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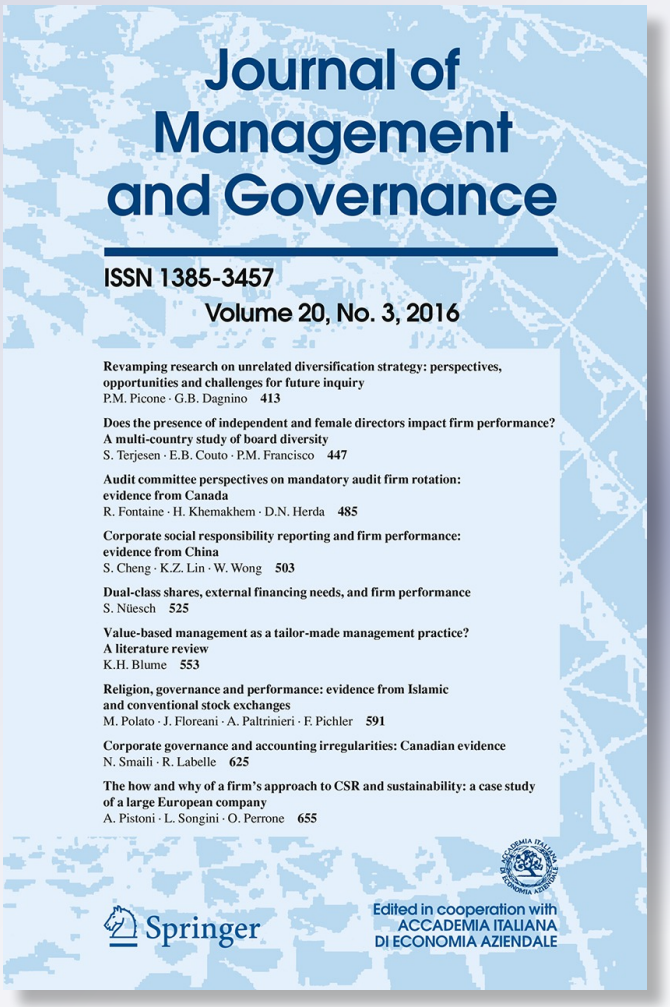

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Dual-class shares, external financing needs, and firm performance

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Abstract Whereas the agency theory predicts that dual-class shares decrease firm performance, the stewardship theory predicts that dual-class shares increase firm performance. The cumulative findings on the performance consequences of dual-class shares have been weak and/or inconclusive. Because endogeneity is a constant challenge in empirical corporate governance studies, this study uses a unique law change in Switzerland as a source of exogenous variation in the fraction of firms with dual-class shares. Controlling for firm fixed effects and time-varying confounders, we find that dual-class shares neither harm nor benefit firm performance on average. However, dual-class shares increase firm performance if the firm requires external finance and dual-class shares decrease firm performance if the firm does not require external finance. External financing needs mitigate the agency costs between controlling and minority shareholders and create a context in which dual-class shares facilitate firm-specific investments instead of private perquisites. The study's results have both managerial and policy implications.

Keywords Corporate governance · Dual-class shares · Agency theory · Stewardship theory · Shareholder value · Natural experiment

JEL Classification G32 · M21

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1 Introduction

Dual-class shares create disproportionality between voting rights and cash flow rights. Several software and social media firms (e.g., *Google, Zynga, LinkedIn, Groupon, Facebook*) have recently gone public with two or sometimes three classes of shares with different voting power. Dual-class equity is typically created to help founders and other dominant owners, which we refer to as *controlling shareholders* in this study, to expand the firm without losing much control. By holding shares that carry ten votes per share, the founders of *Google* (Sergey Brin and Larry Page), for example, control over 50 % of the voting power, but own less than 10 % of shares outstanding. A very similar equity structure puts Mark Zuckerberg, the founder and CEO of *Facebook*, in total command even after going public.

The effect of dual-class shares on firm performance is controversial. Opponents of dual-class shares argue that dual-class shares allow controlling shareholders to extract private benefits with few consequences (Grossman and Hart 1988; Harris and Raviv 1988; Masulis et al. 2009). Others, however, argue that dual-class equity is a value-enhancing governance structure because it helps controlling shareholders to pursue a long-term value creation strategy without fear of short-term oriented raiders acquiring the firm. As dual-class shares act as an anti-takeover device, they encourage incumbent managers to make firm-specific investments (DeAngelo and DeAngelo 1985; Lehn et al. 1990).

The empirical literature is yet to establish if and how dual-class shares affect firm performance. The cumulative findings are inconsistent and predominantly weak (for a review of the literature see Adams and Ferreira 2008).

A major difficulty in establishing a link between dual-class shares and firm performance is the *endogeneity of a firm's equity structure*. Endogeneity is a constant challenge to empirical corporate governance studies (e.g., Larcker et al. 2011) and a major issue when identifying the causal effect of dual-class shares on firm performance (Adams and Ferreira 2008; Bennedsen and Nielsen 2010). Firm performance and the equity structure are jointly determined (Dittmann and Ulbricht 2007; Maury and Pajuste 2011). Omitted variables are therefore likely to affect both a firm's equity structure and performance, leading to spurious results. For example, incapable managers decrease firm performance by making bad decisions. At the same time, incapable managers may try to safeguard their position by issuing and holding shares with superior voting rights (Masulis et al. 2009).

This study uses a law change in Switzerland as a natural experiment[1] to mitigate the endogeneity problem. On October 4, 1991 the Swiss Parliament adopted a new corporation law ("Aktiengesetz") that removed several specific advantages of having non-voting shares (NVS) in addition to voting shares, namely the flexibility in issuing new shares, the ability to buy back shares, and the absence of a minimum

[1] Recently, natural experiments have become an increasingly popular way to identify causal effects in corporate governance studies. Giannetti and Laeven (2008) tested the influence of ownership concentration on firm performance using a Swedish pension reform as a natural experiment. Bebchuk et al. (2010) employed a Delaware Chancery Court ruling as a natural experiment to test the influence of staggered boards on share prices. Duchin et al. (2010) used the board regulations of the Sarbanes–Oxley Act 2002 to estimate the effect of board independence on performance.

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face value. Before the law change, firms had been able to increase non-voting stock, but not voting shares, without the need of shareholder approval, and to buy back their NVS but not their voting shares. There had also been no minimum face value for NVS under the previous law. The new corporation law introduced a minimum face value for NVS, decreased the minimum face value for voting shares, and permitted buybacks for voting shares so that firms no longer have to resort to NVS for buybacks. As a result, the proportion of Swiss firms with NVS dropped from 54.2 % in 1990 to 27.1 % in 1994. We employ the law change as a source of exogenous variation in dual-class shares. Because we estimate a firm fixed-effects model, we essentially compare the performance *changes* of firms that abandoned NVS due to the law change with the performance *changes* of control firms that never had NVS, taking time-varying observable confounders such as firm size and common time trends into account.

The effect of dual-class shares on a firm's performance is unlikely to be universally the same for all firms (one size does not fit all). In this study, we assume that a firm's external financing needs moderate the relation between dual-class shares and firm performance. If profitable investment opportunities exceed a firm's internal cash flow, the firm requires external capital and the agency theory predicts that monitoring by the capital markets is strong (Easterbrook 1984; Jensen 1986). External financing needs mitigate the potential agency conflicts between controlling and minority shareholders so that the benefits of dual-class shares are likely to outweigh the costs of dual-class shares. The stewardship theory, in contrast, predicts that external financing needs negatively moderate the (positive) relation between dual-class shares and firm performance. External financing needs increase the power of external capital providers who have a lower intrinsic motivation to work towards the firm's goals than controlling shareholders.

The main finding of this study is that dual-class shares neither increase nor decrease a firm's Tobin's q and return on asset (ROA) on average, but that a firm's external financing needs significantly moderate the relationship between dual-class shares and firm performance. We find that dual-class shares are associated with significantly better performance if a firm needs external finance, and with significantly worse performance if a firm does not need external finance.

The remainder of this article is structured as follows: In the next section, we give an overview of the theory and present testable hypotheses. We then describe the data, the variables and the identification strategy, und present the empirical evidence. Finally, we discuss our results and conclude.

2 Theory and hypotheses development

2.1 Negative view of dual-class shares

The negative view of dual-class shares is rooted in agency theory. Agency theory describes the costs associated with the separation of ownership and control (Jensen and Meckling 1976; Vishny and Shleifer 1997). Controlling shareholders exercise

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direct or indirect control over the firm. Minority shareholders, while participating in the ownership of the firm, have little to say. Agency costs in this context arise if controlling shareholders pursue their own interests that conflict with the interests of minority shareholders.

If controlling shareholders have disproportionally more voting rights than cash flow rights, they bear a smaller proportion of the financial consequences of their decisions while having a greater ability to extract private benefits (Masulis et al. 2009). In addition, dual-class shares protect entrenched controllers against the market for corporate control. Overall, dual-class shares reduce the costs of consuming perquisites and enjoying private benefits and therefore intensify the agency conflict between controlling shareholders and minority shareholders (Burkart and Lee 2008).

Assuming self-interested individuals and a setting where the controlling shareholders obtain private benefits of control, the theoretical analyses of Grossman and Hart (1988) and Harris and Raviv (1988) show that a one-share-one-vote equity structure is optimal because it minimizes the likelihood that a value-enhancing takeover would not be realized. In firms with dual-class shares, the controlling shareholders with the better management team do not always win in takeover bidding contests.

Several empirical studies have confirmed the negative view of dual-class shares. The event study of Jarrell and Poulsen (1988) finds that the announcement of dual-class recapitalizations has significantly negative effects on stock prices. A negative value impact of dual-class shares is also documented by Claessens et al. (2002) for firms in East Asia, by Lins (2003) for firms in 18 emerging markets, by Villalonga and Amit (2009) for firms in the U.S., and by Barontini and Capiro (2006) for European firms. Examining the channels through which dual-class shares affect share prices, Masulis et al. (2009) show that firms with dual-class shares have higher CEO salaries and that shareholders value the firm's cash, acquisitions and capital spending less than in firms with single-class equity. Thus, dual-class shares reduce firm value to (minority) shareholders as the CEO receives a higher salary and engages in more inefficient empire-building activities. Whereas endogeneity challenges the negative associations in the mentioned studies, this study tries to replicate their findings using a law change as a source of variation. Thus, we predict that:

Hypothesis 1a Dual-class shares decrease firm performance, ceteris paribus.

2.2 Positive view of dual-class shares

The positive view of dual-class has its roots in the stewardship theory of management (Davis et al. 1997) and in the assumption of myopic financial markets. Whereas the agency perspective assumes that controlling shareholders behave opportunistically at the cost of minority shareholders, the stewardship perspective suggests that individual behavior is not simply guided by self-interest but by service to others. The higher the identification with the firm, the higher the

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intrinsic motivation to work toward the firm's goals tends to be (Davis et al. 1997).

According to the stewardship perspective, barriers to the market for corporate control in the form of dual-class shares are not necessarily bad. On the contrary, removing all barriers to the market for control could force otherwise diligent managers and controlling shareholders to concentrate only on the current share price and neglect long-term value creation. Dual-class shares enable controlling shareholders to repel unfriendly takeover attempts that require only a relatively small investment in the equity of the firm. Specifically, firms may benefit from such an anti-takeover device in two ways: First, dual-class shares encourage incumbent managers to invest in firm-specific human capital. Managers tend to be reluctant to make firm-specific investments if potential takeovers threaten their (future) employment (DeAngelo and DeAngelo 1985). Second, firms may benefit from dual-class shares if financial markets undervalue long-term investments and share prices do not fully reflect future cash flow prospects. In such a setting, knowledgeable raiders could take control of the firm at an unreasonably low price. Dual-class shares, however, allow the likewise knowledgeable controlling shareholders to prevail against raiders by making a smaller investment in the equity of the firm. The theoretical analyses of Chemmanur and Jiao (2012) show that dual-class equity is a value-enhancing equity structure if the firm's activities are characterized by high near-term uncertainty defined as "intrinsically more valuable, but showing less signs of success in the near-term" (p. 316). Dual-class shares increase the probability that the incumbent has enough votes to prevail against any myopic rival and to continue the profitable but uncertain projects.

Lehn et al. (1990) and Dimitrov and Jain (2006) show that shareholders earn significantly higher returns following dual-class recapitalizations. Firms that change from a single-class to a dual-class equity structure grow faster than control firms and do not suffer from increased managerial entrenchment. This study tries to replicate the positive associations between dual-class shares and firm performance found in previous studies by using a law change as a source of variation in dual-class equity. Thus, we predict that:

Hypothesis 1b Dual-class shares increase firm performance, ceteris paribus.

2.3 Need for external finance as a moderator

Jensen (1986, 1993) argues that managers and controlling shareholders generally have high discretion to extract private benefits if internally generated funds exceed the opportunities to invest them profitably (e.g., in cash-rich but low-growth industries). Harford et al. (2008) and Dittmar and Mahrt-Smith (2007) find that excess cash holdings decrease firm value only if a firm's corporate governance is weak. They measure the quality of a firm's corporate governance by Gompers et al.'s (2003) set of anti-takeover provisions, such as golden parachutes and poison pills. While Gompers et al. (2003) neglect dual-class shares as an anti-takeover device, they write in a later study (Gompers et al. 2010, p. 1052) that dual-class

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shares are "…the most extreme example of anti-takeover protection…". By protecting managers and controlling shareholders against the market for corporate control, anti-takeover provisions increase the power of managers and controlling shareholders and restrict the rights of minority shareholders. In combination with free cash flow, such anti-takeover protection is likely to facilitate private rent extractions. Masulis et al. (2009) show that the disproportionality of the controlling shareholders' voting to cash flow rights decreases the value of cash holdings to outside investors. Masulis et al. (2009) argue that the controlling shareholders are likely to spend part of the cash holdings on the pursuit of private benefits such as perquisite consumption or excessive compensation.

However, if the internally generated cash flow is not sufficient to finance the profitable investment opportunities, the firm requires external finance and issues new securities. The affairs of such firms will be rigorously reviewed. Because contributors of new capital can, unlike existing investors, refuse to invest money in the firm, controlling shareholders who need to raise money are more likely to act in the interests of minority shareholders than controlling shareholders who are immune from this kind of scrutiny. A firm's existing investors can influence actions only by voting (which suffers from a collective action problem) and by selling their shares (mostly at lower prices).

All in all, financing needs mitigate the agency costs between controlling and minority shareholders and create a context in which the benefits of dual-class shares are likely to outweigh the costs of dual-class shares. Based on agency theory, we therefore predict:

Hypothesis 2a A firm's need for external finance positively moderates the relation between dual-class shares and firm performance.

The stewardship theory, however, suggests that controlling shareholders do not behave opportunistically but act in the best interest of the firm. Controlling shareholders are assumed to protect and maximize (minority) shareholders' wealth and firm performance, because the stewards' utility functions strongly emphasize cooperative behavior. The stewardship theory therefore encourages governance structures that facilitate and empower controlling shareholders rather than those that monitor controlling shareholders (Davis et al. 1997). While dual-class shares protect managers and controlling shareholders against the market for corporate control and therefore increase firm performance according to the stewardship theory, external financing needs (partly) offset the advantage of having dual-class shares and increase the power of external capital providers. External capital providers are less likely to identify with the firm and thus have lower intrinsic motivation to work towards the firm's goals than controlling shareholders. Based on the stewardship theory, we therefore predict:

Hypothesis 2b A firm's need for external finance negatively moderates the relation between dual-class shares and firm performance.

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3 Methods

3.1 Sample

This study uses yearly observations from publicly listed Swiss firms from 1990 to 1999. A firm's equity structure and age have been hand-collected from annual versions of the *Swiss Stock Guide ("Aktienführer Schweiz")*. Data on firm performance, external financing needs, firm size and other firm-specific variables are taken from the *Thomson Reuters Datastream* database. In principle, *Datastream* provides historical data from the late 80s onward. However, data from the early years are less complete and historical data of firms that went bankrupt or were acquired are often missing.

We merged the two data sets based on firm name and year. As name formats may differ between the two data sources, firm names had to be cleaned. In addition, we had to manually check whether a firm name might have changed in order to merge correspondent *Datastream* data. Because we use an instrument based on a specific law change that passed the Swiss Parliament on October 4, 1991, we had to condition on non-missing information in the year 1991. After that, our sample includes 132 firms and 1073 firm-year observations. The sample includes both big firms with a global coverage like ABB, Nestle, Novartis, Roche, and UBS and medium sized (family) firms and seems to be representative of the Swiss Stock market.[2]

3.2 Endogeneity of dual-class shares

Because a firm's equity structure is not randomly assigned but selected by insiders (controlling shareholders who are directors and/or executives), endogeneity issues complicate the identification of the causal effect of dual-class shares on firm performance. Performance may differ between firms with and without NVS for reasons other than dual-class shares.

Maury and Pajuste (2011) show that high private benefits of control available to the controlling shareholders, measured by a high separation between voting and cash flow rights, decrease the likelihood of abandoning dual-class shares. At the same time, private benefits of control also tend to decrease firm value beyond their effect on the firm's equity structure (e.g., Claessens et al. 2002).

The owner's identity may also act as a confounder. Amoako-Adu and Smith (2001) and Cronqvist and Nilsson (2003) show that family-controlled firms are more likely to issue dual-class shares and Maury and Pajuste (2011) find that firms whose largest shareholder is a widely held bank or financial institution are less likely to issue dual-class shares. At the same time, family and financial investor ownership influences firm performance beyond its effect on the firm's equity structure (e.g., Anderson and Reeb 2003; Thomsen and Pedersen 2000).

[2] The mean firm age of the full sample of listed firms in Switzerland is not statistically different from that of the sample used for the regressions.

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Firms with dual-class shares are typically older and larger (Gompers et al. 2010; Jog et al. 2010) and in the last two decades there has been a general trend towards a unification of share classes in Europe (Maury and Pajuste 2011; Bigelli et al. 2011) and Canada (Amoako-Adu and Smith 2001). Firm performance models that do not control for firm age, firm size and year fixed effects are likely to provide biased estimates because firm age, firm size and year fixed effects tend to correlate with firm performance (e.g., Claessens et al. 2002; Hoi and Robin 2010; Loderer and Wälchli 2010).

As long as the confounders are measurable, they can be controlled for. However, if confounders are unobservable, like managerial quality, omitted variable bias emerges. Incompetent managers tend to decrease firm performance by poorly executing important corporate decisions. At the same time, incompetent managers may try to safeguard their position by issuing and holding shares with superior voting rights. In this case, OLS estimates would be biased towards finding a negative effect of dual-class shares on firm performance (Masulis et al. 2009; Gompers et al. 2010).

Another form of remaining endogeneity is reverse causality. Controlling shareholders and managers who know that the firm's cash flows will be lower in the future could increase the separation of voting to cash flow rights in order to reduce the decrease in the value of their shareholdings while still maintaining their control (Lins 2003; Masulis et al. 2009).

Three recent studies (Gompers et al. 2010; Jog et al. 2010; Von der Crone and Plaksen 2010) address the endogeneity problem by using instrumental variables for dual-class shares. The studies use, among other instruments, a binary variable coded one when the founding family's name appears in the firm's name and a variable coded one for firms in the media industry. However, these instruments are likely to affect firm performance beyond their influence on dual-class shares and, therefore, do not fulfill the exogeneity condition (Adams and Ferreira 2008; Bennedsen and Nielsen 2010). The performance of family firms is often found to differ from that of other firms (e.g., Anderson and Reeb 2003) and media firms operate in a specific environment that may cause performance trends to differ from those for firms in other industries.

This study addresses the endogeneity of dual-class shares by using as an instrument a law change in Switzerland that removed specific advantages of having non-voting shares (NVS). On October 4, 1991, the Swiss Parliament passed a new corporation law ("Aktiengesetz") that took effect on July 1, 1992. The new law caused a shock to the fraction of firms with NVS because it abolished three specific advantages of having NVS that can be described with the terms *liquidity*, *protectionism*, and *financial flexibility*.

Swiss firms can issue three major classes of shares: registered shares (RS), bearer shares (BS), and non-voting shares (NVS). While all three classes of shares receive dividends that are proportional to their face values, only RS and BS possess voting rights, namely one vote each share. NVS (in German "Partizipationsscheine") are not entitled to any voting rights. The main difference between RS and BS is that the holders of BS remain anonymous to the firm whereas the buyers of RS have to be registered by the firm to claim the rights vested in the stock. Swiss firms can create

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dual-class equity by issuing both voting shares and NVS or by issuing voting shares with different face values but one vote each share.

First, the new law required that *all* classes of shares have a minimum face value of 10 CHF. It introduced a minimum face value for NVS and decreased the minimum face values for voting shares from 100 to 10 CHF. Thus, firms could no longer increase share liquidity by issuing NVS with very low face values. Unlike with BS and RS, there had been no minimum face value for NVS under the previous law.

Second, the new corporation law significantly curtailed discrimination against unwanted investors and abolished nationality as a valid criterion for denying ownership to buyers of RS of listed firms. Protectionism used to be an important reason for creating dual-class equity in Switzerland. The previous corporation law had allowed Swiss firms to discriminate across investor type by rejecting prospective holders of RS without providing specific reasons. A frequently used criterion had been that shareholders had to be Swiss nationals. However, due to the limited financial power of Swiss investors, large firms had not been able to obtain sufficient domestic capital and therefore had frequently issued an unrestricted class of shares as well. Since NVS are not entitled to any voting rights, NVS had been particularly suitable for protective firms requiring external foreign capital. Under the new corporation law, firms can no longer seek non-voting foreign capital only.

Third, the new corporation law also removed financial flexibility as a reason for having NVS. Because NVS had not even been mentioned in the previous corporation law, firms had been able to issue and withdraw NVS in a very flexible manner. Unlike with voting shares, no shareholder approval had been needed when increasing non-voting stock and firms had been able to buy back their NVS whenever they wanted. Firms had not been allowed, however, to buy back their own voting shares. The new corporation law created more flexible ways to increase capital of voting stock and permitted buybacks of voting shares. In addition, the new law regulated NVS and designed them as shares with the same rights and duties as the voting shares except that they do not have voting rights.

The new corporation law also limited the fraction of non-voting stock to a maximum of double the voting stock. But this regulation did not change much. Our

Table 1 Fraction of firms with NVS

Year	% of firms with NVS	Number of firms that abandoned NVS
1990	54.2	0
1991	52.3	3
1992	44.1	12
1993	33.1	14
1994	27.1	8
1995	23.2	5
1996	19.0	4
1997	16.2	3
1998	11.0	2
1999	8.2	2

Source: Annual versions of the *Swiss Stock Guides* 1990–1999 and *Thomson Reuters Datastream* database

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data reveal only one firm for which the non-voting stock was more than double the voting stock. In addition, exception was granted for firms that already had non-voting stock more than double the voting stock in 1985 (grandfather clause).

By removing the three previous advantages of having NVS (liquidity, protectionism, financial flexibility), the law change caused a substantial number of firms to abandon NVS. Table 1 shows the fraction of firms with NVS and the number of firms that abandoned NVS for each year during our sample period (1990 until 1999). The fraction of firms with NVS dropped from 54.2 % in 1990 to 27.1 % in 1994. Most firms abandoned NVS in the first three years after the law change (between 1992 and 1994).

3.3 Firm performance variables

We measure firm performance in two ways: ROA and Tobin's q. ROA is a standard accounting measure of financial performance commonly found in corporate governance and strategy research (e.g., Jog et al. 2010) and is calculated by dividing annual earnings before interest and taxes by average total firm assets. We use Tobin's q in addition to ROA, because Tobin's q better reflects the future profit and growth potential of a firm. We calculated Tobin's q by dividing the sum of the market value of a firm's equity and the book value of its debt by the book value of total assets.

3.4 Instrument and intervening variable

We measure the existence of dual-class shares using two measures: a dummy variable NVS_{it} that equals 1 if a firm has NVS in a given year and 0 otherwise, and the Gini coefficient of the degree of disproportionality of voting and cash flow rights in a firm.

The Gini coefficient is calculated based on the exact numbers of shares, face values and votes per share class and thus provides a more detailed measure of the disproportionality of voting rights to cash flow rights in a firm than the binary variable NVS_{it}. The Gini coefficient does not only consider whether a firm has NVS or not, but also how many NVS the firm issued and whether the firm additionally issued voting shares with different face values. Even though the Gini coefficient is a standard inequality metric, it has rarely been used to measure the degree of disproportionality in dual-class firms (two notable exceptions are Levy 1983; Kunz and Angel 1996).

As argued in Sect. 3.2, a simple regression relating firm performance to its equity structure is likely to be confounded by omitted variables that may affect both the firm's equity structure and performance. In this study, we make use of the law change that decreased the convenience of NVS to construct an instrument. Specifically, we employ the dichotomous variable Law_{it} as instrument for NVS_{it}. Law_{it} equals 1 for affected firms (i.e., firms with NVS in 1991) in the post-policy period (between 1992 and 1999). Adequate instruments have to significantly influence the endogenous variable, but must not be correlated with the structural error term. Whereas the first condition can be tested by the F-statistics of the

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identifying instrument Law_{it} in a regression explaining the endogenous variable, there is no empirical test for the second condition because of the unobservability of the structural error term.[3]

3.5 Moderating variable

To test whether the influence of dual-class shares on firm performance depends on a firm's external financing needs, we include a proxy of a firm's external financing needs to control for a direct effect on firm performance and an interaction term of the predicted values of dual-class equity from the first-stage regression and the external financing needs proxy to consider a moderation effect. A firm requires external finance if the investment opportunities exceed internal cash flow.

To measure a firm's internal cash flow and its optimal investment level, we follow the approach established by Demirgüç-Kunt and Maksimovic (1998) and applied by Durnev and Kim (2005) and Chen et al. (2010). They define external financing needs as the difference between the firm's actual growth rate and the sustainable growth rate. The actual growth rate of a firm is defined as the annual growth rate in total assets. The sustainable growth rate is defined as the growth rate attainable if the firm does not pay dividends and receives just enough debt financing to maintain a constant debt-to-assets ratio. Under these assumptions, the sustainable growth rate equals ROE/(1 − ROE), where ROE is net income over book equity (see Demirgüç-Kunt and Maksimovic 1998; Durnev and Kim 2005 for a detailed derivation of this formula). If the difference between actual growth rate and the sustainable growth rate is positive, the firm needs external finance. If the difference is negative, the firm generates more internal funds than needed to finance firm growth.

The external financing needs variable is winsorized at the 5th and the 95th percentile to avoid problems with outlying observations due to acquisitions and divestments.[4] To avoid endogeneity issues we use the difference between the actual and sustainable growth rates from the previous year to measure a firm's external financing needs. Moreover, we standardize the variable to increase the interpretability of the estimates and to reduce multicollinearity of the interaction variable.

We prefer this proxy of a firm's reliance on external finance to the free cash flow proxy suggested by Brush et al. (2000). Based on the seminal work of Lang et al. (1991), Brush et al. (2000) argue that free cash flow equals cash flow (operating income before depreciation, minus interest expense, taxes, and dividends) for firms with Tobin's q below 1, but is zero for firms with Tobin's q above 1, because firms with Tobin's q above 1 have profitable investment opportunities in theory. While

[3] If the number of instruments exceeds the number of endogenous variables, tests of over-identifying restrictions (Hansen 1982) can be applied to examine the second condition. This test requires, however, that at least one of the instruments is valid (Larcker and Rusticus 2010). As we have a perfectly identified model, tests for over-identifying restrictions are not possible in our case.

[4] Including additional controls for firm-year observations in which a firm conducted acquisitions (defined as an actual growth rate higher than the 95th percentile) and divestments (defined as an actual growth rate lower than the 5th percentile) would not change our results in any significant way.

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such a measure of free cash flow may be appropriate in models of sales growth (see Brush et al. 2000), it causes significant endogeneity issues in firm performance models (see also Lang et al. 1991, for limitations of the free cash flow proxy).

3.6 Control variables

We remove confounding influences by controlling for factors that may correlate with both a firm's dual-class equity and its performance. Maury and Pajuste (2011) show that firms are less likely to abandon dual-class shares if the largest shareholder's disproportionality of voting rights to cash flow rights is large. Because such disproportionality may also influence firm performance (e.g., Claessens et al. 2002), we control for the ratio of the percentage of voting rights to the percentage of cash flow rights held by the largest shareholder. The voting rights are measured according to the procedure suggested by Faccio and Lang (2002) that does not only consider different share classes but also other control enhancing mechanisms such as pyramiding. In order to prevent reverse causality issues we use data from the previous year to calculate the ratio of voting rights to cash flow rights.

As family firms are more likely to have dual-class equity (Amoako-Adu and Smith 2001; Cronqvist and Nilsson 2003) and tend to differ in performance from non-family firms (e.g., Anderson and Reeb 2003), we include a dummy *family firms* equaling 1 if the largest shareholder holds more than 50 % of the votes including pyramiding.[5]

We also control for *firm age* (number of years since incorporation, transformed by logarithm), *firm size* (firm assets, transformed by logarithm), the *ratio of research and development (R&D) expenditures to net sales* and the firm's *leverage ratio* (debt to equity ratio) because these factors have been found to significantly influence both firm performance and dual-class equity in the previous literature (e.g., Claessens et al. 2002; Jog et al. 2010; Gompers et al. 2010). Because there has been a general time trend towards a unification of dual-class shares in Europe (Bigelli et al. 2011; Maury and Pajuste 2011), we include year fixed effects to control for the possibility of common time trends in NVS status and firm performance. To avoid problems with outlying observations, we winsorize all variables at the 5th and the 95th percentile. Following Miller et al. (2007), we coded missing values for the ratio of R&D to sales as 0.

To control for the possibility of unobserved time-invariant determinants of dual-class status and firm performance such as firm cultures, we make use of the panel dimension of our data. Formally, we decompose the structural error term (ϵ_{it}) into a firm-specific disturbance (u_i) and an independent and identically distributed error term (ε_{it}) so that $\epsilon_{it} = u_i + \varepsilon_{it}$.

[5] Because firms whose largest shareholder is a financial institution are less likely to have dual-class shares (Maury and Pajuste 2011) and because financial investor ownership also tends to affect firm performance beyond its effect on the firḿs equity structure (e.g., Thomsen and Pedersen 2000), we also included a dummy *financial investor* equaling 1 if the largest shareholder is a widely held bank or financial institution as defined by Faccio and Lang (2002) as control. However, *Stata12* dropped the financial investor dummy due to collinearity with our firm fixed effects. The within-firm variation of the financial investor dummy seems not to be large enough.

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The firm-specific disturbance can be either fixed over time for each firm (fixed-effects model), or vary randomly over time for each firm (random-effects model). Because the Hausman specification test (the χ^2-statistics are always higher than 42, $p < 0.01$) is highly significant, a random-effects model inadequately describes firm-level effects (Hausman 1978). By using a firm fixed-effects model, we control for time-constant firm heterogeneity and essentially relate *changes* in firm performance to *changes* in dual-class share status predicted by the new corporation law.

The IV approach is necessary to avoid being misled by potential *unobserved time-varying* confounders and reverse causality. One potential time-varying confounder is managerial quality. Incompetent managers decrease firm performance by making bad decisions. At the same time, such managers who realize their incompetence may seek to hold superior voting rights in order to maintain control while retaining fewer cash flow rights to reduce their losses.

Reverse causality can also bias the OLS results if insiders retain NVS because they correctly anticipate a negative performance trend. In such situations insiders could be tempted to minimize the decrease in the value of their shareholdings while still maintaining control (Masulis et al. 2009).

We argue that our IV estimates are unbiased because the law change instrument is unlikely to be correlated with unobserved time-varying confounders like managerial quality. As we see no special patterns in CEO dismissals around 1992, the *change* in managerial quality around 1992 is unlikely to be significantly different between firms with and without NVS. Because firms with and without NVS had very similar performances in 1991, our IV approach also addresses endogeneity arising from reverse causality. Our IV panel models identify the performance effects of dual-class equity by comparing the performance changes of firms that had NVS in 1991 and thereafter abandoned NVS due to the new corporation law with the performance changes of firms that never had NVS.

Despite our instrument, the time-constant and the time-varying controls, we cannot completely rule out the possibility of an endogeneity bias. Unfortunately, randomized control trials of corporate governance issues are not feasible in most cases and virtually all empirical corporate governance studies are susceptible to the endogeneity concern.

4 Results

4.1 Descriptive statistics

Table 2 provides descriptive statistics of the variables. The firms in our sample have an average ROA of 4.59 % and a Tobin's q of 1.23. The average fraction of firm-year observations with NVS is 32 % and the average Gini coefficient is 0.21. As the mean of the external financing needs variable is −0.03, the firms in our sample generate, on average, nearly sufficient internal funds to finance firm growth. The standard deviation of 0.19 indicates that some firms generate more and other firms less internal funds than needed. The ratio of voting to cash flow rights of the largest shareholder in the previous year is 1.65 on average. The fraction of family firm

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Table 2 Descriptive statistics

Variables	Mean	SD	Min	Max
ROA_{it} (10^2)	4.59	4.05	−4.78	15.11
Tobin's q_{it}	1.23	0.47	0.78	2.95
Non-voting $shares_{it}$ (NVS_{it})	0.32		0.00	1.00
$Gini_{it}$	0.21	0.18	0.00	0.49
External financing $needs_{it-1}$	−0.03	0.19	−0.39	0.45
Ratio of voting to cash flow $rights_{it-1}$	1.65	0.84	1.00	3.44
Family $firm_{it}$	0.51		0.00	1.00
Log firm age_{it}	3.70	1.02	1.39	5.04
Log firm $size_{it}$	13.78	1.69	10.93	17.36
Research & $development_{it}/sales_{it}$ (10^2)	1.21	2.41	0.00	8.60
Leverage $ratio_{it}$	3.73	5.00	0.21	19.16

The table reports the descriptive statistics of the variables used in the regression analyses. The sample includes 132 firms and 1073 firm-year observations

observations is 51 %. Mean log firm age is 3.70 (41 years) and mean log assets 13.78 (around 965,000 CHF). R&D expenditures correspond to 1.21 % of sales and the leverage ratio is 3.72, on average.

Panel A in Table 3 compares firms with NVS (affected firms) to firms without NVS (unaffected firms) in 1991, 1 year before the law change. Firms with and without NVS did not significantly differ in firm performance. For obvious reasons, the Gini coefficient is significantly lower for firms without NVS, although it is not 0, because firms can also create dual-class equity by issuing voting shares with different face values but one vote each share. Firms with and without NVS had very similar external financing needs, similar voting to cash flow rights ratios, and similar fractions whose controlling shareholders were families. Affected firms were, however, older and larger than unaffected firms. The average R&D expenditures to sales ratio and the average leverage ratio of firms with NVS were not significantly different from those of firms without NVS.

Panel B in Table 3 compares firms that abandoned NVS after the law change to firms that did not abandon NVS after the law change. Of the 69 firms that had NVS in 1991 50 firms abandoned NVS and 19 firms did not abandon NVS between 1992 and 1999. Panel B shows no significant difference in the variable means for the two groups of firms, with the sole exception that firms that did not abandon NVS had a significantly higher Tobin's q in 1991 than firms that abandoned NVS. This finding emphasizes the need for the law change as an instrument for dual-class shares. Because controlling shareholders of high performance firms, anticipating depreciations in the future, tend to maintain NVS, standard panel estimates are likely to be downward biased.

4.2 Regression results

In a first step we predict a firm's dual-class equity using the identifying instrument and the control variables (including firm fixed effects). In a second step we relate the predicted values of the first-stage regressions to firm performance.

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Table 3 Comparison of firms with and without NVS in 1991

	Firms with NVS (affected)		Firms without NVS (unaffected)		t-statistic for difference
	Mean	SE	Mean	SE	
Panel A					
ROA_{it} (10^2)	3.99	0.44	4.63	0.49	1.00
Tobin's q_{it}	1.09	0.04	1.19	0.05	1.62
Non-voting $shares_{it}$ (NVS_{it})	1.00		0.00		
$Gini_{it}$	0.33	0.02	0.18	0.02	−5.31***
External financing $needs_{it-1}$	0.02	0.02	0.01	0.02	−0.32
Ratio of voting to cash flow $rights_{it-1}$	1.82	0.11	1.63	0.11	−1.22
Family $firm_{it}$	0.52		0.54		0.37
Log $firm\ age_{it}$	3.88	0.13	3.31	0.15	−2.93***
Log $assets_{it}$	14.09	0.20	13.22	0.21	−3.03***
Research & $development_{it}/sales_{it}$ (10^2)	0.52	0.20	1.02	0.32	1.34
Leverage $ratio_{it}$	3.93	0.58	4.11	0.77	0.19
Number of firms	69		63		
	Firms that abandoned NVS after the law change		Firms that did not abandon NVS after the law change		t-statistic for difference
	Mean	SE	Mean	SE	
Panel B					
ROA_{it} (10^2)	4.03	0.47	3.89	1.00	−0.14
Tobin's q_{it}	1.03	0.03	1.21	0.11	2.08**
Non-voting $shares_{it}$ (NVS_{it})	1.00		1.00		
$Gini_{it}$	0.32	0.02	0.36	0.03	0.99
External financing $needs_{it-1}$	0.01	0.03	0.04	0.04	0.53
Ratio of voting to cash flow $rights_{it-1}$	1.88	0.13	1.64	0.16	1.02
Family $firm_{it}$	0.46	0.07	0.63	0.11	1.27
Log $firm\ age_{it}$	3.84	0.16	3.99	0.21	0.53
Log $assets_{it}$	14.26	0.24	13.62	0.36	−1.45
Research & $development_{it}/sales_{it}$ (10^2)	0.68	0.27	0.11	0.11	−1.34
Leverage $ratio_{it}$	3.97	0.68	3.85	1.12	−0.09
Number of firms	50		19		

The table reports the means and the standard errors of the means of the variables used in the regression analyses in 1991 (i.e., 1 year before the law change). Paired sample *t* test are used to compare the means. Significance levels are denoted by ***1 %, **5 %, and *10 % (two-tailed tests)

Table 4 shows the estimates of the first-stage regressions. *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009) are reported in parentheses. The instrument Law_{it} (equaling 1 for firms with NVS in 1991 for observations after 1991, 0 otherwise) significantly and substantially reduces dual-class equity. The fraction of firms with NVS decreased by

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Table 4 The effect of the law change on dual-class equity (first-stage regressions)

Dependent variables	1 NVS_{it}	2 $Gini_{it}$
Law_{it} (=1 for firms with NVS in 1991 for observations after 1991, =0 otherwise)	−0.47***	−0.07***
	(0.000)	(0.000)
External financing $needs_{it-1}$	0.01	0.01**
	(0.230)	(0.025)
Ratio of voting to cash flow $rights_{it-1}$	0.05***	0.03***
	(0.008)	(0.000)
Family $firm_{it}$	0.01	0.02
	(0.853)	(0.182)
Log firm age_{it}	0.06	0.02
	(0.448)	(0.452)
Log $assets_{it}$	0.04	0.02
	(0.297)	(0.145)
Research & $development_{it}$/ $sales_{it}$ (10^2)	−0.01	−0.01**
	(0.411)	(0.022)
Leverage $ratio_{it}$	0.01*	0.003**
	(0.068)	(0.032)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
F-statistic of the identifying instrument	93.77***	23.63***
Number of observations	1073	1073
Number of firms	132	132
R^2 (within)	0.41	0.30

The table reports OLS estimates of the first-stage regressions predicting dual-class equity. In parentheses are *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009). Significance levels are denoted by ***1 %, **5 %, *10 % (two-tailed tests)

47 % and the Gini coefficient by 7 % for affected firms in the after-policy period, controlling for time-varying controls and time-constant firm heterogeneity.

The high partial F-statistics of the identifying instrument of 93.77 and 23.63 document the relevance of our instrument. As the F-statistics are far above the critical value of 8.96 suggested by Stock et al. (2002), we do not have a weak instrument problem.

Table 5 reports the results when testing hypotheses 1a and 1b of universal effects of dual-class equity on firm performance. The effects of the predicted values of NVS and Gini are negative when using ROA as performance measure and positive when using Tobin's q as performance measure. However, the effects are not statistically different from 0. Thus, neither Hypothesis 1a, which predicts a negative performance effect of dual-class equity, nor Hypothesis 1b, which predicts a positive performance effect of dual-class equity, is supported. The effects of the control variables are mostly insignificant. Exceptions are the effects of external financing needs (significantly negative effects on ROA), of the ratio of research and development costs to sales (significantly positive effects on Tobin's q) and of the

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Table 5 Unversal effects of dual-class shares on firm performance (second-stage regressions)

Dependent variables	3 ROA_{it}	4 Tobin's q_{it}	5 ROA_{it}	6 Tobin's q_{it}
NVS_{it} (predicted values)	−0.32	0.05		
	(0.193)	(0.128)		
$Gini_{it}$ (predicted values)			−0.54	0.09
			(0.193)	(0.337)
External financing needs	−0.48***	0.005	−0.43***	−0.003
	(0.002)	(0.685)	(0.007)	(0.843)
Ratio of voting to cash flow $rights_{it-1}$	0.26	0.046	0.44	0.016
	(0.302)	(0.150)	(0.180)	(0.709)
$Family\ firm_{it}$	−0.01	−0.06	0.14	−0.09*
	(0.989)	(0.176)	(0.778)	(0.091)
Log $firm\ age_{it}$	−0.10	0.01	0.002	−0.01
	(0.908)	(0.938)	(0.998)	(0.942)
Log $assets_{it}$	0.16	−0.10	0.25	−0.12
	(0.759)	(0.179)	(0.635)	(0.120)
Research & $development_{it}/sales_{it}$ (10^2)	0.16	0.05**	0.11	0.06***
	(0.235)	(0.012)	(0.438)	(0.008)
Leverage $ratio_{it}$	−0.20*	−0.01	−0.18*	−0.01*
	(0.069)	(0.166)	(0.100)	(0.095)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Number of observations	1073	1073	1073	1073
Number of firms	132	132	132	132
R^2 (within)	0.10	0.22	0.10	0.22

The table reports estimates of second-stage regressions relating dual-class equity to firm performance (universal effects). In parentheses are *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009). The interaction variables are standardized to reduce multicollinearity of the interaction variables and to increase the interpretabilitiy of the estimates. Significance levels are denoted by ***1 %, **5 %, *10 % (two-tailed tests)

leverage ratio (marginally significant negative effects on both performance measures).

Table 6 reports the results of models that additionally include an interaction term of the predicted values of dual-class equity and a firm's external financing needs. The coefficients of the interaction terms are significantly positive in all four models. As the interaction variables are mean-centered and as the mean of the external financing needs variable is virtually 0, a positive interaction effect implies that dual-class shares increase firm performance if the firm needs external finance (external financing variable above 0), and that dual-class shares decrease firm performance if the firm does not need external finance (external financing needs variable below 0).[6]

[6] Subsample analyses do not reveal any non-linearity of the interaction effect. However, as the cases-to-variables ratio is far below 10, the statistical power of the subgroup analyses is low.

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Table 6 Moderating influence of external financing needs (second-stage regressions)

Dependent variables	7 ROA_{it}	8 Tobin's q_{it}	9 ROA_{it}	10 Tobin's q_{it}
NVS_{it} (predicted values)	−0.33	0.05		
	(0.170)	(0.133)		
NVS_{it} (predicted values) × external financing $needs_{it-1}$	0.40***	0.02**		
	(0.000)	(0.017)		
$Gini_{it}$ (predicted values)			−0.58	0.80
			(0.151)	(0.136)
$Gini_{it}$ (predicted values) × external financing $needs_{it-1}$			0.49***	0.02**
			(0.001)	(0.031)
External financing $needs_{it-1}$	−0.55***	−0.0002	−0.54***	−0.009
	(0.000)	(0.986)	(0.001)	(0.524)
Ratio of voting to cash flow $rights_{it-1}$	0.27	0.04	0.45	0.01
	(0.277)	(0.146)	(0.161)	(0.695)
Family $firm_{it}$	0.02	−0.06	0.31	−0.7
	(0.951)	(0.197)	(0.488)	(0.124)
Log $firm\ age_{it}$	−0.11	0.008	−0.170	−0.01
	(0.894)	(0.940)	(0.834)	(0.867)
Log $assets_{it}$	0.26	−0.09	0.40	−0.11
	(0.608)	(0.199)	(0.435)	(0.148)
Research & $development_{it}/sales_{it}$ (10^2)	0.15	0.04**	0.10	0.05***
	(0.208)	(0.010)	(0.430)	(0.006)
Leverage $ratio_{it}$	−0.21**	−0.01	−0.21**	−0.01**
	(0.035)	(0.112)	(0.030)	(0.045)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Number of observations	1073	1073	1073	1073
Number of firms	132	132	132	132
R^2 (within)	0.12	0.22	0.13	0.23

The table reports estimates of second-stage regressions relating dual-class equity, firm performance and a firm's need for external finance. In parentheses are *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009). The interaction variables are standardized to reduce multicollinearity of the interaction variables and to increase the interpretability of the estimates. Significance levels are denoted by ***1 %, **5 %, *10 % (two-tailed tests)

Thus, Hypothesis 2a, which predicts that a firm's external financing needs positively moderate the relation between dual-class shares and performance, is confirmed, whereas Hypothesis 2b, which predicts that a firm's external financing needs negatively moderate the relation between dual-class shares and performance, cannot be confirmed. The effects of the control variables and the direct effects of dual-class equity do not change in any significant way when including the interaction terms.[7]

[7] The results would not change in any significant way when removing 23 financial firms (179 firm-year observations) from our sample (results are available upon request).

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4.3 Dual-class equity of the largest shareholder

So far, we have used general measures of dual-class equity. Gompers et al. (2010) and Masulis et al. (2009) use the disproportionality of voting rights to cash flow rights of *insiders*, defined as officers and directors, as a measure of dual-class equity. Because Swiss firms have had to publish detailed information on executive compensation and the type and numbers of shares held by the directors and executives only from 2007 onwards, we are unfortunately unable to replicate the results using the insider-specific dual-class measures of Gompers et al. (2010) and Masulis et al. (2009). However, as a sensitivity test, we estimate the results using a dual-class measure suggested by Lins (2003): the ratio of the percentage of voting rights to the percentage of cash flow rights *held by the largest shareholder*.[8]

The first column in Table 7 shows the results of the first-stage regression that predicts the largest shareholder's ratio of voting to cash flow rights. The law change instrument significantly decreases the largest shareholder's ratio of voting to cash flow rights by 0.17. The partial F-statistic of the identifying instrument is 6.71, slightly below the benchmark of 8.96 suggested by Stock et al. (2002). As we cannot completely rule out weak instrument issues, we follow the advice of Larcker and Rusticus (2010) and test the plausibility of the instrumental variable (IV) estimates by comparing them with OLS estimates. The OLS estimates confirm the IV estimates (see Table 8 in the "Appendix").

While two measures of the dual-class equity of a firm, its NVS status and the Gini coefficient, show very substantial reductions in response to the law change, the largest shareholder's voting and cash flow rights do not seem to be similarly affected. One explanation is that the largest shareholder also held NVS, so that abandoning NVS does not change much. Bigelli et al. (2011) show that large shareholders of Italian firms typically held voting and non-voting shares so that they did not receive any compensation for the loss of their voting privileges when unifying share classes. A second explanation is that the largest shareholder is able to maintain a wedge between voting and cash flow rights even after abandoning NVS by issuing and holding shares with equal voting rights but lower face values. Large shareholders tend to strategically adjust their holdings when changing the equity structure. Lauterbach and Yafeh (2011) show that unifications of dual-class shares in Israeli firms had little effect on the voting rights of the largest shareholder. The largest shareholders just increased their holdings.

The results from the second stage regressions show that the direct effects of the predicted ratio of voting to cash flow rights of the largest shareholder and the interaction effects with external financing needs are all statistically insignificant. Thus, whereas the inexistence of universal effects of dual-class equity on firm performance is confirmed, the insignificant interaction effects in Table 7 suggest that the significant interaction effects of external financing needs and the general measures of dual-class equity (NVS and Gini) in Table 6 are not driven by the disproportionality of voting to cash flow rights held by the largest shareholder. A

[8] The results are very similar if the disproportionality of voting rights to cash flow rights is measured by the difference between voting and cash flow rights rather than the ratio. This alternative measure is used, e.g., by Claessens et al. (2002) and Maury and Pajuste (2011).

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Table 7 The relationship between the largest shareholder's dual-class shares and firm performance

Dependent variables	First stage	Second stages			
	Ratio of the largest shareholder's voting to cash flow rights$_{it}$	ROA$_{it}$	Tobin's q$_{it}$	ROA$_{it}$	Tobin's q$_{it}$
Law$_{it}$ (=1 for firms with NVS in 1991 for observations after 1991, =0 otherwise)	−0.17**				
	(0.011)				
Ratio of the largest shareholder's voting to cash flow rights$_{it}$ (predicted values)		−1.26	0.21	−1.29	0.20
		(0.193)	(0.128)	(0.172)	(0.137)
Ratio of the largest shareholder's voting to cash flow rights$_{it}$ (predicted values) × external financing needs$_{it-1}$				0.07	0.01
				(0.690)	(0.386)
External financing needs$_{it-1}$	0.014	−0.44***	0.000	−0.45***	−0.002
	(0.463)	(0.004)	(0.975)	(0.004)	(0.882)
Ratio of voting to cash flow rights$_{it}$	0.321***	1.23	−0.113	1.25	−0.10
	(0.000)	(0.158)	(0.345)	(0.138)	(0.362)
Family firm$_{it}$	0.29***	0.92	−0.22*	0.93	−0.21*
	(0.000)	(0.301)	(0.065)	(0.282)	(0.066)
Log firm age$_{it}$	−0.05	−0.34	0.05	−0.33	0.05
	(0.719)	(0.698)	(0.653)	(0.705)	(0.645)
Log assets$_{it}$	−0.03	0.03	−0.08	0.02	−0.08
	(0.695)	(0.956)	(0.308)	(0.959)	(0.308)
Research & development$_{it}$/sales$_{it}$ (10^2)	−0.03**	0.07	0.06***	0.06	0.06***
	(0.011)	(0.623)	(0.008)	(0.651)	(0.008)
Leverage ratio$_{it}$	0.003	−0.20*	−0.01	−0.20*	−0.01
	(0.573)	(0.067)	(0.175)	(0.068)	(0.173)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes

Table 7 continued

Dependent variables	First stage	Second stages			
	Ratio of the largest shareholder's voting to cash flow rights$_{it}$	ROA$_{it}$	Tobin's q$_{it}$	ROA$_{it}$	Tobin's q$_{it}$
Year fixed effects	Yes	Yes	Yes	Yes	Yes
F-statistic of the identifying instrument	6.71**				
Number of observations	1073	1073	1073	1073	1073
Number of firms	132	132	132	132	132
R^2 (within)	0.20	0.10	0.22	0.10	0.22

The table reports OLS estimates of the first-stage regression in column 1 and of the second-stage regressions in columns 2–5. In parentheses are *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009). The interaction variables are standardized to reduce multicollinearity of the interaction variables and to increase the interpretabilitiy of the estimates. Significance levels are denoted by ***1 %, **5 %, *10 % (two-tailed tests)

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plausible explanation for the lack of significant interaction effects in Table 7 is that the largest shareholder can either be an insider, and thus susceptible to extracting private benefits of control, or an outsider. In the latter case, superior voting rights help the largest shareholder to efficiently control the management if internal funds exceed profitable investment opportunities.

5 Discussion

This study uses a unique law change to explore the causal effect of dual-class shares on firm performance. Performance effects are identified based on panel data of both firms affected and unaffected by the law change, taking unobserved firm heterogeneity and time-varying controls into account. We find that dual-class shares increase firm performance if a firm needs external finance and decrease firm performance if a firm does not need external finance, leading to an insignificant universal effect.

Given that dual-class shares, like most corporate governance practices, have both advantages and disadvantages, the absence of significant universal performance effects should be no surprise (Aguilera et al. 2008). The positive and negative effects could simply neutralize each other. But why do external financing needs create a context in which the advantages of general dual-class equity outweigh the disadvantages of general dual-class equity?

Excess internal funds insulate insiders from the monitoring of the capital market and give them great discretion to extract private benefits. By holding shares with superior voting rights and by having sufficient internal cash flow to fund all firm projects, insiders are unlikely to be replaced by rivals or disciplined by the capital market. The coexistence of dual-class shares and excess internal funds therefore facilitates private rent extractions and inefficient empire-building activities by insiders at the cost of the other shareholders.

If profitable investment opportunities exceed internal cash flow, the situation is quite different. As the firm needs external finance, insiders are under much stronger market discipline and have less leeway to pursue their own objectives. This reduces conflicts of interests between insiders and shareholders without managerial ties to the firm regardless of whether dual-class shares exist or not. In fact, our results indicate that fast growing firms (e.g., social media firms) may benefit from dual-class shares as an anti-takeover device that encourages stable ownership and firm-specific investments by their employees.

This study contributes to the existing literature in two key aspects: We are the first to address the endogeneity of dual-class shares by making use of a natural experiment. The unique law change in Switzerland created a shock to equilibrium governance practices. Thus, the "within equilibrium" criticism (Larcker et al. 2011) does not apply to this study. Second, we show that a firm's external financing needs positively moderate the relationship between dual-class shares and firm performance. Our finding sheds a fresh light on a related study by Chen et al. (2010). They argue that firms with external financing needs tend to have better governance practices because improvements in corporate governance reduce the costs of raising external capital. They find significantly positive interaction effects of external financing needs and a

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general governance quality index on firm performance.[9] Even though dual-class shares are commonly considered as weak corporate governance (Gompers et al. 2010), we show that this is not true for fast growing firms with external financing needs. The performance of such firms benefits from dual-class equity because it shields them from potential hostile takeovers and enables the controlling shareholders (usually the founders) to pursue a long-term value creation strategy.

Despite these contributions, this study has caveats or limitations that need future research to enhance its key arguments. First, as the identification strategy is based on a unique law change in Switzerland, future studies should replicate this study in other countries to test the generalizability of our results. Second, our empirical strategy delivers estimates of the effectiveness of abandoning NVS in response to a law change that removed comparative advantages of NVS. Using only the within-firm variation, we cannot determine whether the firms that did not change their equity structure were guided by rent extraction or value maximization considerations. We simply know that, on average, the performance trend of "changers" was very similar to the performance trend of "stayers".

Third, some of our empirical analyses are constrained by the availability of the data. Unfortunately we do not have data on insider-specific measures of dual-class equity, like the wedge between voting rights and cash flow rights of directors and executives (see, e.g., Gompers et al. 2010; Masulis et al. 2009). In addition, corporate governance data such as board composition and independence, executive compensation or institutional ownership are also not available for our sample. Future studies with access to more detailed data should test additional moderators related, for example, to the composition of the top management team. As founding families tend to identify very strongly with "their" firm, the stewardship theory conjectures that the presence of family members in the top management team should enhance the benefits of dual-class shares. Previous evidence on this topic (e.g., Villalonga and Amit 2006; Hoi and Robin 2010) has been inconclusive. A further interesting extension would be to test the moderating influence of executive compensation. Whereas the optimal contracting approach predicts that executive compensation alleviates the agency costs of dual-class shares, the managerial power approach predicts that executive compensation intensifies the agency costs of dual-class shares.[10]

The results of this study have clear managerial implications. Dual-class shares are not suitable for firms with low long-term growth, for which internally generated funds exceed opportunities to invest them profitably. Such firms should create a one-share-one-vote structure to reduce the risk of private rent extractions by insiders. However, fast growing firms (e.g., social media firms) that need external finance to fund their projects should issue dual-class shares to promote stable ownership and firm specific investments. The capital market mitigates the agency conflicts between controlling and minority shareholders for such firms and both parties benefit from dual-class shares as an anti-takeover device.

[9] As Chen et al. (2010) use a corporate governance index that is inversely coded with a large value indicating poor corporate governance quality, the interaction effect is in fact negative.

[10] For excellent reviews of the two opposing approaches of executive compensation, we refer to Bebchuk and Fried (2003).

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From a policy perspective, the results of this study indicate that policy makers do well to not prohibit dual-class shares in general. There is no one-size-fits-all approach. The performance consequences of dual-class shares depend, for example, on the firm's need for external finance.

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Appendix

Table 8 The largest shareholder's dual-class shares and firm performance without using the law change as an instrument

Dependent variables	ROA_{it}	Tobin's q_{it}	ROA_{it}	Tobin's q_{it}
Ratio of the largest shareholder's voting to cash flow $rights_{it}$	−0.14	−0.004	−0.14	−0.004
	(0.236)	(0.731)	(0.259)	(0.740)
Ratio of the largest shareholder's voting to cash flow $rights_{it}$ × external financing $needs_{it-1}$			−0.07	−0.001
			(0.641)	(0.863)
External financing $needs_{it-1}$	−0.48***	0.006	−0.44***	0.007
	(0.002)	(0.580)	(0.002)	(0.595)
Ratio of voting to cash flow $rights_{it-1}$	0.26	0.05***	0.25	0.05**
	(0.241)	(0.048)	(0.252)	(0.047)
Family $firm_{it}$	0.06	−0.06	0.05	−0.06
	(0.886)	(0.180)	(0.909)	(0.175)
Log firm age_{it}	−0.30	0.04	−0.30	0.04
	(0.733)	(0.697)	(0.730)	(0.697)
Log $assets_{it}$	0.10	−0.09	0.10	0.09
	(0.849)	(0.221)	(0.849)	(0.221)
Research & $development_{it}/sales_{it}$ (10^2)	0.16	0.04**	0.16	0.04**
	(0.213)	(0.018)	(0.216)	(0.018)
Leverage $ratio_{it}$	−0.21*	−0.009	−0.21*	−0.009
	(0.051)	(0.287)	(0.051)	(0.285)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Number of observations	1073	1073	1073	1073
Number of firms	132	132	132	132
R^2 (within)	0.10	0.22	0.10	0.21

The table reports OLS estimates of regressions relating dual-class equity to firm performance (universal effects). In parentheses are *p* values based on standard errors adjusted for heteroskedasticity (White 1980) and firm clustering (Peterson 2009). The interaction variables are standardized to reduce multicollinearity of the interaction variables and to increase the interpretability of the estimates. Significance levels are denoted by ***1 %, **5 %, *10 % (two-tailed tests)

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References

Adams, R., & Ferreira, D. (2008). One share, one vote: The empirical evidence. *Review of Finance, 12*(1), 51–91.

Aguilera, R. V., Filatotchev, I., Gospel, H., & Jackson, G. (2008). An organizational approach to comparative corporate governance: Costs: Contingencies, and complementarities. *Organization Science, 19*(3), 475–492.

Amoako-Adu, B., & Smith, B. F. (2001). Dual class firms: Capitalization, ownership structure and recapitalization back into single class. *Journal of Banking & Finance, 25*, 1083–1111.

Anderson, R. C., & Reeb, D. M. (2003). Founding-family ownership and firm performance: Evidence from the S&P 500. *The Journal of Finance, 58*(3), 1301–1327.

Barontini, R., & Capiro, L. (2006). The effect of family control on firm value and performance: Evidence from continental Europe. *European Financial Management, 12*(5), 689–723.

Bebchuk, L. A., & Fried, J. M. (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives, 17*(3), 71–92.

Bebchuk, L. A, Cohen, A., & Wang, C. C. Y. (2010) *Staggered boards and the wealth of shareholders: Evidence from a natural experiment*. Working paper, Harvard Law and Economics Discussion Paper No. 697.

Bennedsen, M., & Nielsen, K. M. (2010). Incentive and entrenchment effects in European ownership. *Journal of Banking & Finance, 34*(9), 2212–2229.

Bigelli, M., Mehrotra, V., & Rau, P. R. (2011). Why are shareholders not paid to give up their voting privileges? Unique evidence from Italy. *Journal of Corporate Finance, 17*, 1619–1635.

Brush, T. H., Bromiley, P., & Hendrickx, M. (2000). The free cash flow hypothesis for sales growth and firm performance. *Strategic Management, 21*(4), 455–472.

Burkart, M., & Lee, S. (2008). One share—One vote: the theory. *Review of Finance, 12*(1), 1–49.

Chemmanur, T. J., & Jiao, Y. (2012). Dual class IPOs: A theoretical analysis. *Journal of Banking & Finance, 36*(1), 305–319.

Chen, W. P., Chung, H., Hsu, T. L., & Wu, S. (2010). External financing needs, corporate governance, and firm value. *Corporate Governance: An International Review, 18*(3), 234–249.

Claessens, S., Djankov, S., Fan, J. P. H., & Lang, L. H. P. (2002). Disentangling the incentive and entrenchment effects of large shareholdings. *The Journal of Finance, 57*(6), 2741–2771.

Cronqvist, H., & Nilsson, M. (2003). Agency costs of controlling minority shareholders. *Journal of Financial and Quantitative Analysis, 38*(4), 695–719.

Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review, 22*(1), 20–47.

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.

Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance, and firm growth. *The Journal of Finance, 53*(6), 2107–2137.

Dimitrov, V., & Jain, P. C. (2006). Recapitalization of one class of common stock into dual-class: Growth and long-run stock returns. *Journal of Corporate Finance, 12*(2), 342–366.

Dittmann, I., & Ulbricht, N. (2007). Timing and wealth effects of German dual class stock unifications. *European Financial Management, 14*(1), 163–196.

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics, 83*(3), 599–634.

Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective? *Journal of Financial Economics, 96*(2), 195–214.

Durnev, A., & Kim, E. H. (2005). To steal or not to steal: Firm attributes, legal environment, and Valuation. *The Journal of Finance, 60*(3), 1461–1493.

Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *American Economic Review, 74*(4), 650–659.

Faccio, M., & Lang, L. H. P. (2002). The ultimate ownership of Western European corporations. *Journal of Financial Economics, 65*, 365–395.

Giannetti, M., & Laeven, L. (2008). Pension reform, ownership structure, and corporate governance: Evidence from a natural experiment. *Review of Financial Studies, 22*(10), 4091–4127.

Gompers, P., Ishi, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics, 118*(1), 107–155.

Author's personal copy

Gompers, P., Ishi, J., & Metrick, A. (2010). Extreme governance: An analysis of dual-class firms in the United States. *Review of Financial Studies, 23*(3), 1051–1088.
Grossman, S. J., & Hart, O. D. (1988). One share-one vote and the market for corporate control. *Journal of Financial Economics, 20*, 175–202.
Hansen, L. P. (1982). Large sample properties in generalized methods of moments estimator. *Econometrica, 50*(4), 1029–1054.
Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics, 87*(3), 535–555.
Harris, M., & Raviv, A. (1988). Corporate governance: Voting rights and majority rules. *Journal of Financial Economics, 20*, 203–235.
Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251–1271.
Hoi, C. K., & Robin, A. (2010). Agency conflicts, controlling owner proximity, and firm value: An analysis of dual-class firms in the United States. *Corporate Governance: An International Review, 18*(2), 124–135.
Jarrell, G., & Poulsen, A. (1988). Dual-class recapitalizations as anti-takeover mechanisms. *Journal of Financial Economics, 20*, 129–152.
Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review, 76*(2), 323–329.
Jensen, M. C. (1993). The modern industrial revolution. Exit, and the failure of internal control systems. *The Journal of Finance, 48*(3), 831–880.
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm. Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
Jog, V., Zhu, P., & Dutta, S. (2010). Impact of restricted voting share structure on firm value and performance. *Corporate Governance: An International Review, 18*(5), 415–437.
Kunz, R. M., & Angel, J. J. (1996). Factors affecting the value of stock voting right: Evidence from the Swiss equity market. *Financial Management, 25*(3), 7–20.
Lang, L. H. P., Stulz, R. M., & Walking, R. A. (1991). A test of the free cash flow hypothesis: The case of bidder returns. *Journal of Financial Economics, 29*(2), 315–335.
Larcker, D. F., & Rusticus, T. O. (2010). On the use of instrumental variables in accounting research. *Journal of Accounting and Economics, 49*(3), 186–205.
Larcker, D. F., Ormazabal, G., & Taylor, D. J. (2011). The market reaction to corporate governance regulation. *Journal of Financial Economics, 101*(2), 431–448.
Lauterbach, B., & Yafeh, Y. (2011). Long term changes in vorting power and control structure following the unification of dual class shares. *Journal of Corporate Finance, 17*(2), 215–228.
Lehn, K., Netter, J., & Poulsen, A. (1990). Consolidating corporate control: Dual-class recapitalizations versus leveraged buyouts. *Journal of Financial Economics, 27*(2), 557–580.
Levy, H. (1983). Economic evaluation of voting power of common stock. *The Journal of Finance, 38*(1), 79–93.
Lins, K. V. (2003). Equity ownership and firm value in emerging markets. *Journal of Financial and Quantitative Analysis, 38*(1), 159–184.
Loderer, C., & Wälchli, U. (2010). *Firm age and performance*. Working paper, University of Berne.
Masulis, R. W., Wang, C., & Xie, F. (2009). Agency problems at dual-class companies. *The Journal of Finance, 64*(4), 1697–1727.
Maury, B., & Pajuste, A. (2011). Private benefits of control and dual-class share unifications. *Managerial and Decision Economics, 32*(6), 355–369.
Miller, D., Breton-Miller, I. L., Lester, R. H., & Cannella, A. A. (2007). Are family firms really superior performers? *Journal of Corporate Finance, 13*(5), 829–858.
Peterson, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480.
Stock, J. H., Wright, J. H., & Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economic Statistics, 20*(4), 518–529.
Thomsen, S., & Pedersen, T. (2000). Ownership structure and economic performance in the largest European companies. *Strategic Management Journal, 21*, 689–705.
Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics, 80*(2), 385–417.
Villalonga, B., & Amit, R. (2009). How are U.S. family firms controlled? *Review of Financial Studies, 22*(8), 3047–3091.

Author's personal copy

Vishny, A., & Shleifer, R. (1997). A survey of corporate governance. *The Journal of Finance, 52*(2), 737–783.

Von der Crone, H. C., & Plaksen, E. (2010). *The value of dual-class shares in Switzerland*. Working Paper, University of Zurich.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817–838.

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