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Do anti-takeover devices affect the takeover likelihood or the takeover premium?*

MARTIN HOLMÉN^a, EUGENE NIVOROZHKIN^b and RAKESH RANA^c

Abstract

In this paper we use Heckman selection models to analyse the relation between the likelihood of the firm becoming a takeover target, the takeover premium, and the use of anti-takeover devices. Ordinary least squares regressions suggest that anti-takeover devices, especially dual class shares, are associated with a higher takeover premium. However, we also document that anti-takeover devices reduce the likelihood that the firm will be taken over. When we control for the fact that takeover targets are selected, we do not find a significant relation between the takeover premium and dual class shares. Hence, our results suggest that the takeover premium is indeed influenced by private information about the likelihood of takeover.

Keywords: takeover likelihood, takeover premium, Heckman selection, anti-takeover devices, dual class shares

JEL Classification: G34; G32

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^a Centre for Finance, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden, and Department of Finance and Statistics, Hanken School of Economics, Arkadiagatan 22, 00101 Helsinki, Finland. E-mail: martin.holmen@cff.gu.se

^b Corresponding author. SSEES, University College London, Gower Street, London WC1E 6BT, UK. E-mail: e.nivorozhkin@ucl.ac.uk

^c Centre for Finance, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden. E-mail: gusranara@student.gu.se

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Introduction

In this paper we use Heckman selection models to analyse the relation between the likelihood of the firm becoming a takeover target, the takeover premium, and the use of anti-takeover devices. If firms were taken over randomly, we could ignore the fact that takeover premiums are not observed for all firms and use ordinary regressions. However, such a random occurrence of a corporate takeover is unlikely, i.e. takeovers do not happen randomly. Firms that experience a takeover event are selected. Our empirical analysis also documents i) that the determinants of the takeover premium change significantly when we control for the private information explaining the likelihood of a takeover and ii) that the likelihood of a takeover and the magnitude of the takeover premium indeed are not independent. Our results have general implications for the analysis of abnormal returns related to corporate events since cross-sectional tests of abnormal returns may be influenced by sample selection bias.¹

A recent survey of the empirical corporate takeover literature by Betton, Eckbo and Thorburn (2008) acknowledges that “*there are unresolved econometric issues of endogeneity and self-selection*” in most of the existing studies. Furthermore, the authors argue that even if corrections for self-selection are often discussed in the literature, actual corrections are rarely implemented in empirical tests. Ahern (2009) uses simulations to analyse how asset pricing anomalies and selection bias may produce erroneous results in event studies.

A number of papers have analysed the likelihood that a firm will become a takeover target.² Others have analysed the determinants of the takeover premium in corporate takeovers.³ Only a few papers have simultaneously analysed the likelihood of a takeover and the takeover premium, yet without controlling for potential selection problems.⁴ Sokolyk

¹ For a discussion of the event study methodology in financial economics, see MacKinlay (1997).

² See e.g. Morck et al. (1989), Dickerson et al. (2002) and Betton, Eckbo, and Thorburn (2008) and references therein.

³ See e.g. Bradley et al. (1988), Franks and Harris (1989), Stulz et al. (1990) and Betton, Eckbo, and Thorburn (2008) and references therein .

⁴ See e.g. Song and Walkling (1993).

(2011) investigates whether anti-takeover provisions affect both the likelihood that a firm will become a takeover target and the takeover premium. However, to our knowledge, the author does not control for the potential selection problem when analyzing the determinants of the takeover premium.

The selection likelihood of the takeover target and the size of the takeover premium are both likely to be affected by the reservation price for the target firm's equity. The magnitude of the reservation price could be affected, e.g. by the ownership type and structure, and implicit private benefits of control of large shareholders. Shareholders and owner-managers in firms that would receive relatively low takeover premiums may be less inclined to negotiate and accept the terms of a tender offer or merger. It is also possible that shareholders and owner-managers who choose not to negotiate and accept an offer would be offered relatively higher takeover premiums than shareholders in other firms who choose to accept an offer. The reason is that the former group might have a relatively higher reservation offer price level.

We analyse the Swedish market for control.⁵ Analysing Swedish data provides some advantages given the research issue at hand. First, due to Swedish corporate law, the terms of most tender offers are negotiated between the bidder and the large shareholders in the target before they are made public. Once the large shareholders in the target have accepted the terms, the offer is made public and extended to all shareholders. Thus, if the bidder and the blockholders in the target do not reach an agreement, we do not observe a tender offer in the data, and this is precisely the selection bias we are interested in.

Second, a majority of the firms in our sample use dual class shares. Grossman and Hart (1988) show theoretically how dual class shares may make takeovers more costly for the bidder. Dual class shares facilitate for the incumbent in the target firm to demand

⁵ We run robustness tests based on a U.S. sample.

compensation for the loss of private benefits of control. And since all private benefits are not necessarily transferable to the bidder, dual class shares may work as an anti-takeover device. Thus, our focus on dual class shares when testing how the potential selection bias affects the inference from cross-sectional analysis of the takeover premium has sound theoretical underpinnings, and the Swedish market environment facilitates the empirical analysis.

Third, Swedish firms also use alternative types of anti-takeover defences. Therefore, our study allows comparison of the effect of dual class shares and other anti-takeover measures on the takeover premium and takeover likelihood, respectively. Various anti-takeover defences are common in the U.S., while dual class shares and other mechanisms to separate voting rights from cash flow rights to secure the incumbent's control are more common outside the U.S. Comment and Schwert's (1995) find that poison pills do not prevent takeovers in the U.S. and that they are associated with higher takeover premiums.

The Anglo-Saxon corporate governance model is often criticized for being myopic and placing too much emphasis on short-term profits. Gaspar et al. (2005) also document that firms with more short-term shareholders are more likely to be taken over and receive lower takeover premiums. It has been argued that dual class shares and other anti-takeover devices increase the incentives for controlling shareholders and owner-managers to invest in firm-specific managerial capital and adopt a longer time perspective for a company (Taylor and Whittred, 1998). Thus, anti-takeover devices may reduce myopia and short-term behaviour. On the other hand, anti-takeover devices may lead to negative entrenchment effects (see e.g. Claessens et al., 2002). Our empirical analysis explores whether anti-takeover devices are associated with higher takeover premiums (reduced myopia) or with just a reduced likelihood that the target shareholders will receive a takeover premium (entrenchment).

Our data consists of an unbalanced panel with the largest listed non-financial firms on the Stockholm Stock Exchange 1985-2005. There are 2158 firm years for 208 firms. Eighty-

seven firms were subject to a non-partial tender offer during our sample period.⁶ The average takeover premium is roughly 24 percent.

We first document that in a traditional approach without selection control, the use of dual class shares and anti-takeover devices is associated with a higher takeover premium.⁷ Second, the use of dual class shares and anti-takeover devices are also associated with a reduced likelihood of a non-partial takeover. And when we control for the reduced likelihood of a non-partial takeover in the two-stage selection model, we no longer find a significant relation between the takeover premium and the use of dual class shares and anti-takeover devices, respectively. Thus, anti-takeover devices and dual class shares appear to have negative entrenchment effects but no positive effects in terms of reduced myopia.

Comment and Schwert (1995) analyse how the predicted and unpredicted likelihoods that the firm will introduce a poison pill are related to both the probability of a takeover and the takeover premium. They find that predicted (unpredicted) poison pills are associated with a decreased (increased) takeover likelihood. They also document that the unpredicted likelihood that the firm will introduce a poison pill increases the takeover premium. Thus, Comment and Schwert (1995) control for the fact that firms that introduce poison pills are selected. However, they do not directly control for takeover selection, i.e. firms that are taken over are selected.

Eckbo et al. (1990) use limited dependent variable techniques to construct consistent ML estimators that control for the fact that private information truncates the residual term. Their results suggest that managers of bidders, but not targets, have valuable private information about the potential synergies from proposed mergers. The data we use is different in that it contains information on companies that did not experience a takeover event. Our methodology allows to model non-specific information and not just the information specific

⁶ At negotiated block trades (partial takeovers), we do not observe the takeover premium paid by the bidder and the involved parties do not have to disclose the price at which the block was traded.

⁷ The results for anti-takeover devices other than dual class shares are statistically weak though.

to the gains from mergers modelled by Eckbo et al. (1990). Our results suggest that target managers and/or large shareholders indeed have private information and that this influences the takeover premium.

Gaspar et al.'s (2005) methodology is very similar to ours. They study how shareholders' investment horizons are related to the market for corporate control. First, OLS regressions are estimated with the takeover premium as dependent variable. The results show that firms with more short-term shareholders receive lower takeover premiums. They then estimate Heckman selection models and find that firms with more short-term shareholders are also more likely to be taken over. Sample selection is statistically relevant yet does not change their main empirical results, i.e. controlling for sample selection does not change the negative relation between short-term shareholders and the takeover premium. Their results suggest that even if private information is relevant, it is not related to their proxy for short-term shareholders

Our results suggest that anti-takeover devices and dual class shares, chosen as proxies for long-term shareholdings, reduce the likelihood of a takeover but have no effect on the takeover premium once the self-selection is controlled for in the model. Thus, since the relations between dual class shares and anti-takeover provisions, respectively, and the takeover premium change when we control for private information, private information should be related to the use of dual class shares and anti-takeover provisions.

The next section presents our econometric methodology. The data used in the empirical tests as well as our model specification are presented in Section 3. The empirical results are reported in Section 4. Section 5 summarizes and concludes the paper.

2. Methodology

The issue of selection bias has received a fair amount of attention in the empirical corporate finance literature. Accounting for selectivity serves a dual purpose: as a potential remedy against the bias in estimated parameters of a model and, in our context, as a way of incorporating and controlling for unobservable private information possessed by firms and investors. Researchers have long been aware of the fact that corporate finance decisions are not arbitrary and typically reflect premeditated decisions of firm managers and owners to ‘self-select into their preferred choices’ (Li and Prabhala, 2007). In the context of our model, this self-selection is likely to be affected by the magnitude of the private benefits of control, which are pecuniary and non-pecuniary benefits that accrue to the controlling shareholder of a firm. Non-pecuniary benefits of a controlling shareholder, in particular, are largely private information yet are very likely to have a significant effect on the likelihood of a firm to be selected as a takeover target and on the probability of a successful takeover. Gaspar et al. (2005) use the same methodology as we do in their robustness tests in a study of the market for corporate control, while Bilinski and Strong (2010) apply this methodology in the analysis of the long-run performance of seasoned equity offers (SEOs).

Following Heckman (1979), we adopt a baseline selection model, which is the most popular modelling choice in corporate finance. In our context, accounting for self-selection consists of two steps. First, we have to specify a model for self-selection, using finance theory to model why some firms are taken over while others are not. In the second stage, we link the random variables driving firms’ selection to the magnitude of the takeover premium.

We start with a population regression in which the takeover premium P is a function of some variables X . This regression must be estimated using a sub-sample of firms that were subject to successful takeovers, i.e. the firms that self-select into choice S (sell) as opposed to not sell (NS). Selection, C , is specified using a probit model in which firm i chooses S if the

net benefit from doing so, a scalar W_i , is positive. Writing the selection variable W_i as a function of explanatory variables Z_i , we obtain the system

$$C = S \equiv W_i = Z_i \gamma + \eta_i > 0 \quad (1)$$

$$C = NS \equiv W_i = Z_i \gamma + \eta_i \leq 0 \quad (2)$$

$$P_i = X_i \beta + \varepsilon_i \quad (3)$$

where Z_i denotes publicly known information influencing a firm's choice, γ is a vector of probit coefficients, and η_i is orthogonal to public variables Z_i . Assuming that η_i and ε_i are bivariate normal, we can derive the likelihood function and the maximum likelihood estimators for (1)-(3).

In the above framework, selection can be interpreted as an omitted variable problem, while the omitted variable itself can serve as a proxy for unobserved private information (Li and Prabhala, 2007).

Equations (1) and (2), η_i is the part of W_i that is not explained by public variables Z_i . Thus, η_i can be interpreted as the private information driving the takeover event. The ex-ante expectation of η_i should be zero. Ex-post, or after firm i decides whether to accept the takeover bid ($C=S$) or not ($C=NS$), the expectations of η_i can be updated. The revised expectation, $E(\eta_i | C)$, is thus an updated estimate of the firm's private information. To test whether the private information in a firm's acceptance of the takeover bid affected the magnitude of the takeover premium, we would regress outcome P on $E(\eta_i | C)$. But $E(\eta_i | C) = \lambda_C(\cdot)$ is the inverse Mills ratio term, which is exactly what is used in the model to adjust for self-selection (Heckman, 1979).

Testing the statistical significance of the inverse Mills ratio can be viewed as a test of the effect of private information affecting a firm's selection as a takeover target and whether

private information possessed by a firm explains the ex-post magnitude of a takeover premium (Li and Prabhala, 2007).

Given the research question at hand, we interpret the private information as knowledge about the magnitude of non-transferable private benefits of control. Since private benefits of control by definition are private, their magnitude is not public knowledge. The average size of pecuniary private benefits as a percentage of a firm's market capitalization is only 1% in Sweden, compared to 4.5% for the Anglo-Saxon countries (Nenova, 2003). Based on premiums in block transactions, Dyck and Zingales (2002) construct a gauge of pecuniary private benefits of control. They also find a lower value of private benefits in Scandinavia compared to the Anglo-Saxon countries. Yet La Porta et al. (1999) report that in 45% (60%) of large (medium sized) listed firms in Sweden, a family owns a controlling block (>20%). This is consistent with large non-pecuniary benefits of control, especially for families (Zingales, 1994).

Högfeldt (2005) and Holmén and Högfeldt (2009) argue that the non-pecuniary private benefits in Sweden to a large extent stem from political influence and support from the ruling Social Democrats (in power for all except three years of our 20-year sample period). The connections with the Social Democrats result in e.g. smooth relations with the powerful labour unions. Other non-pecuniary private benefits stem from the status and prestige derived from controlling a large listed firm.

3. Data and Model Specification

3.1. Sample Selection

We start with an unbalanced panel dataset containing accounting and stock market data for the largest non-financial Swedish firms listed on the Stockholm Stock Exchange 1985-2005. The accounting data is collected from the Findata Trust database. The sample contains the

vast majority of the largest non-financial public firms in 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), Sundin and Sundqvist (1994-2002), Fristedt, Sundin, and Sundqvist (2003) and Fristedt and Sundqvist (2004-2006).⁸ These sources report the 25 largest owners in all listed firms as of January each year. Sundin and Sundqvist provide detailed information on coalition structures and families in a wide sense. Thus, if two families are known to cooperate, their shareholdings are aggregated by Sundqvist et al. We have followed their definitions of ownership coalitions. After the collection of ownership data, the sample consists of 208 firms and 2158 firm years.

A first rough estimate of non-partial takeover activity is also collected from the publications by Sundqvist et al., since they report all delistings. In Sweden, almost all non-partial takeovers are preceded by a public tender offer (Bergström and Rydqvist, 1989). According to Swedish corporate law, any shareholder or group of shareholders in the target that has 10% of the shares or votes can block a legal merger. Therefore, the terms of the tender offer are often negotiated between the bidder and the large shareholders in the target before the public announcement. When the large blockholders have accepted the terms of the bid, a public tender offer is made for all target shares, including the blockholders' shares (Rydqvist, 1993). Most bids are non-partial and contingent on 90% of the shareholders accepting the offer. To separate other delistings from actual non-partial takeovers, we use daily newspapers.⁹ Our final takeover sample consists of 87 successful non-partial tender offers.

The fact that we only look at successful takeovers suggests that all blockholders ultimately accepted the offer, sometimes after a revision of the offer. Some non-partial

⁸ These publications are referred to as Sundqvist et al. below.

⁹ Part of this data was provided by Kristian Rydqvist.

takeovers start with a hostile tender offer, i.e. an offer that has not been discussed with the blockholders in the target. The bidder then negotiates with the blockholders in the target and then potentially revises the offer. If a rival bidder offers a higher price, the blockholders in the target are not forced to sell to the initial bidder even if they have agreed on the terms of the initial offer. However, since the terms of most tender offers are negotiated between the bidder and the blockholders in the target before they are made public, we do not observe many failed bids. On the other hand, failed negotiations are common, i.e. the bidder and the blockholders in the target start negotiations but do not reach an agreement and then we do not observe a tender offer. Furthermore, blockholders in potential target firms may negotiate with several potential bidders before reaching an acceptable offer or deciding not to sell.

Table 1 panel A summarizes our sample. On average, our sample roughly contains 100 firms each year and roughly comprises 70 percent of the Swedish stock market capitalization. On average, four firms are taken over each year.

3.2. Descriptive Statistics

In Table 2, we provide descriptive statistics for the 208 firms and 2158 firm years in our sample. In panel A, we report statistics for three binary variables. Almost 77 percent of the firms have *Dual Class Shares*. Typically, high-voting A-shares carry 10 votes, while low-voting B-shares are one share/one vote. Anti-takeover devices are present in 15.5 percent of the firms. The anti-takeover devices typically consist of various shareholder agreements and rights of pre-emption. The shareholder agreements consist of agreements between large shareholders regarding how to vote (voting pacts) and restrictions on a coalition member's sale of high-voting stock to a third party. Rights of pre-emption means that owners of high-voting stock have the right to buy back non-traded high-voting stock sold by a coalition

member to a third party.¹⁰ In 41.7 percent of the firms, the second largest shareholder holds at least 10 percent of the voting rights (*Outside Block*).

The sample is split by whether the firm was a takeover target in 1985-2005. The firm is classified as a takeover target all years prior to the successful non-partial takeover. Anti-takeover devices are significantly more common among firms that are not taken over. Dual class shares decrease the probability that the firm will be a takeover target while firms with an outside blockholder are more likely to be taken over. In Panel B, we report statistics for continuous variables. The largest block of equity contains 31 percent of the firm's cash flow rights on average (*Equity*). The average controlling owner holds 47 percent of the voting rights (*Votes*). The difference between *Equity* and *Votes* is due to the high frequency of dual class shares. The median controlling shareholder has almost 16 percent more voting rights than cash flow rights (*Votes-Equity*). The median firm has a market value of equity of 1432 million SEK (*MVE*), has financed 21.3 percent of the total assets with long-term debt (*Leverage*), and has a *Tobin's q* of 1.123. *Tobin's q* is defined as the sum of the market value of equity and the book value of total debt divided by the book value of total assets.

The mean and the median difference tests suggest that the controlling owners in takeover targets have more cash flow rights, yet the median difference test suggests that they have slightly less voting rights. The separation between votes and capital is smaller in takeover targets.¹¹ The average and median target firm has a higher *Tobin's q* than the non-target firms.

¹⁰ We do not include non-traded high-voting stock and voting restrictions when constructing our indicator variable for anti-takeover devices. Non-traded high-voting stock is conditional on dual class shares and highly correlated with our *Votes-Equity* variable (correlation coefficient=0.52), and we want to separate the potential different effects of the use of dual class shares and other anti-takeover provisions. However, we report several robustness tests on the effect of non-listed high-voting stock below. The effect of voting restrictions as an anti-takeover device is ambiguous since it depends on the ownership structure of the firm. Including it when constructing an alternative anti-takeover variable generates similar but statistically weaker results compared to the results reported below. In general, we find a lower frequency of anti-takeover devices in our sample than Cronqvist and Nilsson (2003). We focus on the largest firms while they look at all listed firms. Anti-takeover provisions are more common among small firms.

¹¹ Note that mean differences are tested on the natural logarithm of *Votes-Equity*, *Firm Size*, and *Tobin's q*.

In our sample, there are no firms with both anti-takeover devices and one share/one vote arrangements. The correlation coefficient between *Votes-Equity* and the *Anti-takeover* dummy is 0.15. The dual class firms with additional anti-takeover devices are significantly smaller and are less likely to have a large outside blockholder (*Outside Block*). Additionally, in dual class firms with additional takeover devices, the controlling shareholder coalition holds more cash flow rights and more voting rights – probably as a result of shareholder agreements and rights of pre-emption. The difference between voting rights and cash flow rights (*Votes-Equity*) is smaller in firms with additional anti-takeover devices. However, in a regression with *Votes-Equity* as dependent variable and the *Anti-takeover* dummy as independent variable, and where firm size (*MVE*) and industry effects are controlled for, the *Anti-takeover* dummy is insignificant. Cesares-Field and Karpoff (2002) report that firms with dual class firms in the U.S. do not use any other anti-takeover devices, while firms using one share/one vote systems often use an arsenal of such measures. This result suggests that dual-class shares are the single most effective anti-takeover measure.

Ikäheimo et al. (2011) examine the use of anti-takeover devices in Nordic firms. They document that anti-takeover devices are negatively related to firm value and that this negative relation mainly stems from the use of dual class shares. Maury and Pajuste (2011) also document that dual class share unifications in Europe lead to increased firm value.

3.3. Takeover Premium Estimates

In order to estimate the takeover premium, we collect stock prices for the firms subject to successful non-partial tender offers. The announcement dates are collected from the Affärsdata database¹² and Thomson One Banker. Stock prices are collected from Datastream. We estimate the takeover premium as the market-adjusted returns and the market-model

¹² The Affärsvärlden database contains all newspaper articles from the Swedish business press. We search for the first day the press mentions the tender offer and define the day before as the day of the announcement.

adjusted returns (MacKinlay, 1997; Khotari and Warner, 2007).¹³ Affärsvärldens Generalindex (AFGX) is used as a proxy for the market. This index is value weighted and comprises roughly 99 percent of the Swedish stock market. The market-model parameters are estimated from 240 to 21 days before the offer.¹⁴

Among the 87 takeover targets, 59 firms have dual class shares and 23 firms have both classes of shares listed. If the takeover target has dual class shares but only one class is listed, the premium on the listed shares is used as a proxy for the premium on the non-listed shares. If the takeover target has two classes of shares listed, the returns and abnormal returns are estimated on a value-weighted portfolio. Twelve bids differentiate between A- and B-shares, i.e. the offer price is higher for the A-shares.¹⁵ Among these twelve bids, the average voting premium is 11.5 percent. The correlation between the voting premium in the offer and the voting premium on the stock market in the month before the offer is 84 percent (calculated for the 23 observations with dual class shares listed), i.e. it appears as if the voting premium in the offer reflects different market prices before the offer. However, the causality between these two premiums is of course ambiguous. Rydqvist (1996) shows that the voting premium dramatically increases at control contests. It is likely that the voting premium would increase if a public tender offer were anticipated, especially if the tender offer is expected to include a voting premium.

The average abnormal returns from ten days before the offer to ten days after the offer are reported in Table 3 panel A. Both measures of abnormal returns show significant returns on day -9 and on days -5 to +1. A significant price run-up the week before the tender offer has also been detected in earlier studies and is typically interpreted as informed agents trading in the market (see e.g. Schwert, 1996; Conrad and Niden, 1992; and Farinos et al., 2005).

¹³ It is not possible to calculate the takeover premium based on the offered price since some of the non-cash offers include convertibles and warrants for which we do not have complete information.

¹⁴ There are no failed bids during the estimation periods.

¹⁵ According to Swedish law, the bidder can differentiate the offer price between A- and B-shares. Nevertheless, the bidder cannot differentiate the offer price within the groups of A and B shareholders.

However, the significant abnormal returns on day -9 are puzzling. We identify five target firms with large (>5%) abnormal returns on day -9 and search the news database for these firms.¹⁶ We find news around day -9 for four of these five firms. The news consisted of i) a report of increased sales, ii) a major new contract, iii) layoffs in one plant, and iv) a block trade (without any information about expectations of a tender offer).¹⁷ We re-ran all tests without these five firms. The results remained virtually unchanged.

None of the returns after day +1 are significant. Furthermore, we examined the average abnormal returns from day -20 to day -11, but found no significant returns. The significant average abnormal returns the days before the announcement vary from 0.5 percent the days before the tender offer to almost 18 percent on the day of the offer. The highest one-day return at the tender offer is roughly 65 percent, while the lowest is zero.

In panel B, we report cumulative abnormal returns for various intervals. The average market-adjusted returns and the average market-model adjusted returns from ten days before the tender offer to the day after the tender offer is almost 24 percent. The adjusted returns from the day before to the day after the tender offer are roughly 20 percent. These numbers are similar to the takeover premiums at tender offers in the U.S. reported by e.g. Jensen and Ruback (1983).

3.4. Model Specification

We first focus on the relation between the anti-takeover devices and the takeover premium. Anti-takeover devices are captured by an indicator variable (*Anti-takeover*). Inspired by Grossman and Hart (1988), we also focus on the relation between the use of dual class shares and the takeover premium. We estimate the use of dual class shares as the difference between

¹⁶ Without these five firms, the abnormal returns on day -9 are insignificant.

¹⁷ In the process of initial data collection, we searched for the relevant news and rumors in the financial press prior to the official takeover announcements. We found no news or rumors combining the target firm and the bidding firm with an expected takeover.

the largest shareholder's fraction of the firm's voting rights minus his/her fraction of the firm's cash flow rights, i.e. as *Votes-Equity*. However, the implication of *Votes-Equity* being 0.1 might be different when *Votes* is 0.5 and *Equity* 0.4 compared to a situation when *Votes* is 0.15 and *Equity* 0.05. We therefore include *Equity* per se in the regression model as well. A certain monetary premium would result in a different takeover premium measured in percentage of firm value. We therefore include the market value of equity (*MVE*) as an explanatory variable. There should be less potential value creation when a well performing firm is acquired. *Tobin's q* is included in the model to capture this effect. Finally, a large outside blockholder might influence the price at which a bidder is able to take over the firm. *Outside Block*, which is equal to one if the second largest shareholder holds more than 10 percent of the voting rights in the firm, and zero otherwise, is therefore included as an explanatory variable.

The *MVE* and *Tobin's q* variables are similar to control variables used by e.g. Cai and Vijh (2007) in regressions with the takeover premium as dependent variable. Cai and Vijh (2007) include variables for relative size of the bidder and target firms and the target firms' book-to-market ratio. They also include variables for i) the market value of holdings of the CEO in the bidder, ii) method of payment (cash dummy), iii) the acquirer's book-to-market ratio, iv) industry relatedness between the target and the bidder, and v) side payments to the target CEO. We cannot include information about the bidder or the tender offer in our system of equations since this information is not known prior to the tender offer, i.e. we cannot predict a tender offer by the characteristics of the bidder or the tender offer. However, we do test the impact of the method of payment on the takeover premium in OLS regression in the robustness section below.

We use the same variables as explanatory variables when estimating the likelihood that the firm will be taken over. However, we need to add at least one variable in order to

meet the identification criteria. Stulz (1988) shows how managers can increase their voting power by increasing firm leverage. The managers thereby entrench themselves from the market for corporate control. *Leverage* is therefore added to the selection equation.¹⁸ Whether anti-takeover devices and dual class shares influence the takeover premium, the likelihood of a takeover or both is an empirical question. We therefore include *Anti-takeover* and *Votes-Equity* in the takeover probability models. *Equity* per se is also included. Given wealth constraints, there should be fewer potential bidders for a larger firm, *ceteris paribus*. Market value of equity (*MVE*) is therefore included in the takeover probability model as well. Furthermore, a large outside blockholder might also influence the likelihood of a takeover. In fact, it is not uncommon that it is the second largest shareholder that makes a non-partial takeover of the firm. Hence, we include *Outside Block* in the takeover probability model. We also include a variable for duration dependence. Duration dependence exists when the takeover probability is affected by the length of time during which we observe firms, and thus we would expect to observe a positive (or non-negative) duration dependency. In other words, we hypothesize that the chances of observing takeover are likely to increase the longer we observe a firm. Each year the variable *ldur* is equal to the natural logarithm of the number of years a specific firm has been observed in the dataset up to that point.

Takeover activity is typically clustered in different industries. Furthermore, the magnitude of private benefits of control most likely varies between industries (see e.g. Demsetz and Lehn, 1985). And the magnitude of private benefits of control might influence the probability of a successful tender offer (Grossman and Hart, 1988). We therefore include nine industry dummies in the regressions. The industry dummies are defined based on the first digit in the SIC code.

We end up estimating the following system of equations:

¹⁸ *Leverage* may therefore influence the takeover premium as well. However, in our data there is no such significant relationship.

$$\text{Premium} = \beta_0 + \beta_1 \text{Equity} + \beta_2 (\text{Antitakeover Device}) + \beta_3 \text{MVE} + \beta_4 \text{Tobin's } q + \beta_5 \text{Outside block} + u_1$$

and *Premium* is observed if

$$\gamma_0 + \gamma_1 \text{Leverage} + \gamma_2 \text{Equity} + \gamma_3 (\text{Antitakeover Device}) + \gamma_4 \text{MVE} + \gamma_5 \text{Tobin's } q + \gamma_6 \text{Outside block} + \gamma_7 \text{ldur} + \sum_{i=8}^{17} \gamma_i \text{Industry} + u_2 > 0$$

where $u_1 \sim N(0, \sigma)$, $u_2 \sim N(0, 1)$, and $\text{corr}(u_1, u_2) = \rho$.

Anti-takeover Device is either equal to i) the indicator variable for the existence of anti-takeover devices (*Anti-takeover*) or to ii) the *Votes-Equity* variable¹⁹.

The model is estimated by maximum likelihood. Regression estimates using the non-selection hazard (Heckman, 1979) provide starting values for the maximum likelihood estimation. In unreported tests, we also estimated the model using Heckman's (1979) two-step procedure. The two-step parameter estimates are obtained by augmenting the regression equation with the non-selection hazard computed using Probit estimates of the selection equation. The results from the two-step procedure are similar but marginally statistically weaker than the results reported below.

4. Empirical Results

4.1. Ordinary Regressions

We use the market-model adjusted return over the 12-day window (day -10 to +1) in the empirical analysis. The results for the market-adjusted return and other event windows are similar to the ones reported.

We begin our empirical analysis by running OLS regressions with estimates of the takeover premium as dependent variable and the *Votes-Equity* variable and control variables

¹⁹ The model in Table 7 uses both variables.

as independent variables. The results are reported in the first columns in Table 4. The use of dual class shares (*Votes-Equity*) is significantly positive at the 5 percent level in the OLS model. The market value of equity (*MVE*) is negatively significant at the 5 percent level. The other variables (*Equity*, *Tobin's q* and *Outside Block*) are insignificant.

In Table 5, we substitute the use of dual class shares with the *Anti-takeover* indicator variable. Again, OLS regressions with the same estimates of the takeover premium are reported in the first column. The use of *Anti-takeover* devices is positive and significant at the 10 percent level. Market value of equity (*MVE*) is again negatively significant at the 5 percent level. The other variables are insignificant.

In Table 6 we include both *Votes-Equity* and *Anti-takeover* as independent variables. *Votes-Equity* is positively significant at the 10 percent level. *Anti-takeover* is insignificant. Market value of equity is negatively significant at the 5 percent level. Otherwise the control variables are insignificant. Thus, generally the OLS results in Tables 4-6 suggest that the use of dual class shares, captured by *Votes-Equity*, is associated with higher takeover premiums. The coefficients on other *Anti-takeover* devices are also positive but less significant.

4.2. Heckman Selection Models

We now turn to Heckman selection models where we first estimate the likelihood that the firm will be taken over. The results are reported in the second and third columns of Tables 4-6. In Table 4, the use of dual class shares (*Votes-Equity*) is negatively significant (at the 5 percent level) in the selection equation, i.e. separation of voting rights from cash flow rights by vote-differentiated shares reduces the likelihood that the firm will be taken over. This result is consistent with Grossman and Hart's (1988) argument that shares with differentiated voting rights will reduce the likelihood of takeovers if some of the incumbent's private benefits are not transferable to the bidder.

In Table 5 *Anti-takeover* is also significantly negative at the 5 percent level. Thus, anti-takeover devices indeed reduce the likelihood that the firm will be taken over.

In Table 6, both *Anti-takeover* and *Votes-Equity* are included as independent variables in the selection equation. They are both negatively significant at the 5 percent level. Thus, even if the two variables are positively correlated, it appears as if they capture two separate effects of reduced takeover likelihood.

In terms of the other variables in the selection equation, *Equity* is significantly positive in all tables (at the 5 or 10 percent level), i.e. the more cash flow rights the largest shareholder holds, the more likely a takeover is to occur. This result is consistent with Shleifer and Vishny (1986), who argue that a large shareholder (cash flow rights) can facilitate a takeover by reducing the free rider problem (Grossman and Hart, 1980). Consistent with Stulz' (1988) argument, the likelihood of a takeover is negatively related to *Leverage* at the 1 or 5 percent significance level in the estimated models. Managers and controlling shareholders can insulate themselves from the market for corporate control by increasing firm leverage since it increases their voting power in the firm, *ceteris paribus*. The presence of a large outside blockholder also increases the likelihood of a takeover – significant at the 5 or 10 percent level. Firm performance (*Tobin's q*) significantly reduces the likelihood of a takeover (at the 10 percent level) in Table 4. The likelihood of a takeover exhibits positive duration dependence in all models.

In the third columns in Tables 4-6, we report estimated premium equations where we control for private information about the likelihood of a takeover. The coefficient on *Votes-Equity* is now insignificant in the estimated models in Tables 4 and 6. Thus, when we control for the fact that we do not observe a takeover premium for all firms, there is no significant relation between the use of dual class shares and the takeover premium. Similarly, *Anti-takeover* goes from being positively significant at the 10 percent level to insignificant in Table

5. Thus, there are no indications that dual class shares and anti-takeover devices are associated with higher takeover premiums.

The other coefficients are similar in the OLS and Heckman premium models. Thus, private information does not appear to be related to *Equity*, *Tobin's q* and *Outside Block*. The results for market value of equity (*MVE*) are roughly the same in the OLS and the Heckman premium models, although they become somewhat less significant.

The likelihood ratio tests reject the hypothesis that the selection equation and the takeover equation are independent in Tables 4 and 6 – at the 5 percent level. Thus, the OLS results in the first columns in these tables are biased. The likelihood ratio test does not reject the hypothesis that the selection equation and the takeover premium equation are independent in Table 5 where *Votes-Equity* is not included. Thus, it appears as if the selection problem is more pronounced for the use of dual class shares than for the use of other anti-takeover devices.

The difference between the OLS results and the Heckman results where we control for private information suggests that private information is correlated with the use of dual class shares. The use of dual class shares is probably related to the magnitude of private benefits of control, and the magnitude of private benefits is per definition private information.²⁰ Thus, one interpretation of our results is that the private information consists of private knowledge about the magnitude of the private benefits of control.

4.3. Robustness and Extensions

Leverage: We first test whether *Leverage* indeed is unrelated to the takeover premium. The results are reported in Table 7 panel A and *Leverage* is insignificant. Thus, *Leverage* appears to significantly decrease the likelihood of a takeover but does not appear to be related to the

²⁰ Bebchuk (1999) argues that “*the decision to adopt dual-class equity in conjunction with a concentrated ownership structure can only be explained by the existence of private benefits of control.*”

takeover premium. In unreported tests, we also included *Leverage* in the premium equation and used other variables to identify the system of equations. The results did not change, i.e. *Leverage* was negatively significant in the selection equation and insignificant in the premium equation.

Method of Payment: Several papers have documented that cash tender offers are associated with higher takeover premiums.²¹ We include a cash dummy in our premium equation. The cash dummy is positive but insignificant in the estimated OLS models in Table 7 panel B. Furthermore, including the cash dummy does not change the other results compared to the reported models in Tables 4-6. We have also tested the correlation between the cash dummy and the Mill's ratio from the Heckman model. The correlation is insignificantly negative, i.e. the non-selection hazard rate of a takeover is not significantly related to the method of payment. The insignificant correlation suggests that the private information proxied by the Mill's ratio is not revealed in the method of payment. Thus, the dependence of the premium and selection equations appears not to be driven by the fact that we cannot include a method of payment variable in the selection equation.

Other independent variables: We have also included other variables in the selection equation and the premium equation. Including firm liquidity (tangible assets/total assets), return on assets (EBITD/ total assets) or firm age does not change our main results. And including these variables in the OLS regression with the takeover premium as dependent variable does not change the relation between takeover premium and the use of dual class shares and anti-takeover devices, respectively.

Industry dummies in the premium equation: Including industry dummies also in the premium equation does not change the results for the *Votes-Equity* tests substantially. However, the

²¹ Another variable that has been found to be significantly related to the takeover premium is the relative size of the target and bidder. It is not possible to include this variable in the system of equations since it includes information about the bidding firms. We could include it in the OLS regressions. However, collecting the size of private and foreign bidders is difficult, especially for the takeovers in the 1980s.

results for the *Anti-takeover* tests do change. Without industry dummies in the premium equation, the OLS and the Heckman results are substantially different. With industry dummies in both the selection equation and the premium equation, the OLS and Heckman results are more similar.

Unlisted A-shares: One potential issue with our estimates of the takeover premium is that we do not observe the market price on unlisted A-shares (36 observations) before the tender offer. In the reported tests above, we approximated the takeover premium on unlisted A-shares with the takeover premium on the listed B-shares. We perform a series of tests to explore whether this approximation affects our results. First we insert a dummy equal to one if the firm has unlisted A-shares in both the selection equation and the premium equation. The dummy is insignificant in all estimated models and the other results are virtually unchanged. Second, we adjust the estimated premium for the four target firms that have non-listed A-shares and receive a tender offer that price-differentiates between A- and B-shares. The adjustment of the premium is done by adding the product of the extra premium on the A-shares in the tender offer and the fraction of A-shares of total shares in the firm. This adjustment assumes that the prices of the A- and B-shares are the same before the tender offer. Using the adjusted premium in the estimated models does not change the results.

However, in unreported tests the estimated takeover premium is significantly higher for the dual class firms without listed A-shares compared to the dual class firms with listed A-shares. Thus, either a dual class firm with non-listed A-shares receives a higher takeover bid than a dual class firm with listed A-shares, *ceteris paribus*, or using the takeover premium on the listed B-shares as a proxy for the takeover premium on the unlisted A-shares overestimates the takeover premium on the non-listed A-shares. We think the former alternative is more plausible. Listed A-shares means per definition that the A-shares are more or less dispersed. When the A-shares are not listed, it usually means that the controlling

owner holds all of them in one block. And if the incumbent controls all A-shares, he/she can maximize the proceeds from the sale of control rights and receive a higher takeover premium (Zingales, 1995).

Furthermore, among the acquired firms, *Vote-Equity* is not statistically different if the dual class firm has listed A-shares compared to dual class firms with unlisted A-shares (unreported). And the statistically significant positive relation between *Vote-Equity* and the takeover premium in the OLS regressions remains even if we only include the 23 firms with listed A-shares in the estimation. Thus, the positive OLS relation between *Votes-Equity* and the takeover premium does not appear to be driven by the firms for which we have approximated the takeover premium on the A-shares.

The bidder differentiated between A- and B-shares in 12 of the 59 tender offers for dual class firms (28 targets were single class firms).²² We define a variable *Bid A/Bid B* as the offer price for A-shares divided by the offer price for B-shares minus 1. Thus, if the offer price is the same for A- and B-shares, the variable equals zero. The variable also equals zero for single class firms. *Bid A/Bid B* is negatively significant in M2 in panel B, Table 7. This result suggests that the total takeover premium is reduced when the bidder price differs between A- and B-shares. This result remains roughly the same if we only include the 59 targets with dual class shares in the estimation, i.e. only the firms where a differentiated bid is actually possible.

In M3, we insert a variable capturing the different market prices of A- and B-shares in the month before the tender offer (*Price A/Price B*). The variable capturing different offer prices for A- and B-shares (*Bid A/Bid B*) then becomes insignificant. The variable for

²² In the majority of the tender offers, the blockholders, who typically hold A-shares, do not get preferential treatment. This result is consistent with the small control block premium in Sweden documented by Dyck and Zingales (2002). Many blockholders of A-shares also hold large blocks of B-shares and might therefore be compensated by a relatively high price on the B-shares. In fact, our results suggest that if the blockholder does not also hold a large block of B-shares, i.e. *Votes-Equity* is high, they might not reach an agreement with the bidder and hence the takeover likelihood decreases.

different market prices before the tender offer is on the other hand negatively significant. Again, the results remain roughly the same if we only include the 59 dual class firms in the estimation. It appears as if a larger voting premium on the A-shares in the month before the tender offer reduces the total takeover premium. We interpret this result in terms of a run-up in especially the A-shares in anticipation of a takeover. The mark-up (potentially a higher bid on the A-shares) on the A-shares is then reduced at the tender offer, and this is reflected in a lower total takeover premium. For the 23 observations with listed dual class shares, the correlation between the price difference between A- and B-shares on the market before the tender offer and at the time of the tender offer is 84 percent.

The results in M2 and M3 in panel B should be interpreted with caution since we do not observe the market prices of the A-shares in the dual class firms where the A-shares are not listed. The estimations assume that the market-voting premium is zero for these firms. If we only include the 23 firms with dual class shares listed in panel C, *Bid A/Bid B* and *Price A/Price B* are still negative but become insignificant in M2 and M3, respectively.

Alternative measure of Votes-Equity: We tried alternative definitions of the difference between the largest shareholders' ownership of voting rights and cash flow rights. First, all tests were run replacing the difference between voting fraction and equity fraction with the ratio of the voting fraction and the equity fraction. The results were virtually unchanged. We also used the log of the ratio. Again, the results were virtually unchanged. However, when we instead included a dummy variable for the existence of dual class shares, the dummy variable was insignificant in all tests. Thus, it is not the existence of dual class shares that is related to takeover likelihood. It is only when dual class shares are used to drive a substantial wedge between the controlling shareholder's voting and the cash flow rights, that we observe a negative relation between takeover likelihood and dual class shares.

Longer event window: For the reported results, we used a 12-day event window to estimate the takeover premium. Using shorter event windows does not change the main results. However, if we increase the length of the event window to 22 days, i.e. day -20 to day +1, the results are somewhat different. The OLS results for the premium are roughly the same but the Heckman results are not substantially different from the OLS results.²³

Results for the U.S.: In order to investigate to what extent our Swedish results can be generalized to other countries, we collect a U.S. sample consisting of S&P1500 firms 2004-2010 (1866 firms and 8872 firm year observations). We collect market and accounting data from Thomson's Datastream, takeover information from Bureau van Dijk's Zephyr database, and the anti-takeover score from the corporate governance quotient (CGQ)²⁴.

For the 284 takeovers among S&P1500 firms identified in Zephyr, we use the takeover premium provided in Zephyr instead of estimating the market-model adjusted returns. There are not many firms with dual class shares among the S&P1500 firms, and none of them were taken over 2004-2010. Thus, we cannot analyse the relation between dual class shares and takeover likelihood in the U.S. sample. Instead we use the anti-takeover sub-score provided in CGQ.

We collect market value of equity (*MVE*) and define *Tobin's q* as above. However, we are not able to collect the equity fraction of the largest shareholder. Instead we use a dummy variable available in CGQ that is equal to one if *insider ownership* is between one percent and 30 percent, and zero otherwise. We are not able to collect a variable for outside block

²³ In some previous studies, the cross-sectional results also change depending on how the takeover premium is estimated; see e.g. Barger et al. (2008).

²⁴ CGQ is a corporate governance rating system provided by Institutional Shareholder Services (ISS) on over 8000 companies worldwide. It evaluates the strengths, deficiencies, and risks of a company's corporate governance practices and board of directors. CGQ uses underlying data points for up to 67 corporate governance variables, categorized into four areas of focus: 1) board of directors, 2) audit, 3) anti-takeover provisions, and 4) executive and director compensation. In addition to the overall index, CGQ provides sub-scores for each focus area. A firm's sub-score represents quintile (5=top quintile) rankings in terms of shareholder-friendly policies within each sub-category compared to the firm's market index and its industry group. We report results for the index ranking. The results for the industry ranking are similar. We take the inverse of the quintile ranking in order to make the U.S. results more easily comparable to the Swedish results.

holdings. For the selection equation, we collect and define *Leverage*, duration dependence (*ldur*) and industry dummies as above.

The results are reported in Table 8. In the OLS regression with the takeover premium as dependent variable, the *CGQ Anti-takeover Score* is positively significant. However, after controlling for selection, it is insignificant. These results corroborate the Swedish results.²⁵ The likelihood ratio test also strongly rejects the hypothesis that the selection equation and the takeover equation are independent. Thus, the OLS results are biased.

5. Summary and Conclusion

In this paper, we have explored the relation between the likelihood of the firm becoming a takeover target, the takeover premium, and the use of anti-takeover devices . Focus has mainly been on how the cross-sectional relation between the use of anti-takeover devices and dual class shares, respectively, and the takeover premium changes when we control for the fact that the use of anti-takeover devices and dual class shares also influence the likelihood of a takeover. Dual class shares are positively and significantly related to the takeover premium and negatively and significantly related to the likelihood of a takeover. When we control for private information about the likelihood of a takeover, the relation between dual class shares and the takeover premium becomes insignificant. The results for anti-takeover devices are similar but statistically weaker. Generally, our results suggest that the takeover premium and likelihood of a takeover are not independent.

We believe that our results have two implications. First, ordinary cross-sectional analysis of abnormal returns related to corporate events may be influenced by selection bias and therefore lead to flawed conclusions. Second, dual class shares and anti-takeover devices appear to be associated with negative entrenchment effects in terms of lower probability of

²⁵ Compared to the Swedish results, the *CGQ Anti-takeover Score* is not significant in the selection equation, whereas duration dependence is negatively significant.

receiving a takeover premium. Dual class shares and anti-takeover devices do not appear to be associated with positive effects in terms of higher takeover premiums as a result of reduced myopic behaviour of controlling shareholders and owner-managers.

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Table 1: Frequency of successful non-partial takeovers among large Swedish non-financial firms listed on the Stockholm Stock Exchange 1985-2005

In this table, we provide statistics on the number of sample firms and the frequency of successful non-partial takeovers among Swedish non-financial firms listed on the Stockholm Stock Exchange 1985-2005. The sample consists of 208 firms and 2158 firm years. 87 firms were subject to successful non-partial tender offers.

Year	1. Number of sample firms	2. Percentage of market cap.	3. Number of non- partial takeovers of sample firms	4. Percentage of sample firms being taken over
1985	80	60.3	0	0.0
1986	89	70.7	3	3.4
1987	90	66.9	6	6.7
1988	86	60.1	2	2.3
1989	93	73.1	4	4.3
1990	93	70.1	3	3.2
1991	90	71.2	0	0.0
1992	91	72.8	2	2.2
1993	94	78.4	2	2.1
1994	110	81.1	0	0.0
1995	118	78.3	6	5.0
1996	132	81.2	3	2.3
1997	143	75.6	2	1.4
1998	142	70.5	13	9.1
1999	130	53.0	9	6.9
2000	120	70.5	8	6.7
2001	104	49.1	3	2.9
2002	100	50.5	9	9.0
2003	90	49.3	3	3.3
2004	87	49.6	2	2.3
2005	76	51.2	7	9.2

Table 2: Descriptive statistics, large Swedish non-financial firms 1985-2005

In this table, we provide summary statistics for the 208 firms and 2158 firm years in our sample. The sample is split by whether or not the firm was subject to a successful non-partial tender offer during 1985 to 2005. The firm is classified as a takeover target in all years (N=759) prior to the successful non-partial takeover. *Anti-takeover* is equal to one if the firm has an anti-takeover device, and zero otherwise. *Dual Class Shares* is equal to one if the firm has issued shares with differential voting rights, and zero otherwise. *Outside Block* is equal to one if the second largest shareholder holds at least 10 percent of the voting rights, 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. Market value of equity (*MVE*) is reported in million SEK. *Leverage* is equal to the value of long-term debt 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. Median difference tested by means of Wilcoxon-Ranksum test. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Binary variables

	Total Sample, N=2158 Proportion	Non takeover target, N=1399 Proportion	Takeover targets, N=759 Proportion	Difference Proportion test
<i>Dual Class Shares</i>	0.766	0.792	0.719	3.808***
<i>Anti-takeover</i>	0.155	0.136	0.076	4.131***
<i>Outside Block</i>	0.417	0.402	0.444	-1.870*

Panel B: Continuous variables

	Total Sample, N=2158		Non takeover target, N=1399		Takeover targets, N=759		Difference	
	Mean	Median	Mean	Median	Mean	Median	t-test	Ranksum test
<i>Equity</i>	0.312	0.280	0.301	0.270	0.333	0.300	-3.752***	-4.130***
<i>Votes</i>	0.471	0.464	0.477	0.500	0.460	0.410	1.644	1.989**
<i>Votes-Equity</i> ¹	0.159	0.150	0.176	0.180	0.127	0.100	7.659***	7.328***
<i>MVE</i> ¹	11932	1432	12521	1710	8747	1378	0.127	0.252
<i>Leverage</i>	0.237	0.213	0.240	0.213	0.233	0.215	0.869	-0.090
<i>Tobin's q</i> ¹	1.473	1.123	1.462	1.109	1.493	1.141	-1.856*	-2.390**

¹ Mean difference tested on the natural logarithm of these variables.

Table 3: Estimates of the takeover premium

In this table, we present the stock market returns around the announcement of the 87 non-partial takeovers. In panel A, abnormal returns are reported from 10 days before to 10 days after the first news about the tender offer. Abnormal returns are estimated as market adjusted and market-model adjusted, respectively. In panel B, cumulative abnormal returns are reported for various intervals. The announcement dates are collected from the Affärsdata database and Thomson One Banker. Stock prices are collected from Datastream. If the target firm has two classes of shares listed (23 observations), the returns and abnormal returns are estimated on a value weighted portfolio. The Affärsvärldens Generalindex (AFGX) is used to estimate the returns on the market. The significance of the market-adjusted returns are tested by means of t-test. The significance of the market-model adjusted returns is tested by means of z-values (MacKinlay, 1997). *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Abnormal returns around the announcement of a tender offer

	<i>Market-adjusted return</i>	<i>Market-model adjusted return</i>
-10	-0.0008	-0.0005
-9	0.0081***	0.0078***
-8	0.0037	0.0041
-7	-0.0016	0.0001
-6	-0.0006	-0.0003
-5	0.0058**	0.0060**
-4	0.0053**	0.0051**
-3	0.0054*	0.0057**
-2	0.0069**	0.0077***
-1	0.0119***	0.0105***
0	0.1760***	0.1765***
+1	0.0148**	0.0150***
+2	0.0011	0.0006
+3	0.0035	0.0024
+4	-0.0016	-0.0017
+5	-0.0029	-0.0013
+6	0.0012	0.0006
+7	0.0000	-0.0014
+8	-0.0026	-0.0023
+9	0.0018	0.0027
+10	0.0005	0.0011

Panel B: Cumulative abnormal returns around the announcement of a tender offer

	<i>Market-adjusted cumulative return</i>	<i>Market-model adjusted cumulative return</i>
-10 to +10	0.2359***	0.2385***
-10 to +1	0.2349***	0.2378***
-5 to +5	0.2261***	0.2265***
-5 to +1	0.2260***	0.2265***
-1 to +1	0.2027***	0.2020***

Table 4: Estimated regression models with *Votes-Equity* as independent variable.

In this table, we provide results from estimated OLS regressions and Heckman selection models. The Heckman models are estimated with Maximum Likelihood. The sample contains 208 Swedish listed firms and 2158 firm years from 1985 to 2005. 87 firms were subject to a successful non-partial tender offer. The takeover premium is estimated as the cumulative market-model adjusted return from day -10 to +1. Coefficients are reported with heteroscedasticity-robust t- and z-statistics, respectively, in parentheses. *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. *MVE* is defined as the market value of equity in million SEK. *Leverage* is equal to the value of long-term debt 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. *Outside Block* is equal to one if the second largest shareholder holds at least 10 percent of the voting rights, and zero otherwise. *ldur* is the natural logarithm of the number of years the firm has been included in the dataset before the specific firm-year observation. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Premium estimated as cumulative market-model adjusted return, day -10 to +1.

	<u>Heckman Selection</u>		
	<i>OLS on premium</i>	<i>Selection</i>	<i>Premium</i>
<i>Equity</i>	-0.0578 (-0.69)	0.4537 (1.67)*	0.0214 (0.20)
<i>Votes-Equity</i>	0.2247 (2.11)**	-1.0599 (-2.44)**	-0.0163 (-0.12)
<i>Ln(Firm Size)</i>	-0.0214 (-2.35)**	0.0115 (0.46)	-0.0186 (-1.77)*
<i>Ln(Tobin's q)</i>	0.0092 (0.26)	-0.1527 (-1.73)*	-0.0171 (-0.49)
<i>Outside Block</i>	0.0050 (0.15)	0.1930 (1.84)*	0.0487 (1.27)
<i>Leverage</i>		-0.6738 (-2.57)**	
<i>Ldur</i>		0.2195 (2.54)**	
<i>Industry Dummies</i>		<i>Yes</i>	
<i>p-value LR test of indep. eqns</i>			0.0346

Table 5: Estimated regression models with *Anti-takeover* devices as independent variable.

In this table, we provide results from estimated OLS regressions and Heckman selection models. The Heckman models are estimated with Maximum Likelihood. The sample contains 208 Swedish listed firms and 2158 firm years from 1985 to 2005. 87 firms were subject to a successful non-partial tender offer. The takeover premium is estimated as the cumulative market-model adjusted return from day -10 to +1. Coefficients are reported with heteroscedasticity-robust t- and z-statistics, respectively, in parentheses. *Equity* is defined as the controlling shareholder's (largest voteholder) fraction of cash flow rights in the firm. *Anti-takeover* is equal to one if the firm has an anti-takeover device, and zero otherwise. *MVE* is defined as the market value of equity in million SEK. *Leverage* is equal to the value of long-term debt 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. *Outside Block* is equal to one if the second largest shareholder holds at least 10 percent of the voting rights, and zero otherwise. *ldur* is the natural logarithm of the number of years the firm has been included in the dataset before the specific firm-year observation. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Premium estimated as cumulative market-model adjusted return, day -10 to +1.

	<u>Heckman Selection</u>		
	<i>OLS on premium</i>	<i>Selection</i>	<i>Premium</i>
<i>Equity</i>	-0.1085 (-1.33)	0.6599 (2.26)**	-0.0069 (-0.06)
<i>Anti-takeover</i>	0.1507 (1.68)*	-0.5394 (-2.46)**	0.1047 (1.12)
<i>Ln(MVE)</i>	-0.0212 (-2.35)**	0.0036 (0.14)	-0.0199 (-2.00)**
<i>Ln(Tobin's q)</i>	0.0074 (0.18)	-0.1519 (-1.62)	-0.0146 (-0.38)
<i>Outside Block</i>	-0.067 (-0.22)	0.2493 (2.26)**	0.0369 (0.84)
<i>Leverage</i>		-0.9190 (-2.37)**	
<i>Ldur</i>		0.2652 (3.05)***	
<i>Industry Dummies</i>		<i>Yes</i>	
<i>p-value LR test of indep. Eqns</i>			0.1341

Table 6: Estimated regression models with *Anti-takeover* devices and *Votes-Equity* as independent variables.

In this table, we provide results from estimated OLS regressions and Heckman selection models. The Heckman models are estimated with Maximum Likelihood. The sample contains 208 Swedish listed firms and 2158 firm years from 1985 to 2005. 87 firms were subject to a successful non-partial tender offer. The takeover premium is estimated as the cumulative market-model adjusted return from day -10 to +1. Coefficients are reported with heteroscedasticity-robust t- and z-statistics, respectively, in parentheses. *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. *Anti-takeover* is equal to one if the firm has an anti-takeover device, and zero otherwise. *MVE* is defined as the market value of equity in million SEK. *Leverage* is equal to the value of long-term debt 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. *Outside Block* is equal to one if the second largest shareholder holds at least 10 percent of the voting rights, and zero otherwise. *ldur* is the natural logarithm of the number of years the firm has been included in the dataset before the specific firm-year observation. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Premium estimated as cumulative market-model adjusted return, day -10 to +1.

	<u>Heckman Selection</u>		
	<i>OLS on premium</i>	<i>Selection</i>	<i>Premium</i>
<i>Equity</i>	-0.0866 (-1.06)	0.5354 (1.93)*	0.0153 (0.14)
<i>Votes-Equity</i>	0.2016 (1.94)*	-0.9278 (-2.13)**	0.0062 (0.05)
<i>Anti-takeover</i>	0.1355 (1.54)	-0.4708 (-2.14)**	0.0893 (0.90)
<i>Ln(MVE)</i>	-0.0195 (-2.16)**	-0.0015 (-0.06)	-0.0187 (-1.82)*
<i>Ln(Tobin's q)</i>	0.0038 (0.10)	-0.1337 (1.52)	-0.0237 (-0.65)
<i>Outside Block</i>	0.0096 (0.30)	0.1976 (1.87)*	0.0493 (1.31)
<i>Leverage</i>		-0.7768 (-2.62)***	
<i>Ldur</i>		0.2582 (2.90)***	
<i>Industry Dummies</i>		<i>Yes</i>	
<i>p-value LR test of indep. eqns</i>			0.0240

Table 7: Additional OLS regression models with the takeover premium as dependent variable

In this table, we provide results from estimated OLS regressions on the 87 takeovers. Estimates of the takeover premium measured as the cumulative market-model adjusted returns are dependent variables. The market-adjusted returns are cumulated from day -10 to day +1. Coefficients are reported with heteroscedasticity-robust t-statistics in parentheses. *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. *Anti-takeover* is equal to one if the firm has an anti-takeover device, and zero otherwise. *MVE* is defined as the market value of equity in million SEK. *Leverage* is equal to the value of long-term debt 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. *Outside Block* is equal to one if the second largest shareholder holds at least 10 percent of the voting rights, and zero otherwise. *Bid A/Bid B* is equal to the offered price for the A-shares divided by the offered price for the B-shares minus one at the tender offer. If the tender offer does not differentiate between A- and B-shares or if the firm does not have A- and B-shares, it is equal to zero. *Price A/Price B* is equal to the price of the A-shares divided by the price of the B-shares minus one at the beginning of the month of the tender offer. If the firm does not have listed A- and B-shares, it is equal to zero. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Cumulative market-model adjusted returns day -10 to +1 as dependent variable

	<i>M1</i>
<i>Leverage</i>	0.0303 (0.30)
<i>p-value>F</i>	0.7622

Panel B: Cumulative market-model adjusted returns day -10 to +1 as dependent variable

	<i>M1</i>	<i>M2</i>	<i>M3</i>
<i>Cash Dummy</i>	0.0298 (0.94)	0.0284 (0.89)	0.0333 (1.05)
<i>Equity</i>	-0.0913 (-1.12)	-0.0949 (-1.17)	-0.0754 (-0.94)
<i>Votes-Equity</i>	0.2065 (1.97)*	0.2451 (2.27)**	0.2607 (2.39)**
<i>Anti-takeover</i>	0.1326 (1.57)	0.1271 (1.50)	0.1234 (1.47)
<i>Ln(MVE)</i>	-0.0186 (-2.03)**	-0.0155 (-1.63)	-0.0129 (-1.38)
<i>Ln(Tobin's q)</i>	0.0041 (0.11)	-0.0013 (-0.04)	-0.0026 (-0.07)
<i>Outside Block</i>	0.0091 (0.29)	0.0109 (0.34)	0.0161 (0.50)
<i>Bid A/ Bid B</i>		-0.3973 (-1.67)*	0.2647 (0.64)
<i>Price A/ Price B</i>			-1.3966 (-2.07)**
<i>p-value>F</i>	0.0143	0.0063	0.0031

Table 8: U.S. results on takeover likelihood, takeover premium, and the CGQ anti-takeover score

In this table, we provide results from estimated OLS regressions and Heckman selection models. The Heckman models are estimated with Maximum Likelihood. The sample contains 1866 U.S. S&P1500 firms and 8872 firm years from 2004 to 2010. 284 firms were subject to a successful tender offer. The takeover premium reported in the Zephyr database is dependent variable. Coefficients are reported with heteroscedasticity-robust t- and z-statistics, respectively, in parentheses. *Insider Ownership Dummy* is equal to one if the insiders hold between 1 percent and 30 percent of firm equity, and zero otherwise. *CGQ Anti-takeover Score* is collected from the Corporate Governance Quotient database. *MVE* is defined as the market value of equity in million USD. *Leverage* is equal to the value of long-term debt divided by the book value of total assets. *Tobin's q* is defined as the sum of the market value of equity and the book value of debt divided by the book value of total assets. *ldur* is the natural logarithm of the number of years the firm has been included in the dataset before the specific firm-year observation. *** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

	<i>Heckman Selection</i>		
	<i>OLS on premium</i>	<i>Selection</i>	<i>Premium</i>
<i>Insider Ownership Dummy</i>	0.0056 (0.16)	-0.0004 (-0.01)	-0.054 (-0.11)
<i>CGQ Anti-takeover Score</i>	0.2313 (2.43)**	0.1451 (0.72)	0.2125 (1.63)
<i>Ln(MVE)</i>	-0.0319 (-2.61)**	-0.0945 (-5.10)***	-0.0589 (-4.63)***
<i>Ln(Tobin's q)</i>	0.0114 (0.33)	0.0455 (1.14)	0.0721 (2.49)**
<i>Leverage</i>		0.1448 (1.47)	
<i>ldur</i>		-0.1202 (-3.56)***	
<i>Industry Dummies</i>		<i>Yes</i>	
<i>p-value LR test of indep. eqns</i>			0.0000