

Morphable Ownership Extended: The Impact of Naked Shorting on Voting and Control

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Abstract

This paper examines the trading behavior of firms subject to mergers or hostile takeovers and proxy contests. Our goal is to determine if short sales or naked shorting is used to exploit Hu and Black's morphable ownership properties in an attempt to gain excessive ownership rights during proxy or merger contests. We use likelihood, censored data, and duration methods to examine the trading trends related to short sales and proxies for short sales, as well as naked short equities to consider the impact of shorting on corporate control. This paper seeks to enhance our understanding of the equity market and extend prior work on short interest, particularly naked shorting and its impact on the multiplicity of shares. We find support for the hypothesis that investors use shorting techniques to acquire additional voting interest though no significant evidence naked shorting is used.

JEL classification: G10, G14, G24, G18, G28, L00, L51.

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I. Overview

1.1. Introduction

Most equity securities in the U.S. are dichotomous instruments, possessing both voting rights as well as economic rights. Traditionally this structure is seen as equitable, bestowing on those most concerned with the economic values the right to vote on directors for the company. This property right, as it were, is intuitively understood by investors who believe they acquired both in their entirety when they purchased and retain the stock. This common intuition flows from, among others, Chief Justice John Marshall, who repeatedly and forcefully wrote on property rights. Using the contract clause, the commerce clause, and the Fifth Amendment, he continually fortified barriers against taking or diminishing the rights of the owner. In his dissent in *Ogden v. Saunders* 25 U.S. 213 (1827), the only case in which he was in the minority, Marshall defended the right to contract on the grounds that it “results from the right which every man retains, to acquire property, to dispose of that property according to his own judgment, and to pledge himself for a future act. These rights are not given by society, but are brought to it.”¹

In finance theory, linking voting rights to the economic benefits of shares is deemed desirable. It gives shareholders an incentive to vote wisely, exercising their corporate control. As the two rights are separate but linked, it is also possible to decouple them, distributing the benefits (economic and voting) separately to the owners, borrowers and lenders. What is not as well publicized is this decoupling can take place without the knowledge of the shareholder and without the wider knowledge of the public. Henry Hu and Bernard Black (2006) describe this ability to acquire the voting rights, and only the voting rights, as “morphable ownership.” It is a legal way of ‘vote buying’, and it is this effort to influence corporate control that we propose to examine in this paper.

¹ Huggins and Anderson, *Property Rights: A Practical Guide to Freedom and Prosperity*, The Hoover Institute, 2003

This paper is the first to examine shorting and naked shorting with respect to battles for corporate control and the use of decoupling as described by Hu and Black (2006) and its impact on the target. We present several statistical tests that shed light on the frequency with which shorting stocks is used to gain additional votes to exercise additional influence in shareholder contests. We perform logit regressions, and also utilize censored Tobit regressions and a duration method (the Cox Proportional Hazard Model) in an effort to better understand if efforts are undertaken by participants in a merger or proxy contest to acquire the voting property. These models are ideally suited to determine the sensitivity of appearances of issues identified as having naked short positions and the length of time that issues maintain pervasive short positions given the nature of the available data.

II. Vote Decoupling

The ability to decouple votes from the economic rights of a share is a relatively modern innovation beginning with the implementation of share borrowing in a short transaction. By tradition and law, the lender loses the right to vote, though often in current practice both the lender and borrower retain the vote (see Brooks and Moffett (2007)). What makes this decoupling of such interest is the scale on which the acquisition of voting rights can be acquired. Many firms report large short positions in their securities, with some having greater short positions than their float.² Traditionally this decoupling has relied solely on the share lending market. As detailed by Brooks and Moffett under standard margin account agreements, the share borrower acquired the voting rights from the share lender. The lender, in turn, retains all

² Conversion Solutions Holdings Corp, listed OTCBB, received from ADP the Non-Objecting Beneficial Owner (NOBO) report. It showed 75 million shares accounted for in client accounts at various brokers. The authorized float at the time was 30 million shares. The SEC, in the announcement for Regulation SHO admitted that there were cases where “delivery failures greater than a company’s total public float.”

economic rights and benefits. This decoupling can be magnified by various derivative hedging positions established by market makers – who typically delta hedge their positions via naked shorting. Another possible example would consist of holding a short equity swap position. This occurs when there is an exchange of future cash flows between two counterparties. One of these cash flow streams will be based on a reference interest rate (the interest rate leg), while the other, called the equity leg, is based upon the performance of a share of stock or stock market index. The short leg (party responsible to pay the total return on the stocks, while receiving LIBOR) obtains voting rights on the shorted shares until these shares are delivered. However, with a naked short position, the shares are never (during the time of this study) delivered, so the rights inure to the shorter as if the shares were borrowed and surrendered by a lender. Since many brokers accept votes from naked short buyers, it is also possible that participants purchase naked short shares in order to vote those shares.

Obviously an easy way of acquiring the voting rights, particularly for a short term, is to naked short the shares. With the recent disclosures of the pervasiveness of naked shorting (Boni, 2006; Brooks and Moffett, 2007), we examine whether naked shorting (or shorting) is used to influence corporate control in mergers or proxy contests.

III. Sample Data & Hypothesis

3.1. Sample Data

On July 28, 2004, the U.S. Securities and Exchange Commission (SEC) approved Regulation SHO for the purpose of updating short sales regulations, specifically with respect to ‘fail to deliver’ regulations, otherwise referred to as naked short sales. Naked short sales are the principal cause of pervasive delivery failures in the US equities markets (Boni, 2006) and

Regulation SHO (Reg SHO) was the first attempt to address the problem. As part of the requirements implemented by Reg SHO, each Exchange has to publish a daily list of securities that meet the requirements outlined by Reg SHO as having an excessive fail-to-deliver position. This list is known as the Reg SHO Threshold List (Threshold List). The sample data consists of stocks traded on the NYSE, AMEX, NASDAQ and OTC markets that appeared on the Threshold List between its inception on January 3, 2005 and June 30, 2006 as reported by each market at the end of each trading day. Our initial dataset consists of 163,831 total observations, taken from 19,921 issues.

This data was merged with the Securities Data Corporation (SDC) database for all mergers and proxy contests occurring in the same period, along with a database of daily short interest acquired from Shortsqueeze.com. This in turn was supplemented by monthly short interest data obtained from the NYSE, AMEX and NASDAQ. This data is used for the comprehensive study and is subsetted into a smaller Exchange listed database consisting of shares listed on the NYSE, AMEX and NASDAQ exchanges and a database of companies involved in mergers.

In addition, to qualify for the exchange listed database, issues to be used in the study must meet the following criteria: (1) the issuing company is listed on the CRSP daily tape during this time, (2) the issue has no known unusual trade issues, and (3) if the firm has multiple issues, all issues are included. This is due to some other classes also being determined as having short positions. These data restrictions resulted in 64,070 total observations.

Other data includes:

- o Daily closing prices, trading volumes, market capitalization, and outstanding shares taken from the Center for Research in Securities Prices (CRSP) for all listed stocks, Bloomberg, and www.yahoo.com or www.pinksheets.com for OTCBB stocks.

- o Total shares outstanding, from the Center for Research in Securities Prices (CRSP), Compustat, and Bloomberg.
- o Monthly short interest for listed shares and float from NYSE, AMEX, and Nasdaq via Bloomberg or Shortsqueeze.com.

3.2 Hypothesis Development

The first hypothesis addresses whether short interest or naked short positions identified by Regulation SHO impact the trading of target stocks experiencing takeover attempts or proxy contests. There is no effort to distinguish between friendly or hostile efforts, due to the possibility of short shares being used in friendly attempts as well as hostile. With the sample of issues identified on the SHO Threshold List, we are testing naked shorted stocks to determine if there are naked short positions held beyond the 5-day qualification period and the 13-day close out requirement. We realize that acquiring short shares (naked or otherwise) may expose the acquirer or proxy contestant to significant risks. The possibility exists that some investors may take significant short positions that would be difficult to cover quickly, while other investors would not expect to hold the position open for an extended period of time due to their only goal being to acquire the decoupled voting rights for corporate control. Barring excessive movement in the price of the share, the short sellers could quickly liquidate the position at little cost in a day or two. If this is the case, we expect to see shares obtained (borrowed) shortly before the vote occurs, and then to see the position covered after the vote is exercised. This could happen within a few days and would not register on the SHO Threshold List. However, SHO remains the only publically available source for determining naked short activity in equities, and we use it as a proxy for determining naked short activity. That leads to our first hypothesis:

Hypothesis 1: *The likelihood of an appearance on the Threshold List increases for companies experiencing a merger attempt or proxy contest.*

Next, as has been previously pointed out, Regulation SHO lists daily the issues with excessive fail positions. Should a merger be attempted on a company with an already existing and pervasive naked short position, obtaining sufficient shares to close out the position would become increasingly expensive if attempted quickly. Mitchell and Pulvino (2001) documented how short selling is related to merger activity. They showed how traders, hedge funds, and mutual funds trade based on the perceived premium paid by the acquirer for the acquisition. The traders will short the stock of the acquirer and purchase the stock of the acquisition in an effort to capture the abnormal return. During the negotiations only a few insiders are aware of merger talks, and when the information becomes public the stock prices react quickly to the new information. The increase in target shares, particularly if a large short position has been previously established, would reduce the rapidity with which the position was closed.

We hypothesize that an increased likelihood of an extended length of time on the Threshold List will be realized for those target companies experiencing a merger attempt where a significant short or naked short position is established. The expectation is that a positive correlation in the number of days on the Threshold List with the variables involving short interest and the merger variable will be observed (due to the acquirer of the morphable ownership in illiquid stocks failing to close out his position immediately after the deal is consummated because of the run up in the price of target shares). Due to the abnormal return

experienced by the target shares, we would expect this covering to occur over a more extended period of time.

Hypothesis 2: Delayed covering of the short position brought about by the ending of the merger contest should result in extending the length of time an issue remains on the Threshold List.

The next hypothesis is motivated by the literature on short sales, which establishes institutional ownership as a proxy for supply of hypothecable shares (Asquith, Pathak, Ritter, 2005; Chen, Hong, Stein, 2002; Nagel, 2005). Boni (2006) documents a pervasive and significant relationship between the level of institutional ownership and failures to deliver. We expect this relationship to continue since greater liquidity should reduce the need for naked shorting shares reducing delivery failures. This hypothesis should be more applicable for the exchange only data due to the inclusion of non-hypothecable shares in the comprehensive database.

Hypothesis 3: There should exist a decreased likelihood of a relationship between the percentage of institutional ownership and the probability of its being naked shorted due to the irrelevance of high costs to a naked short position.

The fourth hypothesis flows from the same beliefs as the third, which states that those stocks with a higher percentage of institutional ownership (a proxy for borrowing costs) should be more

liquid and cheaper to borrow, decreasing the incidence of naked shorting. Hence we would expect to see more pervasive naked shorting with reduced institutional ownership:

Hypothesis 4: *There should exist a negative relationship between institutional ownership and the length of time a target security spends on the Threshold List.*

Boni (2006) also found greater share turnover increases the likelihood of persistent naked short positions due to higher borrowing costs on lendable shares. Proxies for borrowing costs were documented by D'Avolio (2002). He shows that the likelihood of a stock being expensive to borrow is a function of several factors including:

- o The cost decrease with market cap
- o The cost decrease with the percentage of shares held by institutions
- o The cost increase with turnover

This motivates our fifth hypothesis:

Hypothesis 5: *There should exist a positive relationship between the turnover of a target stock and the length of time it appears on the Threshold List, and a negative relationship between the turnover of a target stock and market capitalization.*

IV. The Model and Tests of Hypothesis

4.1. The Models and Variables

In an attempt to glean the most accurate information contained in the data, we utilize three separate models; logit, censored Tobit, and duration analysis. The logit is used in the

binomial case of testing the likelihood of an appearance on the Reg SHO Threshold List. This is a means to identify whether extensive naked shorting is used in potential mergers to gain additional votes. The Tobit and duration models are used to determine the pervasiveness of short positions (and naked short positions) with respect to merger contests. We consider several explanatory variables with days listed (DAYS) as the dependent variable that identifies the length of time an issue appears continuously on the Threshold List. Each appearance on the Threshold List is treated individually rather than aggregating all appearances into one sum. As one of the proxies for borrowing costs, we use the logarithm of a firm's market capitalization. We also use another of D'Avolio's proxies for liquidity of the shares - the percentage of shares held by institutional investors (INST). We construct three measures to capture the effects of short sales: short volume ratio (SHORTVOL), short turnover (SHORTTURN) and share turnover (LOGSTURN):

$$\text{Short Volume Ratio}_{i,t} = \frac{\text{ShortSales}_{i,t}}{\text{ShareVolume}_i} \quad 1)$$

$$\text{Short Turnover}_{i,t} = \frac{\text{ShortSales}_{i,t}}{\text{Float}_i} \quad 2)$$

$$\text{Share Turnover}_{i,t} = 1 + \frac{\text{AverageDailyTurnover}_{i,t}}{\text{Float}_i} \quad 3)$$

We generate these ratios for every stock i for each day t in the study.

The turnover ratios are uniquely defined as using the share float (taken from Shortsqueeze.com and Bloomberg), instead of the more commonly used outstanding shares. We

believe this more accurately reflects the actual trading effects, without the inclusion of insider or non-trading shares. In addition we create a binary dummy variable for inclusion on the Reg SHO Threshold List (SHO) for being listed on the NYSE, AMEX or NASDAQ (SMALLCAP) and for being a merger target (MERGER). Our final variable is the daily holding period return (RET) as listed by CRSP. Table 1 gives the descriptive statistics for each variable for the entire sample used in the study.

(Insert Table 1)

The utilization of a logit regression, with SHO being the dependent variable, allows us to test the significance of the independent variables on the likelihood of being identified by Reg SHO requirements as having excessive naked short positions and the likelihood of a merger target having excessive fail-to-deliver positions.

The use of the censored Tobit model is best suited for those occasions when the dependent variable is limited (or censored) from above or below. Censored regression is applied in cases which fall into one of two categories. In the first case, the variable of interest is only observable under certain conditions. In the second case, which appears more often in econometrics, the variable to be explained is partly continuous but has positive point probability at one or more points, which is called a corner solution outcome. Our dependent variable, DAYS, defined as the number of days listed on the SHO Threshold List, takes on the value zero with positive probability (i.e, many firms do not appear on the SHO Threshold List), but is continuous over positive values. Therefore, we use a (censored) Tobit specification.

Next, we use a form of survival analysis to model the time it takes for an event to occur. We focus on the relationship between survival and ‘event-history’ analysis or the time it takes for a stock to be removed from the Threshold List. In order to estimate the contribution of the

independent variables (covariates) to the length of time that the issues are on the Threshold List (survival), we utilize duration analysis. In particular, we use the Cox proportional hazard model, which is a semi-parametric estimator and is the most widely used model for modeling duration.³ The model assumes that the underlying hazard rate (rather than survival time) is a function of the covariates; no assumptions are made about the nature or shape of the hazard function. In this model, the hazard function is the basis of the regression model, which is:

$$h(x_i, t_i) = h_0(x_i, t_i) \exp(\beta'x_i) \quad 4)$$

Cox (1972) applies the conditional partial likelihood function to estimate β by eliminating the effect of the baseline hazard, $h_0(x_i, t_i)$ and using the maximum likelihood estimator. In the context of this paper, the hazard rate estimates the probability of the event that issues disappear from the SHO Threshold List (the hazard event). The positive (negative) hazard ratio implies that a one unit increase in covariates results in an increase (decrease) in the hazard ratio and, therefore, a decrease (increase) in the duration, i.e. DAYS.

4.2. Correlations

In Table 2 we show the Pearson correlations between the variables for all samples used in the study. We find strong positive correlations between institutional ownership and firm size as indicated by market capitalization (0.48), as well as positive correlations between short sales turnover and share turnover (0.47). Concerned about possible multicollinearity, we tested for it by using variance inflation factor (VIF) and tolerance tests (not reported). There were no VIF's

³ While parametric duration models require certain assumptions on the distribution of residuals; the semi-parametric Cox proportional model does not make any distributional assumptions but can estimate the effects of independent variables.

greater than 2 and all tolerance tests were at acceptable levels, thus multicollinearity is not a significant problem (Allison, 1999).

In addition as expected, we found strong negative correlation between the variables merger and small caps (-0.24), and positive correlations between the variables merger and institutional and the log of market cap (0.25 and 0.17).

(Insert Table 2)

4.3. Univariate Tests

Before performing multiple regression analysis, we report the results of univariate tests where we compare the mean and median of characteristics between issues that appear on the SHO Threshold List and issues and issues that do not. We subset the analysis into three sets, including all securities, the exchange listed companies only, and the sample of merger companies only.

{Insert Table 3}

As shown in Table 3, the securities appearing on the SHO Threshold List tend to have significantly lower institutional ownership, which is consistent with our second hypothesis that abnormal returns of target shares should result in extending the length of time on the Threshold List. Also, share turnover and the ratio of short sales to float are significantly greater for securities on the SHO Threshold List, while the market capitalization is significantly lower. This is consistent with D'Avolio (2002) as well as our fifth hypothesis regarding borrowing costs. It should be noted that 19% of the securities on the Threshold List are involved in merger or proxy contests, while 39% of the securities that are involved in merger events are on the Threshold List. Given the possibility that naked short positions are used only to gain additional votes, it is likely

most would be short-lived positions and not linger sufficiently to show up on the Threshold List. We find these numbers to be intriguing at the least.

4.4. Determinants of the Probability of being listed on the SHO List

We evaluate the likelihood of SHO appearance by controlling directly for firm sample characteristics. In particular, we examine whether certain sample characteristics, identified in a series of papers by [Fama and French \(2001, 1993\)](#), can be used to measure the probability that a firm is naked shorted. Fama and French model their expected probability as a function of four variables: we include these characteristics to model the probability that the firm appears on the Threshold List.

For the full model logit regression given in Table 4, we find that the percentage of institutional ownership (INST), short share turnover (SHORTTURN), market capitalization (LOGMKTCAP), share turnover (LOGSTURN), and merger candidates (MERGER) are all significant with z-statistics based on robust standard errors greater than 3.00. Only short volume (SHORTVOL) was not significant to an increased likelihood of appearing on the SHO Threshold List. Being identified as a listed company (SMALLCAP = 0 if listed) was insignificant in the full sample.

{Insert Table 4}

We find that the likelihood of being on the SHO list increases as short sales as a percentage of the float increases, as well as when share turnover increases. The likelihood decreases with increased institutional ownership and as market capitalization increases, both of which are consistent with increased liquidity and lower borrowing costs, reducing the incidence of naked short positions. This is consistent with Kot's (2007) findings that a positive

relationship between different measures of institutional ownership (as a proxy of borrowing costs and liquidity) will play a role in the level of shorting. Companies identified as merger candidates had a lower probability of being listed on the Threshold List. The daily returns were too insignificant to being placed on the Threshold List. SHORTTURN, INST, and MERGER were the most persistent with high z-value results in all regressions.

In both of the regressions for each subset the signage remains consistent for most of the variables, though after the variable RET is dropped both MERGER and LOGSTURN have significantly different (lower) parameter estimates and SMALLCAP becomes significant. Note that the data limitation for the holding period returns allows us to use only 6,647 observations in the full sample case as compared to 64,070 observations without holding period returns.

Given that the majority of stocks in the database and on the Threshold List are small cap stocks, and our results show greater likelihood for appearing on the Threshold List for small cap stocks and less likelihood for those with increasing market capitalization, this is consistent with Asquith, Pathak and Ritter (2005) who found that small cap stocks are the most frequently shorted. Our results are also consistent with studies showing institutional ownership and market capitalization are proxies for borrowing costs, reflecting shares with lower borrowing costs are naked shorted to a lesser degree.

The positive sign for SHORTTURN indicates that the more stocks are shorted, the more likely they are to appear on the Threshold List. While we can't with certainty fix the source or rationale behind any individual incidence of naked shorting, if Hu and Black's premise of shorting stocks to obtain voting rights is valid, then these results would be consistent with that hypothesis, including the increased likelihood of naked shorting shares to gain additional rights.

The negative sign for MERGER shows there is a lack of evidence to substantiate our first hypothesis; this also conflicts with SHORTTURN. One explanation posits that this is evidence the positions, particularly the naked positions, are held only for a very short period of time, or in a insignificantly large enough size and not sufficiently long enough to consistently qualify for the Threshold List. According to Regulation SHO, the naked short position must exceed 5 days in length; exceed 10,000 shares and 0.5 percent of the outstanding shares to qualify for the Threshold List. In our sample, the average position was outstanding approximately 35 days, but our sample includes nearly two thousand observations of positions with duration on the Threshold List of over 100 days, with a large number close to 300 days of continuous appearance on the Threshold List. This skews the data, and until better data is available on naked short positions, we are unable to specifically test this result.

The results with the exchange-listed companies were very similar in size, signage, and degree. They were consistent with the entire sample results. In this table, instead of including the small cap dummy, we include the dummy variable for Nasdaq-listed companies. The coefficient of NASDAQ is positive and significant as expected.

We also ran the logit regression on companies that were merger candidates with the results given in Table 4. Again, the results are consistent with the previous results. Institutional ownership and market capitalization are negatively correlated with the probability of being listed on SHO Threshold List, while the coefficients of share turnover, the short sales to float ratio, and the small cap dummy are positive and significant.

4.5. Determinants of the length listed on the SHO List

To study how sample characteristics impact the pervasiveness of shorting and of being a merger target, we model the effects using Tobit and Cox proportional hazard model, as discussed

in the Section 4.1, to predict the length of time the issue remains on the Threshold List, based on firm-specific variables including being identified as involved in a merger or proxy contest.

Table 5 gives the results for the comprehensive study, exchange listed companies, and merger only companies. The results are consistent with those of the logit regression with one notable exception. In the censored Tobit, SHORTVOL changes sign and gains in significance for comprehensive, exchange, and merger-only regressions. The Tobit results and the Cox Ratio indicate that the pervasiveness of shorting as well as its duration increases along with naked shorting for issues in our study. Thus it is not an “either-or” proposition in seeking to obtain voting rights. Both shorting and naked shorting can increase.

LOGSTURN, SHORTVOL, and SHORTTURN are positive and significant in Tobit regressions and they have negative and significant Cox hazard ratios, indicating the more heavily traded issues are more likely to have a persistent naked short position in addition to the increased likelihood of being an SHO listed security. This would support our second hypothesis that the duration of some short positions may be extended due to gains in the target’s price. Thus merger candidates on the Threshold List may have a longer duration than non-merger issues.

{Insert Table 5}

We also see institutional ownership and market capitalization have negative correlations but positive hazard ratios, both representing borrowing costs. As the cost decreases, companies are more likely to cover their short positions quickly. This is consistent with our third and fourth hypotheses based on institutional ownership and liquidity.

MERGER remains negative and significant in our full regression. While this would appear to conflict with the premise of using short shares to acquire voting rights, it is also possible that many newly established (in the days prior to the vote) short positions are covered

quickly. This would prevent the shares shorted from qualifying for the Threshold List, and is consistent with the strong significance of SHORTTURN over the same period. Without specific data, we can only surmise at the possible reasons for this apparently contradictory result.

The results of Table 5 Panel B on exchange-listed securities remain consistent with the comprehensive regression. There is no change in signs or significant changes in z-statistics. MERGER is unchanged and remains significant. The dummy for Nasdaq-listed firms is positive and significant as expected in a Tobit regression, while it is insignificant in the duration model.

For the merger only population in Panel C, the most interesting results are that SHORTVOL is insignificant in the full model in Tobit regression, while it is partially significant in the Cox semi-parametric model. SHORTVOL remains more inconsistent than SHORTTURN when we include the holding period returns. Its volatility may also be due to the reduced number of observations.

V. Conclusions

This paper examines evidence that investors seek to use the various shorting mechanisms to take advantage of the decoupling of the voting and economic benefits of stocks in order to influence corporate control. We examined available data, building a database of issues experiencing mergers, excessive naked short position, and short sales. We also examined correlations or the increased likelihood of incidence in factors that either directly involve short sales or serve as proxy for the costs of short selling.

We find an increased likelihood of Threshold List stocks with measures of issues reflecting low short sales to float ratios, low market caps and non-exchange listed securities, as well as a decreased likelihood in the full sample that investors do seek to take advantage of the decoupling using shorting or naked shorting with merger candidates. However, the results for

merger candidates were mixed. There were conflicting signals on the utilization of shorting to obtain votes in the various regressions. In the merger only sample SHORTTURN (a measure of short sales) was significant while INST (percentage of institutional ownership) lost its significance (indicating borrowing costs were not significant). For those issues with more pervasive naked short sales, there remain strong correlations with longer tenure on the Threshold List, and higher short sales as indicated by SHORTTURN, while merger candidates are negatively signed and only slightly significant. In merger only candidates we find short turnover to be very significant and pervasive in duration, lending support to the hypothesis.

Our study lends some credence to Hu and Black's theory of morphable ownership used to influence shareholder votes, but the link with the available data is tenuous at best.

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Table 1
Descriptive Statistics
All Companies

This table presents summary statistics for the variables of this study of morphable ownership in mergers and proxy contests. The sample is based on common stocks, listed on the NYSE, AMEX, NASDAQ and OTC stocks taken from the Regulation SHO Threshold List, the Short Interest from the NYSE, AMEX and NASDAQ as reported by Shortsqueeze.com and Bloomberg Data as well as the SDC Database of mergers and proxy contests for the period beginning on January 13, 2005 through June, 2006. The initial analysis evaluates the impact of the percentage of institutional ownership (INST) which serves as a proxy for borrowing costs, the holding period return (RET), days listed on the SHO Threshold List (DAYS), the log of share turnover (LOGSTURN), a dummy variable of zero if the stock is listed on the NYSE, AMEX or NASDAQ and 1 otherwise (SMALLCAP), the log of market capitalization (LOGMKTCAP) which also serves as a proxy for borrowing costs, the short sales to average volume of sales ratio (SHORTVOL), the amount of short sales to float (SHORTTURN), a dummy variable of 1 if the security is on the Threshold List, zero otherwise (SHO), and a dummy variable of 1 if the company was involved in a merger or proxy contest during the period, zero otherwise (MERGER).

Panel A: All Companies

	No.	Mean	p25	Median	p75	Std Dev
SHO (%)	64,070	15.1375	0	0	0	35.8417
DAYS	64,070	35.6448	9	18	41	46.1031
INST (%)	64,070	43.2592	15.3000	41.3000	70.1000	29.8063
LOGSTURN (%)	64,070	0.9079	0.2411	0.5225	1.0067	2.4388
SMALLCAP (%)	64,070	4.7390	0	0	0	21.2474
LOGMKTCAP	64,070	19.9904	18.5167	19.8171	21.3341	2.0573
SHORTVOL (%)	64,070	585.1684	138.4615	370.9753	760.7273	900.1908
SHORTTURN (%)	64,070	3.9744	0.4215	2.3748	5.0202	7.5617
MERGER (%)	64,070	33.5765	0	0	100	47.2261
RET (%)	6,647	0.0262	-1.7544	0	1.6424	4.5507

Table 1**Panel B: Exchange Only Companies**

	No.	Mean	p25	Median	p75	Std Dev
SHO (%)	61,032	15.2330	0	0	0	0.3593
DAYS	61,032	34.8551	9	17	40	45.2375
INST (%)	61,032	41.7832	13.8	39	68.5	0.2978
LOGSTURN (%)	61,032	0.9040	0.2389	0.5204	1.0066	0.0239
LOGMKTCAP	61,032	19.9777	18.4805	19.7855	21.3234	2.0696
SHORTVOL (%)	61,032	579.2650	128.5346	359.0412	751.0081	9.4155
SHORTTURN (%)	61,032	3.9881	0.4146	2.3792	5.0567	0.0757
MERGER (%)	61,032	30.2317	0	0	100.0000	0.4593
NASDAQ (%)	61,032	54.4665	0	100	100.0000	0.4980
RET (%)	6,595	-0.0041	-1.7360	0	1.5655	0.0447

Panel C: Merger Only Companies

	No.	Mean	p25	Median	p75	Std Dev
SHO (%)	20,985	8.6633	0	0	0	0.2813
DAYS	20,985	37.1188	8	19	41	47.8786
INST (%)	20,985	53.2777	27.9000	57.7000	78.6000	0.2887
LOGSTURN (%)	20,985	0.9148	0.3168	0.6035	1.0792	0.0147
LOGMKTCAP	20,985	20.4628	18.9397	20.3768	21.9129	2.0731
SHORTVOL (%)	20,985	587.9183	178.9932	391.3717	742.9049	8.8692
SHORTTURN (%)	20,985	4.2601	1.0186	2.7695	5.2676	0.0564
SMALLCAP (%)	20,985	12.0753	0	0	0.0000	0.3258
RET (%)	1,329	0.0385	-1.45867	0	1.4094	0.0413

Table 2
Pearson Correlation Coefficients
All Companies

This table presents correlation coefficients, with p-values in parentheses for the variables of this study of morphable ownership in mergers and proxy contests. The sample is based on common stocks, listed on the NYSE, AMEX, NASDAQ, and OTC stocks taken from the Regulation SHO Threshold List, the Short Interest from the NYSE, AMEX and NASDAQ as reported by Shortsqueeze.com and Bloomberg Data, as well as the SDC Database of mergers and proxy contests for the period beginning on January 13, 2005 through June, 2006. The initial analysis evaluates the correlations of the percentage of institutional ownership (INST) which serves as a proxy for borrowing costs, the holding period return (RET), days listed on the SHO Threshold List (DAYS), the log of share turnover (LOGSTURN), a dummy variable of zero if the stock is listed on the NYSE, AMEX or NASDAQ and 1 otherwise (SMALLCAP), the log of market capitalization (LOGMKTCAP), the short sales to average volume of sales ratio (SHORTVOL), the amount of short sales to float (SHORTTURN), a dummy variable of 1 if the security is on the Threshold List, zero otherwise (SHO), and a dummy variable of 1 if the company was involved in a merger or proxy contest during the period, zero otherwise (MERGER).

	INST	LOG STURN	SMALL CAP	LOG MKTCAP	SHORT VOL	SHORT TURN	MERGER	RET
INST	1							
LOGSTURN	0.0335 (0.0000)	1						
SMALLCAP	-0.05 (0.0000)	-0.0073 (0.0756)	1					
LOGMKTCAP	0.4853 (0.0000)	0.0071 (0.0838)	-0.019 (0.0000)	1				
SHORTVOL	0.0547 (0.0000)	-0.0635 (0.0000)	0.0098 (0.0162)	0.0362 (0.0000)	1			
SHORTTURN	0.1763 (0.0000)	0.467 (0.0000)	0.0081 (0.0466)	0.0802 (0.0000)	0.2487 (0.0000)	1		
MERGER	0.2529 (0.0000)	0.002 (0.6233)	-0.2462 (0.0000)	0.172 (0.0000)	0.0064 (0.1173)	0.0269 (0.0000)	1	
RET	0.0242 (0.0570)	-0.0026 (0.8379)	-0.0031 (0.8096)	0.0613 (0.0000)	0.0194 (0.1277)	0.0012 (0.9225)	0.0014 (0.9102)	1

Table 3

Univariate Tests

This table presents results from univariate tests of the likelihood of being listed on the SHO Threshold List, with t-tests listed for the variables of this study of morphable ownership in mergers and proxy contests. The sample is based on common stocks, listed on the NYSE, AMEX, NASDAQ, and OTC stocks taken from the Regulation SHO Threshold List, the Short Interest from the NYSE, AMEX and NASDAQ as reported by Shortsqueeze.com and Bloomberg Data, as well as the SDC Database of mergers and proxy contests for the period beginning on January 13, 2005 through June, 2006. The initial analysis evaluates the impact of the variables on the likelihood of appearing on the SHO Threshold List for the variables including the percentage of institutional ownership (INST) which serves as a proxy for borrowing costs, the holding period return (RET), days listed on the SHO Threshold List (DAYS), the log of share turnover (LOGSTURN), a dummy variable of zero if the stock is listed on the NYSE, AMEX or NASDAQ and 1 otherwise (SMALLCAP), the log of market capitalization (LOGMKTCAP), the short sales to average volume of sales ratio (SHORTVOL), the amount of short sales to float (SHORTTURN), a dummy variable of 1 if the security is on the Threshold List, zero otherwise (SHO), and a dummy variable of 1 if the company was involved in a merger or proxy contest during the period, zero otherwise (MERGER). ^a, ^b, and ^c represent statistical significance at the 1%, 5%, and 10% level, respectively.

	No. Obs	Full Sample			Exchange Listed			Merger/Proxy		
		No	Yes	t-test / Wilcoxon test	No	Yes	t-test / Wilcoxon test	No	Yes	t-test / Wilcoxon test
INST (%)	Mean	46.7012	23.9630	-69.487 ^a	45.0730	23.4767	-66.687 ^a	55.2720	32.251	-33.341 ^a
	Median	47.2	17	-67.371 ^a	44.6000	16.6000	-64.961 ^a	60.6	26.8	-31.921 ^a
LOGSTURN (%)	Mean	0.7649	1.7098	34.278 ^a	0.7650	1.6838	33.248 ^a	0.81689	1.942	31.199 ^a
	Median	0.5017	0.7246	28.682 ^a	0.4987	0.7380	28.915 ^a	0.58504	0.971	19.135 ^a
SMALLCAP (%)	Mean	95.2714	95.2023	-0.285				12.64674	6.051	-8.262 ^a
	Median	100	100	-0.776				0	0	-8.249 ^a
LOGMKTCAP	Mean	20.1746	18.9576	-53.033 ^a	2014.73	1903.44	-48.653 ^a	20.62417	18.761	-37.844 ^a
	Median	20.0384	18.7509	-54.107 ^a	1998.74	1880.27	-49.974 ^a	20.57876	18.759	-36.981 ^a
SHORTVOL (%)	Mean	574.7792	643.4114	6.683 ^a	5.6847	6.3932	6.682 ^a	566.4561	814.192	11.417 ^a
	Median	378.7936	323.0000	7.378 ^a	3.6562	3.8146	5.524 ^a	389.0003	439.337	2.557 ^b
SHORTTURN (%)	Mean	3.5058	6.6010	36.256 ^a	3.5143	6.6463	35.744 ^a	3.74671	9.647	43.674 ^a
	Median	2.3697	2.4341	13.310 ^a	2.3675	2.5000	14.349 ^a	2.70005	4.559	16.231 ^a
MERGER (%)	Mean	36.1229	19.3014	-31.466 ^a	32.3630	18.3715	-27.208 ^a			
	Median	0	0	-31.208 ^a	0	0	-27.045 ^a			
NASDAQ(%)					52.8830	63.2785	18.583 ^a			
					100	100	18.531 ^a			
RET (%)	Mean	0.0680	0.0230	-0.201	0.1100	-0.0127	-0.569	0.07361	0.03245	-0.128
	Median	0	0	-0.847	0	0	-1.320	0.0974	0.0001	-1.123

Table 4

Logit Regression Coefficients

This table presents results from logit regressions of the likelihood of being listed on the SHO Threshold List. The sample is based on common stocks, listed on the NYSE, AMEX, NASDAQ, and OTC stocks taken from the Regulation SHO Threshold List, the Short Interest from the NYSE, AMEX, and NASDAQ for the period beginning on January 13, 2005 through June, 2006. The initial analysis evaluates the impact of the variables on the likelihood of appearing on the SHO Threshold List for the variables including the percentage of institutional ownership (INST) which serves as a proxy for borrowing costs, the holding period return (RET), days listed on the SHO Threshold List (DAYS), the log of share turnover (LOGSTURN), a dummy variable of zero if the stock is listed on the NYSE, AMEX, or NASDAQ and 1 otherwise (SMALLCAP), the log of market capitalization (LOGMKTCAP), the short sales to average volume of sales ratio (SHORTVOL), the amount of short sales to float (SHORTTURN), a dummy variable of 1 if the security is on the Threshold List, zero otherwise (SHO), and a dummy variable of 1 if the company was involved in a merger or proxy contest during the period, zero otherwise (MERGER). Table values are estimated coefficients with z-statistics based on robust standard errors reported in parentheses below coefficient values.

	<u>All Companies</u>		<u>Exchange Listed</u>		<u>Merger Only</u>	
INST	-3.07 ^a (-16.04)	-3.347 ^a (-44.52)	-3.000 ^a (-15.73)	-3.347 ^a (-44.19)	-3.117 ^a (-8.32)	-2.032 ^a (-14.15)
LOGSTURN	24.19 ^a -3.24	14.81 ^a -4.18	18.43 ^a -2.65	14.82 ^a -4.04	13.822 -1.19	23.333 ^a -4.86
SMALLCAP	0.219 -0.42	0.516 ^a -8.39			-0.35 ^a (-0.45)	0.895 ^a -6.48
LOGMKTCAP	(-0.165) ^a (-6.95)	-0.178 ^a (-20.93)	-0.097 ^a (-3.55)	-0.182 ^a (-19.92)	-0.464 ^a (-8.46)	-0.576 ^a (-22.21)
SHORTVOL	(-0.004) (-0.62)	-0.001 (-0.87)	-0.004 (-0.64)	-0.001 (-0.62)	-0.034 ^a (-3.65)	-0.002 (-0.74)
SHORTTURN	11.44 ^a -7.96	11.295 ^a -29.31	10.491 ^a -7.73	11.271 ^a -28.72	16.094 ^a -6.87	14.48 ^a -18.64
MERGER	(-1.017) ^a (-9.11)	-0.593 ^a (-17.79)	-1.052 ^a (-9.07)	-0.429 ^a (-13.44)		
RET	0.208 -0.16		-0.142 (-0.11)		2.774 ^a -0.75	
NASDAQ			0.774 ^a -6.03	0.08 ^a -2.62		
Intercept	6.108 ^a -8.24	2.92 ^a -18.2	4.696 ^a -8.25	2.49 ^a -14.84	11.33 ^a -10.63	8.83 ^a -19.33
No. Observations	6,647	64,070	6,134	56,927	1,293	20,065
Wald test	491.82	4,918	520.66	4583.37	198.24	1404.51
P value	0	0	0	0	0	0

Table 5
Tobit Coefficients and Cox Hazard Ratio

This table presents results from Tobit regressions on the number of days listed on the SHO Threshold List, with z-statistics in parentheses for the variables of this study of morphable ownership in mergers and proxy contests. The sample is based on common stocks listed on the NYSE, AMEX, NASDAQ and OTC stocks taken from the Regulation SHO Threshold List, the Short Interest from the NYSE, AMEX, and NASDAQ as reported by Shortsqueeze.com and Bloomberg Data, as well as the SDC Database of mergers and proxy contests for the period beginning on January 13, 2005 through June, 2006. The initial analysis evaluates the impact of the percentage of institutional ownership (INST) which serves as a proxy for borrowing costs, the holding period return (RET), days listed on the SHO Threshold List (DAYS), the log of share turnover (LOGSTURN), a dummy variable of zero if the stock is listed on the NYSE, AMEX, or NASDAQ and 1 otherwise (SMALLCAP), the log of market capitalization (LOGMKTCAP), the short sales to average volume of sales ratio (SHORTVOL), the amount of short sales to float (SHORTTURN), a dummy variable of 1 if the security is on the Threshold List, zero otherwise (SHO), and a dummy variable of 1 if the company was involved in a merger or proxy contest during the period, zero otherwise (MERGER). Table values are estimated coefficients with z-statistics based on robust standard errors reported in parentheses below coefficient values.

Panel A: All Companies.

	Tobit		Cox Hazard Ratio	
<u>Dependent variable : No. of days listed on the SHO Threshold List</u>				
INST	-34.8293 ^a (-13.09)	-98.5396 ^a (-49.03)	0.9162 ^a (11.98)	0.9363 ^a (15.48)
LOGSTURN	157.8828 ^a (10.99)	81.8388 ^a (13.37)	-1.3160 ^a (-2.66)	-1.3151 ^a (-3.57)
SMALLCAP	70.6095 ^a (10.89)	12.8994 ^a (5.88)	-0.8305 ^a (-8.19)	-0.0809 ^c (-1.88)
LOGMKTCAP	-1.2048 ^a (-3.71)	-6.0331 ^a (-24.17)	0.0298 ^a (4.21)	0.0348 ^a (6.54)
SHORTVOL	0.7026 ^a (11.93)	0.3540 ^a (9.15)	-0.0072 ^a (-3.30)	-0.0056 ^a (-3.46)
SHORTTURN	86.4945 ^a (22.63)	207.9680 ^a (57.35)	-4.0990 ^a (-9.84)	-4.1713 ^a (-14.14)
MERGER	-4.9742 ^a (-3.38)	-17.4174 ^a (-16.10)	0.0795 ^b (2.10)	0.0627 ^b (2.10)
RET	-5.2915 (-0.42)		0.2239 (0.83)	
Intercept	122.1735 ^a (13.87)	86.8577 ^a (17.41)		
No. Observations	6,647	64,070	5,738	9,046
LR test	1,333.82	8,632.37	494.84	678.15
P value	0.000	0.000	0.000	0.000

Table 5**Panel B: Exchange Listed Companies**

Dependent variable : No. of days listed on the SHO Threshold List	Tobit		Cox Hazard Ratio	
INST	-99.8933 ^a (-48.48)	-35.9487 ^a (-13.48)	0.9366 ^a (15.30)	0.9139 ^a (11.91)
LOGSTURN	116.5242 ^a (22.49)	164.0793 ^a (10.50)	-1.5374 ^a (-3.61)	-1.6998 ^a (-3.17)
LOGMKTCAP	-5.6858 ^a (-20.92)	-0.5875 ^b (-1.73)	0.0373 ^a (6.00)	0.0288 ^a (3.62)
SHORTVOL	0.3600 ^a (9.06)	0.6894 ^a (11.76)	-0.0060 ^a (-3.58)	-0.0073 ^a (-3.29)
SHORTTURN	210.8101 ^a (64.25)	82.8302 ^a (21.68)	-4.1122 ^a (-13.45)	-4.0189 ^a (-9.36)
MERGER	-12.9027 ^a (-11.78)	-4.5203 ^a (-3.08)	0.0651 ^b (2.12)	0.0731 ^b (1.93)
NASDAQ	2.4886 ^b (2.53)	7.3972 ^a (5.84)	0.0111 (0.43)	-0.0070 (-0.22)
RET		-5.3103 (-0.42)		0.2548 (0.93)
Intercept	64.8140 ^a (12.33)	35.6537 ^a (5.42)		
No. Observations	56,927	6,134	8,612	5,693
LR test	7908.50	1187.26	672.5	423.64
P value	0.000	0.000	0.000	0.000

Table 5**Panel C: Merger Only Companies**

Dependent variable : No. of days listed on the SHO Threshold List	Tobit		Cox Hazard Ratio	
INST	-66.3699 ^a (-15.79)	-42.4847 ^a (-7.26)	0.5000 ^a (4.30)	0.4518 ^a (3.07)
LOGSTURN	369.8052 ^a (9.37)	152.5146 ^a (4.33)	-2.3928 ^a (-3.74)	-2.1319 ^a (-2.87)
LOGMKTCAP	-15.8174 ^a (-21.80)	-5.6503 ^a (-6.16)	0.0427 ^b (2.48)	0.0510 ^b (2.27)
SHORTVOL	0.1109 (1.37)	0.2464 (1.38)	-0.0032 ^b (-2.16)	0.0032 (1.47)
SHORTTURN	454.5206 ^a (34.20)	253.0660 ^a (19.95)	-4.3707 ^a (-14.87)	-4.6809 ^a (-12.39)
SMALLCAP	20.2348 ^a (6.01)	30.6867 ^a (3.18)	-0.1192 (-1.62)	-0.5087 ^a (-3.74)
RET		41.5524 (1.38)		-0.6087 (-0.91)
Intercept	227.8216 ^a (18.01)	126.3895 ^a (7.75)		
No. Observations	20,065	1,293	1,746	1,105
Wald test	3765.68	571.26	346.26	255.20
P value	0.000	0.000	0.000	0.000