

When do firms abolish dual-class stocks?[#]

Ingolf Dittmann[§]

Niels Ulbricht[§]

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Abstract:

This paper analyses why and when dual-class companies decide to convert their non-voting shares into voting shares. We develop a model that describes the controlling shareholder's decision if a new growth opportunity arises. We argue that the controlling shareholder will agree to a stock unification if, after the growth opportunity has been adopted, her share of the costs of the dual-class structure would exceed her private benefits from control. Our empirical analysis of 89 German dual-class firms between 1990 and 2001 supports this argument. A company is more likely to abolish its dual-class structure if expected future growth is high, if the firm is large, or if the largest block of voting shares is small. We also analyse the abnormal returns of 29 firms that actually did abolish their dual-class structure during this period. We find significantly positive abnormal returns around the announcement date not only for non-voting shares, but also for voting shares. Firm value increases by 4% on average. A part of the variation in abnormal returns can be explained by the ownership structure of the firm.

JEL Classification Codes: G32, G34

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[§] Humboldt-Universität zu Berlin, School of Business and Economics, Spandauer Str. 1, 10178 Berlin, Germany; e-mail: dittmann@wiwi.hu-berlin.de, niels.ulbricht@wiwi.hu-berlin.de

1. Introduction

Dual-class stocks are common in many countries around the world. Among the 49 countries analysed by La Porta et al. (1998), 38 permit some form of separation between ownership and control and at least 21 of them actually do have dual-class firms.¹ Dual-class shares are popular because they allow the incumbent management team to control the firm without owning the majority or even a big share of the firm's cash-flow rights. Indeed, the management of dual-class firms typically holds more than 50% of the voting rights but considerably less than 50% of the cash-flow rights. Against this background, it is surprising that many dual-class firms decide to unify their dual-class structure by voluntarily converting non-voting shares into voting shares. For example, dual-class stocks are on average abolished 13 years after their introduction in the U.S. and after 25 years in Germany. This paper investigates why and when a controlling blockholder agrees to a stock unification that dilutes her voting power. We also study the wealth effect of stock unifications.

Our analysis consists of three parts. First, we develop a model of the controlling shareholder's decision whether or not to agree to a stock unification. From this model, we derive some hypotheses on the unification probability and on the market reaction to the unification announcement. In the second part, we analyse the unification decision with a panel of 89 German dual-class firms over the 12 years from 1990 to 2001. Finally, we consider the abnormal market reaction for those 29 companies in our sample that actually announced a stock unification.

Our main result is that the unification decision is closely related to firm size and growth. Our findings imply that, as the firm grows, the share of the costs of the dual-class structure that is borne by the controlling shareholder increases faster than private benefits of control. At some critical firm size, the controlling shareholder will therefore agree to a stock unification before the firm adopts a new growth opportunity. Accordingly, large firms and firms with high expected growth opportunities are more likely to abolish their dual-class structure. Therefore, a dual-class structure should be considered a phase the firm is going through rather than a fixed characteristic of the firm.

¹ In a study on cross-listed dual-class firms, Doidge (2003) analyses a sample of dual-class firms from 20 countries which are included in the La Porta et al (1998) list. The 21st country is the U.S.

In the first part of the paper, we model the decision of the controlling shareholder whether or not to unify the dual-class structure when a new growth opportunity arises. We assume that growth leads to an increase in expected future dividends, in private benefits of control, and in the costs of the dual-class structure. Clearly, the controlling shareholder will agree to a stock unification only if her share of the costs of the dual-class structure exceed her private benefits of control after the growth option has been exercised. Therefore, a necessary condition for observing a stock unification is that the costs of the dual-class structure increase faster than private benefits as the firm grows. The model further predicts that a stock unification is more likely for big firms, for firms that face new growth opportunities, and for firms that have a high proportion of voting shares. In order to understand the last implication, note that a high proportion of voting shares implies that the controlling shareholder holds a comparatively large part of the firm's cash-flow rights and therefore bears a large share of the costs of the dual-class structure.

Next, we run logit regressions of the decision to abandon the dual-class structure on a number of company characteristics. We find strong evidence that growth opportunities indeed trigger stock unifications: The probability of a stock unification is significantly higher in years in which a firm issues new equity. We also find evidence that the market capitalization and the proportion of voting shares have a positive impact on the unification probability just as predicted from our model. Moreover, we discover that the size of the largest voting block is negatively related to the probability of a stock unification.

Finally, we perform an event study for those 29 firms in our sample that announced a stock unification. We find a strong positive abnormal return for non-voting shares and a small, marginally significant positive abnormal return for voting shares. The market capitalization of these firms increases by 4% on average. About 19% of the variation in the cumulative abnormal returns can be explained by the size of the largest voting block: Firms with larger blocks experience higher abnormal returns. Interestingly, the second largest block is not significantly related to the abnormal return, but the sum of all reported blocks is more significant than the largest block alone and can explain approximately 32% of the variation. This finding suggests that the smaller blockholders do not prevent the largest blockholder from extracting private benefits, but rather enter into a coalition with the largest blockholder in order to share private benefits. Since the controlling shareholder must have agreed to the

unification, the positive abnormal returns imply that dual-class structures destroy corporate value for those firms that choose to unify. Our results do not imply, however, that *all* dual-class structures are detrimental to firm value.

Our empirical analysis is based on a comprehensive dataset of German dual-class firms. German data have a number of advantages over data from the U.S. or the U.K. First, there is no corporate governance competition between firms within Germany. Instead, German law specifies corporate governance rules that are binding for every firm. As these rules severely restrict the firm's choice of the dividend and voting rights of the second class of shares, German dual-class structures are much more homogeneous than those in many other countries. German law, for instance, prohibits shares with fractional or multiple votes. Only voting and non-voting shares are allowed, and the rights of non-voting shares are explicitly laid down in the law rather than in each company's charter. Due to the limited heterogeneity across firms, German data are ideal for statistical analysis. In addition, the number of non-voting shares must not exceed the number of voting shares in Germany. This regulation limits the separation between ownership and control and rules out extreme cases, i.e. controlling blocks with minimal cash-flow rights.

The paper is organised as follows. The next section reviews the extant literature on the introduction and abolition of dual-class structures. Section 3 develops our hypotheses with the help of a stylised model. Section 4 introduces the dataset and some institutional details. Section 5 contains the empirical analysis of the unification decision. Section 6 analyses the wealth effects of stock unification announcements, and Section 7 concludes. The appendix contains a list of the symbols used and the proofs of the propositions.

2. Review of the literature

The ownership structure of US dual-class companies was first described by DeAngelo and DeAngelo (1985). They establish that officers and directors in dual-class firms hold on average 55% of the voting rights but only 28% of the cash-flow rights. Consequently, dual-class structures can be seen as an anti-takeover measure that helps managers to entrench themselves. As for other anti-takeover measures, the question arises whether dual-class structures create or destroy value. Partch (1987) finds a significantly positive price response of 1.2% to the announcement of plans to

create a second class of shares in the US, but the median price response is not significantly different from zero. In contrast, Jarell and Poulsen (1988) find a small significantly negative wealth effect of -0.8% for a wave of dual-class reclassifications in the mid 1980s. Dimitrov and Jain (2001) analyse long-run abnormal returns following the dual-class recapitalisations of 178 US firms. They find a highly significant positive abnormal return of 42% over four years for firms that decide not to list their voting stock on a stock exchange. The average long-run abnormal return of firms that list both types of shares is not significantly different from zero. Dimitrov and Jain (2001) argue that managers in firms that do not list their voting shares are more committed to the firm because they cannot easily sell their shares.

The decision to introduce a dual-class structure has not been analysed directly in the literature, presumably because of the immense data requirements of such an analysis. There are two papers, however, which are concerned with comparing dual-class recapitalisations with alternative corporate actions that also consolidate control. Lehn, Netter and Poulsen (1990) consider the firm's choice between dual-class recapitalisation and leveraged buyout. Mikkelson and Partch (1994) analyse the firm's choice between a dual-class structure and an employee stock option plan.

While the introduction of a second class of shares received a lot of attention in the empirical corporate finance literature, there is – to our knowledge – only a single paper that considers the abolition of dual-class structures. Hauser and Lauterbach (2000) analyse 67 Israeli stock unifications between 1990 and 1996 after a new regulation became effective which banned new issues of inferior-voting shares at the Tel-Aviv Stock Exchange. This regulation effectively forced firms to unify their dual-class structure before they could raise new equity capital. As a consequence, investors presumably anticipated the individual unification announcements, which might be the reason why Hauser and Lauterbach (2000) do not find any significant announcement effects. Instead, the authors take advantage of the fact that many firms compensated their old superior-voting shareholders with additional stocks and estimate the value of the voting right from this compensation.

The German data used in this paper differ in two respects from the Israeli data used by Hauser and Lauterbach (2000). First, there was no change in the regulation of dual-class firms in Germany. Hence, stock unification announcements were not fully anticipated in our dataset, so that we are able to document significant abnormal announcement returns. Second, in Germany, superior-voting shares do not receive

compensation for their loss of voting power in the course of a stock unification. Consequently, we cannot use our dataset for calculating the value of control as done by Hauser and Lauterbach (2000). Although we also consider the wealth effect, we mainly focus on the reasons and the timing of stock unifications.

3. A model of the controlling shareholder's decision to unify the dual-class structure

This section models the controlling shareholder's decision whether or not to convert non-voting shares into voting shares. This theory allows us to describe the characteristics of the firms that opt for a stock unification and to predict the stock market reaction to an announcement of a stock unification.

3.1 The set-up of the model

We consider a firm with N shares, which are divided into two classes: φN shares are voting shares and $(1-\varphi)N$ shares are non-voting shares ($0 < \varphi < 1$). Both types of shares receive identical dividends and liquidation payments. We assume that a blockholder (or a coalition of shareholders) needs at least a proportion α of the voting shares in order to control the firm ($0 < \alpha < 1$).

The model consists of six points in time. At time $t = 0$, there is a controlling shareholder who holds exactly a proportion α of the voting shares and no non-voting shares. The remaining voting shares and all non-voting shares are held by small shareholders. For simplicity, we assume that all individuals are risk-neutral. At time $t = 0$, the dual-class structure is stable, i.e., the controlling shareholder has no incentive to abandon the dual-class structure and give up control. At time $t = 1$, a growth opportunity \tilde{g} arises and is observed by the firm and the controlling shareholder but not by minority shareholders. With probability π , there is a positive growth opportunity ($\tilde{g} = g > 0$). Otherwise, there is no growth opportunity ($\tilde{g} = 0$). If there is a positive growth opportunity, the controlling shareholder must decide whether to abandon the dual-class structure and whether to pursue the growth opportunity. To abandon the dual-class structure means to convert non-voting shares one-to-one into voting shares, so that the firm has N voting shares and no non-voting shares after such a transaction. At time $t = 2$, the firm announces the realization of \tilde{g}

and the controlling shareholder's decisions. At time $t = 3$, the announcement is put into practice.

At time $t = 4$, a blockholder who owns at least α of the voting shares receives private benefits from being in control. Simultaneously, the remaining voting shareholders can extract a part of the blockholder's private benefits. If a stock unification took place at time $t = 3$, there is no controlling shareholder and no private benefits are extracted at time $t = 4$. Finally, at time $t = 5$, the firm is liquidated and the liquidation value is paid out pro-rata to all (voting and non-voting) shareholders.

The liquidation value is \tilde{L} if the firm has abolished the dual-class structure, and $\tilde{L} - c(\tilde{L})$ if the firm still has dual-class shares. Here, $c(\tilde{L})$ denote the costs of the dual-class structure. The gross liquidation value \tilde{L} depends on the pursued growth opportunity: If the firm did not grow, $\tilde{L} = L > 0$. If the firm grew with $\tilde{g} = g$, $\tilde{L} = (1 + g)L$. In case there is still a blockholder with α voting shares at time $t = 4$, this blockholder receives private benefits of $(1 + \theta)b(\tilde{L})$ from being in control ($\theta > 0$, $b(\tilde{L}) > 0$). Simultaneously, the remaining voting shareholders extract $\theta b(\tilde{L})$ of the controlling shareholder's private benefits so that the controlling shareholder receives net private benefits of $b(\tilde{L})$. We do not explicitly model how this rent extraction works, because it is not the central part of our model (see Zingales, 1995, Rydqvist, 1996, and Dittmann, 2003, for explicit models). The assumption that $\theta b(\tilde{L})$ is distributed among minority voting shareholders is only needed to introduce a spread between voting and non-voting shares. It has no impact on the controlling shareholder's decisions.

We further assume that benefits $b(\tilde{L})$ and costs $c(\tilde{L})$ are linear in the liquidation value \tilde{L} : $b(\tilde{L}) = b_0 + b_1\tilde{L}$ and $c(\tilde{L}) = c_0 + c_1\tilde{L}$ with $b_0 \geq 0$, $b_1 \geq 0$, $c_0 \geq 0$, $c_1 > 0$. At all times, voting and non-voting shares are traded on a liquid stock exchange among risk-neutral investors. The risk-free rate is zero.

3.2 The decision to abandon the dual-class structure

We first consider time $t = 0$, when the dual-class structure is stable by assumption. This means that, in the no growth scenario, retaining the dual class structure leads to a higher payoff for the controlling shareholder than switching to a single-class structure:

$$\alpha\varphi[L - c(L)] + b(L) > \alpha\varphi L \Leftrightarrow \alpha\varphi c(L) < b(L). \quad (1)$$

Note that $\alpha\varphi$ is the proportion of the cash-flow rights owned by the controlling shareholder, because she holds a fraction of α of all voting shares and φ is the proportion of voting shares among all shares. Hence, the assumption that the dual-class structure is stable at time $t = 0$ leads to an upper bound on the costs of the dual-class structure, $c(L)$. If the dual-class structure were too costly, it would have been abandoned already.²

If the growth opportunity arises at time $t = 1$, the controlling shareholder compares the payoffs of three possible actions:

- Retaining the dual-class structure and not pursuing the growth opportunity yields $\alpha\varphi[L - c(L)] + b(L)$.
- Retaining the dual-class structure and pursuing the growth opportunity yields $\alpha\varphi[(1 + g)L - c((1 + g)L)] + b((1 + g)L)$.
- Abandoning the dual-class structure and pursuing the growth opportunity yields $\alpha\varphi(1 + g)L$.

Note that abandoning the dual-class structure and not pursuing the growth opportunity is never chosen, because the dual-class structure is stable at time $t = 0$ (see equation 1).

Proposition 1: (The controlling shareholder's decision)

Assume that a positive growth opportunity arose at time $t = 1$, i.e., $\tilde{g} = g$. Then at time $t = 2$:

- a) The controlling shareholder agrees to a stock unification if $c_1 > \frac{b_1}{\alpha\varphi}$ and

$$g > \max \left\{ \frac{b(L) - \alpha\varphi c(L)}{(\alpha\varphi c_1 - b_1)L}, \frac{b(L) - \alpha\varphi c(L)}{\alpha\varphi L} \right\}.$$

² The dual-class structure is efficient if $(1 + \theta)b(L) > c(L)$. Note that equation (1) also gives an upper bound for the total efficiency loss caused by the dual-class structure: $c(L) - (1 + \theta)b(L) < [1 - (1 + \theta)\alpha\varphi]c(L)$. If $(1 + \theta)\alpha\varphi \geq 1$, the dual-class structure is efficient. Otherwise, the dual-class structure can be but need not be inefficient.

- b) The controlling shareholder chooses not to pursue the growth opportunity and to retain the dual-class structure if $c_1 \geq 1 + \frac{b_1}{\alpha\varphi}$ and $g \leq \frac{b(L) - \alpha\varphi c(L)}{\alpha\varphi L}$.
- c) Otherwise, the controlling shareholder chooses to pursue the growth opportunity and to retain the dual-class structure.

The proof of the proposition can be found in the appendix. Proposition 1a) states that we will observe a stock unification only if the costs of the structure for the controlling shareholder $\alpha\varphi c(\tilde{L})$ increase faster in \tilde{L} than the benefits $b(\tilde{L})$. But even if this condition is fulfilled, the controlling shareholder will agree to a stock unification only if growth g is high enough. The reason is that for low growth g , the controlling shareholder's costs increase faster than her benefits, but the total benefits might still be larger than the total costs (first inequality). The second reason is that for low growth g , the controlling shareholder might be better off to forfeit the growth opportunity if current benefits exceed benefits from future growth and future cost savings after a unification (second inequality).

Proposition 1b) shows that dual-class firms pass up profitable growth opportunities if the marginal costs c_1 are large and if private benefits $b(L)$ are large (otherwise the right hand side of the second inequality in 1b) becomes negative). This is one reason why dual-class firms can be expected to grow more slowly than otherwise similar single-class firms.

Figure 1 illustrates Proposition 1 for a numerical example with $L = 1$, $\varphi = 0.75$, $\alpha = 0.5$, $b(\tilde{L}) = b_0$, and $c(\tilde{L}) = c_1\tilde{L}$. It displays the three regions 'grow & unify', 'don't grow', and 'grow & don't unify' dependent on marginal costs c_1 and growth rate g . The left panel demonstrates that all three regions exist if $b_0 = 0.5$. If private benefits are smaller, the 'don't grow' region vanishes as the right panel of figure 1 shows for $b_0 = 0.3$.

Corollary 1: (unification probability)

Ceteris paribus, we expect to observe more stock unifications among those dual-class firms that

- (1) are big (i.e., L is large),
- (2) have good growth opportunities (i.e., g and π are large),

- (3) have only few non-voting shares (i.e., φ is large),
- (4) have a large biggest voting block α
- (5) have low benefits of control which can be extracted by a controlling shareholder (i.e., b_0 and b_1 are small),
- (6) bear high costs due to the dual-class structure (i.e., c_0 and c_1 are large).

Corollary 1 summarizes the hypotheses we can derive from Proposition 1 concerning the probability of a stock unification. Effects (1) to (4) can be easily tested, because either the corresponding variables or proxies for them are available. Costs and private benefits of the dual-class structure, on the other hand, are difficult or even impossible to measure.

Especially for the effect of the biggest voting block α it is important to stress that Corollary 1 only reports results under the *ceteris paribus* assumption. One could well argue that private benefits and the costs of the dual-class structure depend on the largest block size α , because a larger block might give access to more possibilities of rent extraction. Hence, private benefits *and* the costs of the dual-class structure would increase in the size of the largest voting block. As the controlling shareholder will only pursue those rent extraction possibilities that make her better off, her net utility from the dual-class structure would then increase in the block size α . Consequently, this argument suggests – contrary to the statement of Corollary 1 – that firms with a larger biggest voting block α are *less* likely to announce a stock unification. The empirical analysis in Section 5 will resolve this issue.

3.3 Market reaction to the announcement of a stock unification

For discussing the market reaction, we first need to introduce some additional notation. Let P_t^V be the market price of a single voting share at time t if no stock unification has been announced. $P_t^{V,U}$ denotes the voting share price if a stock unification has previously been announced. P_t^{NV} and $P_t^{NV,U}$ are the corresponding prices for non-voting shares.

When a company announces a stock unification at time $t = 2$, it must have observed a positive growth opportunity $\tilde{g} = g$ at time $t = 1$. Hence, the price of a single share after the announcement is $P_2^{V,U} = P_2^{NV,U} = (1 + g)L / N$. As the growth opportunity \tilde{g}

is either zero or equal to $g > 0$, we can easily calculate the fictitious price of voting and non-voting shares of this firm at time $t = 2$ if no positive growth opportunity had arisen. This is the price, the investors expected with probability $(1 - \pi)$ at time $t = 1$. For non-voting shares, it is $P_2^{NV} = (L - c(L))/N$. For voting shares, we obtain: $P_2^V = (L - c(L))/N + \theta b(L)/((1 - \alpha)\varphi N)$. Recall that $\theta b(L)$ is the share of private benefits extracted by minority shareholders and $(1 - \alpha)\varphi N$ is the number of voting shares not held by the blockholder.

At time $t = 1$, investors expect a positive growth opportunity g with probability π . Hence, the market prices for voting and non-voting shares at time $t = 1$ are given by $P_1^V = \pi P_2^{V,U} + (1 - \pi)P_2^V$ and $P_1^{NV} = \pi P_2^{NV,U} + (1 - \pi)P_2^{NV}$. Now, we can calculate the market reaction to the announcement of a stock unification (the proof can be found in the appendix):

Proposition 2: (Market reaction to the announcement of a stock unification)

For a firm that announces a stock unification at time $t = 2$, we observe the following price changes from $t = 1$ to $t = 2$:

- a) For non-voting shares: $P_2^{NV,U} - P_1^{NV} = (1 - \pi) \frac{gL + c(L)}{N} > 0$
- b) For voting shares: $P_2^{V,U} - P_1^V = (1 - \pi) \frac{gL + c(L) - \frac{\theta}{(1 - \alpha)\varphi} b(L)}{N}$. If $\theta < \frac{1 - \alpha}{\alpha}$, we obtain: $P_2^{V,U} - P_1^V > 0$.
- c) The market value of the firm, $\varphi NP^V + (1 - \varphi)NP^{NV}$, changes by $(1 - \pi)[gL + c(L) - \frac{\theta}{(1 - \alpha)} b(L)]$. This change is positive if $\theta < \frac{1 - \alpha}{\alpha\varphi}$.

Proposition 2 quantifies two obvious results: The market reaction of non-voting shares is positive, and it is stronger than the market reaction of voting shares. A less obvious result is that the market reaction of voting shares is also positive as long as $\theta < (1 - \alpha)/\alpha$. If, for instance, the critical block size is $\alpha = 50\%$, this condition means that the proportion of the controlling shareholder's private benefits that can be extracted by minority shareholders is less than 50%. Even though the holders of voting shares can extract some of the private benefits of the controlling shareholder,

they are better off under a single-class structure than under a dual-class structure under this condition. The reason is that the controlling shareholder only agrees to a stock unification if her private benefits are comparatively low – in this case, holders of the remaining voting shares are also better off in a single-class structure.

4. Dataset and institutional details

German law distinguishes between voting and non-voting shares. Shares with multiple or fractional votes are not permitted. Non-voting shares must be vested with a cumulative minimum dividend, the size of which (typically between 2% and 10% of the face value) is laid down in the company's charter. Accordingly, the total dividend is distributed among the two types of shares in the following order: First, minimum dividends and arrears are settled. Then each voting share receives an amount up to the minimum dividend. Finally, what remains is distributed equally among all shares, so that the dividend of a voting share never exceeds that of a non-voting share. If the minimum dividend is not paid in two consecutive years, each non-voting share receives a regular voting right until the arrears are fully paid. Moreover, a reduction of the minimum dividend or a conversion of non-voting shares into voting shares can only be declared if 75% of non-voting shareholders agree in a separate meeting. In all other circumstances, only voting shares have the right to vote.

Our dataset is based on the Karlsruher Kapitalmarkt Datenbank (KKMDB), a scientific database that contains German stock market data from 1960 onwards. Dual class companies have been identified by their stock identification number: The first five digits identify the firm and the last digit the class of shares. For all these dual-class firms, we compiled ownership information, the number of outstanding shares and charter provisions regarding voting power and dividend differences from *Handbuch der deutschen Aktiengesellschaften*, the German equivalent of Moody's Manual. We excluded firms for which (1) both types of shares carry voting rights, (2) we could not find any information on the voting arrangement, or (3) only one type of share was listed at a German stock exchange. We also excluded one company that unified its dual-class structure twice within eight years only to issue new non-voting shares a few weeks later both times. No other company introduced new non-voting shares after unifying its dual-class structure. We obtained price, volume, and dividend series as well as information on seasoned equity offerings from KKMDB.

If one of the two types of shares of a company ceased to trade during this observation period, we searched the leading German business papers *Handelsblatt*, *Börsenzeitung*, and *Frankfurter Allgemeine Zeitung* for the reason of the discontinuation and its first announcement. Since this search was often not successful for discontinuations that took place before 1990 and since we could identify only three stock unifications before 1990, we focus on the period from January 1990 to December 2001 for our logit analysis. For this period, we could identify the reasons of all discontinuations. Our final dataset contains 89 dual-class companies and 814 firm-year observations. For 41 of these companies, one or both types of shares ceased to trade during our observation period. We classify 31 of these discontinuations as stock unifications: One company bought back its non-voting shares, and 30 companies converted each non-voting share into one voting share. In one of these 30 conversions, non-voting shareholders had to make an additional payment, and in seven cases there were outstanding past minimum dividends that were not paid before the conversion. The remaining 10 discontinuations were due to bankruptcy (1), mergers (8), or tender offers (1).

Figure 2 displays the frequency of stock unifications for each year in our sample. In 1990, 1991 and 1994, there were no stock unifications and, before 1996, the frequency never exceeded 3%. In contrast, the frequency of stock unifications was always above 6% after 1997 with a peak at 10% in 2000. There are a number of reasons for the growing popularity of stock unifications in the mid 1990s. First, during the 1990s, the German stock market became more internationally oriented. Firms were concerned about the attractiveness of their capital structure to international investors and dual-class shares were generally seen as an impediment for international investments. In addition, in August 2000, Deutsche Börse announced a change of the rules that determine which companies are included in the major German stock indices. After the change took effect in June 2002, companies were ranked according to the free-float of their most liquid class of stocks – and not anymore according to their total market capitalisation. Hence, some companies unified their dual-class shares in order to stay in an index or to increase the probability to be included in an index.

5. Logit analysis of the decision to unify

In order to appropriately accommodate the time dimension of our dataset, we apply a logit model with year dummies:

$$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \alpha_t + X_{it}\beta \quad (2)$$

Here, $p_{it} = \Pr(Y_{it} = 1)$, where Y_{it} is a dummy variable equal to one if firm i decides to unify its dual-class structure in year t . X_{it} is a vector of independent variables and β is the parameter vector we want to estimate.^{3,4} Figure 2 shows that the unconditional probability of a stock unification varies considerably between 1990 and 2001. The year dummies α_t in model (2) remove this variation over time, so that β only captures the effect of the independent variables across firms.

Although Figure 2 already suggests that the unconditional unification probability is not constant, we formally test this hypothesis with a likelihood ratio test, because the time dummies could introduce unnecessary multicollinearity if the unconditional probability is constant. We perform this test without additional independent variables and find that the hypothesis that the unification probability is constant over time is rejected at the 0.5% significance level for the full sample. If we restrict the sample to the years 1996 to 2001, we cannot reject the hypothesis at any significance level below 50%. Therefore, we will report two sets of results: one for the full sample using the model with year dummies (2) and another one for the 1996-2001 sample without year dummies, i.e. in the model

³ Beck, Katz and Tucker (1998) demonstrate that model (2) is equivalent to a discrete proportional hazard model where the baseline hazard depends on calendar time (rather than on the duration of the dual-class structure). In fact, Figure 2 can be interpreted as a non-parametric estimate of this baseline hazard.

⁴ The structure of the data does not allow the consistent estimation of firm fixed effects. Since firms leave our sample after performing a stock unification, the number of observations per firm is limited even if the time dimension becomes arbitrarily large. Also, an elimination of the firm fixed effects using a conditional logit approach is not feasible, because the firms in our sample either never perform a stock unification or they perform exactly one stock unification and leave the sample thereafter. Hence, the sum of all stock unifications performed by a firm completely determines the dependent observations for this firm. As a consequence, the conditional likelihood is constant and cannot be used for the estimation of additional parameters.

$$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \alpha + X_{it}\beta. \quad (3)$$

In this framework, we want to test the hypotheses we derived from our model in Section 3 (see Corollary 1). For the size (or: liquidation value) L , we use the total market capitalization ($MCap$) of the firm. The proportion of voting shares φ and the largest voting block α can be directly calculated from our data. We denote them by $PropVS$ and $BSize$, respectively. In addition to the largest voting block $BSize$, we also use the second-largest voting block $BSize2$ and the proportion of voting shares not contained in the reported blocks, $Freefloat$, in our analysis. Finding a good proxy for growth opportunities (i.e., the variables g and π in the model) is less obvious. We use the dummy variable SEO_{it} which is set to one in years t in which firm i issued additional equity. Clearly, a company will raise additional capital only if it believes to invest it profitably, i.e. if good growth opportunities exist.

In addition to the hypotheses listed in Corollary 1, we consider two further potential reasons for a stock unification which have not been modelled in Section 3. First note that non-voting shares receive a regular voting right, if the minimum dividend has not been paid for two years. In this situation, a stock unification might be more likely for two reasons: First, non-voting shareholders and minority voting shareholders might have the majority and vote for a unification even if the largest voting shareholder does not agree. Second, it might be attractive for voting shareholders to vote for a unification in such a situation, because often the arrears are not paid if non-voting shares are converted into voting shares. For this reason, we construct the dummy variable $NVote_{it}$ which equals one if firm i 's non-voting shares have a regular voting right in year t .

Another potential motivation to abolish dual class stock are liquidity considerations. If the liquidity of voting shares is low and the liquidity of non-voting shares is high, voting shareholders might benefit from a stock unification, so that a unification becomes more likely. In order to test this hypothesis, we construct the liquidity ratio, $LRatio$, which is the logarithm of the ratio of annual turnover in voting shares over annual turnover in non-voting shares. If this ratio is negative, voting shares are less liquid than non-voting shares.

Table 1 displays mean and median, as well as a short description for each of the eight independent variables used in our analysis. The mean (median) market

capitalization is € 1.5 billion (€ 0.2 billion). The average proportion of voting shares is 70% and the average largest voting block is 57%. On average, the firms in our sample issue new equity every eighth year, and non-voting shares have the right to vote every seventh year. The annual turnover does not differ much between the two classes of shares on average.

Results of the corresponding eight univariate logit regressions, where the decision to unify, Y_{it} , is the dependent variable, can be found in Table 2. For both samples, we report the maximum likelihood estimate and the p-value of the t-test for zero effect based on White heteroscedasticity consistent standard errors (see Greene, 2000, p. 823). For both samples, Table 2 displays overwhelming evidence that dual-class firms which issue new stocks are more likely to unify their dual-class structure in the same calendar year. This corroborates hypothesis (2) in Corollary 1. We also find evidence in favour of two other hypotheses listed in Corollary 1: The proportion of voting shares $PropVS$ and the market capitalization $MCap$ both have a positive effect on the unification probability.

The size of the largest voting block $BSize$ has a significant negative effect on the unification probability. This result stands in sharp contrast to Corollary 1 which states that this effect should be positive. The intuition underlying the theoretical result is that a larger block size makes the blockholder internalise more of the costs of the dual-class structure, so that she is more willing to agree to a stock unification. This result holds *ceteris paribus*, i.e., given that the costs and benefits of the dual-class structure are constant. It seems plausible, however, that costs and benefits increase in the largest block size, because a larger block gives access to more possibilities to obtain private benefits. We already argued at the end of Section 3.2 that the controlling shareholder will not extract private benefits that are smaller than the additional costs she has to bear, so that her net utility from the dual-class structure (weakly) increases in the block size. This argument implies that the unification probability is negatively related to the size of the largest voting block which is consistent with the evidence displayed in Table 2. We therefore conclude that the largest block size is indeed a proxy for private benefits and the costs of the dual-class structure.⁵

⁵ In order to test hypothesis (4) of Corollary 1, we would need to control for private benefits and for the costs of the dual-class structure. For this, we would need other measures or proxies for the costs and benefits which we do not have.

Outside ownership as measured by the second-largest voting block *BSize2* has no significant effect on the decision to unify. Moreover, the proportion of voting shares not contained in the reported blocks, *Freefloat*, has a positive effect on the unification probability which is about as significant as the effect of *BSize*. For *NVote* and *LRatio*, we also cannot find any significant effect. Hence neither liquidity considerations nor the temporary voting right of non-voting shares seem to affect the unification decision.

Before turning to multivariate logit regressions, we take a look at the correlations between the four main independent variables. Table 3 shows that the market capitalisation *MCap* is significantly positively correlated with the proportion of voting shares *PropVS* and significantly negatively correlated with the largest voting block *BSize*. Larger companies have fewer non-voting shares and smaller controlling blocks.

Table 4 shows the results of a number of multivariate logit estimations for both samples. In addition to the estimates and the p-value of the two-sided heteroscedasticity-consistent t-test, it also displays the McFadden pseudo R^2 . Note that the pseudo R^2 is higher for the full sample than for the 1996-2001 subsample, because the full sample regressions also include year dummies. The table demonstrates that the *SEO* dummy stays highly significant no matter which additional variables are included. In contrast, the proportion of voting shares *PropVS* loses most of its significance once the market capitalisation *MCap* or the block size *BSize* is introduced into the regression. Among the models with two independent variables (1 to 3), *BSize* has the lowest p-value, but according to the pseudo R^2 *MCap* has the highest overall explanatory power. Model 6 with the independent variables *SEO*, *MCap*, and *BSize* is most successful to explain the data in both samples. The further inclusion of *PropVS* increases the pseudo R^2 only marginally.

We conclude that firms which (1) have positive growth opportunities, (2) are big in terms of total market capitalisation, (3) have a comparatively small controlling block, and (4) have a high proportion of voting shares are more likely to unify their dual class structure. Hence, the empirical logit results corroborate our argument in Section 3.

6. The market reaction to the announcement of a stock unification

This section presents the results of an event study for 29 German firms that announced a stock unification between 1989 and 2002 and actually performed a stock unification thereafter. To our knowledge there was never an announcement of a stock unification that was not put into practice. We start with an initial sample of 37 dual-class firms that announced a stock unification between 1989 and 2002 and exclude a total of eight firms: For two firms, we could not find the date of the first announcement in the business press; three firms simultaneously announced other important events like a merger, a major restructuring programme or an immediate trading halt; two firms continued to have two types of shares with equal voting right but different registration requirements⁶; and one firm had more than 64% missing return observations in the estimation window and the event window.⁷

Table 5 contains a list of the 29 companies in our event study. It shows the company name, the date of the first announcement, the terms of conversion, and additional less important announcements made at the same day. The typical terms of conversion are that each non-voting share is converted into one voting share without any additional payment or any compensation to old voting shareholders. Column 3 of Table 5 shows the deviations from this general rule. In five cases, outstanding minimum dividends were not paid. In two cases, non-voting shareholders had to make an additional payment equal to two thirds of the previous price difference between voting and non-voting shares, and one company announced to buy back non-voting shares for 80% of the price of voting shares. As some companies announced other minor events like a stock split, an SEO, or an extra dividend, we separately analyse a group of 13 firms that exclusively announced a stock unification and that did not require an additional payment from non-voting shareholders. The names of these companies are printed in bold letters in Table 5.

We use a 41 day event window and a 200 day estimation window from trading day –220 to –21 relative to the announcement date. We estimate a market model using the

⁶ These firms initially had non-voting shares, unregistered voting shares, and registered voting shares. They announced the conversion of non-voting shares into unregistered voting shares.

⁷ All remaining firms have less than 8% missing values in either window.

full Frankfurt market portfolio (DAFOX) provided by KKMDB. Figure 3 shows the cumulated average abnormal returns (CAR) for voting shares, non-voting shares and the total market capitalisation of the 29 firms in our sample. Figure 4 displays the corresponding plot for the 13 firms with “clean” announcements. Both plots suggest that there was a run-up for voting and non-voting shares to a CAR between 6% and 10% on day -1 . On the announcement day, non-voting shares experience an additional abnormal return of 3% in the full sample and 2.5% in the ‘clean’ subsample, while there is no distinct reaction for voting shares. In the full sample, the CAR declines gradually over the remaining event window for both shares. In the ‘clean’ subsample, however, the CAR fluctuates around its day 1 value over the remaining days of the event window.

Table 6 displays the results of three tests for zero abnormal return around the announcement date. The Standard Test is the most popular parametric test in event study analysis.⁸ Cowan and Sergeant (1996) show in a simulation study that the Standard Test rejects the null hypothesis too often in two situations: (1) if the announcement has an impact not only on the mean but also on the variance of the abnormal returns, and (2) if the stocks under consideration are thinly traded. As some of the companies in our sample are very small, we are particularly worried about the thin trading bias and therefore also report the results of two non-parametric tests: the Corrado (1989) Rank Test and the Generalized Sign Test proposed by Corrado and Zivney (1992). In Cowan and Sergeant’s (1996) simulation study, these two tests turned out to be robust to thin trading and to changes in the return variance.

Panel A of Table 6 shows that the reaction of non-voting shares is significantly positive according to all three tests. The abnormal returns of voting shares (shown in Panel B) are also positive but smaller than the abnormal returns of non-voting shares. In both samples, the generalized sign test cannot reject the null hypothesis of zero abnormal returns for voting shares. In contrast, the Corrado rank test finds a significant abnormal reaction in the full sample but not in the ‘clean’ subsample. The standard test rejects the null hypothesis in both samples. We conclude that there is some evidence that voting shares experience a positive abnormal announcement return – just as we predicted from our model in Section 3. Finally, Panel C displays

⁸ Campbell, Lo and MacKinlay (1997) describe this test (J_2) on p. 162. Cowan and Sergeant (1996) call it ‘Patell test’.

that the reaction of the full market capitalisation (i.e., the weighted sum of the reactions of voting and non-voting shares) is again significantly positive in both samples according to all three tests. Across the three windows and the two samples, estimates for the average increase of the firms' market value vary between 3.3% and 6.3%.

Table 7 displays the results of eight univariate regressions of the cumulative abnormal return (CAR) on each of the eight variables described in Table 1. From the logit analysis, we know that the *SEO* dummy, the proportion of voting shares *PropVS*, and the market capitalisation *MCap* have a positive effect on the probability of a stock unification while the largest block size *BSize* has a negative effect on this probability. As *PropVS*, *MCap*, and *BSize* are observable and seasoned equity offerings can be anticipated to some extent, we expect that firms with *SEO* = 1, high *PropVS*, high *MCap* and low *BSize* have a lower CAR because the unification announcement was partly anticipated. Except for *BSize* however, we do not find any significant correlations between these variables and the CAR. For the *SEO* dummy, the reason might be that the announcement of a seasoned equity offering has a small positive announcement effect on the firm value in Germany (see Gebhardt, 2002). Therefore, the two opposing effects (the negative effect of anticipated SEOs and the positive effect of surprise SEOs) might cancel and lead to the insignificant results.

Table 7 shows that the largest block size *BSize* has a significant positive effect on the CAR. There are two potential reasons for this finding: First, firms with low *BSize* are more likely to announce a stock unification as shown in Table 2. As a consequence, the announcement of firms with low *BSize* has been anticipated to some extent and the abnormal return is smaller. Alternatively, *BSize* can be considered a proxy for the costs and the benefits of the dual-class structure, if a bigger largest voting block allows the blockholder to extract more private benefits. Proposition 2c shows that the costs of the dual-class structure $c(L)$ directly enter the abnormal market return, whereas the blockholder's private benefits $b(L)$ enter only indirectly via the rent extraction as $-\frac{\theta}{(1-\alpha)}b(L)$, where θ is small. Consequently, the overall effect of an increase in *BSize* on the abnormal market reaction is likely to be positive.

The size of the second largest voting block *BSize2* has no significant effect on the CAR. Given the two results on *BSize* and *BSize2*, it is not surprising that the proportion of voting shares not contained in the reported blocks, *Freefloat*, has a

significantly negative impact on the cumulated abnormal returns. It is interesting to note, however, that this impact is considerably more significant than the effect of *BSize* alone. Also, the variable *Freefloat* explains 32% of the variation in abnormal market returns over the [-4, 1] window compared to only 19% that is explained by the largest block size *BSize*. This result suggests that smaller blockholders do not prevent the largest blockholder from extracting private benefits (then *Freefloat* should have less explanatory power than *BSize*), but rather enter into a coalition with the largest blockholder in order to share private benefits.

7. Conclusions and further notes

In this paper, we theoretically and empirically analyse the controlling shareholder's decision whether or not to abolish a dual-class structure. We develop a model that predicts more stock unifications among big firms, among firms with current positive growth opportunities, and among firms with a high proportion of voting shares. In the empirical analysis, we find evidence for all three hypotheses: The likelihood of a stock unification increases for firms that issue new equity in the same calendar year, that are big in terms of market capitalization, and that have a high proportion of voting shares. In addition, the size of the largest block of voting shares has a negative impact on the unification probability.

Moreover, our model predicts that, under some circumstances, the controlling shareholder of a dual-class company will pass up new growth opportunities. Therefore, our model implies that dual-class firms grow more slowly than otherwise similar single-class firms.

We perform an event study and establish that the average abnormal announcement return for non-voting shares (approx. 9%) is markedly higher than for voting shares (approx. 3%). This finding raises the question why voting shareholders give away so much value to non-voting shareholders. Why doesn't the firm buy back the non-voting shares instead of converting them into voting shares? This question implicitly assumes that non-voting shares can be bought by the company at a price equal to or slightly above their pre-announcement price. Whether this assumption is reasonable critically depends on what happens to the remaining non-voting shareholders who are not willing to sell their shares. There are three possible scenarios. First, if the remaining non-voting shareholders can be forced to sell, a buy-back might indeed be

cheaper than a stock unification. In most countries, however, there are high hurdles to such an act of expropriation. In Germany it is not feasible, except if the corporate charter explicitly allows for it.⁹ Even if this is the case, German courts might prevent a forced buy-back because of a violation of the principle of proportionality. Alternatively, the remaining non-voting shares continue to exist. In this case, a buy-back is cheaper than a stock unification, but the original aim to simplify the capital structure and to abandon non-voting shares is not attained.¹⁰ Finally, the company can convert the remaining non-voting shares into voting shares. If non-voting shareholders correctly anticipate this, they will not be willing to sell their shares for the pre-announcement price. In fact, there is little difference between a buy-back with subsequent stock unification and a straight stock unification right away. Hence, a buy-back is not the cheaper alternative to a stock unification that it seems to be at the first glance.

Appendix

List of variables used

$b(\tilde{L})$	blockholder's (net) private benefits: $b(\tilde{L}) = b_0 + b_1\tilde{L}$
$c(\tilde{L})$	costs of the dual-class structure: $c(\tilde{L}) = c_0 + c_1\tilde{L}$
\tilde{g}	random growth opportunity that is equal to $g > 0$ with probability π and zero otherwise
\tilde{L}	random liquidation value
L	liquidation value if the firm does not grow
N	total number of shares (voting and non-voting)
P_t^V, P_t^{NV}	price of voting and non-voting shares if no unification announcement has been made
$P_t^{V,U}, P_t^{NV,U}$	price of voting and non-voting shares after a unification announcement has been made
t	time index
α	size of the largest voting block ($0 < \alpha \leq 1$)
φ	proportion of voting shares among all shares
π	probability that $\tilde{g} = g > 0$

⁹ Such a rule must be laid down in the corporate charter *before* the first offering of non-voting shares. Typically, corporate charters of German dual-class firms do not include such a rule.

¹⁰ In fact, this is the case for the only buy-back in our sample: RWE AG announced a buy-back on June 25, 1999. Two and a half years later, only 53% of the non-voting shares have been bought back by the company. RWE non-voting shares are still listed and traded at the Frankfurt stock exchange.

θ $\theta b(\tilde{L})$ is the part of the (gross) private benefits extracted by minority voting shareholders

Proof of Proposition 1

a) The controlling shareholder will agree to a stock unification if two conditions are fulfilled:

1) Abandoning the dual-class structure leads to a higher payoff for her than pursuing the growth opportunity and retaining the dual-class structure, i.e.:

$$\alpha\varphi(1+g)L > \alpha\varphi[(1+g)L - c((1+g)L)] + b((1+g)L)$$

$$\Leftrightarrow c_1 > \frac{b_1}{\alpha\varphi} \text{ and } g > \frac{b(L) - \alpha\varphi c(L)}{(\alpha\varphi c_1 - b_1)L} \text{ (Note that, in the second case } c_1 < \frac{b_1}{\alpha\varphi},$$

equation (1) implies $g < 0$, which is not feasible.)

2) Abandoning the dual-class structure leads to a higher payoff for her than not pursuing the growth opportunity and retaining the dual class structure, i.e.:

$$\alpha\varphi(1+g)L > \alpha\varphi[L - c(L)] + b(L) \Leftrightarrow g > \frac{b(L) - \alpha\varphi c(L)}{\alpha\varphi L}$$

This proves Proposition 1a.

b) The controlling shareholder will choose not to pursue the growth opportunity and to retain the dual-class structure if two conditions are fulfilled:

1) Passing up the growth opportunity leads to a higher payoff for her than pursuing the growth opportunity and abandoning the dual-class structure, i.e.:

$$\alpha\varphi[L - c(L)] + b(L) \geq \alpha\varphi(1+g)L \Leftrightarrow g \leq \frac{b(L) - \alpha\varphi c(L)}{\alpha\varphi L}$$

2) Passing up the growth opportunity leads to a higher payoff for her than pursuing the growth opportunity and retaining the dual-class structure, i.e.:

$$\alpha\varphi[L - c(L)] + b(L) \geq \alpha\varphi[(1+g)L - c((1+g)L)] + b((1+g)L) \Leftrightarrow c_1 \geq 1 + \frac{b_1}{\alpha\varphi}$$

This proves Proposition 1b and 1c.

Proof of Proposition 2

$$\begin{aligned} \text{a) } P_2^{NV,U} - P_1^{NV} &= P_2^{NV,U} - (\pi P_2^{NV,U} + (1-\pi)P_2^{NV}) = (1-\pi)(P_2^{NV,U} - P_2^{NV}) \\ &= (1-\pi) \left(\frac{(1+g)L}{N} - \frac{L-c(L)}{N} \right) = (1-\pi) \frac{gL + c(L)}{N} \end{aligned}$$

$$\begin{aligned}
\text{b) } P_2^{V,U} - P_1^V &= (1-\pi)(P_2^{V,U} - P_2^V) = (1-\pi) \left(\frac{(1+g)L}{N} - \frac{\theta b(L)}{(1-\alpha)\varphi N} - \frac{L-c(L)}{N} \right) \\
&= (1-\pi) \frac{gL + c(L) - \frac{\theta}{(1-\alpha)\varphi} b(L)}{N}
\end{aligned}$$

From Proposition (1a) we know that $g > \frac{b(L) - \alpha\varphi c(L)}{\alpha\varphi L}$ if a stock unification is announced. This is equivalent to $gL + c(L) - \frac{1}{\alpha\varphi} b(L) > 0$. Hence, $P_2^{V,U} - P_1^V > 0$ if

$$\theta < \frac{1-\alpha}{\alpha}.$$

$$\begin{aligned}
\text{c) } \varphi N(P_2^{V,U} - P_1^V) + (1-\varphi)N(P_2^{NV,U} - P_1^{NV}) \\
&= \varphi(1-\pi) \left[gL + c(L) - \frac{\theta}{(1-\alpha)\varphi} b(L) \right] + (1-\varphi)(1-\pi) [gL + c(L)] \\
&= (1-\pi) \left[gL + c(L) - \frac{\theta}{1-\alpha} b(L) \right]
\end{aligned}$$

The proof of the last statement is analogous to the second part of the proof in 2b.

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Table 1:**Description of independent variables**

This table contains a description of eight variables used as independent variables in our analysis. It also shows mean and median of each variable for the full sample (1990-2001) and for the 1996-2001 subsample. Mean and median were calculated in two steps: In the first step, for each variable and each firm, the mean across time was calculated in order to arrive at a single number for each firm. In the second step, the mean and median (shown in the table) were calculated from these numbers across firms.

Acronym	Description	1990-2001		1996-2001	
		mean	median	mean	median
MCap	Market capitalisation (in million euro)	1,486.77	195.02	1,950.66	212.81
PropVS	Proportion of voting shares (= number of voting shares divided by the number of voting and non-voting shares)	69.74%	67.62%	69.11%	66.67%
BSize	Percentage of voting shares held by the largest blockholder	56.57%	56.70%	57.66%	56.84%
BSize2	Percentage of voting shares held by the second largest blockholder	13.57%	11.86%	13.10%	10.53%
Freefloat	Percentage of voting shares not held in the reported blocks	35.18%	35.03%	33.24%	30.71%
LRatio	Liquidity ratio (= log of annual Euro trading volume of voting shares minus log of annual Euro trading volume of non-voting shares)	15.08%	-12.52%	11.09%	-21.96%
SEO	Dummy variable that indicates whether the firm performed a seasoned equity offering in this calendar year	13.07%	12.50%	9.82%	0.00%
NVvote	Dummy variable which indicates that non-voting shares have the right to vote because the minimum dividend has not been paid for the past two years	15.16%	0.00%	15.40%	0.00%

Table 2:**Univariate logit regressions**

For both samples (1990-2001 and 1996-2001), this table displays the slope estimates of eight univariate logit regressions of firm i 's decision Y_{it} to unify the dual-class structure in year t ($Y_{it} = 1$ in case of unification and zero otherwise) on each of the independent variables described in Table 1. All regressions include a constant. Moreover, all regressions in the full sample (1990-2001) include eleven year dummies. Estimates for the constant and the dummies are not shown in the table. In addition, the table displays the p-value of the two-sided t-test for zero slope, calculated with White heteroscedasticity consistent standard errors.

Independent variable	Expected sign	1990 - 2001		1996-2001	
		Parameter estimate	p-value	Parameter estimate	p-value
SEO	+	1.509	0.11%	1.763	0.02%
PropVS	+	2.667	2.72%	2.308	9.26%
MCap	+	3.945E-05	5.58%	3.918E-05	6.96%
BSize	?	-1.882	1.68%	-1.984	1.59%
BSize2	?	0.946	60.54%	1.288	51.47%
Freefloat	?	1.696	1.66%	1.700	2.46%
NVote	+	0.371	43.29%	0.268	60.41%
LRatio	-	0.058	67.59%	0.073	65.94%

Table 3:**Correlations between independent variables**

This table displays the Pearson correlations between four independent variables. The corresponding p-value of the two-sided t-test for zero correlation is shown in parentheses.

	SEO	PropVS	MCap	BSize
SEO	+++	1.02% (0.7774)	-0.77% (0.8462)	-1.01% (0.7805)
PropVS	1.02% (0.7774)	+++	8.71% (0.0282)	-3.87% (0.2880)
MCap	-0.77% (0.8462)	8.71% (0.0282)	+++	-12.00% (0.0026)
BSize	-1.01% (0.7805)	-3.87% (0.2880)	-12.00% (0.0026)	+++

Table 4:**Multivariate logit regressions**

Panel A displays the slope estimates of seven multivariate logit regressions of firm i 's decision Y_{it} to unify the dual-class structure in year t ($Y_{it} = 1$ in case of unification and zero otherwise) for the full sample. See Table 1 for a description of the independent variables. All regressions in panel A include a constant and eleven year dummies. Panel B displays the corresponding estimates for the 1996-2001 subsample. These regressions include a constant but no year dummies. P-values of the two-sided t-test for zero slope, calculated with White heteroscedasticity consistent standard errors, are shown in parentheses. In addition, the table provides the McFadden pseudo R^2 .

Panel A: Full sample (1990-2001)

Model	SEO	PropVS	MCap	BSize	Pseudo R^2
1	1.475 (0.13%)	2.584 (2.86%)			17.62%
2	1.602 (0.16%)		4.026E-05 (6.09%)		27.35%
3	1.541 (0.09%)			-1.914 (1.23%)	20.40%
4	1.571 (0.22%)	2.023 (14.04%)	3.849E-05 (9.30%)		28.50%
5	1.519 (0.10%)	2.286 (7.98%)		-1.669 (3.65%)	21.73%
6	1.541 (0.25%)		3.137E-05 (14.67%)	-1.933 (1.31%)	29.66%
7	1.529 (0.28%)	1.840 (20.41%)	3.015E-05 (20.33%)	-1.780 (2.81%)	30.39%

Panel B: 1996-2001 subsample

Model	SEO	PropVS	MCap	BSize	Pseudo R^2
1	1.766 (0.02%)	2.300 (9.60%)			8.59%
2	1.815 (0.05%)		4.252E-05 (6.09%)		18.46%
3	1.800 (0.02%)			-1.942 (1.21%)	12.85%
4	1.781 (0.08%)	1.729 (27.29%)	4.133E-05 (7.82%)		19.48%
5	1.795 (0.02%)	1.958 (19.99%)		-1.747 (3.06%)	13.98%
6	1.724 (0.08%)		3.567E-05 (10.28%)	-1.608 (5.41%)	20.40%
7	1.712 (0.11%)	1.558 (34.48%)	3.491E-05 (13.40%)	-1.479 (8.87%)	21.04%

Table 5:**Firms included in the event study**

The table displays the names of the 29 companies in our event study, the date of the first announcement of the stock unification decision, and additional announcements made at the same time. The column 'special terms of conversion' only reports departures from the general rule that each non-voting share is converted into one voting share without additional payment. Firms with names in bold letters belong to the subsample of firms with 'clean announcement' and without additional payments.

Company name	Date of announcement	Special terms of conversion	Additional announcements
AdCapital AG	07.04.2001		high earnings after a period of losses, firm resumes dividend payments
Carl Schenck AG	22.04.1999		
CompuGROUP Holding AG	20.07.1999		dividends increase by approx. 50%
Deutsche Babcock AG	26.01.1993		abolition of a by-law that restricted the voting power of each shareholder to 5%
Deutsche Beteiligungs AG	29.01.1996		dividends increase by 20%, shares will trade in higher market segment
Deutsche Lufthansa AG	02.05.1996		stock split
Escada AG	18.07.2002		
FAG Kugelfischer AG	25.04.1996		stock split
Gerry Weber International AG	24.02.2000		
Heidelberger Zement AG	15.03.2002		
Herlitz AG	17.04.1999	outstanding past minimum dividends not paid	
Koenig & Bauer AG	11.04.2001		
MAN AG	22.03.2002	for each non-voting share a fee of 2/3 of the price difference must be paid	
Massa AG	06.07.1989		
Metro AG	22.05.2000	for each non-voting share a fee of 2/3 of the price difference must be paid	
MLP AG	04.10.2000		seasoned equity offering for repurchasing previously spun off subsidiaries
Moenus Textilmaschinen AG	19.01.2000	outstanding past minimum dividends not paid	turn-around: cost cutting efforts are successful

Company name	Date of announcement	Special terms of conversion	Additional announcements
NAK Stoffe AG	19.05.1995	outstanding past minimum dividends not paid	
Pegasus Beteiligungen AG	24.07.1999		stock split, share repurchase programme
Pongs & Zahn AG	16.04.1998		stock split
RWE AG	25.06.1999	non-voting shares will be repurchased for 80% of the voting share price	
SAP AG	01.03.2001		
Sixt AG	08.04.1997		stock split, extra dividend
Strabag AG	20.05.1998	outstanding past minimum dividends not paid	
Stuttgarter Hofbräu AG	05.03.1996		extra dividend
Südzucker AG	08.06.2001		
VK Mühlen AG	29.10.1996	outstanding past minimum dividends not paid	seasoned equity offering
Wanderer-Werke AG	23.06.1992		
WKM Terrain- und Beteiligungs-AG	09.04.1998		

Table 6:**Abnormal market reaction to the announcement of a stock unification**

This table shows the Cumulative Abnormal Returns (CAR) for three different event windows for all 29 firms and for the 13 firms with ‘clean’ announcement. In addition, the table displays the test statistics of three two-sided tests for zero abnormal reaction over the respective window. p-values are shown in parentheses. Panel A displays the results for non-voting shares, Panel B for voting shares, and Panel C for the total equity of the firms.

Panel A: Abnormal reaction of non-voting shares

Window	all 29 firms				13 firms with clean announcement			
	CAR	Standard test	Corrado rank test	Generalized sign test	CAR	Standard test	Corrado rank test	Generalized sign test
[-1; 0]	7.3%	13.640 (<0.01%)	4.215 (<0.01%)	2.611 (0.90%)	5.2%	5.580 (0.00%)	2.678 (0.74%)	1.365 (17.22%)
[-4; 1]	9.9%	9.793 (<0.01%)	3.990 (0.01%)	1.949 (5.13%)	10.3%	5.942 (0.00%)	3.472 (0.05%)	1.975 (4.83%)
[-10; 10]	9.2%	5.324 (<0.01%)	3.085 (0.20%)	1.422 (15.51%)	15.5%	4.813 (0.00%)	3.942 (0.01%)	2.657 (0.79%)

Panel B: Abnormal reaction of voting shares

Window	all 29 firms				13 firms with clean announcement			
	CAR	Standard test	Corrado rank test	Generalized sign test	CAR	Standard test	Corrado rank test	Generalized sign test
[-1; 0]	2.4%	4.207 (<0.01%)	2.241 (2.50%)	1.028 (30.39%)	2.5%	2.483 (1.30%)	1.657 (9.74%)	1.011 (31.21%)
[-4; 1]	3.9%	4.042 (0.01%)	2.574 (1.00%)	1.241 (21.46%)	3.1%	2.537 (1.12%)	1.067 (28.62%)	0.458 (64.68%)
[-10; 10]	1.7%	1.337 (18.12%)	1.465 (14.30%)	0.099 (92.10%)	4.9%	1.820 (6.88%)	1.577 (11.49%)	0.525 (59.93%)

Panel C: Abnormal reaction of market capitalisation

Window	all 29 firms				13 firms with clean announcement			
	CAR	Standard test	Corrado rank test	Generalized sign test	CAR	Standard test	Corrado rank test	Generalized sign test
[-1; 0]	4.3%	9.827 (<0.01%)	4.206 (<0.01%)	3.263 (0.11%)	3.3%	4.054 (0.01%)	3.292 (0.00%)	3.016 (0.26%)
[-4; 1]	5.4%	7.031 (<0.01%)	3.762 (0.02%)	3.075 (0.21%)	3.7%	3.528 (0.04%)	2.656 (0.79%)	2.233 (2.56%)
[-10; 10]	3.4%	3.076 (0.21%)	2.518 (1.18%)	1.684 (9.22%)	6.3%	2.776 (0.55%)	2.983 (0.29%)	1.975 (4.83%)

Table 7:**Univariate CAR regressions**

This table shows univariate regressions of the Cumulated Abnormal Returns (CAR) of the market capitalisation of the 29 firms listed in Table 5 on the eight independent variables that are described in Table 1. The table displays estimates for the intercept and the slope coefficient, the p-value of the two-sided t-test for zero slope and the regression R^2 .

Panel A: CARs over the [-4; 1] window

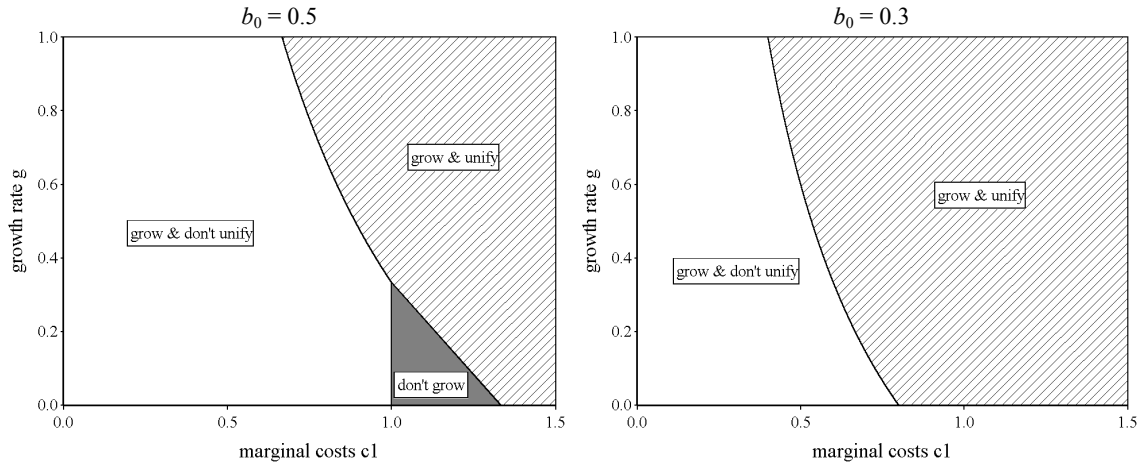
Independent variable	Intercept	Slope	p-value	R^2
SEO	0.0161	0.0327	27.76%	4.35%
PropVS	0.0751	-0.0290	74.45%	0.04%
MCap	0.0574	-8.355E-07	51.49%	1.59%
BSize	-0.0297	18.4090	1.67%	19.43%
BSize2	0.0520	0.0224	87.27%	0.10%
Freefloat	0.1260	-0.2019	0.16%	32.42%
NVote	0.0564	-0.0178	67.01%	0.68%
LRatio	0.0573	-0.0077	35.68%	3.15%

Panel B: CARs over the [-10; 10] window

Independent variable	Intercept	Slope	p-value	R^2
SEO	0.0261	0.0336	52.02%	1.55%
PropVS	0.0399	-0.0078	95.50%	0.01%
MCap	0.0318	5.731E-07	77.47%	0.31%
BSize	-0.0734	0.2371	5.16%	13.31%
BSize2	0.0162	0.2118	32.47%	3.59%
Freefloat	0.1367	-0.2815	0.60%	25.65%
NVote	0.0373	-0.0225	73.02%	0.45%
LRatio	0.0375	-0.0074	56.79%	1.22%

Figure 1:**The controlling shareholder's decision**

The two plots depict the controlling shareholder's decision in $t=2$ when a growth opportunity arose in $t=1$ depending on marginal costs c_1 and growth rate g in a numerical example with $L = 1$, $\varphi = 0.75$, $\alpha = 0.5$, $b(\tilde{L}) = b_0$, and $c(\tilde{L}) = c_1 \tilde{L}$. The left plot displays the result for $b_0 = 0.5$, the right plot for $b_0 = 0.3$.

**Figure 2:****Frequency of stock unifications by year**

For each year, the plot displays the proportion of dual-class firms that decided in their annual general meeting to perform a stock unification.

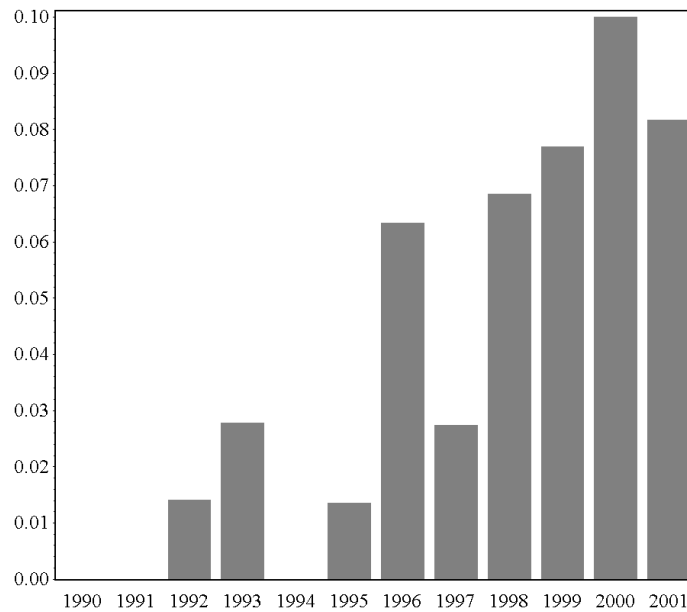
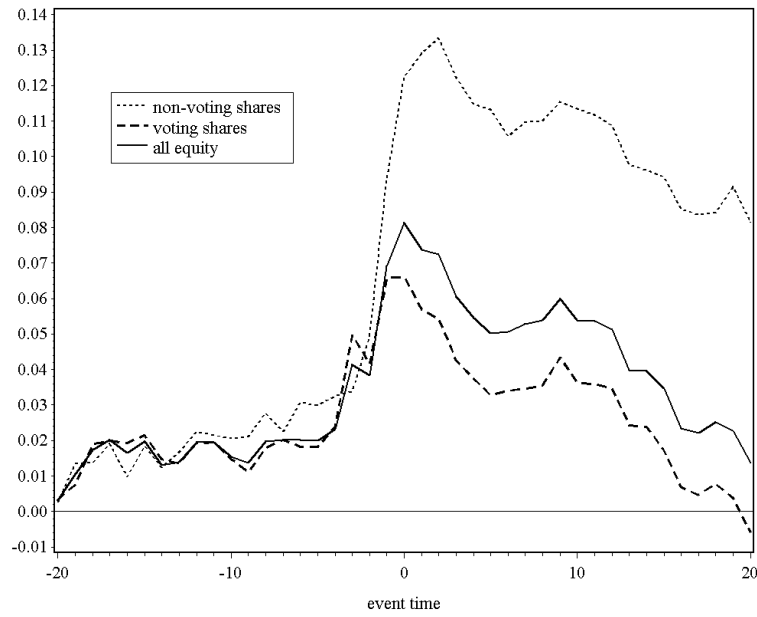


Figure 3:**Cumulated average abnormal returns for all 29 companies****Figure 4:****Cumulated average abnormal returns for 13 companies with 'clean' announcement**