The Value of Say on Pay*

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Abstract

This paper measures the impact of "say on pay" (SoP) on the market value of corporate voting rights. We exploit the staggered introduction of SoP regulations across 14 economies on four continents and run a battery of difference-in-differences regressions. The results show that voting right values have increased in firms with excessive CEO pay, while they have remained largely unaffected (or even decreased) in other companies. Thus, the option to signal dissent with current compensation through say on pay is not per se valuable and might even translate into net costs for shareholders. The effects are persistent over time and are robust to many different regression specifications and alternative SoP shocks.

Keywords: Say on Pay, Corporate Voting Rights, Corporate Governance, Option Pricing.

JEL codes: G13, G32, G34.

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Abstract

This paper measures the impact of "say on pay" (SoP) on the market value of corporate voting rights. We exploit the staggered introduction of SoP regulations across 14 economies on three continents and run a battery of difference-in-differences regressions. The results show that voting right values have increased in firms with excessive CEO pay, while they have remained largely unaffected (or even decreased) in other companies. Thus, the option to signal dissent with current compensation through say on pay is not per se valuable and might even translate into net costs for shareholders. The effects are persistent over time and are robust to many different regression specifications and alternative SoP shocks.

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1 Introduction

In the last two decades, public outrage on excessive compensation of top managers has led governments all over the world to strengthen corporate voting rights and empower shareholders to express their opinion on top-management compensation in so-called "say on pay" (SoP) votes. Past research (see, e.g., Correa and Lel, 2016) has shown that the introduction of say on pay led to a significant improvement of compensation practices. However, the question whether and to what extent shareholders value the right to vote on top-management compensation remains an open issue. Further, research on the very different implementation characteristics of SoP laws (e.g., binding vs. advisory SoP votes) is very limited.

This paper closes this research gap by measuring the market value that shareholders attach to the right to vote on top-management compensation. Specifically, we exploit the staggered introduction of SoP regulations in 14 major economies across Australia, Asia, Europe, and North America and apply a difference-in-differences (DiD) design to obtain estimates of the causal effects of SoP on voting-right values. We show that the effect of the introduction of SoP on voting values largely depends on whether or not the compensation of top management is excessive, according to the methodology of Correa and Lel (2016) and Ferri and Maber (2013), among others. These findings indicate that shareholders value the right to vote on top-management compensation whenever suboptimal pay practices are in place and SoP votes can lead to an improvement of the alignment between management incentives and shareholders' interests. In firms without excessive compensation, shareholders most likely see only little scope for improvement but still face substantial information-gathering costs. Surprisingly, these effects are much stronger for the looser advisory votes than for the stricter binding votes. We conjecture that this has two reasons. First, advisory votes do not distort firm-specific investment decisions, while excessive shareholder power could lead to hold-up problems between powerful shareholders and the CEO (Wagner and Wenk, 2017; Göx, Imhof, and Kunz, 2014). Second, shareholders may value the additional flexibility of advisory votes compared to binding votes. In particular, advisory votes allow shareholders to signal dissent with the board even in issues unrelated to compensation (see, e.g., Fisch, Palia, and Solomon, 2018). Further, additional flexibility arises from the fact that the decision by shareholders can be overruled by the board if it is harmful for the firm's prospects.

To ensure that our results are not spurious, we use a second identification strategy for a subsample of all U.S. firms by following (Kronlund and Sandy, 2016). Shareholders of U.S. firms decided in 2010 if say on pay votes in their respective firm will take place in the future in an annual, biennial, or triennial schedule. This firm-specific schedule of voting, which firms actually follow, leads to a time-varying pattern of say-on-pay voting rights that is able to identify effects of additional voting rights on voting values. The results derived using this identification strategy are very similar in terms of size and signs of the coefficients as derived using our baseline DiD methodology.

Following the newer literature, we extract voting-right values from option prices (see Kind and Poltera, 2013; Kalay, Karakaş, and Pant, 2014; Karakaş and Mohseni, 2015; Gurun and Karakaş, 2016). Option-based methods offer the advantage that voting values (i) can be measured for specific shareholder meetings, (ii) they can be computed and updated frequently, (iii) they reflect the marginal investor's willingness to pay for a voting right, (iv) and they can be obtained for a broad sample of firms, specifically for all firms with liquid traded options. We consider in the sample all firms with liquid options from Australia, Belgium, China, Finland, France, Germany, Hong Kong, Italy, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom, and the United States. This cross-country sample is particularly well-suited for our research question because of two reasons. First, the adoption of SoP laws occurred in several countries at different points in time. This setup allows us to rule out potentially biased conclusions drawn from only one country or only one legal shock. Second, legislations in the sample differ with respect to their strictness. We are thus able to differentiate between the looser advisory and the stricter binding votes and to measure whether or not shareholders value the rigor of the latter. For instance, Finland and Hong Kong never introduced SoP regulations, Sweden introduced binding votes in 2006, Italy introduced advisory votes in 2011, and the United Kingdom (henceforth UK) introduced advisory votes at the end of 2002 and binding votes in 2013.

This study contributes to two strands of literature: (i) the value of shareholder voting rights and (ii) the SoP literature. The former aims at measuring the value of voting rights attached to stock ownership – by disentangling it from the value of cash-flow claims – and finding its determinants. Previous literature finds that shareholder voting rights are valuable (Levy, 1983; Horner, 1988), but can also be costly under certain circumstances (Lease, McConnell, and Mikkelson, 1983). The

value of voting rights depends, among other things, on the magnitude of private benefits of control (Zingales, 1994, 1995), on firm characteristics such as firm size, leverage, ownership structure, and managerial ability (Barclay and Holderness, 1989; Smith and Amoako-Adu, 1995; Rydqvist, 1996; Chung and Kim, 1999; Hauser and Lauterbach, 2004), the country of incorporation (Nenova, 2003), the level of market development (Dyck and Zingales, 2004), and the country's legal origin (Kind and Poltera, 2013). Further, holding voting rights is particularly valuable around M&A deals, for firms targeted by activist hedge funds (Kalay, Karakaş, and Pant, 2014), at meetings with important agenda items, such as the redemption of antitakeover provisions (Karakaş and Mohseni, 2015; Kind and Poltera, 2016), and after negative earnings announcements (Gurun and Karakaş, 2016). To the best of our knowledge, our study is the first to provide an estimate of the causal effects of SoP on the market value of voting rights.

The SoP literature focuses on the direct consequences that the introduction of SoP has on top managers' salaries, the market values of corporations, and the factors that influence SoP approval rates. Overall, empirical studies conducted in different countries certify that the introduction of SoP had favorable effects on the compensation of top management. Particularly, the relation between CEO compensation and firm performance was amplified due to the new governance mechanism (Ferri and Maber, 2013; Correa and Lel, 2016; Iliev and Vitanova, 2017). However, while the level of CEO pay decreased significantly for firms with excessive CEO pay targeted by shareholder proposals (Ertimur, Ferri, and Muslu, 2011), evidence is mixed on whether mandatory SoP led to similar results. Ferri and Maber (2013) find a moderating effect of SoP on the level of CEO compensation only for firms with poor performance. Iliev and Vitanova (2017) show that the regulation generally led to increased levels of CEO pay and Brunarski, Campbell, and Harman (2015) provide evidence that this is even the case for CEOs that already earned excessive salaries before the introduction of SoP. Nevertheless, numerous studies report that the introduction of SoP had positive effects on firms' market values (Cai and Walkling, 2011; Ferri and Maber, 2013; Cuñat, Giné, and Guadalupe, 2016; Iliev and Vitanova, 2017) – with Larcker, Ormazabal, and Taylor (2011) being the only exception. This suggests that "investors perceived say on pay to be a value enhancing mechanism" Ferri and Maber (2013, p.529). One important driver of voting outcomes are proxy advisory firms that provide voting recommendations to shareholders majorly based on firm performance and the level of CEO pay (Ertimur, Ferri, and Oesch, 2013). According to Malenko and Shen (2016), vote-against

recommendations cause a 25 percentage-point drop in SoP approval rates. We contribute to this literature by providing the first direct measurement of the value that investors are willing to pay for the right to vote in SoP ballots – a gap in research already suggested by Yermack (2010). Further, we analyze how this value depends both on SoP characteristics, firm-specific features, and the country of incorporation.

The DiD methodology applied in this paper might be prone to two critiques. A first potential concern is that shareholders might potentially anticipate the effects on voting values prior to the introduction of SoP. However, it is important to note that our option-based method extracts voting values only for the next annual meeting. Thus, each voting value reflects only the value that shareholders are willing to pay to vote at the upcoming annual shareholder meeting. Particularly, the options' maturities used to extract voting values never include more than one meeting and thus they cannot react to anticipated increases in voting values in the future. A second potential concern is that other regulatory changes – that are introduced simultaneously to the introduction of SoP and have also a severe impact on voting values – may distort our results. First, due to the use of multiple staggered shocks across 14 countries and time, such distortions are unlikely. All, or most, shocks would have to suffer from the same bias in order to affect our results. Otherwise, the distortion would be mitigated by data from other countries. Second, we manually checked the laws that were passed in the years of SoP introduction. To the best of our knowledge, there is no legal shock that is likely to have (i) a strong impact on voting values and (ii) is spread all over our sample to systematically bias our findings. We accompany these theoretical arguments in favor of the suitability of our empirical approach with several placebo tests that reinforce our conviction that our DiD research design is well specified. In addition, we also carry out a specific US-based analysis that exploits the time pattern of SoP votes (every two years or every three years) to show that the basic findings of our study also hold by exploiting a different exogenous source of variation in SoP votes.

The remainder of this study is organized as follows. Section 2 describes the SoP legislation across the 14 countries in our sample and develops testable hypotheses. Section 3 introduces the research design (Subsection 3.1) and the sample (Subsection 3.2). Section 4 presents and discusses the empirical findings. Section 5 concludes.

2 Say on Pay Legislation and Hypotheses Development

2.1 Say on Pay in Different Countries

Say on pay allows shareholders to vote on the compensation of top management and therefore empowers them with important decision rights. Since 2002, numerous laws regarding mandatory shareholder votes on top-management compensation were introduced in the 14 countries of our sample. An overview of SoP regulations across countries is provided by Stathopoulos and Voulgaris (2016) and Thomas and Elst (2015), among others.

In 2002 (effective for the meeting season 2003), the United Kingdom was the first country to adopt a law that required public companies to hold advisory votes on executive remuneration at annual shareholder meetings (Ferri and Maber, 2013). The Commission of the European Union proposed similar bills that mandate non-binding votes on executive-directors' compensation for the member states. Italy and Belgium introduced such votes in 2012 (Correa and Lel, 2016; Belcredi, Bozzi, Ciavarella, and Novembre, 2014). The Italian regulation additionally included a provision that demanded binding votes in financial firms (banks and insurance companies). For French firms under the amended AFEP-MEDEF governance code[1] – effective starting from the meeting season 2014 – annual advisory votes on the compensation of each executive are recommended ("comply or explain").[2] In contrast to many other countries, Germany has not introduced mandatory votes (Vesper-Gräske, 2013). However, through the introduction of a new remuneration bill in 2009,[3] the supervisory board received the competence to include advisory votes on executive-director compensation at annual meetings. Typically, voluntarily implemented votes are subject to a self-selection bias as the inclusion decision is endogenous. Firms with poor compensation standards that may anticipate a rejection of their plans from shareholders are unlikely to offer such votes. However, the German bill enabled shareholders of corporations to force SoP votes if the supervisory board

[1] Potentially small- and mid-cap firms could alternatively follow the rules of the governance code "MiddleNext" (that does not recommend say on pay votes). Manual checks show that a negligible fraction of French firms in our sample adhere to this code.

[2] Despite SoP votes are not compulsory in France, the pressure to hold a vote is extremely high. For instance, the proxy advisor Institutional Shareholder Services (ISS) comments on the potential non-compliance with the rule that "ISS considers it unlikely that any explanation could justify a situation whereby an issuer referring to this code would fail to propose a say on pay vote" and that "ISS will generally recommend a vote AGAINST [sic!] the approval of the annual financial statements and, if filed to the AGM agenda, the reelection of the chairman of the compensation committee." See: ISS FAQ: say on pay Remuneration Changes France 2014 under `https://www.issgovernance.com/file/2014_Policies/ISSFranceRemunerationFAQ.pdf`.

[3] Gesetz zur Angemessenheit der Vorstandsvergütung.

didn't introduce them. Due to the high pressure that this amendment had on German firms, we classify the general meetings of German companies in the first years as meetings with non-binding SoP votes. All other annual meetings in Germany are not considered to include mandatory SoP votes. Advisory votes in the United States came into force in January 2011. Australia introduced advisory votes already in 2004, and made them more powerful in 2011 by introducing the so-called "two-strike" rule (Thomas and Elst, 2015).

[INSERT TABLE 1 APPROXIMATELY HERE]

Stricter, binding laws have been introduced in other countries. In Sweden, since 2006 public firms have to hold an annual binding vote on the compensation policy. The Netherlands, the UK, and Spain require binding SoP votes at general meetings since 2004, the end of 2013, and 2015, respectively. In these countries, SoP votes have to be held only every third year, or whenever a company significantly alters its compensation policy. For companies incorporated in these countries, we manually checked when binding SoP votes took place.

Switzerland introduced annual binding votes at the end of 2013 (Wagner and Wenk, 2017). While some Swiss firms implemented these changes already in the 2014 general-meeting season, 2015 was the first year when all large firms had to hold these votes. Similarly, since 2017 also in France annual binding votes on the compensation policy of top-managers are required by law. The only country in our sample which never introduced legal requirements on say on pay votes in the period 2002-2017 is Finland.

[INSERT FIGURE 1 APPROXIMATELY HERE]

2.2 Hypotheses Development

In line with previous literature, voting rights should be valued most in the forefront of meetings covering important agenda items, i.e., if shareholders are entitled to vote on resolutions with an economically significant impact on a company's prospect or the shareholders' expected return on

investment (Rydqvist, 1996; Kalay, Karakaş, and Pant, 2014). Thus, with respect to SoP ballots, shareholders should value the opportunity to vote if there is a chance to introduce more efficient compensation contracts (Bebchuk, 2007; Ferri and Maber, 2013). Besides this instrumental value of SoP votes, shareholders may price the intrinsic psychological benefit (Bartling, Fehr, and Herz, 2014) of participating in SoP ballots and expressing their opinion and sentiment on compensation issues. This effect can be expected to be especially strong for say on pay votes because the compensation of top management is a particularly salient topic which receives broad public coverage in the media and often even triggers socially-motivated shareholder activism (Wagner and Wenk, 2017). Further, shareholders might overestimate the probability of being pivotal in say on pay votes, which may let them value both the instrumental and the intrinsic component of voting rights more than they should (Dittmann, Kübler, Maug, and Mechtenberg, 2014).

With respect to the instrumental value of mandatory SoP votes, there is evidence that already their introduction has triggered positive stock-price reactions, especially in firms with high abnormal CEO compensation and/or performance-insensitive compensation packages (Cai and Walkling, 2011; Ferri and Maber, 2013; Cuñat, Giné, and Guadalupe, 2016, among others). Further, the introduction of SoP votes has been shown to lead to an increase in the sensitivity of CEO pay for performance (Correa and Lel, 2016; Iliev and Vitanova, 2017; Ferri and Maber, 2013). Nonetheless, the fraction of votes against the compensation plans proposed by management has been generally low – in UK firms, on average 14.0% in 2003 and 10.9% in 2004 (Ferri and Maber, 2013) and in US-firms 9.6% during the proxy season of 2011 (Ertimur, Ferri, and Oesch, 2013) – so that they have been very rarely rejected. In both countries, the total rejection rates amount to merely 2% (Ertimur, Ferri, and Oesch, 2013; Ferri and Maber, 2013).

In this paper, we study whether and to what extent the upgrade of voting rights triggered by the introduction of SoP laws (that mandate firms to hold votes on executive compensation) leads to an increase in the market value of shareholders' voting rights. Based on the mentioned evidence, we expect that SoP votes are not universally valuable to shareholders. Even though the right to vote on managerial compensation can be seen as an additional free option for shareholders to express their opinion on pay practices, exercising this option is not free of costs. After the introduction of say on pay, shareholders have to perform time- and/or cost-intensive research on top-management pay.

This may often require paying for expensive services provided by proxy advisory firms who assist investors in the decision on whether and how to vote. In many countries, such as Switzerland[4] and the US (Larcker, McCall, and Ormazabal, 2015), abstention from voting is not possible for selected institutional investors. Additional anecdotal evidence suggests that proxy advisors consult firms that hold votes on how to set pay and how to optimally prepare votes (Kronlund and Sandy, 2016). Therefore, for shareholders that are satisfied with current pay policies, the introduction of say on pay may actually represent a costly burden rather than an additional free option.

H1: General value of SoP votes

We expect that the introduction of SoP does not per se increase the market value of shareholder voting rights.

We expect voting values to increase upon the introduction of mandatory SoP votes only if compensation practices are inefficient, i.e., if a firm's top management receives a larger salary than justified by firm performance. In this case, shareholders may find that a redirection of pay (for instance by making compensation more performance-sensitive) appealing because it would reduce agency costs. In such situations, investors value the opportunity to vote and are provided with the necessary monetary incentives to actively engage in a campaign against current pay practices.

H2: Value of SoP votes for firms with excess top-management pay

We expect the introduction of SoP votes to have a more positive impact on voting values in firms with excessive top-management pay than in firms without excessive managerial pay.

Binding votes should trigger stronger effects than advisory votes since in the former case the board's willingness to implement the shareholders' decision is not required. Nonetheless, reputational concerns of board directors could also force them to act according to the shareholders' preferences upon advisory votes (Bebchuk, 2007).[5]

H3: Advisory vs. binding SoP votes

[4]Swiss Investors Code – 12/2017

[5]Bebchuk (2007) argues that the re-election probability for directors is less dependent on managers when the shareholders' decision power is high.

Due to their stricter nature, we expect binding votes to have a stronger impact on voting values than advisory votes.

3 Empirical Framework

3.1 Research Design

We test the impact of the passage of SoP laws on the value of shareholder voting rights by estimating the following difference-in-differences regression with industry-, country-, and year-fixed effects for ten countries between 2002 and 2017:

$$VotingValue_{i,t} = \alpha + \beta \cdot SoP_{i,t} + \gamma \cdot Comp_{i,t} + \lambda \cdot SoP_{i,t} \cdot Comp_{i,t} + \delta \cdot X_{i,t} + \varepsilon_{i,t}, \qquad (1)$$

where the dependent variable is the voting value of firm i at the annual meeting in year t; voting values are measured in percent of the firm's stock price (voting yield); SoP is a dummy that equals one for all years following the staggered introduction, i.e., the implementation, of mandatory say on pay votes in country i and zero otherwise. This approach is regularly used by corporate-governance scholars (Bertrand and Mullainathan, 1999, 2003; Correa and Lel, 2016; Fauver, Hung, Li, and Taboada, 2017). In some regression specifications, we split SoP in two dummies, $AdvisoryVote$ and $BindingVote$, for advisory and binding votes, respectively. Interactions with proxies for adverse compensation, $Comp$, are used only in some specifications and are laid down in Subsection 3.2. $X_{i,t}$ is a set of controls for firm's financial and governance conditions as well as economy-wide characteristics. We use different combinations of country, year, and industry fixed effects. Our standard errors are robust by double clustering at the firm levels and the firm times year levels.

We follow the newer literature on voting-right values (Gurun and Karakaş, 2016; **?**; Kalay, Karakaş, and Pant, 2014; Kalay and Pant, 2009; Karakaş, 2009) and extract them from option prices. The measurement of voting values in this study is based on the direct optimization method by Kind and Poltera (2013), which is similar to Kalay, Karakaş, and Pant (2014) but does not suffer

from a pricing bias in the absence of European-style options.[6] A firm's stock price includes both the right to receive cash flows and the right to vote. To disentangle the two values, the method exploits the similarity of voting values and dividends. Investors who buy a stock before the ex-dividend date are entitled to receive the next dividend; investors who buy a stock after the ex-dividend date are not. The stock price just before the ex-dividend date includes the (present) value of the next dividend; the stock price just after the ex-dividend date does not. Similarly, shares owned before the record date entitle the holder to vote at the upcoming meeting; shares bought after the record date don't. The stock price just before the record date includes the (present) value of the right to vote at the upcoming general meeting; the stock price just after the record date does not. Thus, if the right to vote at a certain meeting is valuable, a price drop after the record date should be discernible on average. The method utilizes the fact that the existence of voting values does not only affect the expected values of stock prices, but also the values of options written on that stock. Importantly, in contrast to share prices which are likely very volatile also around the record day, option prices reflect the expected effect of voting values of stock prices. This quantity is much less volatile (and can be measured much more precisely) than the actual change in the stock price on the record date. In the option-pricing method, voting values are modeled as cash dividends, but the value of the voting value is not an input (as the value of the dividend would be), but it is estimated during the optimization alongside with the implied volatility of that stock.

The use of option prices to extract voting-right values has several advantages:[7] First, the option approach allows us to measure voting values over to the options' (limited) maturity. In contrast, a stock-based approach would capture voting values for an infinite future time horizon. Therefore, the option-implied approach isolates voting values for a specific shareholder meeting and enables us to control for distorting events around it. Second, voting values extracted from option prices can be updated frequently, typically on a daily basis. Third, they reflect the marginal investor's willingness to pay for voting rights rather than a control premium. Finally, the option-based method allows us to measure the value of voting rights for a broad sample of firms, which mitigates potential selection and endogeneity issues that are rather severe in the other two approaches. Appendix A provides the details on the applied numerical option-pricing procedure, the extraction of voting yields, and

[6] A more detailed description of the procedure follows in Appendix A.

[7] More classical valuation models are the dual-class-shares approach (e.g. Rydqvist, 1996; Zingales, 1994) and the block-trade approach (Barclay and Holderness, 1989; Bradley, 1980; Dyck and Zingales, 2004).

other model-related issues.

3.2 Sample, Data Sources, and Descriptive Statistics

The empirical valuation of voting values is based on public companies between 2002 and 2018 in the 14 countries in Australia, Asia, Europe, and North America from with the most developed financial markets, i.e., Australia, Belgium, China, Finland, France, Germany, Hong Kong, Italy, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom, and the United States. We use all observations with liquid exchange-traded options. The stock and option data stems from OptionMetrics' Ivy DB Europe, Ivy DB Asia, and Ivy DB USA databases, which combine quotes of the most important derivative markets, e.g., Eurex, Euronext, and ICE Futures Europe. The risk-free interest rates and dividends are also obtained from this dataset. To obtain the exact maturities needed to match the options' contractual expiration times, we interpolate the available risk-free rates. Par value reductions (mainly for Swiss firms) as well as missing dividends are hand-collected from financial reports. The average market capitalization of firms in our sample is approximately € 21bn and thus similar to the STOXX Europe 600 index (€ 17bn on average). This comparison shows that the focus on liquid exchange-traded options do not produce a selective sample biased toward large companies, but rather that the sample includes large, mid, and small caps. To minimize the influence of valuation biases, option contracts are filtered with criteria common in the option-pricing literature (see, for example, Rubinstein, 1985; Dumas, Fleming, and Whaley, 1998; Peña, Rubio, and Serna, 1999; Cont and Da Fonseca, 2002).[8] and voting yields are winsorized at the 1% level to exclude outliers. The final sample of voting values covers 1,500 firms with about 8,800 firm-year observations. Table 2 provides information on the sample by showing the number of firms, the number of general meetings, the number of option quotes used, as well as the number option quotes per meeting across countries.

[INSERT TABLE 2 APPROXIMATELY HERE]

To control for the firm's equity and ownership structure, as well as economy-wide characteristics, we use the following variables constructed from data of COMPUSTAT U.S. and Global. *log(Total Assets)* refers to the natural logarithm of the total asset value in million Euro. *Leverage* is defined

[8]The option-contract filtering is described in Appendix B.

as the ratio of total debt divided by total assets. Further, we control for industry-adjusted firm performance, as measured by the firm's stock return in the last year adjusted by the median SIC2-industry return (*Ind. Adj. Firm Perf.*), and the firm's book to market ratio (*Book To Market*). In line with the previous literature on voting values, we control for the ownership structure of the firm (e.g., Zingales, 1994). To do so, we use data from Thomson Reuters Datastream as well as data hand-collected from firms' financial reports. *Majority Shareholder* is a dummy that equals one if a single shareholder holds the majority of voting rights during the general meeting. The dummy *Widely Held* indicates a dispersed ownership structure where no single shareholder or shareholder group holds a significant stake in the company. Thereby, we follow Faccio and Lang (2002) and apply a control threshold of 10%. *Dual Class* indicates whether a firm has issued more than one class of shares with different voting rights per face value.[9] Table 3 contains descriptive information about variables in the sample split by the treatment variables. Due to missing balance sheet and ownership data, we can perform our baseline regressions in Table 5 only with the remaining 5,700 observations.

[INSERT TABLE 3 APPROXIMATELY HERE]

Our regression specifications also include proxies of suboptimal compensation practices computed from Capital IQ:[10] Our baseline regression specification uses the variable *Excess Pay* as defined by Correa and Lel (2016) and earlier used in different variations by Core, Holthausen, and Larcker (1999), Cai and Walkling (2011), and Ferri and Maber (2013). In particular, we regress the log of total CEO compensation on the logarithm of sales, industry-adjusted stock returns, the market-to-book ratio, annualized stock return volatility, leverage, gross domestic product (GDP) growth, and year and industry fixed effects. The residuals are defined as *Excess Pay*. Therefore, the variable measures the difference between the actual CEOs' pay and their predicted values based on performance, firm characteristics, and economic conditions. In line with the previous literature, the mean of it is approximately zero. Despite the worldwide coverage of CIQ, only about 4,000 observations contain

[9] Some of the companies in the sample divide their equity capital in registered and bearer shares but both types of shares have the same face value and voting power. Such an equity structure is not classified as dual class.

[10] As Correa and Lel (2016) point out, cross-country studies either use BoardEx or Standard&Poor's Capital IQ (CIQ). CIQ has a broader coverage outside the UK and the US. We thus follow Correa & Lel (2016) and use CIQ for our study.

the compensation information we need to perform our tests on excess compensation in Table 6 and 7.

The median voting yield amounts to 1.51% (mean: 1.49%) of the stock price for the entire sample of meetings between 2002 and 2018.[11] Using an option-based approach Kalay, Karakaş, and Pant (2014) find voting values at general meetings of 0.24% for companies incorporated in the US. As mentioned by Kalay, Karakaş, and Pant (2014) voting values measured using the dual-class and the block-trade approach vary widely across countries and over time with values between 1.0% and 81.5%. For the sake of simplicity and easier interpretation, we use voting values measured in Euro instead of voting yields in the following.

[INSERT TABLE 4 APPROXIMATELY HERE]

4 Results

4.1 Average Treatment Effect

In this section, we run difference-in-differences regressions to test whether the introduction of SoP increases the average voting-rights value of firms that were "treated" with mandatory SoP votes, relative to untreated firms. Table 5 shows the results of DiD regressions that differ with respect to the inclusion of controls as well as country, year, and industry fixed effects. As the coefficient of the dummy *SOP Vote* is close to zero and not statistically significant, we conclude that the introduction of mandatory SoP votes does not per se increase the average value of shareholder voting rights. Unreported results show that we also do not detect a significant effect if we split the dummy *SOP Vote* in a dummy for advisory votes and a dummy for binding votes, respectively.While this finding is in line with Hypothesis 1, it calls for additional analysis on whether the introduction of SoP might be valued by shareholders under specific circumstances.

[INSERT TABLE 5 APPROXIMATELY HERE]

[11] This value is similar to the median voting-right value for months with annual meetings of 1.66% (mean: 1.82%) obtained in the empirical study of Kind and Poltera (2013) which covers French, German, Dutch, and Swiss firms between 2003 and 2010. If we restrict our sample of the current paper to these sample countries and the same time period, the median is 2.19% (mean: 2.41%).

The results related to the set of control variables in the models are broadly in line with expectations and previous literature. *Majority Shareholder* is negatively related with voting yields. Whenever a single shareholder owns more than 50% of the voting shares, she is in control and most decisions can be carried out by her – thus the incentives to acquire further shares to improve her voting position or that of other investors are low (see, e.g., Zingales, 1994; Rydqvist, 1996). The regression provides further evidence that dispersed ownership adversely affects voting values, as indicated by the negative (albeit insignificant) coefficient of *Widely Held*. In fact, in a firm with a dispersed ownership structure, there are no large investors who are willing to pay a premium for acquiring additional voting rights to reach control. Additionally, the coordination among minor shareholders for collective action is likely too expensive when compared to the relatively small potential monetary benefits from active involvement. Thus, the relation between ownership concentration and voting values follows an inverted u-shape (see, e.g., Kind and Poltera, 2013): Voting values are low both in firms with dispersed ownership (*Widely Held*) or a majority investor (*Majority Shareholder*).

4.2 Heterogeneous Treatment Effects

While there is no evidence supporting the existence of an average treatment effect on voting values from the SoP introduction, significant treatment effects may be present for certain subgroups of firms, depending on their firm-specific characteristics and the peculiarities related to the type of SoP regulation.

4.2.1 Excessive Managerial Pay

Previous literature and reports by practitioners identify in the excessive remuneration of top managers the major source of shareholders' dissent in SoP votes (e.g., Ertimur, Ferri, and Oesch, 2013). Further, as mentioned by Kronlund and Sandy (2016), among others, high levels of CEO pay attract public scrutiny. Table 6 shows the results of multivariate DiD regressions that test whether the effect of say on pay on shareholders' voting-right values depends on the firm-specific compensation policy of top managers. In particular, we follow the related literature (see Ferri and Maber, 2013; Correa and Lel, 2016) and focus on *Excess Pay* – defined as the excess compensation of the firm's CEO – as a proxy for excessive, and thus suboptimal pay. The reported regressions are based on the specification by Correa and Lel (2016).

[INSERT TABLE 6 APPROXIMATELY HERE]

The regression results in Table 6 evidence that in firms with above-average excess CEO compensation is SoP regulations increase voting values more than in firms with below-average excess CEO compensation. Thus, while the adoption of SoP does not seem to affect voting values of the average firm, it exerts the opposite effect on firms with excessive and non-excessive CEO pay. In other words, we show that, in compliance with Hypothesis 2, excess CEO compensation moderates the effect of SoP on voting values.

4.2.2 Advisory vs. Binding SoP Votes

To address the interesting (but often neglected) fact that SoP regulations differ across countries, especially in terms of their strictness for management, we split the previous treatment dummy, *SoP Vote*, into two distinct dummy variables, *Advisory SOP* and *Binding SOP*. Consequently, in Table 7, we test if the effect of introducing mandatory SoP votes depends on whether the outcomes of SoP votes are either advisory or binding for management.

[INSERT TABLE 7 APPROXIMATELY HERE]

Table 7 shows that *Excess Pay* moderates the effect of mandatory advisory votes: Firms with above-average excess CEO compensation experience a significantly higher change in voting values than firms with below-average excess CEO compensation. Interestingly, this moderating effect cannot be detected for the introduction of binding SoP votes. In other words, while there are circumstances (suboptimal managerial pay) in which the empowerment of shareholders with advisory votes on managerial compensation is valuable, binding SoP votes never lead to an increase in voting values. In this respect, advisory SoP votes seem to be preferable and superior to binding SoP votes. While in the hypotheses development we argued that we expected the binding feature of SoP votes to add strength, strictness, and thus economic value to shareholders' rights (Hypothesis 3), the opposite is true empirically: Shareholders do not seem to appreciate the introduction of mandatory and binding SoP votes.

Although prima facie surprising, the finding that advisory votes are valued more by shareholders than the stricter binding votes complies with some previous evidence in related research and is also

backed by sensible theoretical arguments. For instance, when studying the stock price reactions following the introduction of binding say on pay in Switzerland, Wagner and Wenk (2017) find evidence in favor of a trade-off between the benefits and costs of binding shareholder votes on top-management compensation. In particular, Wagner and Wenk (2017) argue that on the one hand binding SoP votes increase the ability of shareholders to use managerial pay to align managerial interests with those of shareholders. On the other hand, however, shareholders' power to set pay ex post decreases CEOs ex-ante incentives to make firm-specific investments (as they fear not to receive the full reward for their effort). Thus, these diminished ex-ante incentives to exert effort and engage in firm-specific investments may lead to lower firm values (as shown in Wagner and Wenk, 2017) and hinder voting rights to become more valuable (as shown in our study). This nontrivial trade-off between benefits and costs of binding votes was already formalized in a theoretical model by Göx, Imhof, and Kunz (2014).

In more general terms, shareholders may value the higher flexibility of advisory votes as compared to binding votes. For instance, the former could also allow shareholders to signal dissent with the board on issues unrelated to compensation, such as, for instance, unsatisfying firm performance (Fisch, Palia, and Solomon, 2018). Since failures in passing binding SoP votes will necessarily lead to adjustments in managerial compensation, binding SoP votes are unsuitable as flexible means of communication. In this respect, it seems plausible that the intrinsic flexibility of advisory votes which arises from the possibility of subsequently overruling by the board of directors shareholder decisions – e.g., if the implementation of vote results would really be harmful for the firm's prospects – is particularly valued by shareholders.

4.3 Persistence of the Treatment Effect

Figure 2 depicts the development of the predicted voting-right value from Model 4 in Table 7 before and after the SoP introduction. We split the sample in firms with excessive managerial pay (solid line with squared markers) and for firms without it (dashed line with triangular markers). The figure shows clearly that the introduction of SoP votes triggers a strong effect that is persistent over time for firms with excessive pay.

[INSERT FIGURE 2 APPROXIMATELY HERE]

4.4 Alternative Identification following (Kronlund and Sandy, 2016): Within-firm variation of voting rights

Difference-in-Differences setups can be flawed if other (potentially unknown) shocks coincide with the external shock used for the study. Despite the fact that we are confident that this is unlikely the case for our study (see Introduction), we address these concerns by adding another natural experiment to our analysis. We follow the identification strategy by (Kronlund and Sandy, 2016) who exploit the fact that shareholders in the US could decide on the frequency of SoP votes (annual, biennal or triennal vote) after the regulation was introduced. Due to the fact that SoP voting is only possible at meetings whose agendas contain SoP votes according to the schedule, a within-firm time-varying pattern of voting rights results. Accordingly, voting values should only react in SoP vote years. For this reason, we code SoP vote years as "1" in our dummy *SoP Vote Year* if voting is scheduled by the firm as a voting year and as "0" if this is not the case. Due to the fact that, according to (Kronlund and Sandy, 2016) and our own analysis, the firms stick to the schedule, we do not go the detour and model the *SoP Vote Year* as an instrumental variable. We complement our model with firm-specific controls (as described in the sample section) as well as firm, firm and year, firm and year and firm-year, as well as firm, year firm-time-trend fixed effects.

[INSERT TABLE 8 APPROXIMATELY HERE]

The results of the additional tests support our findings from the difference-in-differences analysis. We find that SoP is valued more if the top management receives excessive compensation. The effect is robust for all specifications.

4.5 Placebo Tests

Despite the fact that our regressions indicate a strong and significant effect of new voting rights (through the introduction of say on pay) on voting values for excess pay firms, we address potential concerns in the following.

First, the difference-in-differences methodology assumes that treated and non-treated firms are affected similarly by the shock of the law (introduction of SoP). If observable or unobservable char-

acteristics of the treated and the control group are very different from each other, this assumption can be problematic. While Table 3 shows that firms with and without votes in place are in fact very different, our DiD setup using the staggered introduction of SoP in different years this problem is mitigated. Even firms that are indeed already treated (i.e. have either advisory or binding votes in place) serve as controls for countries that currently pass SoP laws.

Second, the voting value extraction method might capture noise. To address this potential criticism, we measure voting values at dates very close to shareholder meetings when voting is not possible. Due to the fact that voting is not possible (i.e. no voting right exists), voting values should be zero. Further, the limited maturity of the options which we use to extract voting values is also not long enough to contain another voting event. In line with these conjectures, we find that not only the voting values derived 45 days before and after the meeting, but also their mean is statistically indifferent from zero. Further, we show that the significantly positive voting values from our main specifications are significantly different from the placebo voting values (i.e. zero) and show that this is in fact the case for all of our specifications. These tests show that our measure of voting values indeed does not measure noise.

Third, the DiD methodology might fail to measure the effect of receiving the right to vote on SoP on voting values because another regulatory change happened at the same time. To the best of our knowledge, no other significant voting rights were introduced simultaneously in the countries of our sample. In the US, a large number of regulation was introduced. To exclude that the introduction of other laws impacts our findings, we use an alternative identification following Kronlund and Sandy (2016) in Section 4.4 and show that the results are robust to a time-varying pattern that is specific to say on pay votes.

Fourth, voting values might measure noise that is somehow correlated to our SoP dummies and thus cause significant results. If this was the case, it would be possible that the placebo voting values (measured 45 days after the actul annual meeting date) also measure noise that is correlated with our focus variables. If we perform our regressions from Tables 6, 7, and 8 again with our placebo voting values, all effects vanish. See Table 9 for the placebo test on the general SoP dummy interacted with CEO Excess Pay, Table 10 for the Table with advisory and binding SoP dummies,

and Table 11 for the placebo tests for the SoP vote year identification strategy.

[INSERT TABLE 9 APPROXIMATELY HERE]

[INSERT TABLE 10 APPROXIMATELY HERE]

[INSERT TABLE 11 APPROXIMATELY HERE]

5 Conclusion

The introduction of votes on executive compensation was highly debated both by academics and practitioners. By using a difference-in-differences approach and within-firm variations of SoP voting rights, we test whether and to what extent shareholders value this upgrade in their voting rights. Following the newer literature, we extract voting values from option prices. As a source of exogeneity, we exploit the unique setup of the staggered introduction of say on pay laws across Australia, Asia, Europe, and the US in the years between 2002-2018. Using both methods, we show that the opportunity to vote on managerial compensation is valued by shareholders whenever pay is not optimally set, e.g., if the firm's CEO receives excessive pay. This effect is persistent over time and robust to many different specifications. The effects are driven by advisory votes, which indicates that shareholders value flexibility (advisory votes) over strictness (binding votes), a piece of evidence that should not be overlooked by regulators. Taken together, the findings of this paper indicate that – even though previous literature shows that comparably few SoP votes are rejected – say on pay is a powerful governance tool.

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Figure 1: Mandatory SoP Votes in 14 Countries around the World

This figure illustrates the introduction of say on pay votes across Europe for the countries of our sample. Dashed lines represent advisory, solid lines binding say on pay votes in place. Our sample includes data from 2002-2018.

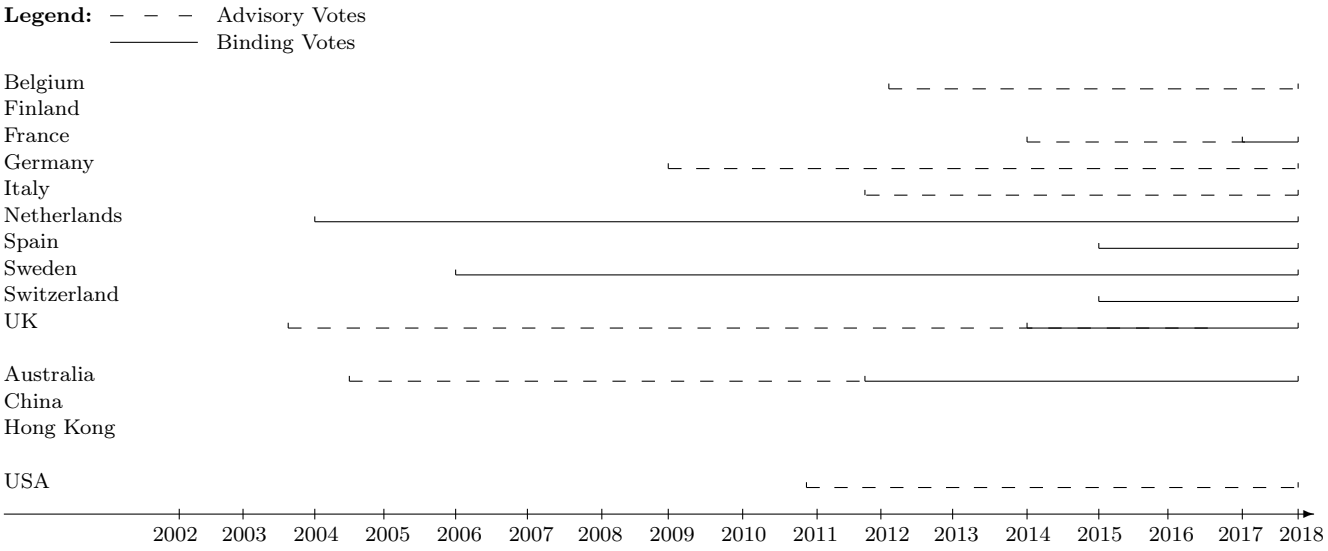


Table 2: Sample Description

This table summarizes this study's empirical sample of voting values. The first column defines the origin country of the respective firms. Columns two and three present the number of unique firms in the sample and the total number of held general meetings. In column four, the total number of option contracts used during the complete valuation process is shown followed by the average number of options applied per optimization step in column five. The last column displays the classification of each country according to the origin of its legal system.

Country	**Firms**	**General Meetings**	**Option Quotes**	**Options per Meeting**
Australia	69	617	33,720	54.65
Belgium	28	185	6,872	37.15
China	38	490	38,291	78.15
Finland	11	51	1,544	30.27
France	68	610	29,718	48.72
Germany	113	819	63,265	77.25
Hong Kong	23	212	26,879	126.78
Italy	78	347	17,162	49.46
Netherlands	78	531	68,389	128.79
Spain	31	91	1,893	20.80
Sweden	45	174	6,342	36.45
Switzerland	66	493	31,009	62.90
United Kingdom	77	487	13,934	28.61
United States	775	3,750	382,682	102.05
Total Sample	1,500	8,857	721,700	81.48

Table 1: SoP Regulations in Different Countries

This table summarizes the regulatory changes in 2002-2018 concerning say on pay in the countries of our sample. *Country* indicates the name of the country, *Regulation* indicates the content of the regulation; *Vote Type* specifies if shareholders vote on the Remuneration Report (indicated as "Report"), or on the Remuneration Policy ("Policy"); *Introduction* states the date from which new say on pay laws are effective and *Source* contains the reference to the respective law or governance code.

Country	Regulation	Vote Type	Introduction	Source
Belgium	Annual Advisory Vote	Report	Jan 1, 2012	Law on Corporate Governance and Executive Remuneration
Finland	-	-	-	-
France	Comply or Explain	Report	Jan 1, 2014	AFEP-MEDEF Code
France	Annual Binding Vote	Policy	Jan 1, 2017	"Sapin 2" - Law on Transperancy,
	& Annual Binding Vote	Report	Jan 1, 2018	Anti-Corruption and Economic Modernisation
Germany	At Board's Discretion	Policy	Aug 5, 2009	Gesetz zur Angemessenheit der Vorstandsvergütung (VorstAG)
	or on Shareholders' Demand			
Italy	Annual Advisory Vote[a]	Policy	Dec 31, 2011	Legislative Decree 58/1998 - Art 153, §3
Netherlands	Binding Vote if Policy Changes	Policy	Jan 1, 2004	Dutch Civil Code- Book 2, Article 135 & 145 Dutch Corporate Governance Code
Spain	Binding Vote all 3 Years	Policy	Dec 24, 2014	Ley de sociedades de capital - Article 529 novodecies
	or if Policy Changes			
Sweden	Annual Binding Vote	Policy	Jan 1, 2006	Swedish Companies Act - S 51ff ch 7
Switzerland	Annual Binding Vote	Policy+Report	Jan 1, 2015	Ordinance Against Excessive Compensation (OaEC)
	& Annual Advisory Vote	Report		
UK	Annual Advisory Vote	Report	Dec 31, 2002	Companies Act 1985 - Schedule 7A
UK	Binding Vote every 3 years	Policy	Oct 1, 2013	Companies Act 2006, s. 439A
	or if Policy Changes			
	& Annual Advisory Vote	Report		
Australia	Annual Advisory Vote	Report	July 1, 2004	Corporations Act of 2001, section 250R (2)
Australia	Binding Vote ("Two-Strike Rule")	Report	July 1, 2011	Shareholder Rights Directive 2017/828
China	-	-	-	
USA	Advisory Vote at least every third year	Policy	January 24, 2011	Dodd-Frank Wall Street Reform and Consumer Protection Act

[a]Binding for Financials since 2011

Table 3: Descriptive Statistics by Vote Type

This table contains summary statistics of the control variables used in the paper. The sample contains 2508 observations from 2002-2017. The variables are defined as described in 3.2. Panel A, B, and C include information for observations without say on pay vote, with advisory, and binding votes, respectively. Panel D contains figures for the full sample. Observations mentioned here are firm years for which we can obtain a voting value and the respective firm characteristic.

Panel A: No Vote	**N**	**Mean**	**Median**	**Std. Dev.**	**25% Perc.**	**75% Perc.**
log(Total Assets)	3,768	9.65	9.59	1.80	8.35	10.78
Leverage	3,766	0.64	0.63	0.23	0.50	0.79
Majority Shareholder	3,250	0.32	0.00	0.47	0.00	1.00
Widely Held	2,997	0.30	0.00	0.46	0.00	1.00
Dual Class	3,261	0.09	0.00	0.29	0.00	0.00
Book to Market	3,583	0.40	0.25	0.52	0.01	0.61
Ind. Adj. Firm Perf.	3,716	0.03	-0.00	0.52	-0.23	0.19
Panel B: Advisory Vote	**N**	**Mean**	**Median**	**Std. Dev.**	**25% Perc.**	**75% Perc.**
log(Total Assets)	3,018	9.32	9.20	1.79	8.04	10.48
Leverage	3,017	0.65	0.63	0.25	0.49	0.79
Majority Shareholder	2,392	0.13	0.00	0.33	0.00	0.00
Widely Held	2,267	0.42	0.00	0.49	0.00	1.00
Dual Class	2,623	0.03	0.00	0.18	0.00	0.00
Book to Market	2,921	0.21	0.01	0.43	0.00	0.20
Ind. Adj. Firm Perf.	2,989	0.03	0.00	0.47	-0.22	0.23
Panel C: Binding Vote	**N**	**Mean**	**Median**	**Std. Dev.**	**25% Perc.**	**75% Perc.**
log(Total Assets)	951	9.49	9.15	1.75	8.26	10.45
Leverage	951	0.63	0.61	0.21	0.48	0.77
Majority Shareholder	952	0.23	0.00	0.42	0.00	0.00
Widely Held	848	0.06	0.00	0.24	0.00	0.00
Dual Class	876	0.10	0.00	0.30	0.00	0.00
Book to Market	787	0.49	0.39	0.46	0.18	0.64
Ind. Adj. Firm Perf.	907	0.02	0.00	0.41	-0.19	0.16
Panel D: Full Sample	**N**	**Mean**	**Median**	**Std. Dev.**	**25% Perc.**	**75% Perc.**
log(Total Assets)	7,737	9.50	9.40	1.79	8.22	10.64
Leverage	7,734	0.65	0.63	0.24	0.50	0.79
Majority Shareholder	6,594	0.24	0.00	0.43	0.00	0.00
Widely Held	6,112	0.31	0.00	0.46	0.00	1.00
Dual Class	6,760	0.07	0.00	0.26	0.00	0.00
Book to Market	7,291	0.33	0.10	0.49	0.00	0.51
Ind. Adj. Firm Perf.	7,612	0.03	0.00	0.49	-0.22	0.20

Table 4: Voting Values by Country

This table provides descriptive statistics of the voting values extracted from option quotes written in the stock of European companies between 2002 and 2018 in the forefront of their annual meetings. For each subsample, the mean voting value, three quartiles, and the number of firm-year observations are presented.

Country	**Mean**	**25% Perc.**	**50% Perc.**	**75% Perc.**	**N**
Australia	-0.05	-0.01	0.01	0.03	547
Belgium	0.07	-0.04	0.04	0.14	178
China	0.02	-0.01	-0.00	0.00	174
Finland	0.16	-0.03	0.01	0.04	50
France	0.14	0.04	0.14	0.28	576
Germany	0.08	0.01	0.06	0.15	788
Hong Kong	-0.02	-0.07	-0.02	0.01	181
Italy	0.01	0.00	0.01	0.02	276
Netherlands	0.04	0.00	0.03	0.07	498
Spain	-0.17	-0.05	0.01	0.05	89
Sweden	-0.04	-0.22	0.11	0.46	170
Switzerland	0.64	0.02	0.17	0.62	457
United Kingdom	0.00	-0.00	0.01	0.02	445
United States	0.11	0.01	0.07	0.15	3,311
Total	**0.10**	**0.00**	**0.04**	**0.14**	**7,740**

Table 5: General Effect of SoP on Voting Values

In these regressions, we estimate the general effect of the introduction of Say on Pay on voting values. Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parantheses. The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model > (6)
SoP Vote	0.03	-0.04	0.03	0.02	-0.00	-0.01
	(0.02)	(0.05)	(0.02)	(0.02)	(0.01)	(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	No	Yes	No	No	No
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	Yes	Yes	No	No	No
Firm f.e.	No	No	No	Yes	Yes	Yes
Country-spec. time trends	No	No	No	No	Yes	No
Country × Year f.e.	No	No	No	No	No	Yes
Adj. R-squared [0,1]	0.065	0.042	0.083	0.182	0.191	0.206
N	5,744	5,743	5,743	5,622	5,622	5,618

Table 6: Managerial Compensation as Moderating Variable

The regressions show the effect of the introduction of Say on Pay on voting values in dependence of the firm-specific variable *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parantheses.The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)	Model (3)	Model (5)	Model (6)
SOP Vote × Excess Pay	0.08***	0.09***	0.07***	0.08***	0.08***	0.07***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
SOP Vote	-0.02	-0.09	-0.01	-0.03	-0.05***	-0.05**
	(0.02)	(0.06)	(0.01)	(0.02)	(0.01)	(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	No	Yes	No	No	No
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	Yes	Yes	No	No	No
Firm f.e.	No	No	No	Yes	Yes	Yes
Country-spec. time trends	No	No	No	No	Yes	No
Country × Year f.e.	No	No	No	No	No	Yes
Adj. R-squared [0,1]	0.070	0.042	0.082	0.218	0.231	0.227
N	3,999	3,998	3,998	3,888	3,888	3,871

Table 7: Advisory vs. Binding SoP Votes

The regressions show the effect of the introduction of Say on Pay on voting values in dependence of the strictness of SoP votes (*Advisory SOP* or *Binding SOP*) and of the firm-specific variable *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parantheses. The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Advisory SoP × Excess Pay	0.08***	0.07***	0.07***	0.05*	0.05**	0.05
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Binding SoP × Excess Pay	0.01	0.07	0.03	0.04	0.05	0.04
	(0.04)	(0.05)	(0.03)	(0.06)	(0.06)	(0.07)
Advisory SoP	-0.02	-0.10	-0.01	-0.01	-0.03**	-0.03*
	(0.03)	(0.06)	(0.02)	(0.02)	(0.01)	(0.01)
Binding SoP	0.02	-0.07**	0.02	-0.00	-0.05	-0.02
	(0.04)	(0.03)	(0.03)	(0.05)	(0.03)	(0.05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	No	Yes	No	No	No
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	Yes	Yes	No	No	No
Firm f.e.	No	No	No	Yes	Yes	Yes
Country-spec. time trends	No	No	No	No	Yes	No
Country × Year f.e.	No	No	No	No	No	Yes
Adj. R-squared [0,1]	0.069	0.044	0.082	0.217	0.230	0.226
N	3,999	3,998	3,998	3,888	3,888	3,871

Table 8: Alternative specification: Time-Varying Voting Pattern

This table shows results based on the alternative identification strategy following (Kronlund and Sandy, 2016). In the US (among other countries), shareholders decided in 2010 if they will vote annually, every second year, or every third year on say on pay issues. We code each vote year as a one and non-voting years as zero. The regressions show the joint effect of a) having the right to vote on SoP in the vote year and b) the CEO receiving *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parentheses. The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)
SoP Vote Year × Excess Pay	0.08**	0.08**	0.08**
	(0.04)	(0.04)	(0.04)
SoP Vote Year	-0.05*	-0.05*	-0.05*
	(0.03)	(0.03)	(0.03)
Controls	Yes	Yes	Yes
Country f.e.	No	No	No
Year f.e.	Yes	Yes	Yes
Industry f.e.	No	No	No
Firm f.e.	Yes	Yes	Yes
Country-spec. time trends	No	Yes	No
Country × Year f.e.	No	No	Yes
Adj. R-squared [0,1]	0.125	0.124	0.125
N	1,805	1,805	1,805

Figure 2: Development of Voting Values over the SoP Adoption Year

This figure plots the predicted and demeaned voting values over the years of adoption of mandatory advisory SoP votes for firms with above median (*Excess Pay*) and firms with below median (*No Excess Pay*) excess CEO pay according to the measure of Correa and Lel (2016).

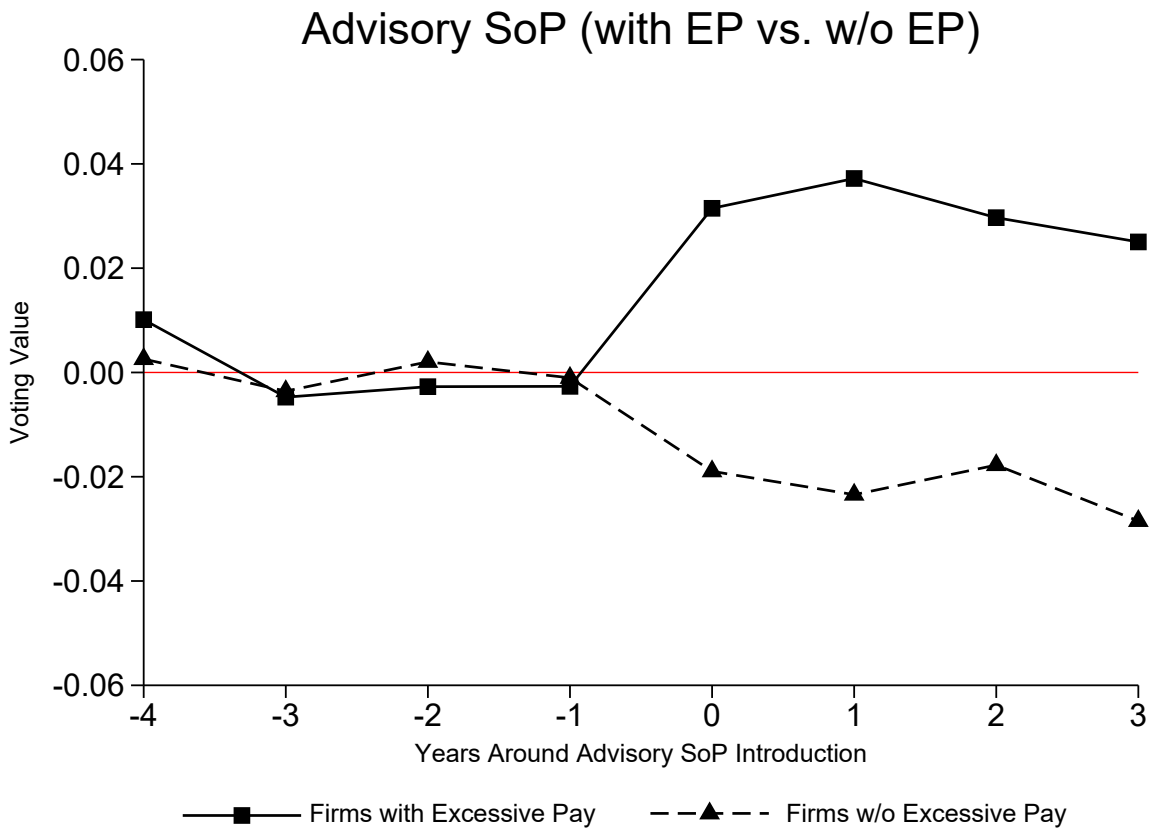


Table 9: Placebo Tests I

This table provides a robustness test for table 6. We measure voting values 45 days after the actual meeting when shareholders are not allowed to vote. Thus, voting values should be zero and SoP should not affect placebo voting values. The regressions show the effect of the SoP vote year and paying *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parentheses The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)	Model (3)	Model (5)	Model (6)
SOP Vote × Excess Pay	0.00	0.02	0.00	-0.00	-0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
SOP Vote	0.03**	-0.03	0.03**	0.02	0.00	0.02*
	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	No	Yes	No	No	No
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	Yes	Yes	No	No	No
Firm f.e.	No	No	No	Yes	Yes	Yes
Country-spec. time trends	No	No	No	No	Yes	No
Country × Year f.e.	No	No	No	No	No	Yes
Adj. R-squared [0,1]	0.059	0.049	0.069	0.162	0.165	0.185
N	3,716	3,716	3,715	3,612	3,612	3,588

Table 10: Placebo Tests II

This table provides a robustness test for table 7. We measure voting values 45 days after the actual meeting when shareholders are not allowed to vote. Thus, voting values should be zero and say on pay should not affect the placebo voting values. The regressions show the effect of the SoP vote year and paying *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parentheses The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Advisory SoP × Excess Pay	0.01	0.01	0.01	-0.02	-0.02	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Binding SoP × Excess Pay	-0.00	0.02	0.01	0.05	0.05	0.03
	(0.01)	(0.03)	(0.01)	(0.04)	(0.04)	(0.02)
Advisory SoP	0.02	-0.03	0.03**	0.03	0.01	0.04***
	(0.01)	(0.03)	(0.01)	(0.02)	(0.03)	(0.01)
Binding SoP	0.04	-0.05*	0.04	-0.00	-0.02	-0.01
	(0.04)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	No	Yes	No	No	No
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	Yes	Yes	No	No	No
Firm f.e.	No	No	No	Yes	Yes	Yes
Country-spec. time trends	No	No	No	No	Yes	No
Country × Year f.e.	No	No	No	No	No	Yes
Adj. R-squared [0,1]	0.058	0.050	0.068	0.162	0.165	0.185
N	3,716	3,716	3,715	3,612	3,612	3,588

Table 11: Placebo Tests: Time-Varying Voting Pattern

This table provides a robustness test for table 8. Instead of measuring voting values at the shareholder meeting, we measure them 45 days after the actual meeting when shareholders are not allowed to vote. Thus, voting values should be zero and SoP should not affect placebo voting values. The regressions show the effect of the SoP vote year and paying *Excess Pay*, as defined by Correa and Lel (2016). Across the models, we alter the use of controls and fixed effects. Standard errors are clustered on the firm level and shown in parentheses The significance levels of the t-statistics are as follows: * p < 0.1, ** p < 0.05, *** p < 0.01.

	Model (1)	Model (2)	Model (3)
SoP Vote Year × Excess Pay	-0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.03)
SoP Vote Year	-0.05	-0.05	-0.05
	(0.07)	(0.07)	(0.07)
Controls	Yes	Yes	Yes
Country f.e.	No	No	No
Year f.e.	Yes	Yes	Yes
Industry f.e.	No	No	No
Firm f.e.	Yes	Yes	Yes
Country-spec. time trends	No	Yes	No
Country × Year f.e.	No	No	Yes
Adj. R-squared [0,1]	0.171	0.171	0.171
N	1,735	1,735	1,735

Appendix

A Technical Details on the Extraction of Voting Values

Voting values are extracted from prices of single-stock options. This is possible because the value of voting rights accrues to investors in a similar way as dividends. It is well known that a stock is on average worth more at the last cum dividend date than afterward. Similarly, if voting rights are valuable, a stock should be worth more before the record date – when owning the stock entitles to participate to the upcoming annual general meeting – than afterward – when the very same stock does not include this right. In fact, in all 14 countries included in our sample, companies close their shareholder book on the record date. Between the record date and the meeting date, an investor who newly purchases shares is not able to register as shareholder and, therefore, is not allowed to participate or vote at the upcoming meeting. Thus, similar to dividends, also voting rights should lower the future expected value of a stock:

$$E_t^Q \left[S(t + \Delta t) \right] = S(t) \cdot \exp\{r \cdot \Delta t\} - PV(D_C) - v, \tag{2}$$

where $S(t)$ indicates the stock price at time t, r is the risk-free interest rate, and Δt refers to the time step over which expectations are formed. $PV(D_C)$ refers to the present value of (expected) dividends in the period t–$t + h$ and v is the present value of expected voting values over the same time frame.

Since regular dividends and voting values affect future stock prices, they should also be reflected in the prices of the corresponding call and put options. In general terms, an option price can be defined as a function of three sets of variables:

$$P = f\left(\Theta, \Sigma, v\right), \tag{3}$$

where Θ includes all pricing factors that are known at the time the option is traded (i.e., the option type, the price of the underlying stock, the option's maturity, the strike, the risk-free interest rate, and known dividend payments); Σ refers to all parameters that drive the future volatility of the underlying stock returns; Finally, v indicates the present value of voting rights that accrue to equity investors until the option's maturity. Thus, both v and Σ refer to unknown parameters that have to be extracted from option prices.

In the baseline specification, we model voting values as continuous voting yields, v^*, i.e., as percentage of the stock price, in a binomial tree model with constant volatility σ à la Cox, Ross, and Rubinstein (1979).

Estimates for v^* and σ are simultaneously obtained via a calibration procedure that minimizes the squared difference between model prices, $\hat{P}$, and observed option prices, P, based on a set of Noptions:

$$v^* = \underset{\Sigma, v}{\arg\min} \sum_{i=1}^{N} (\hat{P}_i(\Theta, \Sigma, v) - P_i)^2. \tag{4}$$

For the option valuation $\hat{P}$, we follow Geske and Johnson (1984) and employ an enhanced version

of the Binomial Black-Scholes model with Richardson extrapolation (BBSR).

In order to generate sensible estimates of voting values, we require that the options' lifetimes must include both the last cum-voting date[12] and the annual general meeting.

[INSERT TABLE A.1 APPROXIMATELY HERE]

Figure A.1 shows the details of the valuation setting employed in our study. The cum date separates the "valuation period" from the "meeting period". To obtain a suitable balance between the number of options used for the calibration and a realistic volatility update, we consider for each valuation period associated to an annual general meeting four separate trading weeks just before the cum-voting date. For each of these for weeks, we estimate both a voting yield, v^*, and an implied volatility, σ, using all suitable options traded in that week that mature directly after the meeting (typically on the third Friday of a month).

In Figure A.1, the contractual maturities of eligible options are drawn with solid horizontal lines. With this minimal time horizon over which voting values are calculated, the voting rights associated with a meeting can be optimally isolated. The influence of control matters unrelated to the particular meeting on voting values, such as merger activities or proxy contests, is arguably minimal as their occurrence is relatively unlikely during this short period of time. All other options, whose maturities are depicted with dashed horizontal lines – which either are not traded within the valuation period or mature before the meeting or after the first third Friday of the meeting period – are excluded from the analysis.

Finally, the annualized voting yield of company f's shareholder meeting in year y, $\overline{vy}_y^f$, is calculated as the arithmetic average of the four weekly voting-yield observations, $vy_{y,j}^f$, during the valuation period:

$$\overline{vy}_y^f = \frac{1}{4}\sum_{j=1}^{4} vy_{y,j}^f. \tag{5}$$

The duration of the period with closed shareholder registers varies from country to country and from firm to firm. In general, it is much shorter in Europe than in the US. In contrast to the US, however, historical record dates of European firms are neither recorded in a central database nor widely available in company filings for the full sample period. Thus, for each country, the meeting period starts on a specific day relative to the general meeting, depending on the specific financial market regulations.

[INSERT TABLE A.1 APPROXIMATELY HERE]

[12]Following recommendations by the SEC, the cum-voting date is set some days prior to the record date in order to reflect the operational time needed to settle the transaction at the exchange and register it in the shareholder book. For the entire sample, we set this time equal to five days.

Table A.1 provides an overview of regulations regarding vote-registration laws of the countries covered in this empirical analysis. For each meeting observation, the record date is set on the last trading day of the week just before the earliest possible record date. This approach makes sure that no option contract traded after the cum-voting date is used in the calibration. For the two countries with no binding law in effect (Italy and Switzerland), a sensible date based on empirical observations including a safety margin is chosen.[13]

B Filtering Option Data

To improve the quality of option data, we require options to meet the following criteria to be considered in the calibration. First, only end-of-day option quotes with positive trading volume are considered. Thereby, pricing errors stemming from stale prices and synchronization biases when matching option quotes with prices of the underlying stock are mitigated. Additionally, this filter makes sure that only actual market quotes are applied in the optimization and not model-generated end-of-day quotes.[14] Second, the analysis is limited to at-the-money options with a moneyness[15] between 0.95 and 1.05 to mitigate issues related to volatility-smile or smirk effects.

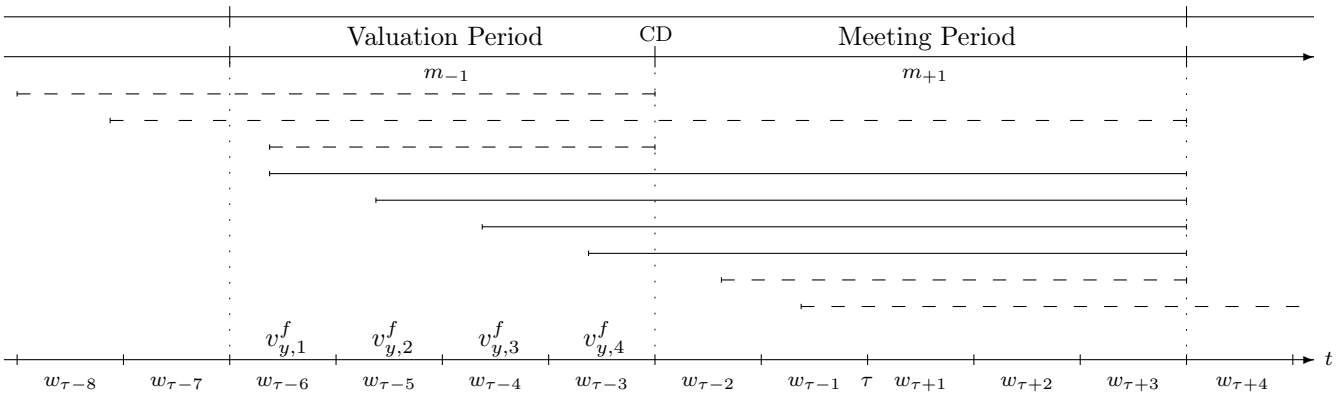
[13] In Italy, companies typically close their shareholder register one or two working days prior to the meeting. This results in a chosen record date of one week prior to the shareholder meeting. In Switzerland, stock companies close their shareholder register around one week ahead of a meeting. Therefore, we apply a 14-day period with closed shareholder registers.

[14] Option exchanges estimate closing prices for illiquid contracts to settle margin accounts after each trading day.

[15] Moneyness describes the ratio of the present value of an option's strike and the price of the corresponding share price.

Figure A.1: Valuation setting and selection of option contracts

This figure illustrates the valuation setting and shows the selection of option contracts used for the computation of voting-right values around firm f's shareholder meeting in year y. The cum-voting date (CD) separates the valuation period from the meeting period and lies two weeks prior to the shareholder meeting (held on day τ) in this example. The valuation period lasts four weeks, from week $w_{\tau-6}$ to week $w_{\tau-2}$. For each week, a voting value is computed based on all valid option contracts observed within the respective week that mature on the third Friday directly after the shareholder meeting. The contractual maturities of eligible option contracts are drawn with solid horizontal lines. All other options, i.e. those that are not traded over the meeting date or don't mature directly on the third Friday after the meeting, are excluded from the optimization process. The maturities of deleted option contracts are drawn with dashed lines. m defines the option trading month (third Friday of a month to third Friday of the next one) relative to the cum-voting date.



Time Relative to Shareholder Meeting

Table A.1: Vote-Registration Laws

This table shows for each country included in the empirical analysis the earliest possible record date according to financial-market regulations. The third column provides the legal source.

Country	Earliest Record Date	Source
Belgium	14 calendar days prior to meeting	Belgian Companies Code - Art 536 §2, s 1, ch 2
Finland	Eight working days prior to meeting	Finnish LLC Act - Art 2, s 2, ch 4
France	Three working days prior to meeting	French Commercial Code - Art R225-85, s 3, ch 5
Germany	21 calendar days prior to meeting	German Stock Corporation Act - §123-2
Italy	No binding law in effect	Italian Civil Code - Tit 5, Book 5
Netherlands	28 days prior to meeting	Dutch Civil Code - Art 119 §2, Book 2
Spain	Five working days prior to meeting	Spanish Corporate Enterprises Act - Art 179 §3
Sweden	One week prior to meeting	Swedish Companies Act - S 16, ch 7
Switzerland	No binding law in effect	Swiss Code of Obligations
UK	Two working days prior to meeting	UK Companies Act (c 46) - Art 327, ch 3, pt 13