeover (see Models 3-6 in Table 3).

A somewhat surprising finding arising from our results is that ownership stake, voting power, and leverage are the only significant determinates of successful takeover.

[13] We do not report the coefficients of non-parametric baseline hazard.

Control factors such as firm's size and age, profitability, investments, liquidity, Tobin Q, and calendar effects do not have any significant effect on the takeover hazard in our model.

B. Firm Market Value

The results in table 3 indicate that families use dual class shares to entrench themselves, i.e. the risk of takeover is significantly reduced with the controlling family's excess votes. In this section we explore whether the use of dual class shares also affect firm market value. Our hypothesis is that the reduced risk of a takeover is discounted by investors and therefore we expect to find a negative relation between families using dual class shares and firm market value.

Firm market value is approximated by the natural logarithm of Tobin's q (Allayanis and Weston, 2001). The same independent variables as in the hazard rate models in table 3 are used. We rely on fixed effect regressions as suggested by Himmelberg et al (1999). Fixed effect estimates adjust for the possibility that unobservable firm-specific factors influence the level of leverage in each individual firm and are equivalent to estimating OLS models and including an indicator variable for each firm. Zhou (2001) argues that ownership variables vary significantly across firms but relatively little within firms. It is therefore unlikely that within (fixed effects) estimates panel tests will show any relations between ownership and performance even when it does in fact exist. However, we have 16 years of data and some variations in the ownership variables. Furthermore, an F-test indicates that we indeed have firm specific fixed effects. Pooling the data and estimating OLS without firm dummies would result in biased estimates. Finally, the Hausman test rejects that the firm specific fixed effects are uncorrelated with the regressors, which makes random effect estimations unsuitable.

The results are reported in table 4. In M1 *Excess Votes* is negatively significant in line with our hypothesis and earlier results (Claessens et al, 2002; Cronqvist and Nilsson, 2003).

However, table 3 indicates that it is only for families that *Excess Votes* is associated with a reduced risk of a takeover. In M2 we differentiate between the family control and non-family control. The *Family*Excess Votes* interaction term is negatively significant while the *Nonfamily*Excess Votes* is insignificant.

When the *Excess votes* and *Equity* interaction terms are included, the *Family* indicator variable becomes positively significant. Thus, family control per se is associated with higher market value, consistent with U.S. results (Anderson and Reeb, 2003). However, when the family relies on dual class shares to keep control the positive effect of family control is significantly reduced. Similar results are reported for Fortune 500 firms controlled by families (Villalonga and Amit, 2004).

The Equity variable is negatively significant in M1. When *Family*Equity* and *Nonfamily*Equity* interaction terms are included in M2 *Family*Equity* remains significant while the *Nonfamily*Equity* is insignificant. The alignment of interest effect suggests that Equity should be positive (Jensen and Meckling, 1976). We interpret the negative sign on *Family*Equity* as an additional entrenchment effect even though the variable is insignificant in the hazard models in table 3. At a takeover, any negative effect on the risk of a takeover stemming from the family's equity ownership in the firm is negated by the effect of the premium paid in takeovers. The more equity the family owns, the more incentive it has to accept a takeover bid with a significant premium, ceteris paribus.

Leverage is negatively significant at the 10% level in M1 and M2. When we include *Family*Leverage* and *Nonfamily*Leverage* interaction terms in M3 *Family*Leverage* is negatively significant while *Nonfamily*Leverage* is insignificant. This is the same pattern as in the estimated hazard models in table 3. Thus, it appears as if families use a combination of dual class shares and firm leverage to entrench themselves and that both mechanisms are discounted by outside investors.

Firm value is negatively related to *Firm Size* and *Firm Age* while positively related to *Profitability* and *Investment* level. This corroborates earlier results (see e.g. Anderson and Reeb, 2003; Cronqvist and Nilsson, 2003). The *Liquidity* variable is insignificant.

Summing up the main results in table 3 and table 4: Family control per se is associated with a higher risk of takeover and higher market value; however, when the family uses dual class shares to entrench themselves, both the risk of takeover and firm market value decrease; same thing with leverage in family controlled firm -- when family firms increase their leverage, both the risk of takeover and firm market value decrease.

5. Conclusion

In this paper we investigate the Swedish market for corporate control and test whether the negative relation between firm market value and dual class shares can be explained by lower takeover probability, i.e. do controlling shareholders use dual class shares to entrench themselves and therefore hang on to control too long? And is this behaviour discounted by investors?

We estimate hazard functions on an unbalanced panel of large Swedish non-financial firms listed on the Stockholm Stock Exchange 1985-2000. In all test we distinguish between family control and non-family control. First, we find that family controlled firms have a higher hazard rate of takeover. Second, families significantly reduce the hazard rate of takeover by the use of dual class shares and firm leverage. Finally, we run fixed effects regression models with Tobin's q as dependent variable. Family control per se is associated with higher Tobin's q. However, the performance of family firms is significantly reduced by the families' use of dual class shares. Furthermore, when families increase firm leverage, firm performance declines. We conclude that families entrench themselves by using dual class shares and by manipulating firm capital structure and this translates into lower firm value.

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Table 1
Frequency of Takeovers of Large Swedish Non-Financial Firms Listed on the Stockholm Stock Exchange 1985-2000

In this table we provide statistics on the number of sample firms and the frequency of successful non-partial tender offers on Swedish non-financial firms listed on the Stockholm Stock Exchange 1986-2001. The sample consists of 200 firms and 1706 firm years. 47 firms were subject to successful non-partial tender offers.

Panel A: Our sample

Year	1. Number of Sample Firms	2. Percentage of market capitalization	3. Number of Takeovers of Sample Firms	4. Percentage of sample firms being taken over	5. Percentage of taken over firms included in sample	6. Percentage of total value taken over included in sample
1986	80	60.3	0	0.0	0.0	0.0
1987	89	70.7	1	1.1	20.0	58.5
1988	91	66.9	1	1.1	6.3	38.9
1989	88	60.1	1	1.1	12.5	64.0
1990	95	73.1	2	2.1	16.7	21.1
1991	95	70.1	2	2.1	25.0	81.3
1992	92	71.2	1	1.1	33.3	17.6
1993	93	72.8	2	2.1	66.7	99.9
1994	95	78.4	2	2.1	20.0	36.4
1995	110	81.1	0	0.0	0.0	0.0
1996	118	78.3	5	4.2	50.0	93.9
1997	133	81.2	5	3.7	29.4	43.4
1998	141	75.6	1	0.7	9.1	95.2
1999	140	70.5	12	8.5	46.2	75.6
2000	127	53.0	6	4.6	25.0	11.7
2001	119	70.5	6	4.9	37.5	79.9

Panel B: Stockholm Stock Exchange

Year	1. Number of listed firms beginning of the year	2. Market Capitalization beginning of the year	3. Number of successful non-partial takeovers during the year	4. Percentage of listed firms subject to successful non-partial takeovers	5. Percentage of market capitalization subject to successful non-partial takeovers
1986	246	302	20	8.1	2.8
1987	238	441	5	2.1	0.8
1988	257	436	16	6.2	2.3
1989	239	613	8	3.3	3.5
1990	241	766	12	5.0	0.7
1991	218	544	8	3.7	2.5
1992	200	548	3	1.5	0.3
1993	184	547	3	1.6	1.6
1994	193	892	10	5.2	1.4
1995	213	1026	14	6.6	4.2
1996	209	1208	10	4.8	1.9
1997	218	1834	17	7.8	5.1
1998	236	2102	11	4.7	12.9
1999	243	2354	26	10.7	3.1
2000	268	3781	24	9.0	2.5
2001	287	3300	16	5.6	2.3

Table 2
Descriptive Statistics Large Swedish Non-Financial Firms 1985-2000

In this table we provide summary statistics for the 200 firms and 1706 firm years in our sample. The sample is split by whether the firm was subject to a successful non-partial tender offer 1985-2000 (47 firms). All firm years (N=425) prior to the successful non-partial takeover are classified as belonging to a takeover target. *Equity* is defined as the controlling shareholder's (largest voteholder) fraction of cash flow rights in the firm. *Votes* is defined as the controlling shareholder's fraction of voting rights in the firm. *Excess Votes* is defined as *Votes* minus *Equity*. *Firm Size* is defined as the book value of total assets in Million SEK. *Firm Age* is defined as the number of years since the firm was founded. *Investment* is defined as total capital expenditure divided by the book value of total assets. *Profitability* is equal to Earnings Before Interest, Taxes, and Depreciation (EBITD) di8vided by the book value of total assets. *Leverage* is equal to the value of long term debt divided by the book value of total assets. *Liquidity* is equal to the value of short term assets divided by the book value of total assets. *Tobin's q* is defined as the sum of market value of equity and book value of debt divided by the book value of total assets. *Family* is equal to one if the ultimate controlling shareholder is a family, an individual, or a group of individuals, and zero otherwise. *Dual Class Shares* is equal to one if the firm has issued shares with differential voting rights, and zero otherwise. *Controlling owner holds all A-Shares* is equal to one if the controlling owner holds all A-shares (high voting shares) and zero otherwise. Median Difference tested by means of Wilcoxon-Ranksum test. ***. **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Continuous variables

	Total Sample, N=1706		Not Takeover Targets, N=1281		Takeover Targets, N=425		Difference	
	Mean	Median	Mean	Median	Mean	Median	t-test	Ranksum test
Equity	0.323	0.290	0.320	0.290	0.335	0.310	1.460	2.213**
Votes	0.489	0.490	0.489	0.500	0.489	0.480	0.045	0.171
Excess Votes	0.166	0.150	0.169	0.150	0.153	0.140	1.947*	1.494
Firm Size[1]	9561	1525	10175	1327	7713	2883	2.061**	2.683***
Firm Age[1]	59	47	54	46	74	59	2.965***	2.823***
Investment	0.112	0.085	0.112	0.083	0.113	0.090	0.007	0.703
Profitability	0.081	0.124	0.078	0.124	0.089	0.125	0.421	0.447
Leverage	0.261	0.237	0.261	0.227	0.262	0.253	0.118	1.579
Liquidity	0.539	0.564	0.537	0.553	0.545	0.592	0.651	1.053
Tobin's q[1]	1.538	1.146	1.609	1.147	1.325	1.143	2.739***	0.479

[1] mean difference tested on the natural logarithm of these variables.

Panel B: Binary variables

	Total Sample, N=1706 Proportion	Not Takeover Targets, N=1281 Proportion	Takeover Targets, N=425 Proportion	Difference Proportion test
Family	0.673	0.691	0.621	2.655***
Dual Class Shares	0.789	0.770	0.849	3.493***
Controlling owner holds all A-shares	0.282	0.268	0.327	2.353**

Table 3
Estimated Models of the Hazard Rate of Takeover

In this table we report models estimating the hazard rate of the firm being subject to a successful non-partial tender offer. The sample consists of 200 firms and 1706 firm years. 47 firms were subject to successful non-partial tender offers. We report models without unobserved heterogeneity (M1, M3, and M5) and with Gamma distributed unobserved heterogeneity (M2, M4, and M6), respectively. Coefficients are reported with z-statistics in parenthesis. ***. **, and * denote significance at the 1%, 5%, and 10% level, respectively. *Family* is equal to one if the ultimate controlling shareholder is a family, an individual, or a group of individuals, and zero otherwise. *Equity* is defined as the controlling shareholder's (largest voteholder) fraction of cash flow rights in the firm. *Votes* is defined as the controlling shareholder's fraction of voting rights in the firm. *Excess Votes* is defined as *Votes* minus *Equity*. *Firm Size* is defined as the book value of total assets in Million SEK. *Firm Age* is defined as the number of years since the firm was founded. *Investment* is defined as total capital expenditure divided by the book value of total assets. *Profitability* is equal to Earnings Before Interest, Taxes, and Depreciation (EBITD) divided by the book value of total assets. *Leverage* is equal to the value of long term debt divided by the book value of total assets. *Liquidity* is equal to the value of short term assets divided by the book value of total assets. *Tobin's q* is defined as the sum of market value of equity and book value of debt divided by the book value of total assets, T80 is equal to one for the years before 1990 and zero otherwise. The duration dependency of hazard rate is captured by four dummy variables corresponding to four-year duration intervals. Ln denotes the natural logarithm.

	M1 Without Unobserved Heterog.	M2 Gamma Dist. Unobserved Heterog.	M3 Without Unobserved Heterog.	M4 Gamma Dist. Unobserved Heterog.	M5 Without Unobserved Heterog.	M6 Gamma Dist. Unobserved Heterog.
Family	-0.136 (0.40)	-0.389 (0.84)	1.620 (2.17)**	2.527 (2.23)**	2.128 (2.38)**	2.913 (2.28)**
Equity	1.426 (1.90)*	2.667 (2.20)**				
Excess Votes	-1.658 (1.36)	-1.063 (0.54)				
*Family*Equity*			0.449 (0.47)	1.100 (0.81)	0.508 (0.53)	1.209 (0.87)
*NonFamily*Equity*			3.140 (2.71)***	6.157 (2.71)***	3.363 (2.81)***	6.179 (2.73)***
*Family*Excess Votes*			-3.869 (2.58)***	-3.750 (1.77)*	-3.822 (2.55)**	-3.841 (1.82)*
*Nonfamily*Excess Votes*			2.749 (1.48)	6.209 (1.95)*	2.814 (1.51)	5.992 (1.89)*
Leverage	-1.822 (1.79)*	-2.973 (1.92)*	-1.680 (1.66)*	-2.962 (1.93)*		
*Family*Leverage*					-2.514 (1.93)*	-3.529 (1.99)**
*Nonfamily*Leverage*					-0.511 (0.36)	-1.743 (0.77)
Ln(Firm Age)	-0.023 (0.13)	-0.048 (0.19)	0.011 (0.07)	-0.069 (0.25)	0.011 (0.06)	-0.055 (0.20)
Ln(Firm Size)	0.046 (0.49)	0.162 (0.90)	0.017 (0.18)	0.110 (0.63)	0.019 (0.19)	0.105 (0.61)
Profitability	0.965 (0.41)	0.636 (0.26)	1.076 (0.48)	0.941 (0.38)	1.005 (0.46)	0.865 (0.36)
Investment	-0.700 (0.39)	-0.726 (0.36)	-1.008 (0.55)	-1.131 (0.55)	-1.070 (0.59)	-1.134 (0.56)
Liquidity	0.299 (0.38)	0.897 (0.72)	0.177 (0.22)	0.435 (0.37)	0.063 (0.08)	0.364 (0.31)
Ln(Tobin's q)	-0.256 (0.74)	-0.507 (0.89)	-0.347 (0.98)	-0.580 (1.05)	-0.361 (1.04)	-0.586 (1.07)
T80	-0.044 (0.08)	0.051 (0.08)	-0.016 (0.03)	0.213 (0.34)	-0.003 (0.00)	0.205 (0.33)
LR test of frailty		$\chi^2(3) = 4.31$ [.0190]		$\chi^2(3) = 6.41$ [0.006]		$\chi^2(3) = 5.72$ [0.008]
Non-parametric baseline hazard	$\chi^2(1) = 16.66$ [0.008]	$\chi^2(1) = 11.61$ [0.009]	$\chi^2(1) = 17.57$ [0.005]	$\chi^2(1) = 14.48$ [0.002]	$\chi^2(1) = 17.69$ [0.005]	$\chi^2(1) = 14.28$ [0.003]
Log-likelihood value	-192.24	-190.09	-187.92	-185.01	-186.94	-184.08
AIC	0.243		0240		0.240	

Table 4
Fixed Effect Models with Tobin's q as Dependent Variable

In this table we report fixed effect models with the natural logarithm of *Tobin's q* as dependent variable. *Tobin's q* is defined as the sum of market value of equity and book value of debt divided by the book value of total assets. The sample consists of 200 firms and 1706 firm years. Coefficients are reported with heteroscedastic robust t-values in parenthesis. ***. **, and * denote significance at the 1%, 5%, and 10% level, respectively. *Family* is equal to one if the ultimate controlling shareholder is a family, an individual, or a group of individuals, and zero otherwise. *Equity* is defined as the controlling shareholder's (largest voteholder) fraction of cash flow rights in the firm. *Votes* is defined as the controlling shareholder's fraction of voting rights in the firm. *Excess Votes* is defined as *Votes* minus *Equity*. *Firm Size* is defined as the book value of total assets in Million SEK. *Firm Age* is defined as the number of years since the firm was founded. *Investment* is defined as total capital expenditure divided by the book value of total assets. *Profitability* is equal to Earnings Before Interest, Taxes, and Depreciation (EBITD) divided by the book value of total assets. *Leverage* is equal to the value of long term debt divided by the book value of total assets. *Liquidity* is equal to the value of short term assets divided by the book value of total assets. Ln denotes the natural logarithm.

	M1	M2	M3
Family	0.008	0.093	0.129
	(0.29)	(2.01)**	(2.10)**
Equity	-0.203		
	(-2.41)**		
Excess Votes	-0.224		
	(-2.03)**		
*Family*Equity*		-0.235	-0.227
		(-2.34)**	(-2.27)**
*NonFamily*Equity*		-0.139	-0.126
		(-1.43)	(-1.31)
*Family*Excess Votes*		-0.365	-0.362
		(-2.77)***	(-2.74)***
*Nonfamily*Excess Votes*		0.223	0.225
		(1.36)	(1.38)
Leverage	-0.128	-0.132	
	(-1.80)*	(-1.87)*	
*Family*Leverage*			-0.178
			(-2.26)**
*Nonfamily*Leverage*			-0.049
			(-0.48)
Ln(Firm Age)	-0.146	-0.137	-0.134
	(-3.30)***	(-3.03)***	(-2.96)***
Ln(Firm Size)	-0.062	-0.063	-0.062
	(-2.15)**	(-2.20)**	(-2.16)**
Investment	0.235	0.225	0.225
	(2.75)***	(2.69)***	(2.69)***
Profitability	0.765	0.770	0.759
	(4.02)***	(4.03)***	(3.69)***
Liquidity	0.073	0.037	0.032
	(0.80)	(0.41)	(0.35)
Year Dummies	*Yes*	*Yes*	*Yes*
Adj R^2	0.682	0.684	0.684
p-value of F-test for fixed effects	0.000	0.000	0.000
p-value Hausman Test	0.000	0.001	0.001