

STOCKHOLM SCHOOL OF ECONOMICS
Department of Finance
Bachelor's Thesis
Spring 2015

Regulatory Effects on Voting Premiums in Sweden

Explaining the price differential between share classes during a period of legislative change

Authors:

MAX CARLSÉN^Ψ

HUGO WIESLANDER^Φ

Abstract:

This paper explains the voting premium of dual-class firms in Sweden and specifically investigates the effects of a fair price rule, hindering differentiated takeover bids between superior voting shares (Class A) and inferior voting shares (Class B). While Sweden is the country with the highest fraction of dual-class firms in Europe, in recent years, no comprehensive study has been conducted explaining the voting premium. The dual-class structure, championed by the business community, has long been contested and was once again under scrutiny when the discussion of a fair price rule emerged. With daily trading data from 2004-2014, we explain up to 25.2% of the voting premium in Sweden, utilising control variables on ownership structure, liquidity and firm size. In order to assess the regulatory effect, we perform a difference-in-differences analysis, employing a control group consisting Western European dual-class firms. The results suggest the rule drove voting premiums down by 8.0 percentage points and thus had significant monetary implications for holders of Class A shares.

Key Words: Dual-class shares, Voting premium, Takeovers, Difference-in-differences, Fair price rule

JEL Codes: G32, G34

Tutor: Markus Senn

^Ψ 22935@student.hhs.se

^Φ 22801@student.hhs.se

Acknowledgment

We thank our tutor Markus Senn at the Swedish House of Finance, for invaluable support and guidance throughout the writing of this thesis.

We would also like to express our gratitude to Johan Bygge, COO at EQT and former board member of Näringslivets Börskommitté and Föreningen för god sed på värdepappermarknaden, for sharing his knowledge and valuable opinions. We further thank Erik Graf, Bachelor Student at Stockholm School of Economics, for technical input. Felix Bratell, Analyst at Morgan Stanley, for information regarding the procedure surrounding a takeover. Lucas Carlsén, Associate at McKinsey & Company, for helpful remarks at the final stage.

Table of Contents

1. INTRODUCTION.....	1
2. PREVIOUS RESEARCH.....	3
2.1 DUAL-CLASS SHARES.....	3
2.1.1 <i>Control Theories</i>	3
2.1.2 <i>Liquidity Theories</i>	4
2.2 TAKEOVERS AND CONTROL CONTESTS	4
3. THE DUAL-CLASS SHARE SYSTEM IN SWEDEN.....	7
3.1 VOTING PREMIUM.....	7
3.1.1 <i>Sweden in a European Context</i>	7
3.1.2 <i>Ownership Structure</i>	7
3.1.3 <i>Historical Voting Premium</i>	8
3.2 SWEDISH TAKEOVER REGULATION AND THE FAIR PRICE RULE	10
3.2.1 <i>Background and Regulatory Implications</i>	11
3.2.2 <i>Timeline Surrounding the Legislative Change</i>	13
3.3 MAIN HYPOTHESIS.....	15
4. DATA	16
4.1 SAMPLE SELECTION AND DATA COLLECTION	16
4.1.1 <i>Treatment Group</i>	16
4.1.2 <i>Control Group</i>	17
4.2 VARIABLES.....	18
4.2.1 <i>Voting Premium Variable</i>	18
4.2.2 <i>Corporate Control Variables</i>	19
4.2.3 <i>Liquidity Variables</i>	19
4.2.4 <i>Firm Size Variable</i>	20
4.2.5 <i>Fair Price Rule</i>	20
4.2.6 <i>Difference-in-differences Variables</i>	21
4.2.7 <i>Summary Tables of Variables</i>	21
5. EMPIRICAL METHODOLOGY.....	22
5.1 GENERAL VOTING PREMIUM REGRESSION MODEL SPECIFICATION	22
5.2 DIFFERENCE-IN-DIFFERENCES REGRESSION MODEL SPECIFICATION	22
5.3 CHOICE OF MODEL TYPES.....	22
5.4 CORRELATION & MULTICOLLINEARITY ANALYSIS	24
5.5 OTHER MODEL CONSIDERATIONS.....	25
6. RESULTS	26
6.1 GENERAL VOTING PREMIUM	26
6.1.1 <i>Descriptive Statistics</i>	26

6.1.2 General Voting Premium Regression	27
6.2 FAIR PRICE RULE IMPLICATIONS	29
6.2.1 Descriptive Statistics of the Voting Premium	29
6.2.3 Difference-in-differences Model Results	29
6.3 ROBUSTNESS AND PROBLEMATIZATION.....	31
6.3.1 Endogeneity	31
6.4.2 Caveats to the DiD Analysis	31
8. CONCLUSION.....	32
9. REFERENCES	33
APPENDIX.....	36

List of Figures

FIGURE 1: HISTORICAL VOTING PREMIUM IN SWEDEN (2004–2014)	9
FIGURE 2: HISTORICAL VALUE-WEIGHTED VOTING PREMIUM IN SWEDEN (2007–2010).....	14

List of Tables

TABLE 1: PREVIOUS TAKEOVER BIDS ON DUAL-CLASS FIRMS IN SWEDEN	12
TABLE 2: PREVIOUS TAKEOVERS, POST INTRODUCING THE FAIR PRICE RULE	12
TABLE 3: THE VOTING PREMIUM 2004-2014 (TREATMENT GROUP)	17
TABLE 4: THE VOTING PREMIUM 2004-2014 (CONTROL GROUP)	18
TABLE 5: INDEPENDENT VARIABLES, GENERAL VOTING PREMIUM REGRESSION	21
TABLE 6: INDEPENDENT VARIABLES, DIFFERENCE-IN-DIFFERENCES ANALYSIS.....	21
TABLE 7: HAUSMAN AND BREUSCH-PAGAN LAGRANGE (BPL) MULTIPLIER TESTS.....	23
TABLE 8: PEARSON PAIRWISE CORRELATION MATRIX.....	24
TABLE 9: VARIANCE INFLATION FACTOR (VIF) TEST	25
TABLE 10: DESCRIPTIVE STATISTICS OF THE VARIABLES, SWEDISH COMPANIES (2004-2014)	26
TABLE 11: GENERAL VOTING PREMIUM REGRESSION – A RANDOM EFFECTS MODEL.....	27
TABLE 12: VOTING PREMIUM DESCRIPTIVE STATISTICS (TREATMENT GROUP)	29
TABLE 13: VOTING PREMIUM DESCRIPTIVE STATISTICS (CONTROL GROUP)	29
TABLE 14: DIFFERENCE-IN-DIFFERENCES RANDOM EFFECTS REGRESSION, CLUSTERED AT THE COMPANY LEVEL.	30

1. Introduction

For the first time in 40 years, the board of Näringslivets Börskommitté (the Swedish Industry and Commerce Stock Exchange Committee) was divided on an issue. Since its inception, all decisions of the committee had been unanimous until March 2009, when a member of the board accounted for the first no-vote in the committee's history. The matter in question was regarding a potential implementation of a fair price rule for dual-class firms, hindering differentiated takeover bids for different share classes. A legislative change that would demand, barring an exemption, equal price for superior voting shares (Class A) and inferior voting shares (Class B) during takeovers. The issue was first raised when a number of Swedish and international institutional investors, managing capital over SEK 12,000 billion, demanded equal treatment for all shareholders, being displeased after a takeover resulting in a significant voting premium for the Class A shareholders. After long processes and reviews, the committee finally made its decision, suggesting that a fair price rule should be incorporated into the Swedish Takeover Act. The rule was implemented 1 October 2009, applying to all Swedish stock exchanges and marketplaces.

The fraction of dual-class firms in Europe is falling every year. Unifications of share classes are becoming more common and dual-class IPOs occur less frequently. The European Central Bank has for long opposed the dual-class structure, having raised the issue of a potential ban of the structure several times. However, the attempts have been unsuccessful and no such prohibition has been set. Many Europeans see the dual-class structure as an old-fashioned model that is slowly vanishing. However, the business community in Sweden has been a loyal supporter of the dual-class system, arguing that a potential ban would threaten the stabile ownership base the Swedish model has created. Particularly during a time when long-term ownership is in demand and the passive ownership of mutual funds has increased. The strong support from the business community might potentially be an explanation to why Sweden clearly stands out from the other European countries, having a significantly higher fraction of dual-class firms listed. Today, 38.6%¹ of the companies listed on Sweden's main stock exchange, NASDAQ OMX Stockholm, are dual-class firms, compared to the European Union mean of around 20%².

Long-drawn discussions and significant media attention followed the suggestion of a potential fair price rule. Proponents of the rule argued that all shareholders investing capital in the Swedish stock market should be equally treated, whilst opponents felt that the pricing of shares should be handled by the financial markets and not be determined by rules and regulations. Given the large interest

¹ Bloomberg data, 2015-05-16

² Chemmanur (2012), see references

in this issue, we consider it interesting to study how this legislative change actually affected the voting premium. Since many takeovers, prior to the legislative change, were executed with a differentiated bid, offering a higher price for superior voting shares than for inferior voting shares, our hypothesis is that the implementation of a fair price rule should have pushed the voting premium down. This hypothesis is investigated by studying how the voting premium in Sweden changed in connection to the introduction of the fair price rule. In order to isolate the effect, we have performed a difference-in-differences analysis, comparing changes in premiums for a treatment group, consisting of all Swedish dual-class firms with both share classes listed, with changes in premiums for a control group, consisting of Western European companies not affected by the legislative change. In order to further investigate what factors create the voting premium in Sweden, we use a set of explanatory variables, focusing on corporate control and liquidity, in order to generally explain the voting premium.

Previous research has thoroughly investigated the dual-class structure from a number of angles. Zingales (1995) along with Nenova (2003) and Gardiol (1997), are examples of papers studying the price differential between superior voting and inferior voting shares, attempting to find the explanatory factors creating the premium. Although Sweden is a special country in terms of dual-class shares, there are no recent published papers focusing solely on explaining the voting premium. Studying the effects of a fair price rule is completely a new approach, as no one previously has investigated its impact on the voting premium in Sweden. Neumann (2003) had a similar approach, studying the implications of a fair price rule in Denmark. However this is not extensively investigated, using no difference-in-differences or similar analysis in order to isolate the causal effect.

From our analysis we can conclude that the results from the independent variables, explaining the general voting premium in Sweden, are in line with our expectations as well as the results from previous papers studying other countries (Gardiol, 1997, Neumann, 2003). A large shareholder, holding a significant stake in a company drives the premium down, just as lower relative liquidity in the superior voting share, also drives the premium down. Our key finding, is that the aforementioned legislative change, had a negative effect on the voting premium in Sweden. On average, the voting premium decreased with 8.0 percentage points post introducing the fair price rule, a result confirming our hypothesis. This finding should pave the way for more research on the subject of how regulatory changes affect voting premiums.

2. Previous Research

2.1 Dual-class Shares

Dual-class shares, as referred to from here on in this paper, are two different classes of shares issued by a single firm, possessing the same cash flow rights but differing in voting rights. Examining this share structure in relation to the theory of asset pricing, disregarding liquidity risk and agency problems, shares with equal cash flow rights should trade at the same price. However, empirically, a price difference has existed between dual-class shares, as superior voting shares usually are traded at a higher price. Since the two share classes differ only in terms of voting rights, the price difference is further defined as a voting premium.

The existence of a voting premium has been investigated empirically for a long time. In the US, Lease (1983) documented that shares with superior voting rights trade at an average premium of 5.44%. Similarly, Rydqvist (1986) discovered a voting premium ranging from 2% to 6% from 1975 to 1985 in Sweden. Megginson (1990) reported a 13% voting premium in the UK and Zingales (1994) an 82% voting premium in Italy. Nenova (2003) performed a cross-country analysis of 18 countries assessing the value of the corporate voting rights, a measurement similar to the voting premium, displaying that corporate voting rights are valued worldwide. In Nenova's (2003) results for each country, Scandinavia (Sweden, Denmark, Finland) stands out, finding those countries to have a lower value of corporate voting rights than the other countries investigated.

2.1.1 Control Theories

Corporate control, indicated by ones voting rights, is an important factor when attempting to explain the price differential between different share classes. The concept has been applied in a number of papers on the subject, for instance by Zingales (1994, 1995) and Levy (1983) who suggested that the value of superior voting rights are partly determined by the ownership distribution. Specifically, a concentrated ownership structure with one block holder controlling the majority of the votes results in a lower premium, due to a lower probability of a control contest. In the same sense, a dispersed ownership structure or when two large minority shareholders hold stakes of similar size, would drive the premium up (Robinson and White, 1990). Rydqvist (1996) reached the same conclusion, studying a similar hypothesis using Swedish stock market data.

Many previous studies have linked private benefits of control theories to the voting premium, e.g. Grossman and Hart (1988), Modigliani and Perotti (1998) and Rydqvist (1996). The theory is based on the fact that a shareholder with a large enough share of the votes in a firm can extract perquisites

and other privileges. There is thus an inherent value, other than the prospects of share returns, to control of a company.

2.1.2 Liquidity Theories

Liquidity is an important concept in asset pricing and refers to the speed and ease at which a security can be traded. Low liquidity in an asset creates liquidity risk, which investors expect to be compensated for. Using the bid-ask spread as a proxy for liquidity, Amihud and Mendelson (1985) found that asset returns increased with a higher spread, indicating that liquidity is priced in the asset return. Hence, an illiquid security should theoretically be priced lower than a comparable asset with higher liquidity. In our case, if share classes differ in terms of liquidity, it would be a potential determinant of the voting premium.

Consistent with the theory above, Doidge (2003) argued that if an inferior voting share class (Class B) is more liquid than the superior voting share class (Class A), this would impact the voting premium negatively. Smith and Amoako-Adu (1995) found results complying with Doidge's theory, performing a study on Canadian dual-class firms. They found the inferior voting share class to be more liquid resulting in a smaller voting premium. Looking at the implied liquidity risk over 20 trading days, Neumann (2003) also found a significant and negative impact on Danish dual-class firms.

2.2 Takeovers and Control Contests

A takeover bid, as defined in the Swedish Takeover act, is a public offer from anyone, an individual or an entity, made to the holders of shares issued by a listed company, to acquire all or some of its shares. Takeover bids in Sweden are regulated by the Swedish Act on Takeover Bids and by the rules of the stock exchange or the authorised marketplace where the target company's shares are traded. The regulation is applicable to shares of Swedish listed companies as well as foreign companies listed on a Swedish stock exchange.

The current Swedish takeover regulations were first entered into force 1 July 2006, stating that all stock exchanges and authorised marketplaces should adopt rules regarding takeovers. Today, the Swedish marketplaces consists of two stock exchanges, NASDAQ OMX Stockholm AB ("Nasdaq") and Nordic Growth Market NGM AB ("NGM"), and three multilateral trading facilities, NASDAQ OMX First North ("First North"), Nordic MTF and Aktietorget AB ("Aktietorget"). All Swedish market places, stated above, have elected the Swedish Securities

Council (“SSC”) to act as the responsible body for interpretation and to decide whether an exemption from the rules should be made.

As described, Sweden has comprehensive regulation on takeovers, both in terms of legislation as well as self-regulation via institutes striving for good practice on the stock market. Takeovers are common in Sweden, and takeovers of dual-class companies are no exception. In 2006, ECB listed Sweden and Denmark as the countries with the highest fraction of mergers and takeovers of dual-class firms in Europe. A takeover may, and often does, result in a premium paid for superior as well as inferior voting shares over prevailing market prices. Yet, previous events show that superior voting shares have been subject to larger takeover premiums than the inferior voting shares.

Over the years, previous research has shown a clear link between takeovers and an additional premium for superior voting shares. DeAngelo and DeAngelo (1985) studied takeover bids of 20 US dual-class firms between 1960 and 1980, finding four takeovers where the holders of superior voting shares were offered an 83% to 200% premium to the holders of inferior voting shares. Megginson (1990) reported similar findings, reviewing 43 takeovers of UK dual-class firms in 1955-1982, where 86% of the takeovers were executed with a differentiated bid premium, ranging from 1.6% to 260% higher for superior voting shares. As the aforementioned research concludes, an additional premium for superior voting shares during takeovers has been common, and Sweden is no exception. Rydqvist (1992) followed the same method as Megginson’s, and applied it to Sweden. During ten years between 1980 and 1990, 40 differentiated takeover bids were recorded. The bid premiums for superior voting shares averaged around 27% and ranged from 0.8% to 116%.

These findings led to further research on the subject, mainly focusing on investigating the basis of why this premium for superior voting shares exist. Zingales (1995) found that an important factor explaining the overall premium is the expected additional payment of a potential control contest. Further explained, the existence of a potential other party interested in control of the target company is an important driver of the value and attraction of the superior voting shares. Rydqvist (1996) further confirmed Zingales’ (1995) results, finding the voting premium to be greater during times of frequent takeover activity, concluding that the likelihood of a takeover is relevant in determining the premium.

Historically, several papers have studied the effects of legislative change on the stock market. Li (2008) investigated the market reactions to the Sarbanes-Oxley act of 2002 in the US, Larcker (2011) studied the effect of legislative and regulatory actions pertaining to corporate governance in the US, both finding significant results. These two papers are merely a fraction of the papers finding

significant market reactions to legislative changes. Considering this, as well as the fact that previous research has concluded takeovers to be of importance for the voting premium, we find it interesting to further study how the incorporation of a fair price rule affected the voting premium in Sweden.

3. The Dual-class Share System in Sweden

3.1 Voting Premium

3.1.1 Sweden in a European Context

The dual-class structure, with differing voting rights per share, allows a shareholder holding a minority stake of the share capital of a company to exercise effective control over the shareholders' meeting and thereby the election of the board and thus the company. Sweden has long been a poster boy for dual-class firms, due to the high fraction of listed firms adopting the structure, as well as the fact that these firms typically are controlled by one of the few powerful Swedish spheres. In 2001, ECB listed Sweden as the country in Europe with the highest percentage of dual-class firms. Further, during 1996-2001, Sweden was the country that experienced the lowest unification activity of dual-class shares, with only 5% of the firms switching to a one-share-one-vote structure. We can also see a trend in Europe of diminishing dual-class IPOs. In 1996, 22% of the newly listed companies had a dual-class structure, a number decreasing to 4% in 2002. While Sweden followed the decreasing trend, it showed a much higher percentage of dual-class IPOs than the European mean. In 1996, 59% of the IPOs in Sweden were of firms using a dual-class structure, a figure which decreased to 29% in 2002.

The discussion regarding the existence of the dual-class system is persistent and constantly recurring. Sweden, together with Finland and Denmark, has for a long time struggled and argued for the system to prevail. Even though, to this date, the attempts to phase out the dual-class system have been unsuccessful, there is still a trend in Europe as well as in Sweden suggesting that the dual-class structure might be abandoned in the future. In 1997, an important legislative change in Sweden took place demonstrating the trend, determining that shares could be issued at a maximum ratio of 10:1 votes. Previously, a ratio of up to 1000:1 was allowed. Today, the majority of the Swedish dual-class firms have a structure in which the superior voting shares (Class A) each carry one vote, while the inferior voting shares (Class B) carry 1/10th of a vote.³

3.1.2 Ownership Structure

The listed dual-class shares in Sweden are concentrated to a few wealthy spheres (e.g. Wallenberg, Lundberg, Stenbeck). Through family foundations and family owned investment companies, they control the largest companies in the country. Examples include Investor (controlled by the Wallenberg family) and Industrivärden (controlled by the Lundberg family), together holding

³ Catella is the exception for the listed companies, where Class B shares carry 1/5 of a vote

controlling stakes in 13 of the 20 largest listed corporations in Sweden.⁴ This concentrated ownership would not have been possible without Sweden's widespread use of dual-class shares.

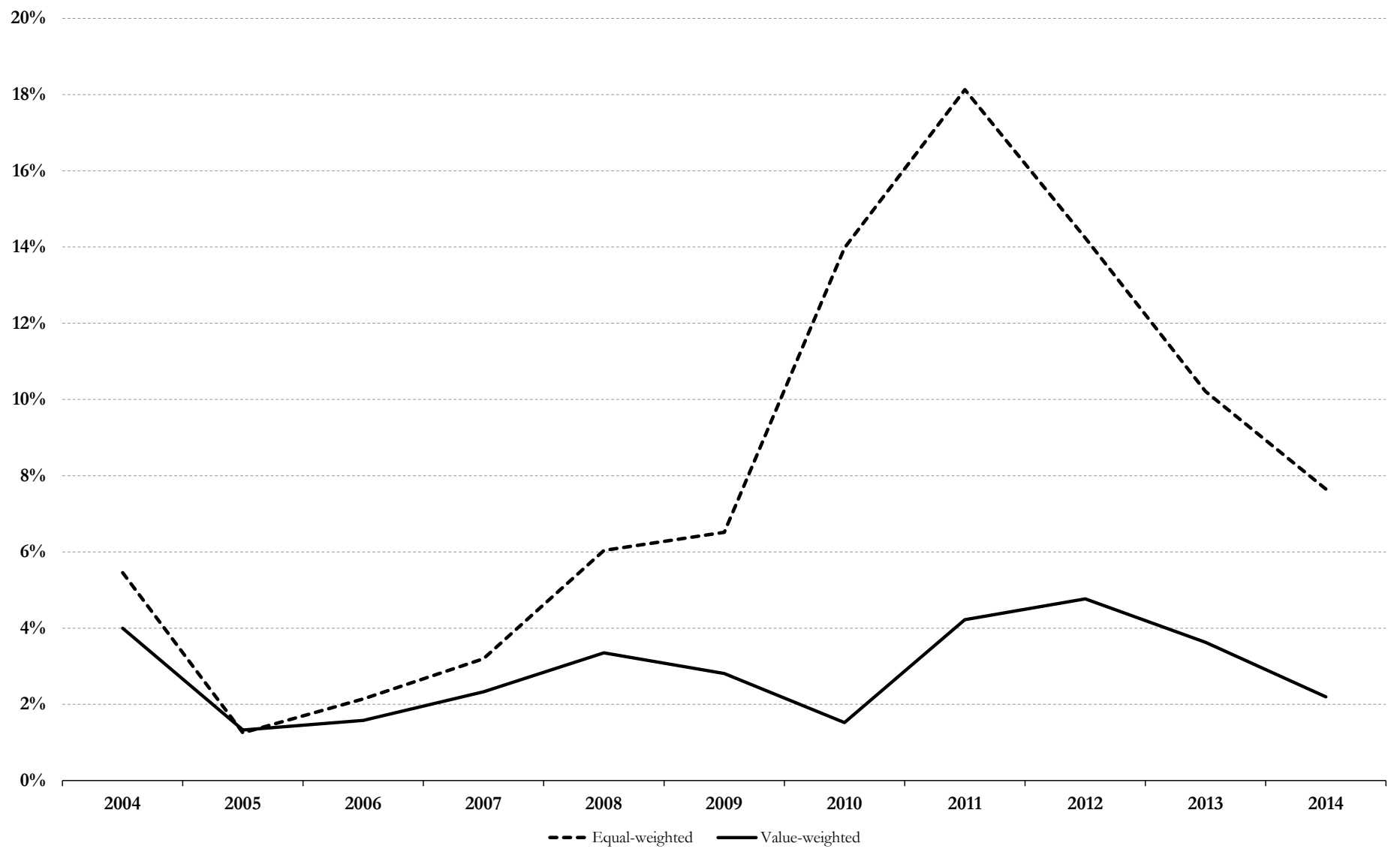
3.1.3 Historical Voting Premium

Figure 1, below, illustrates the Swedish voting premium, equal-weighted as well as value-weighted, between 2004 and 2014. The sample consists of Swedish listed companies, ranging from small companies listed on Aktietorget to some of Sweden's largest companies. Notably, the larger companies often have a smaller voting premium than the smaller companies. Similarly, the large cap voting premium is not as volatile. This is confirmed by comparing the charts below – the equal-weighted premium is always higher and much more volatile than the value-weighted premium. Overall, we notice that the average voting premium for Swedish listed dual-class firms is consistently positive throughout the period.

A notable increase in the voting premium occurred during 2010-2012, when the equal-weighted premium more than doubled from 2009 to 2010. This period was during the aftermath of the global financial crisis, a tumultuous time with unpredictable market behaviour. One senior industry professional suggested an explanation to the momentous increase was due to institutional investors exiting parts of their holdings in equities, in order to decrease the risk of their portfolios. Institutional investors often prefer inferior voting shares to superior ones, mainly due to their higher relative liquidity. The typical holders of superior voting shares in Sweden are family owned investment companies, often with a legacy to preserve and thus a long-term perspective. The intuition is that these families will not ponder selling off their holdings even during times of crisis. In conclusion, during the hardships of 2010-2012, in the aftermath of the global financial crisis and during the Eurozone crisis, institutional investors exited their positions in inferior voting shares whilst strategic investors in superior voting shares retained theirs, thus driving the voting premium up. Neumann (2003) had a similar interpretation for Denmark, finding that block holders typically concentrate their ownership in superior voting right shares and that their holding seems to be more stable over time.

⁴ Companies: Ericsson, SHB, SEB, Volvo, Atlas Copco, Investor, SCA, SKF, Kinnevik, Electrolux, Tele2, SSAB, MTG

Figure 1: Historical voting premium in Sweden (2004–2014)



3.2 Swedish Takeover Regulation and the Fair Price Rule

In October 2009, the Swedish stock exchange accepted to adopt the new takeover rules suggested by Näringslivets Börskommitté (“NBK”). The new takeover regulation included several alterations and changes, one of which, considered to be the most radical, causing extensive media attention, ruled that equal treatment for all shareholders during takeovers must prevail. This rule stipulated that all share classes, including the shares with inferior voting rights, must be treated equally in terms of price during a takeover. Below is an excerpt from the prevailing legislation implemented in October 2009.

If the offeree company has different classes of shares, the same form of consideration must be offered for all classes of shares. [...]

If the offer applies to different classes of shares which only differ in terms of the voting rights carried by the shares and all classes of shares are not admitted to trading on the Stock Exchange, the value of the consideration must be the same for all shares.

If the offer applies to different classes of shares which only differ in terms of the voting rights carried by the shares and all classes of shares are admitted to trading on the Stock Exchange, the general principle is that the value of the consideration must be the same for all shares. Subject to the Securities Council's consent, the offeror may offer a price for each class of shares which is equal to the listed price of the shares and, in addition, may offer a premium which, for each class of shares, represents an equal percentage of the price of all such classes of shares. The Securities Council may only consent to this type of consideration structure if:

- *the liquidity in the relevant classes of shares is sufficient to provide a fair and true price structure;*
- *the price difference is not merely temporary; and*
- *the price difference is not due solely to demand from only one or a small number of buyers.⁵*

The most central take-away from the new takeover act is the fair price rule, forbidding premiums for superior voting shares (Class A) over inferior voting shares (Class B). Exemptions can be made by the SSC if meeting the three criteria above.

⁵ Excerpt from Takeover Rules, 1 February 2015, Section II paragraph 11, decided and published by NASDAQ OMX Stockholm (see references). The excerpt is identical to the one first implemented in October 2009.

3.2.1 Background and Regulatory Implications

A review of a potential takeover regulation was first initiated in 2004, when the European Commission wanted to modernise its company law with a directive regarding takeover bids. This set off a spark in many European countries, including Sweden, which in the beginning of 2006 implemented its first law regarding takeover bids on the stock exchange: the Swedish Act on Takeover Bids. However, the initial Swedish Takeover Act had no specific rule regarding the pricing of different share classes during takeovers. Substantial premiums for superior voting shares could be offered in any way it pleased the offeror. It was the case of the Invik takeover in 2007 that caused shareholders and media to react and raise the issue regarding the significant premiums paid for superior voting rights over the years.⁶ The SSC approved a premium of 10% for the Invik Class A shares compared to the Class B shares. This decision caused several institutional investors, together managing capital over SEK 12,000 billion, to react and demand a change. The investors submitted a joint request to NBK and NASDAQ OMX in the beginning of 2008, demanding that the Swedish takeover rules must be stringent so that the same price will apply to Class A and Class B shares during takeover bids. Although many high-profile executives reacted and strongly opposed the bill, NBK chose to further investigate the takeover regulation in March 2008. A first referral was drafted and published in March 2009, later on approved and put into law in October 2009, which is the one referred to and quoted in the previous section as the fair price rule.

In order to further understand the impact of the fair price rule in Sweden, it is important to study the premiums paid for Class A shares prior to the new rules. In Sweden, multiple takeovers have been completed over the years, both for small companies as well as blue chip companies. Table 1 below shows historical takeovers of dual-class firms on the Swedish stock exchange during the last 15 years, resulting in an additional premium for the Class A shares. Table 2 demonstrates the cases and the decisions, after the introduction of the fair price rule, of all requests made to the SSC for a premium for Class A shares.

⁶ Swedish Securities Council. Statement 2007:24.

Table 1: Previous takeover bids on dual-class firms in Sweden⁷

Announcement Date	Target	Bidder	Voting Premium	Premium 1 day prior to announcement
2001-02-21	Sydkraft	E.ON	20%	9.1%
2004-05-06	RKS	Sigma	10%	n.a.
2004-07-19	Fabege	Wihlborgs Fastigheter	2%	-3.8%
2004-07-28	Brio	Proventus Group	12%	n.a.
2004-08-31	VLT	Private Associates	10%	n.a.
2004-08-24	Frango	Cognos	10%	n.a.
2005-06-02	Intentia	Lawson Software	12%	n.a.
2007-04-26	Invik	Milestone	10%	n.a.
Avg.			10.8%	2.65%

Table 2: Previous takeovers, post introducing the fair price rule

Announcement Date	Target	Bidder	Premium requested	Premium 1 day prior to announcement
2014-06-26	ACAP Invest	North Investment Group	55%	89.7%

Decision SSC: Requested premium denied, same price must apply for all share classes

Table 1 demonstrates a number of takeovers of dual-class companies as well as the wide spread in voting premiums paid over the years. A voting premium during takeovers clearly existed, and was in fact common, showing that a legislative change of this kind would have affected transactions prior to October 2009. The average premium for Class A shares during 1999-2007 amounted to 10.8%, a premium that most likely would have been 0% if the fair price rule would have been law at the time. An additional observation, for the few cases with both share classes traded, is that the takeover premium for Class A shares is well above the regular trading premium prior to the announcement. This is in line with previous research showing that a potential control contest is an important driver of the overall premium for superior voting shares.

As described in the previous section, the fair price rule is in fact not definitive; it leaves some room for exemptions. Mentioned above, the SSC has the power to grant voting premiums during takeovers if certain criteria are met, potentially leaving the market a bit uncertain regarding the rigorousness of the rule. To this date, we can see that no takeovers with a premium for Class A

⁷ Swedish Securities Council Statements, see references.

shares have taken place since the incorporation of the fair price rule.⁸ Table 2 shows the one example where a company requested for consent to deviate from the rule. However, NBK's final decision was to not approve the difference and the takeover was completed with an identical price for Class A and Class B shares, causing the 89.7% voting premium, existing one day prior to the announcement, to be completely erased.

3.2.2 Timeline Surrounding the Legislative Change

Figure 2 below, illustrates the value-weighted premium, during the time surrounding the fair price rule between 2007 and 2010. The most important dates believed to cause a market reaction and affect the voting premium are noted below the figure. In the beginning of 2008, the issue regarding takeover premiums for Class A shares received a lot of media attention, when shareholders as well as industry professionals expressed their concern of the unequal pricing of different share classes that had occurred during takeovers. Tomas Nicolin, CEO of the pension fund giant Alecta, spoke on 5 March 2008 at the International Corporate Governance Conference in Gothenburg, requesting rules to mandate equal treatment of all shareholders during takeovers.⁹ Behind him was a strong force of 12 Swedish and 12 international institutional investors, supporting his cause. Nicolin's speech along with the institutional investors' concerns was highly noticed in media on 6 March 2008¹⁰, causing NBK to initiate a process to review the takeover rules and investigate a potential fair price rule. Referring to Figure 2, in January of 2008, the voting premium shifted towards a more downward trend during the period NBK was working on a revised legislation, potentially expressing the market's belief of a new tougher regulated future takeover legislation.

Summing up, the extensive media attention, institutional investors expressing their standpoint, statements from high-profile executives, we consider the date, 6 March 2008, to be a date of high importance in order to capture the complete market reaction of the legislative change. Since, at this time it was common knowledge on the market that potentially a change would come.

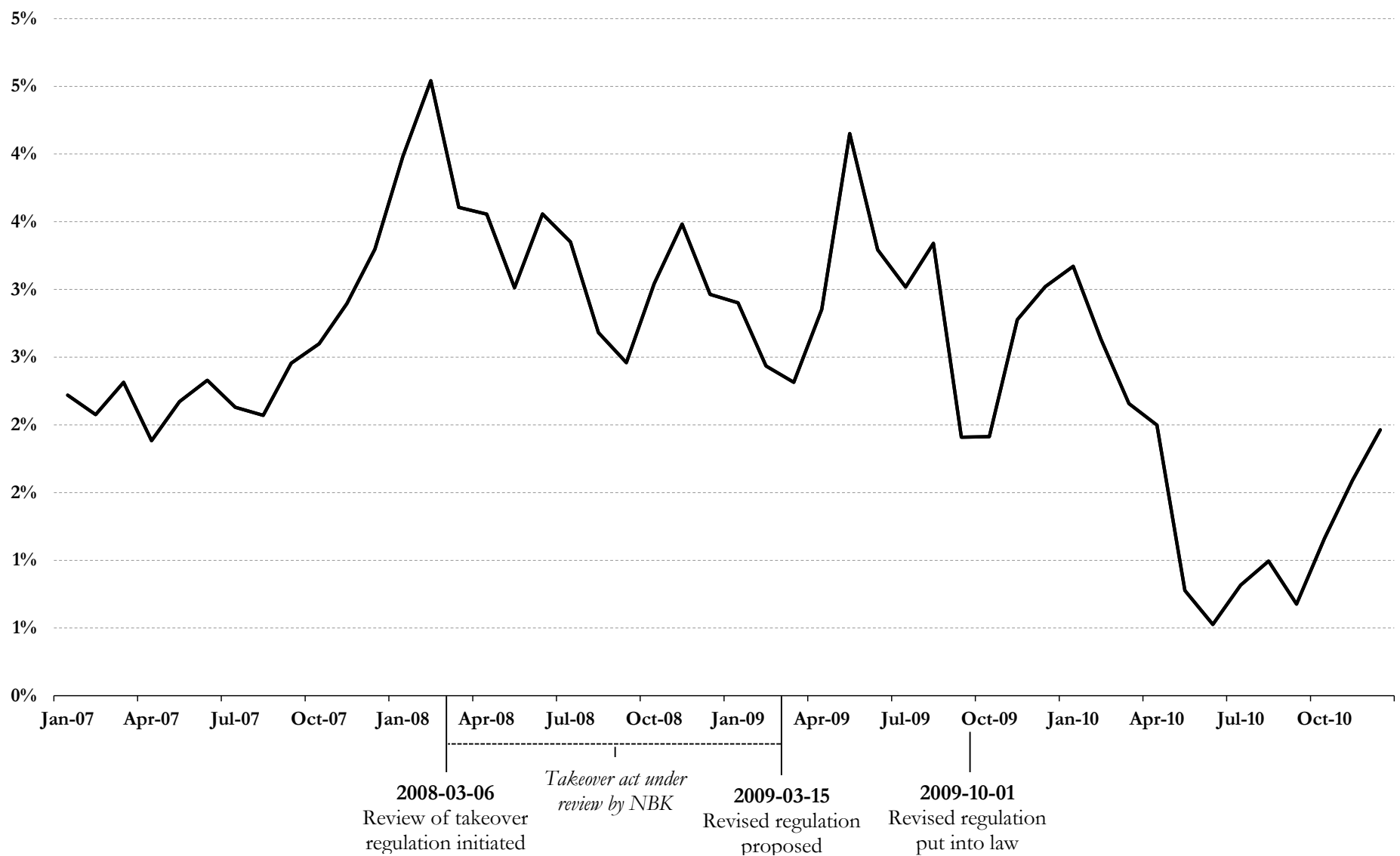
The first proposal of a revised regulation was published by NBK on 15 March 2009. Studying the figure below, we can see a strong increase in the value-weighted premium following this date. An increase later on reduced when the revised proposal was put into law in 1 October, without any adjustments. Certainly the market was affected by other events during this time period, however we consider these events to be of particular significance when performing the statistical analyses.

⁸ Source: Senior official at the Swedish Securities Council.

⁹ Article: "Jättar kräver nya budregler".

¹⁰ Articles: "Alectas VD kräver nya regler", "Uppror mot Scaniaaffären", "Ingen tar ansvar för budpliktsregler".

Figure 2: Historical value-weighted voting premium in Sweden (2007–2010)



3.3 Main Hypothesis

The voting premium, as a phenomenon, has in the past been studied from a wide range of perspectives. A big part of previous research has been focusing on determining the existence of a voting premium and the factors explaining said premium. Sweden, having the highest fraction of dual-class firms in Europe, is an interesting country to further investigate.

Seeing how voting premiums during takeovers were both common and legitimate in Sweden prior to the introduction of the fair price rule, the rule should have had a direct impact on the market's perception of superior voting shares. Our main hypothesis in this paper is that the fair price rule forced the voting premiums for Swedish listed dual-class firms down.

Further, throughout the paper, we will provide expectations for the coefficients of the explanatory variables determining the voting premium.

4. Data

The data we have collected is used for two things: explaining the voting premium in Sweden and specifically study how the fair price rule affected said voting premium. For these purposes, we will perform a series of regressions on the voting premium in Sweden and a difference-in-differences (“DiD”) analysis in order to specifically study the implications of the fair price rule.

4.1 Sample Selection and Data Collection

The sample for this study consists of 31 Swedish companies, which make up the treatment group, and 25 foreign, Western European firms, which make up the control group. The companies were selected on the basis of having multiple classes of shares traded during the period 2004-2014, with the same cash flow rights but with differing voting rights. In order to mitigate survivorship bias, we have chosen to include firms that delisted as well as firms that were listed during the period. The time period (2004-2014) was selected as many companies were lacking pre-2004 data, on items such as bid-ask spread and ownership information. The daily trading data was collected using DataStream and Bloomberg, including price, bid-ask spread, market capitalisation, number of outstanding shares and volume traded. In order to correct for extreme values, we have performed a trimming operation, eliminating premium values above (below) the 97th (3rd) percentile. In collecting ownership data, we used SIS Ownership Service (SIS). SIS provides quarterly ownership data for most Swedish companies and years, although in some instances only annual data is available. Since many listed Swedish companies are owned and controlled by families, often through a number of holding companies, SIS provides a valuable service in grouping families’ holdings into spheres. In total, the data set made up over 135,000 observations, 77,967 for the treatment group and 57,998 for the control group.

4.1.1 Treatment Group

The 31 Swedish companies in the sample vary in size, although 20 are classified as large-cap. The most common industries are Industrials and Financials, each consisting eight companies. The sample consists of 13 of the 30 companies in the OMXS30 index. A comprehensive table of the treatment group is found in Appendix, Table A.

Table 3: The voting premium 2004-2014 (Treatment group)

Year	Mean (%)	Median (%)	N
2004	5.5	1.3	6536
2005	2.0	0.7	6791
2006	2.7	0.7	6907
2007	4.3	1.5	7184
2008	7.8	2.8	7419
2009	9.3	2.3	7333
2010	8.7	2.0	7238
2011	9.2	2.1	7284
2012	10.6	2.4	7216
2013	8.8	2.0	7171
2014	8.6	1.4	7171
All	7.1	1.6	77,967

Note: Figures in this table are post trimming.

In Table 3, we see mean and median premium as well as the number of observations for the Swedish firms during the course of the time period. One can conclude that both mean and median premium increased substantially in 2008 and has since sustained a high level.

4.1.2 Control Group

The control group consists 25 Western European companies, domiciled in Denmark, Finland, Norway, Germany, the UK and Spain. The decision to use these particular countries stems from the fact that they have not implemented a fair price rule similar to the Swedish rule during the time period. Further, we argue that the markets in these countries, all in Western Europe, relatively well mimic the movements of the Swedish exchange, such as impact from the financial crisis of 2008. This is helpful in the analysis of the causal effects of the fair price rule. We have selected all companies in the aforementioned countries with dual-class shares traded during the time period. The companies have differing voting splits between share classes, ranging from 1:0 to 10:1. A comprehensive description of the firms included in the control group is found in Appendix, Table B.

Table 4: The voting premium 2004-2014 (Control group)

Year	Mean (%)	Median (%)	N
2004	7.8	3.3	4349
2005	5.6	3.6	4452
2006	4.1	1.8	4995
2007	3.9	0.4	5115
2008	9.1	5.3	5212
2009	13.8	5.3	5034
2010	12.8	4.4	5257
2011	19.5	8.3	5469
2012	20.5	7.3	5930
2013	20.8	4.6	6210
2014	17.2	2.3	6184
All	12.8	4.0	57,998

Note: Figures in this table are post trimming.

In Table 4, we see mean and median premium as well as the number of observations for the foreign firms during the course of the time period. Mean and median premium spiked in 2008 and continued to increase step by step until 2013.

4.2 Variables

The control variables are attributable to two different parts of the analysis: the general voting premium regression and the difference-in-differences analysis, with the exception of the voting premium variable, used in both parts.

4.2.1 Voting Premium Variable

The voting premium is often calculated as the price difference in percentage points between the two share classes. Although intuitive, such a calculation implicitly assumes that every company has the same voting split (calculated as the relative voting right per share) between share classes. The companies we have selected for the control group have shares that differ only in terms of voting rights. Other papers on the subject have studied companies with other features for its share classes, such as differing dividend rights. The authors have in those cases used voting premium variables adjusting for those differences. For example, Zingales (1994) introduced a variable adjusting for differing dividend rights across countries, studying the Milan Exchange. Gardiol (1997) adjusted the premium for differences in face value across share classes when studying Swiss companies.

We have selected a voting premium variable suitable for the aforementioned characteristics of our companies, adjusting only for the differences in voting ratios. This variable makes premiums comparable internationally between companies and has been used in previous papers on the subject, such as in Zingales (1995) and Doidge (2003). We use this variable both in the general voting premium regression and in the difference-in-differences analysis. It looks as follows:

$$VP = \frac{(P_A - P_B)}{(P_B - rP_A)}$$

P_A (P_B) denotes the price of the superior (inferior) voting shares. r denotes the relative voting right of the inferior to the superior share.

4.2.2 Corporate Control Variables

Previous papers, including Gardiol (1997), Neumann (2003) used dummy variables that take on the value 1 if a certain threshold of ownership is reached by the largest shareholder or shareholder group. In this paper, we have defined large owners as any largest owner holding more than 40% of the votes and any second largest owner holding more than 20% of the votes. Thus, firstly, we have introduced dummy variables for ownership level of votes over 50% and 40%. The 50% level was previously used by Gardiol (1997) and we believe it to be relevant for Sweden, as many companies are controlled by families holding large stakes.

Secondly, we introduce dummy variables for the second largest owner (30% and 20%), inspired by Rydqvist (1992). Since the probability to be able to extract any private benefits of control as well as the probability of a control contest decrease with a big largest or second largest owner, we expect the coefficients to show negative signs in the regressions.

4.2.3 Liquidity Variables

Two of the most commonly used liquidity measures are the bid-ask spread and the volume traded. Bid-ask spread measures the difference between the lowest price the seller of a security expects to receive and the highest price a buyer of a security expects to pay. A high (low) bid-ask spread implies low (high) liquidity. The volume of shares traded reflects the number of shares having switched hands during a trading day. A high number implies high liquidity. Generally in Sweden, the superior voting shares are considerably less liquid than their inferior voting counterpart.

As many previous papers on the subject have done (Neumann (2003), Nenova (2003), Gardiol (1997), Zingales (1994)), we have introduced two liquidity variables for the model, based on the relation between liquidity in the different share classes:

$$\text{Relative Bid} - \text{Ask spread} = \text{Bid} - \text{Ask spread}(A) / \text{Bid} - \text{Ask spread}(B)$$

This variable shows the relation of the bid-ask spread between superior and inferior voting shares and has been used by Neumann (2003) and Ødegaard (2007). A value over one indicates that the superior voting share has lower liquidity than its inferior counterpart. We expect a negative coefficient for this variable, as the premium theoretically should decrease given a higher relative bid-ask spread in the superior voting share.

$$\text{Relative Volume to NOSH} = \left(\frac{\text{Vol}(A) / \text{NOSH}(A)}{\text{Vol}(B) / \text{NOSH}(B)} \right)$$

This variable, inspired by Nenova (2003), relates volume traded ($\text{Vol}(A), \text{Vol}(B)$) to number of outstanding shares ($\text{NOSH}(A), \text{NOSH}(B)$). Other papers have used relative volume traded, such as Zingales (1995) and Neumann (2003). Once again, the variable concerns the relative measure between the share classes. We expect a positive coefficient as the premium theoretically should increase given higher relative volume to NOSH in the superior voting share.

4.2.4 Firm Size Variable

In order to take firm size into account, we have used the natural logarithm of market capitalisation, a measure used by Nenova (2003), Gardiol (1997) and Ødegaard (2007).

$$\text{Firm size} = \ln(\text{Market Capitalisation})$$

Our rationale for including this variable is that larger firms, which by definition require more capital in order to gain influence, should have lower premiums, and vice versa. Further, market capitalisation works as a proxy for the likelihood of an acquisition (Megginson 1990). Thus, we expect the coefficient of the firm size variable to be negative. A perhaps more conventional firm size measure is the natural logarithm of total assets, used in, for example, Megginson (1990). We argue, however, that the market capitalisation is more applicable in our thesis as the likelihood of being able to gain control is better determined by the market value of a firm rather than its book value of assets.

4.2.5 Fair Price Rule

Since the main focus of this paper is to specifically study the effects of the aforementioned fair price rule implemented in Sweden, we have introduced a dummy variable that kicks in at the date, 6 March 2008. We have previously argued that this date is of high importance in order to capture the complete market effect.

4.2.6 Difference-in-differences Variables

For the separate DiD analysis, studying the effects of the fair price rule, we will use three dummy variables. *Treatment*, taking the value one if the observation is part of the control group. *Post Event*, taking the value one if the observation is after the event date. *Treatment * Post Event* is simply the two variables above multiplied.

4.2.7 Summary Tables of Variables

Table 5: Independent variables, general voting premium regression

Strat50(40)	is a dummy variable equal to one if the largest strategic shareholder has more than 50% or 40% of the outstanding votes, respectively, and zero otherwise
Strat30-2(20-2)	is a dummy variable equal to one if the second largest strategic shareholder has more than 30% or 20% of the outstanding votes, respectively, and zero otherwise
Firm size	is the natural logarithm of market capitalisation
Rel BidAsk	$\left(\frac{\text{Bid-Ask spread (A)}}{\text{Bid-Ask spread (B)}}\right)$ is the relative bid-ask spread of the inferior to the superior voting share
Rel Vol to NOSH	$\left(\frac{\text{Vol(A)} / \text{NOSH(A)}}{\text{Vol(B)} / \text{NOSH(B)}}\right)$ is the ratio of the daily trading volume to the number of shares outstanding of the inferior to the superior voting share
Fair price rule	is a dummy variable equal to one all dates post 6 March 2008

Table 6: Independent variables, difference-in-differences analysis

Treatment*Post Event	is a dummy variable that is the product of the two variables below. Hence, it is equal to one if the date is post 6 March 2008 and the observation is within the treatment group, and zero otherwise
Treatment	is a dummy variable equal to one if an observation is within the treatment group, and zero if it is in the control group
Post Event	is a dummy variable equal to one all dates post 6 March 2008, when speculation regarding a new fair price rule started, and zero the dates prior

5. Empirical Methodology

5.1 General Voting Premium Regression Model Specification

In order to explain the voting premium in Sweden during 2004-2014, we have constructed a model incorporating the aforementioned control variables. We have named it the General Voting Premium Regression Model and it attempts to build a foundation of understanding of the voting premium before proceeding with the focus of this paper, the implications of the fair price rule. The General Voting Premium Regression Model looks as follows:

$$(1) VP_{it} = \beta_0 + \beta_1 Strat50_{it}(Strat40_{it}) + \beta_2 Strat30_2_{it}(Strat20_2_{it}) + \beta_3 Rel\ Vol\ to\ NOSH_{it} \\ + \beta_4 Rel\ BidAsk_{it} + \beta_5 Fair\ price\ rule_{it} + \beta_6 Firm\ size_{it} + \varepsilon_{it}$$

5.2 Difference-in-differences Regression Model Specification

One way of analysing the effects of the fair price rule would be to compare the voting premium before and after the law. While simple and intuitive, the method has serious drawbacks as many other external factors affect market behaviour and thus voting premiums. The goal is to specifically study the effect of the regulation, and we have thus decided to employ a DiD analysis. A DiD employs a control group and is thus able to isolate the effect of a change affecting only the treatment group.

The DiD model attempting to isolate the casual effect of the fair price rule looks as follows:

$$(2) VP_{it} = \beta_0 + \beta_1 Treatment * Post\ Event_{it} + \beta_2 Treatment + \beta_3 Post\ Event + \varepsilon_{it}$$

5.3 Choice of Model Types

The data set, with multiple firms observed over numerous time periods, constitutes panel data. Before running any regressions, it is crucial to determine what model to use. The choice comes down to either a pooled OLS model, a fixed effects model or a random effects model. Previous papers studying voting premiums have used a wide range of model types. Nenova (2003) and Caprio (2008) used fixed effects models, clustered at the firm level, Neumann (2003) and Zingales (1994 and 1995) used a simple pooled OLS model. Gardiol (1997) used a simple OLS, a random effects as well as a fixed effects model, but only reports the OLS results. Doidge (2003) used both a random effects model and an OLS.

A random effects model allows for individual effects whereas a fixed effects model imposed time invariant effects for each entity. Generally, you use a random effects model if you want to estimate variables that are constant within units, i.e. firms in our case (Woolridge, 2013). Many of our control variables are relatively static over time within firms, such as ownership structure, supporting the argument for using a random effects model.

In order to determine the appropriate model for the different estimations, we have conducted a number of tests. First, we performed a Hausman test, which is designed so that to indicate if a fixed effects or random effects model is preferable, given a set of data. We ran the Hausman on both the variables used in the general voting premium regression and the DiD. The test deemed the random effects model the best, for both sets of variables, with the results shown in Table 7.

Although the Prob>Chi2 value for the general voting premium regression is insignificant, we have chosen to perform the general voting premium regression using a fixed effects model as well, found in Appendix, Table D. The results for the DiD variables strongly confirms that a random effects model is preferred.

When having determined that a random effects model is preferable to a fixed effects model using the Hausman test, we ran a Breusch-Pagan-Lagrange multiplier test (Table 7), in order to test whether a random effects or OLS model is superior. It is statistically significantly determined that a random effects model is more suitable.

Table 7: Hausman and Breusch-Pagan Lagrange (BPL) multiplier tests

Estimation equation	Prob>Chi2 (Hausman)	Prob>Chibar2 (BPL)
General voting premium regression (Eq. 1)	0.396 (Accept)	0.000 (Reject)
Difference-in-differences (Eq. 2)	0.661 (Accept)	0.000 (Reject)

Null hypothesis (Hausman): The coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. **Null hypothesis (BPL):** Variance across entities is zero. Time period: 2004-2014.

The generic random effects model looks as follows:

$$y_{it} = \beta_0 + \beta_1 x_{it1} + \dots + \beta_k x_{itk} + v_{it}$$

Where v_{it} is the composite error, consisting $\alpha_1 + \mu_{it}$ and $Cov(x_{ijt}, \mu_{it}) = 0$

5.4 Correlation & Multicollinearity Analysis

In order to determine whether or not the variables in the general voting premium model show problematic levels of correlation and multicollinearity, we have created a Pearson correlation matrix and conducted a Variance Inflation Factor (VIF) test. The correlation matrix (Table 8) shows the pairwise correlation between the independent variables. Pairwise correlation is an intuitive measure showing how variables, on a one-to-one basis, correlate. We should, for example, expect some correlation between firm size and the ownership variables as the larger companies in the data set typically are owned by one of the dominant Swedish families. Cohen (1988) determines the correlation to be small if the value is below 0.30. This is the case for all variables.

Table 8: Pearson pairwise correlation matrix

	Strat50	Strat40	Strat30-2	Strat20-2	Firm size	Rel Bid-Ask	Rel Vol to NOSH	Fair price rule
Strat50	1							
Strat40	-0.2010*	1						
Strat30-2	-0.0592*	0.0257*	1					
Strat20-2	-0.0072*	-0.1934*	-0.0570*	1				
Firm size	0.0066	0.1794*	0.0965*	-0.2331*	1			
Rel Bid-Ask	0.0509*	0.0079*	-0.0173*	-0.0142*	-0.0463*	1		
Rel Vol to NOSH	-0.0079*	-0.0051	-0.0016	-0.0030	-0.0104*	-0.0020	1	
Fair price rule	-0.0105*	0.0409*	-0.0951*	0.0419*	-0.0534*	0.0343*	0.0006	1

Note: * Denotes significance at the 5% level. Time period: 2004-2014.

The VIF test attempts to identify and quantify the severity of multicollinearity experienced between a set of independent variables. The results from the VIF test are shown in Table 9. A rule of thumb concerning the VIF test is that one should consider multicollinearity severe if the value is above ten. The VIF test thus confirms that the variables work well when regressed together.

Table 9: Variance inflation factor (VIF) test

	VIF	1/VIF
Strat50	1.05	0.949064
Strat40	1.11	0.900269
Strat30-2	1.02	0.977475
Strat20-2	1.11	0.902453
Relative Bid-Ask	1.01	0.991840
Relative Vol to NOSH	1.00	0.999743
Firm size	1.10	0.905590
Fair price rule	1.02	0.984968
Mean VIF	1.05	

Note: VIF-test performed as a pooled OLS, since the test does not support random effects regressions.
Time period: 2004-2014.

As for the DiD estimators, due to the inherent and predetermined structure of the analysis, a correlation matrix or a VIF test would not add any value, and have thus been excluded.

5.5 Other Model Considerations

The great benefits of the DiD analysis include its relative simplicity and the ability to identify the causal effect of a policy or law etc. However, the DiD has its limitations. In a 2002 study, Bertrand, Duflo and Mullainathan concluded many researchers using the DiD ignore problematic serial correlation. The paper suggested several corrections for this issue, including block bootstrapping standard errors, clustering standard errors at the unit level and aggregating the data into one pre and one post period. When running tests on the variables, we conclude both the variables in the general voting premium regression as well as the DiD suffer from autocorrelation problems. We have decided to cluster the standard errors at the firm level as a mitigating factor to the problem. This choice applies to the general voting premium regression as well as the DiD. Further, in effect, clustering at the firm level when running a random effects model creates heteroscedasticity-robust standard errors.

6. Results

6.1 General Voting Premium

6.1.1 Descriptive Statistics

Table 10: Descriptive statistics of the variables, Swedish companies (2004-2014)

Variables						
	Mean	Median	Std. Dev.	Max	Min	N
Premium	0.071	0.016	0.156	1.195	-0.100	77967
Strat50	0.222	0	0.416	1	0	77967
Strat40	0.124	0	0.329	1	0	77967
Strat30-2	0.012	0	0.109	1	0	77967
Strat20-2	0.209	0	0.407	1	0	77967
ln(Market Cap)	9.531	10.275	2.322	13.106	1.231	77967
Rel Bid-Ask	15.480	4.710	75.966	9288.178	-166.035	77963
Rel Vol to NOSH	1.591	0.024	103.983	28277.730	0.000	76586

Note: **Premium** is the voting premium. **Strat50** and **Strat40** are dummy variables equal to one if the largest shareholder holds more than 50% or 40%, respectively. **Strat30-2** and **Strat20-2** are dummy variables equal to one if the second largest shareholder holds more than 30% or 20%, respectively. **ln(Market Cap)** is the firm size variable, defined as the natural logarithm of market capitalisation. **Rel Bid-Ask** is calculated as the bid-ask spread of the superior voting shares divided by the bid-ask spread of the inferior voting share. **Rel Vol to NOSH** is calculated as the ratio of the daily trading volume to the number of shares outstanding of each share class. These numbers are post trimming of the data.

In Table 10, we provide descriptive statistics of the voting premium and control variables used in the general voting premium regression. One can conclude that the mean and median values differ significantly, even though we have trimmed the data to remove extreme values. We see that, as expected, the relative bid-ask spread is higher than one, indicating that the superior voting shares are in general less liquid than their inferior counterparts. The numbers for the other liquidity measure, relative volume to NOSH, are ambiguous, with an unexpected mean (higher than one), while median is close to zero. The high standard deviation is most likely an explanatory factor to this difference. The means of the Strat variables effectively show the percentage of observations with an owner meeting or exceeding the thresholds for each variable. The fact that Strat50 has a higher mean than Strat40 is expected as Strat50 consists all ownership levels above 50% while Strat40 consists only ownership levels between 40% and 50%. The same applies to the second largest owner, who in most cases holds above 30%. We will perform an econometrical analysis using the mentioned variables in the regression below.

6.1.2 General Voting Premium Regression

Table 11: General voting premium regression – A random effects model, clustered at the company level

	Regressions							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.084****	0.557***	0.535**	0.529**	0.532**	0.564***	0.563***	0.555***
Strat50	-0.036		-0.039	-0.039	-0.040*	-0.080***	-0.080***	-0.067*
Strat40						-0.054	-0.054	-0.049
Strat30-2								0.053
Strat20-2					-0.014	-0.022**	-0.022**	-0.018*
ln(Market Cap)		-0.053**	-0.052**	-0.051**	-0.051**	-0.053**	-0.053**	-0.052**
Rel Bid-Ask							5.4e ⁻⁶	6.0e ⁻⁶
Rel Vol to NOSH				1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *
Fair price rule			0.042***	0.042***	0.042***	0.044***	0.044***	0.045***
Overall R² (%)	1.2	22.6	25.1	22.0	21.9	22.7	22.8	22.8
Prob>Chi2	0.189	0.021	0.009	0.000	0.001	0.000	0.001	0.000

Significance level: *10% **5% ***1% ****0.1%

Note: The voting premium in Sweden is investigated using a random effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. **Strat50** and **Strat40** are dummy variables equal to one if the largest shareholder holds more than 50% or 40%, respectively. **Strat30-2** and **Strat20-2** are dummy variables equal to one if the second largest shareholder holds more than 30% or 20%, respectively. **ln(Market Cap)** is the firm size variable, defined as the natural logarithm of market capitalisation. **Rel Bid-Ask** is a proxy for relative liquidity in different share classes, calculated as the bid-ask spread of the superior voting shares divided by the bid-ask spread of the inferior voting share. **Rel Vol to NOSH** is a proxy for relative liquidity in different share classes, calculated as the ratio of the daily trading volume to the number of shares outstanding of each share class. **Fair price rule** is a dummy variable equal to one if the date is after 6 March 2008. Sample size=31 companies. Robust standard errors are used and found in Appendix, Table D. Time period: 2004-2014.

In Table 11, we perform eight random effects regression on the 31 Swedish firms, from 2004-2014, utilising different explanatory variables. All variables with significance have coefficients with signs in line with our expectations, except for the Fair price rule dummy.

The ownership variable Strat50 is negative and significant in regressions #5, #6, #7 and #8. This is consistent with Neumann's (2003) and Gardiol's (1997) results for their largest ownership dummy. The ownership variable Strat40 is negative, but insignificant in all regressions. Strat30-2 is positive and insignificant at any conventional level. Strat20-2 is negative in all regressions showing significance. From the ownership variable results with significance, we can conclude that any large owner, as defined on section 4.2.2, negatively affects premiums. This is consistent with the corporate control theory as well as with the theory of private benefits of control (Rydqvist, 1996), stating that the value of a marginal vote should be smaller if there are large incumbent shareholders.

The liquidity measure Rel Vol to NOSH is significant and shows the anticipated positive sign in all regressions. This is consistent with the previously mentioned liquidity theories that less liquid assets should trade at a lower price. Rel BidAsk is positive and insignificant in all regressions. The firm size variable, $\ln(\text{Market Cap})$, is negative and significant at the 5% level in all regressions. Zingales (1995) had similar findings, linking it to corporate control theories. A larger firm, by definition, requires more capital to gain any influence in, thus theoretically makes the price of voting rights fall. Interestingly, firm size is very important for the model, by itself explaining 22.6% of the premium.

Studying the Fair price rule dummy, we can see it is positive and significant in all regressions, indicating that the average premium increased post the legislative change. This, we will study in more detail against the control group in the coming sections.

Regression 3 has the highest overall R^2 values at 25.2%. This implies the model succeeds in explaining one fourth of the voting premium in Sweden. This is in line with, for example, Neumann's (2003) results for Denmark, but lower than Caprio's (2008) results for Italy.

6.2 Fair Price Rule Implications

6.2.1 Descriptive Statistics of the Voting Premium

Table 12: Voting premium descriptive statistics (Treatment Group) (%)

Period	Mean	Median	Std. Dev.	Max	Min	N
Post-Law	9.1	2.1	18.0	119.5	-10.0	49301
Pre-Law	3.8	1.1	9.4	118.5	-9.9	28696

Note: This table shows descriptive statistics of the voting premium in Sweden. These numbers are post trimming of the data. Time period: 2004-2014.

Table 13: Voting premium descriptive statistics (Control Group) (%)

Period	Mean	Median	Std. Dev.	Max	Min	N
Post-Law	16.7	5.1	25.8	119.6	-9.9	38195
Pre-Law	5.3	2.3	10.1	75.6	-10.0	19823

Note: This table shows descriptive statistics of the voting premium for the foreign companies. These numbers are post trimming of the data. Time period: 2004-2014.

In Table 12 and Table 13, we compare the voting premiums for the treatment group and the control group. One can conclude that the period post-law was characterised by higher average premiums and higher volatility than pre-law, for both groups. We have statistically confirmed the increase in average premiums in Appendix, Table F. The higher volatility is probably mainly due to the financial crisis, which caused markets to act erratically and unpredictably. Without drawing any conclusions from it, we can see that premiums for the control group increased more than for the treatment group, looking at both mean and median. This serves as an indication that the coming DiD analysis could confirm our hypothesis and thus be of great value to this paper.

6.2.3 Difference-in-differences Model Results

The DiD estimator is created by generating two dummies, one taking on the value 1 if the company is part of the treatment group, and one taking on the value 1 if the date is post the event date (6 March 2008) and multiplying the two. This estimator is called *Treatment*Post Event* in the analysis. The DiD results are found in Table 14.

Table 14: Difference-in-differences random effects regression, clustered at the company level.

Event date: 6 March 2008

	Coefficient	Robust Std. Err.	z	P> z
Intercept	0.058	0.017	3.43	0.001
Treatment*Post Event	-0.080	0.048	-1.66	0.097
Treatment	-0.009	0.023	-0.40	0.690
Post Event	0.123	0.046	2.71	0.007

Prob > chi2 = 0.0010, Overall R² = 6.6%

Note: The effect of the fair price rule in Sweden is investigated using a random effects model, clustered at the company level. The dependent variable is **Voting Premium (VP)**. **Treatment** is a dummy equal to one if the company is part of the treatment group. **Post Event** is a dummy equal to one if the date is 6 March 2008 or later. **Treatment*Post Event** is the two aforementioned dummies multiplied. Sample size=56 companies. Robust standard errors are used. Time period: 2004-2014.

In the output from the DiD regression, we find that the variable, Treatment*Post Event is indeed negative and significant at the 10% level. This confirms our hypothesis that the fair price rule did push premiums down in Sweden. The coefficient is at -0.080, implying the premium decreasing 8.0 percentage points due to the legislative change.

The coefficient of the Treatment variable is negative and small, implying that the overall premium in Sweden are not considerably different from the control group. This result is however statistically insignificant, and should thus not be used to draw any conclusions. Further, we can see that the Post Event dummy is statistically significant at the 1% level and positive. This implies that premiums went up overall for both the Swedish and the foreign firms, something we saw in the previous section.

In the interest of transparency regarding the timing of the market reaction, we have in Appendix, Table G and Table H, performed two more identical regressions, differing only on event date. One of them being 15 March 2009, when NBK published their first proposal of the fair price rule and the second one being 1 October 2009 when the fair price rule was effectively in law. These two additional regressions, although not significant, both show a negative sign and a coefficient of the same magnitude for the Treatment*Post Event dummy. The two additional regressions are included for transparency only; we still consider 6 March 2008 to be the most accurate date in performing this analysis.

6.3 Robustness and Problematicization

6.3.1 Endogeneity

One potential problem with the statistical analyses is endogeneity. The commonly mentioned sources of endogeneity are simultaneity, measurement error and omitted variables. The most serious one is arguably simultaneity, i.e. that the independent variables are affected by the dependent variable. It is likely that the control variables in the general voting premium regression, relative liquidity, ownership and firm size, are affected by the voting premium, and not strictly the other way around. This bias is tricky to deal with, and is arguably outside the scope of this paper, as it concerns the general voting premium regression, which is not the core analysis. One possibility is to use a simultaneity equation model (SEM).

Measurement error is a possible bias we cannot rule out. Further, it is possible that the analysis suffers from omitted variables, i.e. that the control variables show correlation with unobserved factors. A potential mitigating factor is the fact that we perform the regressions using a random effects clustered model, which could handle the aforementioned unobserved effects better than, for example, an OLS model. A way of dealing with the omitted variables issue is to add more control variables or change the current ones. In this thesis, we have primarily focused on market data. Adding, for example, accounting data could possibly mitigate omitted variable bias.

6.4.2 Caveats to the DiD Analysis

It should be noted that while none of the companies in the control group did implement a fair price rule during the time period (2004-2014), Denmark and the UK have since 1995 and 1968, respectively, had such legislation in law. We argue that the effect of these pieces of legislation for long has been priced in the market, and thus should not adversely affect the robustness of the DiD analysis. However, it is a possibility. If excluding the Danish and the UK firms from the DiD analysis, the Treatment*Post Event variable is no longer significant, although it still has the “correct” negative sign, see Appendix, Table I. While this might seem troubling to the analysis, we argue that the result is expected, given that we decrease the control group sample by 40%, or from 25 to 15 companies.

Further, a DiD analysis makes a strong assumption called “parallel trend”, that the mean variation in the control group serves as the counterfactual variation in the treatment group if no treatment took place. This assumption would fail to hold for the analysis if the Western European markets we have used as the control group are not a fair proxy for the Swedish market. While this is a possibility, we argue that there is not a more suitable set of countries to choose.

8. Conclusion

This paper attempts to explain the voting premium, defined as the price differential between Class A and Class B shares, prevalent in the Swedish market, and specifically how a legislative change regarding fair price during takeovers affected said premium.

From collecting daily trading data for 31 Swedish companies, we find that the average voting premium in Sweden from 2004-2014 was 7.1%. With a random effects model, clustered at the company level, utilising control variables on firm size, liquidity and ownership, we explain up to 25.2% of the premium in Sweden. All the variables with significance show the expected signs. We find, a large shareholder, holding 50% or more of the votes, drives the premium down. The intuition behind this is that the value of a marginal vote decreases as the size of the largest shareholder increases, i.e. the likelihood of being able to exert any control as a prospective investor. This is consistent with applicable corporate control theories, as developed by Rydqvist (1996). Regarding firm size and premiums, we find a negative relationship, suggesting premiums go down as firm size increases. In terms of liquidity, if superior voting shares are less liquid than their inferior counterpart, the voting premium, in general, is lower. This is due to illiquid assets generally trading at a discount, consistent with the liquidity theories developed by Amihud and Mendelson (1985). These findings, from the general voting premium analysis, are, in our view, a contribution to research, as no previous papers as comprehensively have explained the voting premium in Sweden.

As for the main focus of the paper, the legislative change, we have confirmed our hypothesis that the fair price rule pushed premiums down in Sweden. A result found by conducting a difference-in-differences analysis against a control group consisting 25 Western European companies. The effect of the regulation was a decrease in the voting premium of 8.0 percentage points. We consider this finding remarkable. Effectively, holders of superior voting shares (Class A) lost considerable amounts of value due to the fair price rule. The fact that NBK, for the first time in its 40-year history, was divided on this issue now makes more sense. This, since the decision apparently had significant monetary implications for holders of Class A shares.

For future work on the subject, it would be interesting to go about explaining the voting premium from other perspectives. In this paper, we have focused primarily on market data. We believe that adding control variables based on accounting data, such as growth, leverage, profitability and conversion rights between share classes, would add a valuable dimension.

9. References

- Åkesson, N. (2007). Alecta vill stoppa uppköpet av Invik. *Dagens Industri*, June 15: 8.
- Amihud, Y., & Mendelson, H. (1986). Asset pricing and the bid-ask spread. *Journal of financial Economics*, 17(2), 223-249.
- Bergstrand, M. (2008). Förtroendet raserat för Stockholmsbörsen. *Dagens Nyheter*. Available [online]. <http://www.dn.se/debatt/fortroendet-raserat-for-stockholmsborsen/> [2015-03-01].
- Bergstrand, M. (2009). Börskommitténs förslag hotar svensk aktiemodell. *Dagens Nyheter*, March 15: 6.
- Bertrand, M., Duflo, E., & Mullainathan, S. (2002). How much should we trust differences-in-differences estimates?. National Bureau of Economic Research, (No. w8841).
- Burgess, K., Milne, R., Ward, A. (2009). Sweden to outline new takeover rules. *Financial Times*. Available [online]. <http://www.ft.com/intl/cms/s/0/35ddc856-9008-11de-bc59-00144feabdc0.html#axzz3ZXwp49OR> [2015-03-01].
- Caprio, L., & Croci, E. (2008). The determinants of the voting premium in Italy: The evidence from 1974 to 2003. *Journal of Banking & Finance*, 32(11), 2433-2443.
- Chemmanur, T. J., & Jiao, Y. (2012). Dual class IPOs: A theoretical analysis. *Journal of Banking & Finance*, 36(1), 305-319.
- Cohen, J. (2013). Statistical power analysis for the behavioral sciences. Academic press.
- DeAngelo, H. & DeAngelo, L. (1985). Managerial ownership of voting rights: A study of public corporations with dual classes of common stock. *Journal of Financial Economics*, 14(1): 33-69.
- Doidge, C. (2003). U.S. cross-listings and the private benefits of control: evidence from dual-class firms. *Journal of Financial Economics*, 72(3): 519-553.
- Ekonominyheter. (2008). Uppror mot Scaniaaffären. *Ekonominyheter.se*. March 6.
- Fellman, P. (2004). Sigma lägger bud på RKS. *Dagen Industri*. Available [online]. <http://www.di.se/artiklar/2004/5/7/sigma-lagger-bud-pa-rks/> [2015-03-10].
- Fellman, P. (2008). Ingen tar ansvar för budpliktsregler. *Dagens Industri*, March 8.
- Fellman, P. (2008). Jättar kräver nya budregler. *Dagens Industri*, March 6.
- Fellman, P. (2008). Striden om A-aktierna hårdnar. *Dagens Industri*, May 6.
- Finansinspektionen. (2015). Takeover bids. Available [online]. <http://www.fi.se/Folder-EN/Startpage/Regulations/Market-information/Takeover-bids/> [2015-02-15].
- Gardiol, L., Gibson-Asner, R., Tuchschnid, N. (1997). Are liquidity and corporate control priced by shareholders? Empirical evidence from Swiss dual class shares. *Journal of Corporate Finance*, 3(4): 299-323.

- Gripenberg, P. (2008). Alectas VD kräver nya regler. *Dagens Industri*. March 6.
- Grossman, S. & Hart, O. (1988). One share/one vote and the market for corporate control. *Journal of Financial Economics*, 20:175-202.
- Habbard, P. (2008). Corporate governance in Sweden – An international trade union perspective. *Report for the Hans Böckler Foundation in Partnership with the Global Union Research Network, Paris, February*.
- Hammaström, M. (2007). Stenbeck bekänner färg. *Dagens Industri*, May 2: 33-34.
- Harris, M. & Raviv, A. (1988). Corporate governance: Voting rights and majority rules. *Journal of Financial Economics*, 20(1-2): 203-235.
- Karlberg, L. (2004). Kanadensiska Frango köper svenska Frango. *NyTeknik*. Available [online]. http://www.nyteknik.se/nyheter/it_telekom/allmant/article237405.ece [2015-03-10].
- Larcker, D. F., Ormazabal, G., & Taylor, D. J. (2011). The market reaction to corporate governance regulation. *Journal of Financial Economics*, 101(2), 431-448.
- Lease, R. C., McConnell, J. J., & Mikkelsen, W. H. (1983). The market value of control in publicly-traded corporations. *Journal of Financial Economics*, 11(1), 439-471.
- Levy, H. (1983). Economic evaluation of voting power of common stock. *Journal of Finance*, 38(1): 79-93.
- Li, H., Pincus, M., & Rego, S. O. (2008). Market reaction to events surrounding the Sarbanes-Oxley Act of 2002 and earnings management. *Journal of law and Economics*, 51(1), 111-134.
- Modigliani, F. & Perotti, E. (1998). Protection of minority interest and the development of security markets. *Managerial and Decision Economics*, 18: 519–528
- Meggison, W.L. (1990). Restricted voting stock, acquisition premiums, and the market for corporate control. *Financial Review*, 25(2): 175-198.
- Nachemson-Ekval, S. (2009). Mindre bråk med nya regler. *Dagens Industri*, March 17: 17.
- Nachemson-Ekval, S. (2009). Starkt stöd för likabehandling. *Dagens Industri*, May 14: 12.
- NASDAQ OMX Stockholm. (2015). Takeover Rules. Available [online]. http://www.nasdaqomx.com/digitalAssets/96/96648_takeover-rules---1-february-2015.pdf [2015-03-01].
- Nenova, T. (2003). The value of corporate voting rights and control: A cross-country analysis. *Journal of Financial Economics*, 68(3), 325-351.
- Neumann, R. (2003). Price differentials between dual-class stocks: voting premium or liquidity discount? *European Financial Management*, 9(3):315-332.
- Ødegaard, B. A. (2007). Price differences between equity classes. Corporate control, foreign ownership or liquidity?. *Journal of Banking & Finance*, 31(12), 3621-3645.

- Pajuste, A. (2005). Determinants and consequences of the unification of dual-class shares.
- Robinson, C. & White A. (1990). The value of a vote in the market for corporate control. *Unpublished manuscript, York University*.
- Rydqvist, K. & Bergstrom, C. (1992). Differentiated bids for voting and restricted voting shares in public tender offers. *Journal of Banking and Finance*, 16(1): 97-114.
- Rydqvist, K. (1986). The pricing of shares with different voting power and the theory of oceanic games. *Unpublished paper, Stockholm School of Economics*.
- Rydqvist, K. (1996). Takeover bids and the relative prices of shares that differ in their voting rights. *Journal of Banking & Finance*, 20(8), 1407-1425.
- Smith B. and Amoako-Adu B. (1995). Relative prices of dual class shares. *Journal of Financial and Quantitative Analysis*, 30(2):223-239.
- Swedish Securities Council. (2001). Statement 2001:3. Available [online]. <http://www.aktiemarknadsnamnden.se/200103> [2015-03-10].
- Swedish Securities Council. (2004). Statement 2004:18. Available [online]. <http://www.aktiemarknadsnamnden.se/200418> [2015-03-10].
- Swedish Securities Council. (2004). Statement 2004:19. Available [online]. <http://www.aktiemarknadsnamnden.se/200419> [2015-03-10].
- Swedish Securities Council. (2004). Statement 2004:21. Available [online]. <http://www.aktiemarknadsnamnden.se/200421> [2015-03-10].
- Swedish Securities Council. (2005). Statement 2005:13. Available [online]. <http://www.aktiemarknadsnamnden.se/200513> [2015-03-10].
- Swedish Securities Council. (2007). Statement 2007:24. Available [online]. <http://www.aktiemarknadsnamnden.se/200724> [2015-03-10].
- Swedish Securities Council. (2014). Statement 2014:35. Available [online]. <http://www.aktiemarknadsnamnden.se/201435> [2015-03-10].
- Thulin, C. (2009). Historisk splittring om rösträtten. *Dagens Industri*. Available [online]. <http://www.di.se/artiklar/2009/3/16/historisk-splittring-om-rostratten/?activetab=MostPopular>. [2015-04-20]
- Wooldridge, J. (2012). *Introductory econometrics: A modern approach*. Cengage Learning. 5th edition.
- Zingales, L. (1994). The value of the voting right - A study of the Milan Stock Exchange experience. *Review of Financial Studies*, 7(1): 125-148.
- Zingales, L. (1995). What determines the value of corporate votes?. *The Quarterly Journal of Economics*, 1047-1073.

Appendix

Table A: Description of the treatment group (Swedish firms)

Company	NASDAQ Cap	Industry	Trading	Voting Ratio
Atlas Copco	Large	Industrials	Full period	10:1
Electrolux	Large	Consumer Discretionary	Full period	10:1
Ericsson	Large	Technology	Full period	10:1
Handelsbanken	Large	Financials	Full period	10:1
Holmen	Large	Materials	Full period	10:1
Husqvarna	Large	Industrials	Jun 2006-	10:1
Industrivärden	Large	Financials	Full period	10:1
Investor	Large	Financials	Full period	10:1
Kinnevik	Large	Financials	Full period	10:1
MTG	Large	Communications	Full period	10:1
NCC	Large	Industrials	Full period	10:1
Ratos	Large	Financials	Full period	10:1
SCA	Large	Consumer Staples	Full period	10:1
Scania	Large	Industrials	-Jun 2014	10:1
SEB	Large	Financials	Full period	10:1
SKF	Large	Industrials	Full period	10:1
SSAB	Large	Materials	Full period	10:1
Stora Enso	Large	Materials	Full period	10:1
Tele2	Large	Communications	Full period	10:1
Volvo	Large	Industrials	Full period	10:1
Ind. & Fin. Sys.	Mid	Technology	Full period	10:1
Metro	Mid	Communications	-Jun 2012	10:1
Sweco	Mid	Industrials	Full period	10:1
Transcom	Mid	Consumer Discretionary	-Nov 2014	10:1
ACAP Invest	Small	Consumer Discretionary	-Nov 2014	10:1
Catella	Small	Financials	Full period	5:1
Conpharm	Small	Health Care	Full period	10:1
Midsona	Small	Health Care	Full period	10:1
Midway	Small	Industrials	Full period	10:1
Ortivus	Small	Health Care	Full period	10:1
Svolder	Small	Financials	Full period	10:1

Note: Voting Ratio shows the votes of the superior voting share and the inferior voting share

Table B: Description of the control group (Foreign firms)

Company	Country	Industry	Trading	Voting Ratio
Carlsberg	Denmark	Industrials	Full period	10:1
Gyldendal	Denmark	Consumer Staples	Full period	1:0
Højgaard	Denmark	Communications	Full period	10:1
Maersk	Denmark	Industrials	Full period	2:0
Rockwool	Denmark	Consumer Discretionary	Full period	10:1
Aktia Bank	Finland	Financials	Sep 2009-	20:1
Ilkka	Finland	Financials	Full period	20:1
Kesko	Finland	Communications	Full period	10:1
Metsä	Finland	Consumer Staples	Full period	20:1
Oriola	Finland	Materials	Jul 2006-	20:1
Orion	Finland	Health Care	Jul 2006-	20:1
Raisio	Finland	Health Care	Full period	20:1
Stockmann	Finland	Consumer Staples	Full period	10:1
Ålandsbanken	Finland	Consumer Discretionary	Full period	20:1
Viacom	Germany	Communications	Jan 2006-	1:0
Hafslund	Norway	Utilities	Full period	1:0
Odfjell	Norway	Industrials	Full period	1:0
Wilhelmsen	Norway	Industrials	Full period	1:0
Abengoa	Spain	Industrials	Oct 2012-	100:1
Grifols	Spain	Health Care	Jun 2011-	1:0
Braime	UK	Industrials	Full period	1/4:0
Dewhurst	UK	Industrials	Full period	1:0
Heavitree	UK	Consumer Discretionary	Full period	10:1
Schroders	UK	Financials	Full period	1:0
Young Brew	UK	Consumer Staples	Full period	1:0

Note: Voting Ratio shows the votes of the superior voting share and the inferior voting share

Table C: Fixed effects regression model clustered at the company level

	Independent variables							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.079****	0.582**	0.551**	0.542**	0.545**	0.580**	0.580**	0.571**
Strat50	-0.036		-0.039	-0.039	-0.040	-0.080**	-0.080**	-0.068*
Strat40						-0.055	-0.055	-0.050
Strat30-2								0.053
Strat20-2					-0.014	-0.022*	-0.022*	-0.018*
ln(Market Cap)		-0.054**	-0.052**	-0.051**	-0.051**	-0.053**	-0.053**	-0.053**
Rel Bid-Ask							5.5e ⁻⁶	6.1e ⁻⁶
Rel Vol to NOSH				1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *	1.5e ⁻⁵ *
Fair price rule			0.042***	0.042***	0.042***	0.044***	0.044***	0.045***
Overall R² (%)	1.2	22.6	25.1	21.9	21.9	22.7	22.7	22.8
Prob>Chi2	0.201	0.031	0.019	0.002	0.004	0.004	0.006	0.005

Significance level: *10% **5% ***1% ****0.1%

Note: The voting premium in Sweden is investigated using a fixed effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. **Strat50** and **Strat40** are dummy variables equal to one if the largest shareholder holds more than 50% or 40%, respectively. **Strat30-2** and **Strat20-2** are dummy variables equal to one if the second largest shareholder holds more than 30% or 20%, respectively. **ln(Market Cap)** is the firm size variable, defined as the natural logarithm of market capitalisation. **Rel Bid-Ask** is a proxy for relative liquidity in different share classes, calculated as the bid-ask spread of the superior voting shares divided by the bid-ask spread of the inferior voting share. **Rel Vol to NOSH** is a proxy for relative liquidity in different share classes, calculated as the ratio of the daily trading volume to the number of shares outstanding of each share class. **Fair price rule** is a dummy variable equal to one if the date is after 6 March 2008. Sample size=31 companies. Robust standard errors are used and found in Table E. Time period: 2004-2014.

Table D: Robust standard errors from regressions in Table 11

Regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.021	0.216	0.208	0.212	0.216	0.206	0.205	0.207
Strat50	0.027		0.023	0.023	0.024	0.030	0.030	0.035
Strat40						0.041	0.041	0.039
Strat30-2								0.050
Strat20-2					0.015	0.011	0.011	0.010
ln(Market Cap)		0.023	0.022	0.023	0.023	0.022	0.022	0.022
Rel Bid-Ask							1.3e ⁻⁵	1.3e ⁻⁵
Rel Vol to NOSH				8.5e ⁻⁶	8.5e ⁻⁶	8.4e ⁻⁶	8.4e ⁻⁶	8.4e ⁻⁶
Fair price rule			0.015	0.014	0.014	0.015	0.015	0.015

Note: This tables shows the robust standard errors to each coefficient in the regressions in Table 11.

Table E: Robust standard errors from regressions in Table C

Regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.006	0.225	0.216	0.221	0.224	0.216	0.216	0.217
Strat50	0.027		0.024	0.024	0.024	0.030	0.030	0.036
Strat40						0.041	0.041	0.040
Strat30-2								0.050
Strat20-2					0.015	0.011	0.011	0.010
ln(Market Cap)		0.024	0.023	0.023	0.023	0.022	0.022	0.022
Rel Bid-Ask							1.3e ⁻⁵	1.3e ⁻⁵
Rel Vol to NOSH				8.5e ⁻⁶	8.5e ⁻⁶	8.4e ⁻⁶	8.4e ⁻⁶	8.4e ⁻⁶
Fair price rule			0.014	0.014	0.014	0.015	0.015	0.015

Note: This tables shows the robust standard errors to each coefficient in the regressions in Table C.

Table F: Fair price rule dummy regression

	Coefficient	Robust Std. Err.	z	P> z	R ²
Treatment group					
Intercept	0.049	0.016	3.04	0.002	
Fair price rule	0.043	0.016	2.67	0.007	2.7%
Control group					
Intercept	0.058	0.017	3.39	0.001	
Fair price rule	0.123	0.046	2.68	0.007	5.8%
Prob>Chi2=0.0075 (treatment), 0.0074 (control)					

Note: The effect of the **Fair price rule** dummy on voting premium is investigated for both the treatment group and the control group, separately, with a random effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. The one control variable is **Fair price rule**, a dummy variable equal to one if the date is after 6 March 2008. Sample size=31 companies for the treatment group and 25 companies for the control group. Robust standard errors are used. Time period: 2004-2014.

Table G: Difference-in-differences random effects regression, clustered at the firm level.

Event date: 1 October 2009

	Coefficient	Robust Std. Err.	z	P> z
Intercept	0.077	0.014	5.53	0.050
Treatment*Post Event	-0.082	0.052	-1.57	0.117
Treatment	-0.018	0.021	-0.82	0.415
Post Event	0.118	0.050	2.35	0.019
Prob> chi2 = 0.0040, Overall R ² =6.4%				

Note: The effect of the fair price rule in Sweden is investigated using a random effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. **Treatment** is a dummy equal to one if the company is part of the treatment group. **Post Event** is a dummy equal to one if the date is 1 October 2009 or later. **Treatment*Post Event** is the two aforementioned dummies multiplied. Sample size=56 companies. Robust standard errors are used. Time period: 2004-2014.

Table H: Difference-in-differences random effects regression, clustered at the firm level.

Event date: 15 March 2009

	Coefficient	Robust Std. Err.	z	P> z
Intercept	0.070	0.015	4.73	0.000
Treatment*Post Event	-0.080	0.053	-1.50	0.132
Treatment	-0.015	0.022	-0.71	0.475
Post Event	0.120	0.051	2.36	0.018

Prob> chi2 = 0.0022, Overall R²=6.5%

Note: The effect of the fair price rule in Sweden is investigated using a random effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. **Treatment** is a dummy equal to one if the company is part of the treatment group. **Post Event** is a dummy equal to one if the date is 15 March 2009 or later. **Treatment*Post Event** is the two aforementioned dummies multiplied. Sample size=56 companies. Robust standard errors are used. Time period: 2004-2014.

Table I: Difference-in-differences random effects regression, clustered at the firm level.

Event date: 6 March 2008 (removing Denmark & UK from sample)

	Coefficient	Robust Std. Err.	z	P> z
Intercept	0.061	0.023	2.66	0.008
Treatment*Post Event	-0.024	0.044	-0.55	0.580
Treatment	-0.012	0.028	-0.44	0.658
Post Event	0.068	0.041	1.64	0.100

Prob> chi2 = 0.0083, Overall R²=3.7%

Note: The effect of the fair price rule in Sweden is investigated using a random effects model, clustered at the firm level. The dependent variable is **Voting Premium (VP)**. **Treatment** is a dummy equal to one if the company is part of the treatment group. **Post Event** is a dummy equal to one if the date is 6 March 2008 or later. **Treatment*Post Event** is the two aforementioned dummies multiplied. Sample size=56 companies. Robust standard errors are used. Time period: 2004-2014.