



The impact of CEO overconfidence and firm performance on SOP dissent – Evidence for SOP voting firms in Germany

Trautberg, Mario; Bouzzine, Yassin Denis; Steen, Hendrik

*Published in:*  
Management Studies

*Publication date:*  
2019

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication](#)

*Citation for published version (APA):*  
Trautberg, M., Bouzzine, Y. D., & Steen, H. (2019). The impact of CEO overconfidence and firm performance on SOP dissent – Evidence for SOP voting firms in Germany. *Management Studies*, 9(2), 23-43.  
<https://managementstudies.org/ms/article/view/12>

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

#### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



---

# The impact of CEO overconfidence and firm performance on SOP dissent – Evidence for SOP voting firms in Germany

Mario Trautberg

Leuphana University Lüneburg,  
Universitätsallee 1, 21335 Lüneburg, Germany; [mario.trautberg@stud.leuphana.de](mailto:mario.trautberg@stud.leuphana.de)

Yassin Denis Bouzzine

Leuphana University Lüneburg,  
Universitätsallee 1, 21335 Lüneburg, Germany; [yassin.bouzzine@leuphana.de](mailto:yassin.bouzzine@leuphana.de)

Hendrik Steen

Leuphana University Lüneburg,  
Universitätsallee 1, 21335 Lüneburg, Germany; [hendrik.steen@stud.leuphana.de](mailto:hendrik.steen@stud.leuphana.de)

---

## Abstract

This study examines the association between Chief Executive Officer (CEO) overconfidence and Say-on-Pay (SOP) dissent in the context of behavioral agency theory implications. Using a German sample of SOP voting firms, we examine the association between CEO Overconfidence interacting with Tobin's Q and return-on-assets (ROA) and SOP dissent. Consistent with our prediction, we find a significant negative association between CEO overconfidence combined with high firm performance and SOP dissent revealing that shareholders' voting behavior is mainly driven by firm performance. Our results are robust to variation in model specifics. These findings provide first evidence for Germany regarding the association between CEO overconfidence and SOP dissent.

## 1 Introduction

SOP on the CEO's compensation, as a shareholder activism instrument, has received significant attention from legislators worldwide. While the United Kingdom (UK) (2002), France (2004) and the Netherlands (2005) occupied a pioneering role in SOP legislation in Western Europe, Germany implemented first statutory laws at first in 2009 (VorstAG, 2009). Hereby, shareholders attained the right to use SOP to vote on CEO compensation, even though this vote was not legally binding but only had a consultative character (§ 120 Abs. 4. AktG). With the introduced Directive (EU) 2017/828 amending Directive (EU) 2007/36/EC, the European Parliament now reforms SOP, which resulted in a first draft bill in Germany (ARUG II-RefE). As of now, the SOP voting on the CEO compensation contracts will become mandatory and shareholders will obtain the right to vote at least every four years.

From a practical perspective, uncertainty regarding the implications of CEO overconfidence is existent. On the one hand, there are special situations, where confidence can be useful, such as lacking innovativeness (Hirshleifer *et al.*, 2012), and on the other hand, overconfidence can be particularly harmful to firms (e.g. Ferris *et al.*, 2013; Malmendier and Tate 2008). Furthermore, there is no evidence that CEO overconfidence is visible to shareholders, raising the question if shareholders' votes reflect potential overconfidence.

So far, research on SOP dissent and CEO overconfidence are two distinct research fields that have received more attention in the United States (US) and UK (e.g. Alissa, 2015; Malmendier and Tate, 2005a). Hence, there exists a research gap for both, SOP dissent and CEO overconfidence in Germany. We assume that behavioral characteristics such as CEO overconfidence also affect SOP dissent. Therefore, our paper is the first study that examines the implications of CEO overconfidence in Germany. Further, this study complements SOP dissent

research in Germany (Obermann, 2018a; Obermann 2018b) and is the first study that combines the research fields of SOP dissent and CEO overconfidence.

SOP as a research field is well-established but has received new attention due to European legislation (Directive (EU) 2017/828). Some researchers conclude that SOP is rather a say-on-performance instrument than a functional corporate governance mechanism as SOP voting dissent is driven by poor firm performance (Fisch *et al.*, 2018; Kimbro and Xu, 2015). However, SOP dissent increases if CEO compensation is excessive (Balsam *et al.*, 2016; De Falco *et al.*, 2016).

Behavioral management characteristics, such as narcissism, fairness, and overconfidence, are subject to empirical examinations following the financial crisis in 2008/2009 (e.g. Ham *et al.*, 2017; Rouen, 2017; Malmendier *et al.*, 2011). We choose to examine the implications of CEO overconfidence, because of his power and his attentiveness in public. CEO overconfidence is characterized as an optimism bias, which leads to over-optimistic assumptions about a firm's prospects and the overestimation of the own capabilities to successfully manage the firm (Nier, 2004; Hayward and Hambrick, 1997). Recent academia has provided evidence that CEO overconfidence mostly leads to miscalibrations, such as value-destroying Mergers & Acquisitions (M&A) (Ferris *et al.*, 2013; Malmendier and Tate 2008), higher leverage (Ben-David *et al.*, 2013, Park and Kim, 2009) and engagement in earnings management (Hsieh *et al.*, 2014). With regards to compensation, overconfident CEOs receive a higher equity-pay ratio than their rational peers (Humphery-Jenner *et al.*, 2016), which causes a lower SOP dissent (Obermann, 2018a). Next to equity pay, the firm performance is the main driver affecting SOP dissent. Therefore, we argue that SOP dissent has a negative association with CEO overconfidence during a high firm performance and that CEO overconfidence either is not detected by shareholders or is negligible for them.

In accordance with Doukas and Petmezas (2007), we classify CEOs as overconfident when they conduct at least five M&A deals within three years. Henceforward, we link both distinct research fields with the equity-pay ratio of CEOs and examine the association between overconfident CEOs and SOP dissent using 1,216 observations for the SOP selection model and 86 observations for the main model in a data set of listed German firms, respectively. Our results indicate that CEO overconfidence has a significant negative association with SOP dissent for firms with higher firm performance (measured by ROA and Tobin's Q) and overconfident CEOs. With regards to sensitivity analysis, our results are robust as we modify the overconfidence M&A proxy from the UK due to lower M&A activity in Germany and still report significant findings. We conclude that the reduction of SOP dissent results from shareholder satisfaction with high firm performance and resolution of agency conflicts through equity compensation. Thus, SOP is more an instrument for shareholders to communicate their (dis-)satisfaction rather than fulfilling its aimed purpose in questioning CEOs' compensation.

Even though we report significant findings in our empirical approach, our analysis is subject to content-based and methodological limitations. We critically acknowledge that archival research has its limitations in behavioral research and that we directly transfer a research approach, tailored for the UK, to the German setting. Furthermore, the output dimension of SOP research remains unconsidered in our study. Methodologically, the "nosiness" of our overconfidence proxy, potential omitted variable biases as well as the small sample are major drawbacks in our model.

The study proceeds as follows: Section 2 provides information on the theoretical background of CEO overconfidence and SOP. Section 3 reviews prevailing literature for CEO overconfidence and SOP dissent, combines the two research fields with CEO compensation and derives our research hypothesis. Section 4 includes the data description, the construction of the overconfidence proxy, the empirical methodology and the results. In Section 5, we critically assess the study and highlight future research recommendations. Finally, Section 6 concludes our empirical study.

## 2 Say-on-pay in the context of agency theory

The agency theory is based on the presence of agency relationships. Agency problems arise when the principal delegates its personal utility maximization to the agent, while respective interests and utilities are not aligned. Non-aligned interests and utilities may lead to agency decisions, which are not in favor of the principal or the company (Ross, 1973). Management has control over information and does not or falsely provides them to the shareholders (Bosse and Phillips, 2016; Jensen and Meckling, 1976). To control for agency problems, Fama and Jensen (1983) advocate a variable management compensation in common stocks, which enables a better risk-sharing between the principal and the agent and thus a better alignment of interests.

In contrast to the Anglo-Saxon countries, the German corporate governance system consists of two tiers, which assures complete separation of management and monitoring. Thereby, the supervisory board is responsible for the monitoring of the management, which implies major decisions on corporate policies like the determination of management compensation, etc. On the other hand, the shareholders only have limited possibilities to take influence (Weimar and Pape, 1999). With respect to SOP, shareholders can request a SOP vote if they have at least five percent of the voting rights. Then, the voting can be put on the agenda of the annual meeting by the CEO and the supervisory board. Afterward, the shareholders receive the opportunity to vote on executive compensation and to (indirectly) communicate their (dis)satisfaction to the CEO and the supervisory board.

SOP, as a corporate governance mechanism, enables shareholders to express their support or dissent on executive compensation with the aim to align executive compensation to shareholders' preferences and to resolve agency conflicts (Kimbrow and Xu, 2015). However, the overlapping competencies on executive compensation between the shareholders and the supervisory board raise the question if SOP fits into Germany's two-tier system. Neoclassical agency theory assumes that both, principals and agents, are economically rational and self-interested (Jensen and Meckling, 1976). However, Wiseman and Gomez-Mejia (1998) critically reflect that this assumption is unrealistic and that there is not a homogenous group of shareholders and managers. They take prospect theory (Kahneman and Tversky, 1986) into account, point out that there are significant differences in risk preferences for individuals and, by that, enhance the neoclassical agency theory to behavioral agency theory. Pepper and Gore (2015) put further emphasis on the individual level of the agent. They argue that agents (and principals) are irrational and have differences in loss, risk and uncertainty aversion. This irrationality challenges neoclassical corporate governance mechanisms (e.g. SOP) as the reaction upon those mechanisms might be different than expected.

In this empirical study, we will focus on the individual characteristics of the CEO, as the CEO is the key decision-maker in the firm. CEO's decisions (e.g. on M&A) have a major impact on the well-being of the firm, making the CEO's individual characteristics particularly important.

CEO overconfidence is a consequence of a self-attribution bias, in which CEOs reflect the company's recent performance and media appraisal on themselves making them increasingly overconfident (Hayward and Hambrick, 1997). CEO overconfidence implies a variety of effects. The "above-average-effect" describes the tendency of individuals to see themselves as "above-average" on characteristics that are socially desirable (Nier, 2004). It describes the bias of many people, which makes them believe that they are more capable than others in doing certain activities. Self-attributed "above-average" CEOs believe that their firms should do better than other firms, even though there is no rational motivation or reason for this belief. "Above-average" CEOs are subject to overenthusiasm and excessive optimism, which makes them press their firms to succeed in the short-run (Larwood and Whittaker, 1977). Furthermore, overconfident CEOs are miscalibrated. Miscalibration is the systematic underestimation of the range of potential outcomes. This is a consequence of CEOs either overestimating their own abilities or underestimating the volatility of random outcomes. Miscalibrated CEOs have excessive confidence that their information is accurate. They overestimate the precision of their forecasts and underestimate the variance of risky processes. The accuracy of corporate decision-making is influenced by miscalibration (Ben-David *et al.*, 2013).

The "above-average-effect", as well as managerial miscalibration, is associated with negative impacts on corporate policies. This view is supported by plenty of empirical evidence (Hsieh *et al.*, 2014, Malmendier and Tate, 2005a). However, there is empirical evidence that CEO overconfidence might be beneficial in some cases, illustrating that overconfidence has a rather non-linear course and that its implications depend on the situation of the respective firm (Hirshleifer *et al.*, 2012; Gervais *et al.*, 2011;). This non-linearity highlights the importance of firm performance in the evaluation of overconfidence. Overconfident CEOs are particularly harmful when the firm performance is low and, vice versa, when the firm performance is high with direct implications for the SOP voting behavior.

### 3 Literature review and hypothesis development

With regards to SOP research, corporate governance characteristics (e.g. Sauerwald *et al.*, 2016; Bates and Henessy, 2010), shareholder characteristics (e.g. Ertimur *et al.*, 2011; Chowdhury and Wang, 2009), stakeholder characteristics (e.g. Ferri and Oesch, 2016; Larcker *et al.*, 2015), firm characteristics (e.g. Hooghiemstra *et al.*, 2017; Ertimur *et al.*, 2010) and executive compensation (e.g. Hooghiemstra *et al.*, 2017; Ertimur *et al.*, 2013) have been identified research items that significantly affect SOP voting behavior (Velte and Obermann, 2018). In terms of our study, the CEO's compensation structure and firm performance are the major drivers that have a significant impact on shareholders' SOP dissent.

In detail, SOP dissent increases in the US when CEOs are excessively paid (Balsam *et al.*, 2016; De Falco *et al.*, 2016). Moreover, proxy advisors in the US are more likely to issue an "against recommendation" for poor performing firms, proxied by ROA, and excessively compensated CEOs (Ertimur *et al.*, 2013). Supporting findings for the US setting are provided by Fisch *et al.* (2018) and Kimbro and Xu (2015). Poor performing firms receive higher SOP dissent since shareholders use SOP as a disciplinary tool to express their (dis-)satisfaction with the management. However, during a higher firm performance, SOP dissent remains stable as shareholders do not regard excessive CEO compensation as harmful. These findings are consistent with a UK sample, where increasing SOP dissent is more distinct for poor performing firms, reflecting shareholder dissatisfaction (Alissa, 2015). Although SOP dissent increases with higher CEO compensation (Fisch *et al.*, 2018), SOP dissent has a negative relation with equity-pay ratio Obermann (2018a). Thus, SOP dissent decreases with an increasing equity-pay ratio. The overwhelming empirical evidence attributes negative implications to CEO overconfidence with reductions in shareholders' wealth. In particular, firms with overconfident CEOs from the US, UK and globally undertake more value-destroying M&A-transactions and pay unjustified price premiums for their targeted firms in comparison to rational peers (Ferris *et al.*, 2013; Malmendier and Tate, 2008; Doukas and Petmezas, 2007). Overconfident CEOs

perceive their firms as undervalued and thus, equity as irrationally expensive (Malmendier and Tate, 2005a). As a result, overconfident CEOs distribute lower dividends in order to have more funds available for future investments (Deshmukh *et al.*, 2013), conduct destructive investments, when abundant internal funding is available (Malmendier and Tate, 2005a) and overestimate returns on corporate investment projects and even undertake projects with negative net present values (Ben-David *et al.*, 2013; Malmendier *et al.*, 2011; Heaton, 2002). With respect to capital structure, firms with overconfident CEOs have higher leverage (Ben-David *et al.*, 2013; Park and Kim, 2009) which is also present when an overconfident CEO replaces a rational one (Malmendier *et al.*, 2011).

Moreover, overconfident CEOs are more likely to voluntarily issue forecasts and consequently miss them (Hribar and Yang, 2016), have a more aggressive accounting approach (Ahmed and Duellmann, 2013), engage in earnings management (Hsieh *et al.*, 2014) and execute tax-avoidance activities while collaborating with overconfident CFOs (Hsieh *et al.*, 2018). Overconfident CEOs are also more likely to engage in financial misreporting (Schrand and Zechmann, 2012), invest less in corporate social responsibility (CSR) initiatives (McCarthy *et al.*, 2017) and when disclosing CSR reports, their optimistic bias is present in form of a very positive tone (Sauerwald and Su, 2017).

Replicating supporting theoretical insights of Fama and Jensen (1983), who advocate equity-based compensation for enabling a better risk-sharing between the principal and the agent and thus a better alignment of interests concerning the controlling for agency problems. Humphery-Jenner *et al.* (2016) find evidence that overconfident CEOs are associated with a higher equity-pay ratio than their rational peers whereas Obermann (2018b) finds that the equity-pay ratio represents the main driver for lower SOP dissent. Thus, we predict a negative relationship between overconfident CEOs and SOP dissent for firms with higher firm performance. Further, we argue that the effect of firm performance prevails and that CEO overconfidence has a negligible impact for shareholders or is even not detected by shareholders during a higher firm performance. Considering the outlined literature and supporting theoretical insights we derive our research hypothesis:

**H1:** SOP dissent is negatively associated with CEO overconfidence for firms with higher financial performance.

## 4 Empirical analysis

### 4.1 Sample selection

Following Obermann (2018b), we examine the underlying hypothesis that SOP dissent is negatively associated with high-performing firms and overconfident CEOs by first sampling to estimate the likelihood of SOP occurrence (SOP selection model). In the second step, we use a sample of SOP voting firms to analyze SOP voting behavior (SOP dissent model). The regulation of voluntary SOP was introduced in Germany in 2009. However, the first voluntary SOP occurred in 2010 for the financial year of 2009. Hence, the SOP likelihood model consists of annual general meetings (AGM) for the period 2010 to 2017. As AGMs are generally held in the first half of the specific calendar period due to adjustments of the financial and calendar year by German firms, the financial data is between 2009 and 2017. The original sample consists of 2,896 firm-year observations covering the entire German Prime Standard, as it is subject to the highest disclosure standards and reports are required to be published in both, German and English. However, we exclude firms from the financial industry (399 firm-years), namely all firms classified on the one-digit SIC code of six, due to their special characteristics in terms of regulation, accounting rules as well as risk models (Zheng *et al.*, 2012; Chih *et al.*, 2010; Leutz *et al.*, 2003). In particular, the exclusion aims to provide crucial comparability as well as generalizability across the sample's underlying industries. For the SOP selection model, 1,281 firm-years are omitted due to missing data for the underlying control variables. Therefore, the model for the first regression consists of 1,216 firm-year observations. After reviewing the remaining AGM minutes, we identify 208 SOP votes that underlie our main analysis of SOP dissent and CEO overconfidence. Since the SOP dissent specification requires various fundamental data, such as scarce information on corporate governance characteristics and sustainable performance, 122 firm years are excluded due to missing data. Table 1 provides summary statistics for both models.

**Table 1:** Descriptive statistics

Panel A: SOP Selection model										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
No SOP vote	258	289	327	322	303	296	246	255	234	2530
SOP vote	105	70	33	24	28	23	25	19	39	366
Firm-years	363	359	360	346	331	319	271	274	273	2896
FINAL SAMPLE										
No SOP votes	102	119	166	169	160	148	144			1008
SOP votes	75	43	22	16	20	20	12			208
Firm-years	177	162	188	185	180	168	156			1216
Panel B: SOP dissent model										
	2010	2011	2012	2013	2014	2015	2016			Total
SOP votes	75	43	22	16	20	20	12			208
FINAL SAMPLE										
SOP votes	30	18	8	6	7	8	9			86
Mean dissent	0.07	0.13	0.15	0.20	0.04	0.08	0.26			0.12
Std. deviation	0.14	0.16	0.16	0.13	0.02	0.07	0.22			0.15

*Descriptive statistics for the number of firms listed in the German Prime Standard and frequency of SOP votes by year (panel a) and the number of votes (panel b) with mean SOP dissent, standard deviation. Both panels include observations for the final sample.*

## 4.2 Measuring CEO overconfidence

Examining the association between CEO overconfidence and SOP dissent for firms with higher performance requires a suitable as well as challenging approximation for the behavioral dimension. Despite the fact that research on overconfidence primarily concerns experimental psychology literature (e.g. Kruger, 1999; Alicke *et al.*, 1995; Svenson, 1981), there are various approaches for determining overconfidence in economic archival research. In particular, Malmendier and Tate's (2005a) surrogate for measuring CEO overconfidence by the circumstances of holding in-the-money options implies a widely used and accepted approach in behavioral academia (e.g. Ahmed and Duellman, 2013; Deshmukh *et al.*, 2013; Hirshleifer *et al.*, 2012). Hereby, the inference for the presence of overconfidence is based on the assumption that rationally risk-averse, underdiversified CEOs normally exercise their stock options when the option lies predominantly in the money (Hall and Murphy, 2002). However, since data on international executive's option portfolios are usually rare and unavailable (e.g. Ferris *et al.*, 2013), adequate reconstruction of the stock-option holding proxy in the German context remains impossible. An alternative approach from Malmendier and Tate (2008) classifies CEOs as overconfident by analyzing newspapers and business publications. Since categorizations based on newspaper articles are potentially prone to subjective biases, such as diverging views or personal intolerance among journalists, inferences should always be treated with caution (Doukas and Petmezas, 2007). As a solution approach, we, therefore, follow Doukas and Petmezas (2007) who approximate overconfidence on the basis of the CEO's M&A-activity within a short period for a UK sample. In particular, we determine CEOs as overconfident when they complete five or more acquisitions within a period of three or fewer years.<sup>1</sup> Setting a 3-year period also serves to address the issue of CEO turnovers, since turnovers are expected to be very low for the specified period. Moreover, a CEO's acquisitiveness indicates a direct measure for overconfidence and the fact that overconfident managers are associated with excessive optimism in creating value (Roll, 1986) as well as higher project activity (Heaton, 2002). Furthermore, the approximation by Doukas and Petmezas (2007) finds support by Malmendier and Tate (2008), who provide evidence that overconfident CEOs are more acquisitive than their rational peers. Conducting multiple acquisitions in a short period of time by a CEO, therefore, refers to overestimating one's own abilities when choosing profitable targets. This also implies the underestimation of potential losses from future acquisitions on the other side. Thus, the high frequency of M&A activities indicates a substantial proxy for overconfidence. Moreover, the approximation is consistent with Odean (1998), providing evidence that overconfident investors are associated with a higher stock trading activity.

<sup>1</sup> Since the research design of Doukas and Petmezas (2007) is based on a UK setting and significant fluctuations in the M&A activities between Germany and the UK are present (e.g. Rossi and Volpin, 2004), we address these concerns by applying moderate scoring variations for M&A activity in later sensitivity analysis.

To assess CEO overconfidence we collect M&A data from Thomson Reuter's deal screener by only considering all available completed acquisitions for our underlying firms without taking into account differences in deal volumes since information on purchase prices is mostly kept under closure. As mentioned before, the SOP dissent specification requires scarce fundamental data for corporate governance characteristics and sustainable performance resulting in an exclusion of observations due to missing data. Therefore, we only conduct CEO overconfidence scores for firm-years with all underlying variables. Overall, we identify 1,399 acquisitions during the period of 1985 to 2018 (untabulated).

In the next step, we compute a binary variable for CEO overconfidence. Consequently, overconfident CEOs carrying out five or more acquisitions within a 3-year period are coded to one and zero otherwise. Noteworthy, we assume that personal characteristics are constant over time and not changing. Thus, a CEO once determined overconfident remains overconfident for the whole term of office. Furthermore, we avoid potentially biased results due to CEO turnovers, by hand collecting CEO tenure data for all considered executives. Therefore, the respective acquisitions are adequately assigned to all executives. Overall, our overconfidence variable (CEOOC5D3Y) consists of 111 firm-year observations, whereas 51 are classified as overconfident. Table 2, panel A provides distribution statistics for the underlying overconfidence measure.

**Table 2:** Descriptive statistics of the overconfidence variable

Panel A: CEO overconfidence variable		
CEOOC5D3Y	Obs.	Percent
Confident		54.05
Overconfident		45.95
Total	111	100

  

Panel B: M&A activity by industry		
Industry (one-digit SIC code)	Industry	Acquisitions
	1 Mining & Construction	40
	2 Manufacturing	410
	3 Manufacturing	481
	4 Transportation, Communications, Electric, Gas and Sanitary service	217
	5 Wholesale Trade	87
	7 Services	105
	8 Services	59
	Total	1,399

*Descriptive statistics for the variable of overconfidence (panel a) and the frequency of M&A activity by the one-digit SIC code (panel b).*

Furthermore, M&A activity substantially varies across different industries (e.g. Doukas and Petmezas, 2007). Since the respective sample includes a broad range of industry segments (Table 2, panel B), consequently, our overconfidence measure based on M&A deal activity is subject to potential industry biases. To address these concerns about latent “noisiness” resulting from biased scorings due to omitted industry effects, we apply industry adjustments for our overconfidence variable. More specifically, we compute the industry mean in the number of M&A deals for each observation of overconfidence using the single-digit standard industrial classification (SIC) industry code and calculate our binary variable by subtracting the industry mean (CEOOC5D3Y\_Adj). As a result, the level of CEO overconfidence changes from a binary variable to a continuous scale with values between 0 and 1.

### 4.3 Methodology

The following section discusses the methodological background for the analysis of SOP dissent and CEO overconfidence for firms with higher performance. Since our analysis considers SOP dissent and the occurrence of an SOP vote is not random but depends in particular on the respective management, it is necessary to address those concerns about potential selection bias. Further, putting an SOP on the AGM agenda is a binary variable,

while analyzing the substantial SOP dissent implies a continuous scale. Thus, the voting outcome on the compensation policy will only take place if an SOP vote occurred beforehand. Statistically, such settings are generally referred to as Type-II Tobit models (e.g. Obermann 2018a). Therefore, we control for potential self-selection bias by conducting the two-step Heckman correction (Heckman, 1979). More specifically, we compute the Inverse Mills Ratio (IMR) based on the results of the first logistic SOP selection regression and integrate it into our SOP dissent equation.

#### 4.3.1 SOP selection model

The underlying sample for SOP votes represents panel data with longitudinal and cross-sectional properties. Technically, estimating fixed-effect models is inappropriate, as only firms with at least one SOP vote would be included in the equation. By that, firms without conducting the SOP vote are excluded from the outset, which in turn can lead to potentially biased results. As an approach, we apply population-averaged (PA) panel logistic regression analysis to estimate the SOP probability, since PA models examine differences between firms with SOP and without SOP occurrence. Consequently, the predictor generates average mean estimates based on the firm level for the entire period. Furthermore, the sample pattern suggests that firms usually perform SOP votes every three to four years (untabulated). In line with Obermann (2018a), this pattern could be due to the fact that the CEO contracts last at least for one year. Thus, SOPs take usually place as a result of assessing new executive's remuneration contracts.

Statistically, we include robust standard errors clustered at the firm level for tackling heteroscedasticity as well as autocorrelation. Since our SOP selection model does not primarily investigate the drivers of SOP occurrence, but only serves to control for potential self-selection bias, we merely implement different control variables for the firm, corporate governance and shareholder characteristics. The respective controls are motivated in a later section.

$$\text{logit}(SOP_{it}) = \beta_0 + \beta_n \text{CONTROLS}_{nit} + \varepsilon_{it} \quad (1)$$

#### 4.3.2 SOP dissent model

For testing the hypothesis that SOP dissent is negatively associated with higher performance for firms with overconfident CEOs, we use a second specification. Consequently, the dependent variable is SOP dissent (SOP\_DISS) with a continuous scale level. Further, we follow prior literature in computing shareholder dissent by considering the number of abstentions into the calculation as well. According to Ferri and Maber (2013), institutional investors use the mechanism of abstention to signal their dissatisfaction with the management. In addition, voting abstentions by shareholders are also associated with skepticism towards the respective board members (Sauerwald *et al.*, 2016; Ertimur *et al.*, 2013). As prior academia provides evidence for including voting abstentions into the dissent calculation (e.g. Obermann, 2018a; 2018b; Sauerwald *et al.*, 2016; Hooghiemstra *et al.*, 2015; Ferri and Maber, 2013), the dependent variable SOP dissent (SOP\_DISS) is calculated as the sum of voting rejections and the number of abstentions divided by the total number of SOP votes.

The independent variable for the behavioral dimension is CEO overconfidence (OC5D3Y\_adj). For including the channel of firm performance into the analysis, we use interaction terms of overconfidence with firm performance. The approach to investigating the effectiveness of higher firm performance by using sub-samples is subject to small sample size issues and therefore not recommended for our analysis. Further, we provide a broad understanding of the association with firm performance (PERF) by considering both, accounting-based as well as market-based determinants. In particular, using market-based measures indicates a more sufficient approach to examine shareholders' opportunity costs and benefits (Kim and Bettis, 2014). For the dimension of accounting-based performance we include return-on-assets (ROA) into the equation while in terms of market-based effectiveness, Tobin's Q serves as a commonly used proxy (Deb *et al.*, 2017). Further, we compute Tobin's Q (TOBINSQ) as the ratio of market capitalization plus total debt, divided by total assets. Obermann (2018b) provides evidence that Tobin's Q is negatively associated with SOP dissent suggesting that shareholders reward the management with the SOP voting for increasing shareholder value. Other prior academia indicates that the alternative market-based measure with the market-to-book ratio is negatively associated with SOP dissent (Hooghiemstra *et al.*, 2015). Furthermore, Obermann (2018b) provides evidence for lower SOP dissent and accounting-based performance by using free cash-flows as the underlying determinant.

Due to the industry adjustment procedure of the CEO overconfidence variable, the proxy scale changes from binary to continuous. Since our firm performance measures represent continuous variables as well, employing moderated multiple regression models of interactions between continuous predictors are subject to potential multicollinearity issues. Therefore, we apply a mean centering procedure to tackle the risk of multicollinearity between the underlying variables and the computed interaction terms (Iacobucci *et al.*, 2016; Shieh, 2011). Consequently, our models include mean-centered predictors for accounting-based ROA (c\_ROA), market-based firm performance Tobin's Q (c\_TOBINSQ), CEO overconfidence (c\_CEOOC5D3Y) as well as for



the respective interactions of interest ( $c\_CEOOC5D3Y * c\_ROA / c\_TOBINSQ$ ) to provide robust coefficient estimates.

Furthermore, to consider other factors and their correlation with SOP dissent, we control for various firm, corporate governance as well as shareholder characteristics (CONTROLS), which we motivate in the next section. Finally, we control for potential selection bias by including the computed IMR based on the preceded SOP selection model.

$$SOP_{DISS_{it}} = \beta_0 + \beta_1 c_{CEOOC5D3Y_{it}} + \beta_3 c_{CEOOC5D3Y_{it}} * PERF_{it} + \beta_3 PERF_{it} + \beta_n CONTROLS_{nit} + \varepsilon_{it} \quad (2)$$

With respect to the model specification, we run pooled ordinary least squares (OLS) regression analysis based on the results of the Sargan-Hansen test. In addition, we control for heteroscedasticity and auto-correlation by including Huber-White robust standard errors clustered at the firm level. However, the Wooldridge test indicates no presence of auto-correlation. All variables, except CEO overconfidence, are winsorized at the 1 and 99 percentiles to adjust for potential outliers.

### 4.3.3 Controls

The following section motivates the underlying control variables based on prior academia, by first addressing the SOP selection model, followed by the respective controls for the SOP dissent analysis. All data originate from Thomson Reuters DataStream and Eikon.

*SOP selection model:* Prior literature suggests that firm size is positively associated with the likelihood of SOP occurrence (Obermann, 2018a). In particular, large firms are subject to higher shareholder activism as they receive more attention from the media and society (Burns and Minnick, 2013; Cai and Walkling, 2011). Further, the ownership structure of large firms indicates a lower concentration of blockholders resulting in a higher likelihood of SOP voting. Therefore, we control for firm size by using the natural logarithm of total assets (LOG\_TA), as we expect a positive association with the likelihood of SOP occurrence.

In contrast to our main specification for SOP dissent with ROA and Tobin's Q, we control for growth opportunities and firm performance by including alternatives for accounting- and market-based measures. As agency theory suggests, the firm's cash flow represents an essential driver for agency conflicts regarding the efficient resource allocation for future investments (Jensen, 1986). Therefore, we include cash flow per share (CFPS) to control for accounting-based performance. In addition, to control for market-based performance, we integrate market-to-book-ratio (MTB) into the model. Following Obermann (2018a), we expect that firm performance is positively associated with a higher likelihood of SOP occurrence. Further, we include the leverage ratio (LEV) since we expect that higher leveraged firms are related to stronger monitoring by debt investors (Obermann, 2018a) as well as lower agency costs of free cash flow (Jensen, 1986). Thus, we expect leverage to be positively associated with SOP likelihood.

With respect to shareholder characteristics, we control for the potential existence of blockholders by including the standardized Herfindahl-Hirschman Index (HHI) as a measure for stock ownership concentration. As prior literature indicates, blockholders tend to use different control mechanisms, unlike SOP shareholder activism, to enforce their own interests resulting in a decrease of SOP likelihood (Obermann, 2018a; McCahery *et al.*, 2016; Becht *et al.*, 2009). The HHI ratio is calculated based on the equity stake held by the 100 largest shareholders for each company. Consequently, we expect that a higher HHI is negatively associated with SOP likelihood.

We include industry controls computed by the one-digit SIC code to control for differences in industry sectors since certain segments are subject to different regulations as well as different levels of monitoring (Obermann, 2018a). Finally, Eulerich *et al.* (2014) and Obermann (2018a) provide evidence for a German SOP setting, indicating a higher voting frequency directly after the introduction of SOP regulation. Hence, we control for the opportunity of omitted year effects by including year dummy variables.

*SOP dissent model:* Both models for analyzing SOP dissent include controls for firm performance. In particular, we include ROA and Tobin's Q as controls with respect to the specific setting of the underlying interaction analysis. Thus, the regression model for examining the interaction of ROA with CEO overconfidence implies the integration of the uncentered Tobin's Q as an additional performance control measure, while the market-based analysis, in contrast, includes uncentered ROA as a control measure. In line with prior literature, we expect a negative association for firm performance with SOP dissent (Obermann, 2018b; Balsam *et al.*, 2016; Kimbro and Xu, 2016). Since prior academia provides evidence that risk is positively associated with SOP dissent (Kimbro and Xu, 2015), we include the natural logarithm of the annualized stock return volatility (LOG\_VOL).

In addition, similar to the SOP selection model, we control for shareholder characteristics and the presence of blockholders through the HHI, as Kimbro and Xu (2015) document a positive association with SOP dissent. Furthermore, it is essential to control for various compensation factors as part of the corporate governance system. In particular, Hooghiemstra *et al.* (2015) for the US as well as Brunarski *et al.* (2015) for the UK show evidence that excessive compensation represents a major driver for shareholder disapproval. We compute the variable for abnormal compensation (EXC\_COMP) based on the model of Core *et al.* (2008). However, we adjust the original

model in line with Obermann (2018b) to the German capital market. Consequently, abnormal excessive compensation is calculated as:

$$EXC_{COMP_{it}} = \text{Log}(\text{Total Comp.})_{it} - \text{Log}(\text{Predicted Comp.})_{it} \quad (3)$$

$$\text{Log}(\text{Predicted Comp.})_{it} = \beta_0 + \beta_n \text{CONTROLS}_{nit} + \mu_{it}^2 \quad (4)$$

Previous results by Obermann (2018a; 2018b) indicate a negative correlation for SOP dissent and executive's equity-based compensation. Hence, we include equity compensation by calculating the ratio of stock compensation to total compensation (EQUITY\_PAY).

Next, prior academia documents a significant association between SOP dissent and various corporate governance characteristics, especially with respect to board characteristics. In particular, shareholders recognize weak corporate governance structures, resulting in higher SOP dissent. For instance, the negative link is notably present for fewer outside directors (Cai and Walkling, 2011) and independent boards (Sauerwald *et al.*, 2016) as well as smaller boards in terms of lower monitoring quality (Renneboog and Szilagyi, 2011). However, it must be emphasized that there is no clear consensus in research as to whether the mentioned board determinants are generally linked to a potential increase of corporate governance quality or may be driven by endogeneity issues (Hauser, 2018; Falato *et al.*, 2014). Further, the implementation of controls by outside directors is not as practical as the underlying sample is based on a two-tier system (Obermann, 2018b). Another approach to measure board quality would be the use of gender diversity as in Obermann (2018b) since prior results by Adams and Ferreira (2009) document a positive association with corporate governance quality. Due to the fact of insignificance in Obermann (2018b), we, therefore, include the corporate governance score (CG\_SCORE) by Asset4 to control for overall governance quality. Noteworthy, the environmental, social and governance (ESG) scores by Asset4 are well established in research on CSR (Cheng *et al.*, 2014). Consequently, we expect that higher corporate governance quality is negatively associated with SOP dissent.

Taking the unique German setting with a two-tier system into account, we control for the existence of a compensation committee in the supervisory board. As agency theory and prior literature (Kent *et al.*, 2018) assume, monitoring mechanisms mitigate agency conflicts between shareholders and the respective management, thus leading to lower SOP dissent. Hence, we include a dummy variable for the existence of a compensation committee (COMP\_COM).

According to Cullinan *et al.* (2017), a firm's CSR performance serves as a substitute for financial performance. More precisely, this implies that managers assume a higher return through the alignment with long-term firm performance mitigating short-term risks. Consequently, shareholders tend to reward higher sustainable performance with lower SOP dissent (Cullinan *et al.*, 2017). Hence, we include the firm's sustainable performance as an additional control. As the Asset4 overall ESG score for CSR performance already covers the determinant of corporate governance quality, we only include the environmental and social dimensions of the score. Therefore, the sustainability performance proxy (ES\_SCORE) is calculated by subtracting the CG\_SCORE weight from the total ESG measure. Subsequently, the proxy is normalized to allow a balanced counterpart to the corporate governance score.

Finally, similar to the SOP selection model, year controls are used to address time differences in SOP votes, as previous research indicates that voting behavior develops over time due to learning and experience effects (Monem and Ng, 2013). Consequently, industry effects based on the first-digit SIC code are included as well. All controls, except dummy variables, are winsorized at the 1 and 99 percentiles to avoid biased results through potential outliers.

#### 4.3.4 Uni- and bi-variate statistics

Tables 3 and 4 provide descriptive statistics for all variables of the SOP selection model and the SOP dissent, taking into account only data for the observations contained in both regression models. With respect to firm size (TA), the sample ranges between 65 million to 148 billion Euros. Furthermore, the respective performance measures ROA and Tobin's Q represent widely dispersed values although we winsorized the data before.

---

<sup>2</sup> For regression results of excessive compensation see table 10.

**Table 1:** Descriptive statistics (SOP selection model)

SOP SELECTION MODEL	Obs.	Mean	Min	Max	25%-Perc.	Median	75%-Perc.	Std. Dev.
SOP	1216	0.17	0	1	0	0	0	0.38
TA	1216	86774.45	65.74	1481320	1611.28	6465.7	30048.25	256904.57
LOG_TA	1216	13.6	8.79	19.68	11.99	13.38	14.92	2.18
CFPS	1216	2.89	-9.45	39.25	0.57	1.68	4.05	4.35
MTB	1216	2.28	-1.91	11.65	1.12	1.72	2.64	2
LEV	1216	31.21	0	152.52	11.92	29.66	45.4	24.15
HHI	1216	0.32	0.03	1	0.12	0.25	0.46	0.24

*Descriptive statistics for the variables of the SOP selection model.*

**Table 2:** Descriptive statistics (SOP dissent model)

SOP DISSENT MODEL	Obs.	Mean	Min	Max	25%-Perc.	Median	75%-Perc.	Std. Dev.
SOP DISS	86	0.11	0	0.67	0.03	0.05	0.11	0.15
CEOC5D3Y	86	0.53	0	1	0	1	1	0.5
CEOC5D3Y_Adj.	86	0.49	0	1	0.43	0.5	0.57	0.22
c_CEOC5D3Y	86	0.02	-0.47	0.53	-0.05	0.03	0.1	0.22
c_TOBINSQ	86	0.09	-1.02	6.27	-0.48	-0.14	0.39	0.95
TOBINSQ	86	1.18	0.08	7.37	0.62	0.96	1.48	0.95
c_ROA	86	1.38	-10.88	24.06	-1.37	0.49	3.26	5.12
ROA	86	4.89	-7.37	27.57	2.14	4	6.77	5.12
VOL	86	27.4	14.14	52.52	21.21	26.16	32.11	8.18
LOG_VOL	86	3.27	2.65	3.96	3.05	3.26	3.47	0.29
EXC_COMP	86	0.22	-1.07	1.51	-0.12	0.23	0.57	0.47
EQUITY_PAY	86	0.16	0	0.53	0	0.15	0.29	0.16
HHI	86	0.18	0.03	0.8	0.06	0.09	0.21	0.17
COMP_COM	86	0.74	0	1	0	1	1	0.44
CG_SCORE	86	60.15	9.38	92.81	45.29	62.13	75.88	20.89
ES_SCORE	86	71.18	26.75	93.85	61.23	75.96	84.43	16.76
IMR	86	0.56	0.36	0.76	0.45	0.55	0.66	0.11

*Descriptive statistics for the variables of the SOP dissent model.*

Finally, table 5 displays the pairwise correlations for all variables used in the regression analysis. Further, significant coefficient estimates for the 10 percent with p-values based on the Spearman correlation are presented. Several independent variables are highly correlated. Therefore, the variance inflation factor (VIF) is included in all upcoming regression tables.

**Table 3: Spearman correlation matrix with coefficient and significance level**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
(1) SOP_DISS	1																			
(2) CEOOC5D3Y	0.031	1																		
	0.777																			
(3) CEOOC5D3Y_Adj.	0.0074	0.3955*	1																	
	0.9462	0.0002																		
(4) c_CEOOC5D3Y %_ROA	-0.0206	0.0366	0.3977*	1																
	0.8505	0.7378	0.0001																	
(5) c_CEOOC5D3Y %_TOBINSQ	-0.0112	-0.0413	0.0343	0.7421*	1															
	0.9186	0.7056	0.7538	0																
(6) LOG_TA	-0.2463*	0.2733*	-0.0897	-0.2313*	-0.2673*	1														
	0.0222	0.0109	0.4112	0.0321	0.0128															
(7) CFPS	-0.1053	-0.0756	-0.1528	-0.2529*	-0.2558*	0.4852*	1													
	0.3346	0.4891	0.1602	0.0188	0.0174	0														
(8) MTB	-0.0919	0.0371	0.0905	0.2481*	0.3667*	-0.3146*	-0.1458	1												
	0.3999	0.7345	0.4073	0.0213	0.0005	0.0032	0.1803													
(9) LEV	-0.3221*	0.1282	-0.0854	-0.1721	-0.2421*	0.4444*	0.3485*	-0.3342*	1											
	0.0025	0.2395	0.4341	0.113	0.0247	0	0.001	0.0017												
(10) FHH	-0.4400*	-0.2836*	-0.0114	0.0306	0.0034	0.1199	0.1453	-0.0508	0.1582	1										
	0	0.0081	0.917	0.7797	0.9754	0.2713	0.182	0.6422	0.1458											
(11) TOBINSQ	0.1164	0.031	0.1486	0.3236*	0.4469*	-0.4731*	-0.2319*	0.7615*	-0.4553*	-0.1661	1									
	0.286	0.777	0.172	0.0024	0	0	0.0317	0	0	0.1265										
(12) ROA	0.1166	0.0005	0.0327	0.2931*	0.3460*	-0.4082*	-0.2118*	0.6912*	-0.5457*	-0.2047*	0.8356*	1								
	0.285	0.9966	0.7652	0.0062	0.0011	0.0001	0.0503	0	0	0.0587	0									
(13) LOG_VOL	-0.0877	-0.1437	-0.1966*	-0.2034*	-0.1996*	-0.1704	-0.0003	-0.2721*	0.1469	0.0849	-0.3244*	-0.3247*	1							
	0.4222	0.1869	0.0696	0.0603	0.0654	0.1166	0.9977	0.0113	0.1772	0.4373	0.0023	0.0023								
(14) EXC_COMP	-0.1281	0.1512	-0.0075	0.0767	0.1132	0.4172*	0.2435*	0.0021	0.0357	0.1471	-0.09	-0.0142	-0.0218	1						
	0.2399	0.1646	0.9456	0.4826	0.2995	0.0001	0.0239	0.9844	0.7442	0.1765	0.4101	0.897	0.8422							
(15) EQUITY_PAY	-0.3061*	0.1443	-0.0387	-0.0123	0.0162	0.2129*	0.1108	0.1253	0.1899*	0.1691	-0.1	-0.1199	0.1634	0.3257*	1					
	0.0042	0.185	0.7238	0.9104	0.8825	0.0491	0.31	0.2502	0.08	0.1196	0.3595	0.2717	0.1329	0.0022						
(16) FHH	-0.4400*	-0.2836*	-0.0114	0.0306	0.0034	0.1199	0.1453	-0.0508	0.1582	1.0000*	-0.1661	-0.2047*	0.0849	0.1471	0.1691	1				
	0	0.0081	0.917	0.7797	0.9754	0.2713	0.182	0.6422	0.1458	0	0.1265	0.0587	0.4373	0.1765	0.1196					
(17) COMP_COM	-0.2152*	-0.0124	0.2008*	0.2018*	0.1127	0.1084	0.1632	-0.1165	0.0446	0.0998	-0.0816	-0.0649	-0.0225	0.1911*	-0.004	0.0998	1			
	0.0466	0.9096	0.0638	0.0624	0.3014	0.3203	0.1333	0.2855	0.6838	0.3604	0.4552	0.5524	0.8368	0.078	0.9679	0.3604				
(18) CG_SCORE	0.0415	0.2395*	0.0134	0.152	0.2951*	0.2873*	0.1279	0.2097*	-0.0012	-0.3143*	0.2678*	0.171	-0.1832*	0.3283*	0.165	-0.3143*	0.1213	1		
	0.7043	0.0264	0.9023	0.1624	0.0058	0.0073	0.2405	0.0526	0.9913	0.0032	0.0127	0.1154	0.0913	0.002	0.129	0.0032	0.2659			
(19) ES_SCORE	-0.1757	0.0789	-0.0763	-0.0267	0.0438	0.6092*	0.3742*	0.0913	0.0706	-0.007	0.0235	0.0078	-0.3878*	0.4121*	0.1229	-0.007	0.1922*	0.5271*	1	
	0.1056	0.4703	0.485	0.8075	0.6888	0	0.0004	0.4034	0.5182	0.9491	0.8299	0.943	0.0002	0.0001	0.2594	0.9491	0.0763	0		

\*\*\*, \*\* and \* denote statistical significance at the 1, 5 and 10% level, respectively.

#### 4.4 Results for SOP selection model

The following section provides results for the first-stage logistic regression model by analyzing the association between firm and shareholder characteristics and the likelihood of SOP occurrence. The results are presented in Table 6. Further, population-averaged panel estimates with robust standard errors clustered on the firm level and year as well as industry fixed effects based on the SIC first digit code are included. The model consists of 1216 firm-year observations. The coefficients for firm size (SIZE) and MTB are positive and statistically significant on the 1 and 5 percent level, respectively. In contrast, higher shareholder concentration (HHI) is negatively associated and significant on the 1 percent level. However, no significance for cash flow per share (CFPS), leverage (LEV) as well as industry (untabulated) is present.

**Table 6:** SOP selection model

VARIABLES	(1) SOP
LOG_TA	0.286*** (5.764)
CFPS	-0.0151 (-0.660)
MTB	0.102** (2.129)
LEV	-0.00458 (-1.026)
HHI	-1.489*** (-3.288)
Year & SIC	Yes
Constant	-3.539*** (-4.938)
Observations	1,216
mean VIF	1.21
Wald chi2	200.12

*Logistic population-averaged panel regression with robust std. errors. Firm, corp. gov. & shareholder characteristics as independent variables; SOP dummy as dependent Variable. Year and industry fixed effects are included. Parentheses contain the t-statistics. Mean VIF is tabulated. \*\*\*, \*\* and \* denote statistical significance at the 1, 5 and 10% level, respectively.*

Keeping all variables at their mean values, the likelihood of SOP occurrence is 12.4 %. An increase in firm size by one standard deviation leads to an increase in SOP likelihood by 6.76%, indicating large firms are subject to public interest. In addition, an increase in MTB is associated with a higher probability of 2.22%, which is in line with the expectation that management will ask for SOP votes in times of positive firm performance, as a low dissent rate is expected. With respect to shareholder concentration (HHI), a reduction by one standard deviation leads to a higher likelihood of 3.88%. However, the negative association between the presence of blockholders and SOP occurrence could indicate that blockholders use different and more effective corporate governance mechanisms to enforce their interests (e.g. McCahery et al., 2016).

All included year dummies (untabulated) are negative and significant on the 1 percent level and thus consistent with the fact that the frequency of SOP votes decreases during the underlying period. Further, the results suggest that managers conduct SOP directly after the introduction of SOP regulation, whereas in the following period SOPs are likely used in terms of necessity or when changes in remuneration policies are planned (Obermann, 2018b). Overall, our results for the SOP selection model are similar to the findings of Obermann (2018b). Finally, by controlling for potential self-selection bias in the second SOP dissent model, the estimates of the SOP selection model are used to compute the IMR for all upcoming models.

#### 4.5 Results for SOP dissent model & CEO overconfidence

Table 7 provides regression results for the second stage model examining the association between the interaction of firm performance and CEO overconfidence and SOP dissent. Model (1) represents pooled OLS regression estimates for accounting-based firm performance ROA and CEO overconfidence, while model (2) provides estimates for the interaction between market-based performance Tobin's Q and CEO overconfidence. As stated before, we use mean-centered variables for the equations of CEO overconfidence (c\_CEOCD5D3Y), ROA (c\_ROA) and Tobin's Q (c\_TOBINSQ) to adjust for multicollinearity issues. Consequently, the post estimated

mean variance inflation factors (VIF) of 1.67 and 1.63 indicate no concerns about potential multicollinearity. Next, both models include robust standard errors clustered at the firm level as well as year and industry fixed effects. Further, both regressions consist of 86 firm-year observations. Overall, the R-squared of 0.46 and 0.48 indicates a reasonable explanatory power for the underlying models.

**Table 7:** SOP dissent model

VARIABLES	(1) SOP DISS	VARIABLES	(2) SOP DISS
c_CEOC5D3Y	-0.00986 (-0.129)	c_CEOC5D3Y	0.00852 (0.110)
c_CEOC5D3Y*c_ROA	-0.0174* (-1.781)	c_CEOC5D3Y*c_TOBINSQ	-0.217*** (-3.032)
c_ROA	-0.00182 (-0.478)	c_TOBINSQ	-0.0144 (-1.049)
TOBINSQ	-0.0199 (-1.463)	ROA	-0.00222 (-0.659)
LOG_VOL	0.00220 (0.0312)	LOG_VOL	0.00641 (0.0933)
EXC_COMP	0.00994 (0.191)	EXC_COMP	-0.000631 (-0.0129)
EQUITY_PAY	-0.274** (-2.395)	EQUITY_PAY	-0.287** (-2.497)
HHI	-0.127 (-1.401)	HHI	-0.119 (-1.349)
COMP_COM	0.00800 (0.154)	COMP_COM	0.0117 (0.230)
CG_SCORE	0.000449 (0.442)	CG_SCORE	0.000756 (0.742)
ES_SCORE	-0.00254** (-2.014)	ES_SCORE	-0.00277** (-2.366)
IMR	-0.0471 (-0.0974)	IMR	-0.0428 (-0.0943)
Year & SIC	Yes	Year & SIC	Yes
Constant	0.301 (0.880)	Constant	0.345 (1.034)
Observations	86	Observations	86
mean VIF	1.67	mean VIF	1.63
R-squared	0.463	R-squared	0.477

*Pooled OLS regression with robust std. errors for CEO overconfidence\*ROA (Tobin's Q) on SOP dissent in column 1 (2). Year and industry fixed effects are included. Parentheses contain the t statistics. Mean VIF is tabulated. \*\*\*, \*\* and \* denote statistical significance at the 1, 5 and 10% level, respectively.*

The coefficients of interest for our hypothesis are c\_CEOC5D3Y\*c\_ROA (Column 1) and c\_CEOC5D3Y\*c\_TOBINSQ (Column 2), respectively. The estimate for the interaction between ROA and CEO overconfidence is negative and statistically significant on the 10 percent level, suggesting weak evidence that SOP dissent is negatively associated with CEO overconfidence for firms with higher performance. In terms of the economic effect, an increase in the standard deviation of CEO overconfidence, causes SOP dissent to decrease by 0.38%. Thus, we find weak evidence to support our hypothesis in line with prior academia that SOP dissent is negatively associated for firms with higher performance, namely ROA, and overconfident CEOs. With respect to the underlying controls, the equity pay ratio (EQUITY\_PAY) is negative and statistically significant on the 5 percent level. Regarding economic significance, as EQUITY\_PAY increases by one standard

deviation, SOP dissent decreases by 4.38%. Hence, the results are in line with agency theory and Obermann (2018a, 2018b) providing evidence that stock-based compensation represents an appropriate mechanism for reducing agency conflicts. Next, a firm's sustainability performance (ES\_SCORE) is also negatively associated with SOP dissent on the 5 percent level, resulting in an economic effect of -4.28%. Consequently, the results show that shareholders reward management for improved sustainability performance in SOP voting. Since the IMR is not statistically significant, potential self-selection biases are not present in the SOP dissent specification.

According to model (2) and the interaction of CEO overconfidence and Tobin's Q, we find negative and highly significant coefficients (-0.217). In particular, the coefficient estimates and significance indicates a stronger association for Tobin's Q with CEO overconfidence compared to ROA. Accordingly, if CEO overconfidence increases by one standard deviation for firms with higher Tobin's Q, SOP dissent decreases by 4.77% relative to the sample mean. Next, regarding the estimates of our underlying controls, we still report significant coefficients for equity pay ratio and sustainability performance. However, the coefficient indicates a slightly stronger association.

In summary, we find strong evidence that firms with higher market-based performance and overconfident CEOs are associated with lower SOP dissent, whereas the interaction with accounting-based performance suggests weak but confirming evidence. Consequently, we can confirm our underlying hypothesis that overconfident CEOs in higher-performing firms are negatively associated with SOP dissent. Thus, the results indicate that shareholders are not concerned about the negative implications of CEO's being overconfident, as long as firm performance is high. In addition, the inferences suggest as well, given the assumption that CEO overconfidence is mitigated due to higher equity-based compensation and higher firm performance is present, the SOP dissent will logically decline.

#### 4.6 Sensitivity analysis

For sensitivity analysis, we apply variations in overconfidence scoring by moderating the criteria of frequency in M&A-activity. Since the overconfidence proxy by Doukas and Petmezas (2007) is based on a UK setting and M&A activity in Germany is significantly lower than in UK (e.g. Rossi and Volpin, 2004), we determine CEOs as overconfident, when they conduct three or more acquisitions within a 3-year period (CEOOC3D3Y). For a second variation, we follow Malmendier and Tate (2003) by classifying CEO's as overconfident, when they conduct multiple acquisitions within one year (CEOOC2D1Y). Table 8, provides summary statistics for the variations in overconfidence variables. As the frequency of classified overconfident CEOs varies among the three underlying proxies, the implementation of the sensitivity analysis appears appropriate. Consequently, we re-execute our pooled OLS SOP dissent regression model for robustness check by applying industry adjusted overconfidence proxies with mean centered interaction terms. Robust standard errors clustered on the firm level and year, as well as industry fixed effects, are included.

**Table 8:** Descriptive statistics (CEO overconfidence)

	CEOOC5D3Y		CEOOC3D3Y		CEOOC2D1Y	
	Obs.	Percent	Obs.	Percent	Obs.	Percent
Confident	60	54.05	52	46.85	44	39.64
Overconfident	51	45.95	59	53.15	67	60.36
Total	111	100	111	100	111	100

*Descriptive statistics (CEO overconfidence) for alternative approximation with 3 or more acquisitions in 3 years (CEOOC3D3Y) and multiple acquisitions within one year (CEOOC2D1Y).*

Regression results of the sensitivity analysis for the alternative CEO overconfidence scoring criteria, combined with the interaction between accounting-based (column 1 and 2) and market-based (column 3 and 4) performance on SOP dissent, are presented in table 9. The results for the interaction with  $c\_CEOOC3D3Y * c\_ROA$  misses significance on a 10 percent level slightly (table 9, column 1). However, we still find negative and significant coefficients (-0.0168) for the interaction of  $c\_CEOOC2D1Y * c\_ROA$  with SOP dissent. Noteworthy here is that the coefficient is even significant on a 5 percent level and that the economic effect increases to 0.37% for the decline in SOP dissent. Further, our controls (EQUITY\_PAY and ES\_SCORE) still indicate a significant association. Overall, our sensitivity analyses confirm partially robustness of our main model and provide support for our hypothesis that SOP dissent is negatively associated with overconfident CEOs for firms with higher accounting-based performance.

**Table 9:** Sensitivity analysis

	(1)		(2)		(3)		(4)
	SOP_DISS		SOP_DISS		SOP_DISS		SOP_DISS
c_CEOOC3D3Y	-0.110 (-1.460)	c_CEOOC3D3Y	-0.111 (-1.479)	c_CEOOC2D1Y	-0.0278 (-0.436)	c_CEOOC2D1Y	-0.0428 (-0.657)
c_CEOOC3D3Y*c_ROA	-0.0155 (-1.653)	c_CEOOC3D3Y*c_TOBINSQ	-0.179** (-2.397)	c_CEOOC2D1Y*c_ROA	-0.0168** (-2.066)	c_CEOOC2D1Y*c_TOBINSQ	-0.198*** (-3.189)
c_ROA	-0.00250 (-0.633)	c_TOBINSQ	-0.0117 (-0.768)	c_ROA	-0.00254 (-0.672)	c_TOBINSQ	-0.00608 (-0.474)
TOBINSQ	-0.0202 (-1.460)	ROA	-0.00288 (-0.814)	TOBINSQ	-0.0209 (-1.569)	ROA	-0.00379 (-1.068)
LOG_VOL	-0.0242 (-0.379)	LOG_VOL	-0.0215 (-0.335)	LOG_VOL	-0.0125 (-0.183)	LOG_VOL	-0.00112 (-0.0167)
EXC_COMP	0.0211 (0.380)	EXC_COMP	0.0148 (0.277)	EXC_COMP	0.0198 (0.343)	EXC_COMP	0.0115 (0.213)
EQUITY_PAY	-0.257** (-2.313)	EQUITY_PAY	-0.262** (-2.360)	EQUITY_PAY	-0.282** (-2.520)	EQUITY_PAY	-0.286** (-2.621)
HHI	-0.166* (-1.714)	HHI	-0.161* (-1.685)	HHI	-0.143 (-1.556)	HHI	-0.153 (-1.667)
COMP_COM	0.00742 (0.146)	COMP_COM	0.0123 (0.238)	COMP_COM	0.00131 (0.0259)	COMP_COM	-0.000966 (-0.0191)
CG_SCORE	0.000346 (0.336)	CG_SCORE	0.000556 (0.548)	CG_SCORE	0.000552 (0.543)	CG_SCORE	0.000838 (0.828)
ES_SCORE	-0.00233* (-1.886)	ES_SCORE	-0.00256** (-2.183)	ES_SCORE	-0.00243* (-1.935)	ES_SCORE	-0.00254** (-2.195)
IMR	0.0918 (0.181)	IMR	0.0798 (0.165)	IMR	0.0809 (0.151)	IMR	0.143 (0.276)
Constant	0.269 (0.776)	Constant	0.320 (0.945)	Constant	0.269 (0.787)	Constant	0.259 (0.757)
Year & SIC	Yes	Year & SIC	Yes	Year & SIC	Yes	Year & SIC	Yes
Observations	86	Observations	86	Observations	86	Observations	86
mean VIF	1.71	mean VIF	1.68	mean VIF	1.66	mean VIF	1.66
R-squared	0.474	R-squared	0.482	R-squared	0.472	R-squared	0.490

*Pooled OLS regression with robust std. errors for CEO overconfidence\*ROA (Tobin's Q) on SOP dissent for alternative approximation. Year and industry fixed effects are included. Parentheses contain the t statistics. Mean VIF is tabulated. \*\*\*, \*\* and \* denote statistical significance at the 1, 5 and 10% level, respectively.*



With respect to the channel of market-based performance, the robustness check supports our results from the prior regression analysis. The coefficients for the interaction of  $c\_CEOOC3D3Y*TOBINSQ$  remains negative and significant. However, by applying the more moderate M&A criteria for overconfidence, the reported association indicates lower but significant coefficients (-0.179), suggesting a decline of SOP dissent by 3.94% relative to the sample mean. In terms of CEO overconfidence for multiple deals within one year, the interaction of  $c\_CEOOC2D1Y* TOBINSQ$  indicates lower coefficients (-0.198) compared to the main model. Therefore, an increase in CEO overconfidence by one standard deviation leads to a reduction of SOP dissent by 4.36%. In addition, our controls of interest remain significant but slightly different in coefficients estimates.

In summary, our sensitivity analyses confirm our hypothesis that SOP dissent is negatively associated with overconfident CEOs for higher-performing firms by applying variations in the assessment of overconfidence due to M&A activity. In particular, we provide robust findings that market-based performance is the main reason for shareholder activism, which is in line with prior academia.

## 5 Discussion

Overall, the results are consistent with prior academia. The hypothesis that shareholders are not concerned about the potentially negative implications of CEO overconfidence, as long as accounting-based as well as market-based performance are high, can be confirmed. Since Obermann (2018b) provides evidence that Tobin's Q is negatively associated with SOP dissent, we suggest that the interaction is mainly driven by the market-based dimension as well. Given the large differences between the interaction terms for both, ROA and Tobin's Q, the results appear to be logically consistent as shareholders focus on shareholder value and thus on market capitalization. Following Humphery-Jenner *et al.* (2016), overconfident CEOs are associated with a higher equity pay-ratio, which is in line with agency theory. Consequently, variable compensation represents a corporate governance mechanism with the aim of reducing agency conflicts. Accordingly, shareholders reduce their SOP dissent, when CEOs are compensated in equity to a large extent as they see a lower potential for agency conflicts (Obermann, 2018a). However, with regards to CEO overconfidence, Malmendier and Tate (2005a) prove that overconfident CEOs believe that their equity stake in their companies is particularly attractive and being compensated in equity might even enhance their overconfidence.

Synthesizing both drivers for lower SOP dissent, we conclude that SOP dissent decreases as shareholders are content with the firm performance and with the resolution of agency conflicts through equity compensation. Hence, the results imply that SOP rather serves to communicate shareholder (dis-)satisfaction with executives than for the actual principle of questioning executive's compensation (Fisch *et al.*, 2018; Obermann, 2018b). Further, the results from the SOP selection model indicate an increase in the likelihood of SOP occurrence due to higher firm performance. Consequently, we can derive that CEOs, associated with lower firm-performance, are concerned about the potential of SOP disapproval by strategically proposing SOPs during a higher performance. Therefore, the introduction of mandatory SOPs for EU members from June 2019 (EU Directive 2007/37/EG) is a step in the right direction. However, mandatory SOPs will not resolve the problem of shareholders' voting behavior driven by firm-performance. Thus, the original issue of excessive CEO compensation will remain in the future.

## 6 Limitations and recommendations

First of all, we critically acknowledge that archival research based on historical data is not the best approach to conduct research on behavioral characteristics. As pointed out in chapter 4.2, we have to approximate CEO overconfidence with the M&A-activity of the respective CEO. However, numerical data has its limits when it comes to the determination of behavioral characteristics. The operationalization of behavior in a variable always requires the use of proxies, which might (or not) capture the desired behavioral effect. Our M&A-proxy is no exclusion in this matter. Thus, it is advisable to conduct experiments when it comes to behavioral examinations since they do not need an approximation of the desired effect and enable direct research on the consequences of certain behaviors. For instance, Larwood and Whittaker (1977) conducted a sound experimental approach to dig into the topic of overconfidence and its consequences.

Furthermore, our research approach of using the M&A-activity of CEO as a proxy for overconfidence is derived from the primary study of Doukas and Petmezas (2007), who originally examined the UK and derived that a CEO is overconfident when five or more companies were acquired in a time-frame of 3 years. We directly transfer this approach to Germany, which might raise issues as the German and the UK setting have major differences. In general, M&A-activity and capital market orientation are much higher in Anglo-Saxon countries as capital markets are much more abundant. On top of that, CEO dualism is common in Anglo-Saxon countries, while this phenomenon is impossible in Germany due to the separation of management and monitoring. This circumstance reduces the likelihood of CEOs being overconfident in Germany as they have less power. For upcoming research, a generic CEO overconfidence proxy specifically developed for the German setting can help to overcome the need to transfer findings from other settings. Motivated by recent discussions, we plead for the use of short-term goodwill impairments. Large goodwill impairments, shortly after the acquisition, demonstrate

that the acquisition was not useful and that overconfidence was the driver for it. This proxy would align with the approach of Malmendier and Tate (2008).

Moreover, we neglect the output dimension of SOP research. In order to evaluate the impact of the estimated SOP dissent, the effect on CEO compensation should be regarded (e.g. Ertimur *et al.*, 2011). Therefore, a two-stage regression approach should be applied, which offers the benefit of estimating SOP dissent based on CEO overconfidence, which is then used in the second-stage to estimate CEO compensation. This approach considers the input and output dimension of SOP research (Obermann and Velte, 2018).

Methodologically, we critically acknowledge that our M&A-proxy for overconfidence is “noisy” and captures several effects at the same time. “Noisy” variables imply statistical problems such as “correlation by chance” since it is hard to distinguish with effect, captured by the M&A-variable, is responsible for the correlation (Todeschini *et al.*, 2004). To enhance the robustness of our proxy, we have applied industry adjustments (chapter 4.2) with the aim to control for industry effects. However, due to our limited number of observations, industry data is limited as well, which diminishes the adjustments. Furthermore, the M&A-proxy can capture effects on a firm level (e.g. performance), which we do not control for, potentially biasing our coefficient. For future research, we thus recommend obtaining a greater number of M&A-deals for better industry adjustments and the use of less “noisy” overconfidence proxies in SOP research (e.g. Malmendier and Tate, 2005a).

Moreover, we see potential endogeneity issues in our model. As illustrated in chapter 4.3, we effectively tackle the self-selection bias with the Heckman (1979) correction. However, a variable bias might result from the omission of important explanatory variables for SOP dissent, even though we have included plenty of control variables in our model (Chamberlain, 1978). Gillan and Starks (2000), as well as Yang *et al.* (2012), point out that the type of shareholder (institutional vs. non-institutional investor) is significantly relevant for the result of a shareholder vote, which we do not control for. However, Clarke (2005) critically assesses that the simple inclusion of multiple control variables does not suffice to control for endogeneity. According to Clarke (2009), endogeneity is a consequence of model misspecification and does not result from the omission of variables. Accordingly, formal sensitivity analysis shall be conducted to detect whether or not a variable is important and should be implemented in the regression model.

Finally, our study faces limitations with regard to the small sample. The focus on SOP dissent in Germany and the availability of control variables diminished our sample substantially. Due to this particular focus on the German setting and the small sample, comparability and transferability of our results are not warranted. To overcome this issue, we recommend the conduct of international behavioral SOP research with controls for country effects, which allows for a greater sample of SOP outcomes and more robust results.

## 7 Conclusion

The purpose of this empirical study is to establish SOP dissent and CEO overconfidence research in Germany as only three studies are dealing with SOP votes in Germany (Obermann, 2018a; Obermann 2018b; Eulerich *et al.*, 2014). Thus, our study has pioneering character, because it is the first paper that contributes to behavioral corporate governance literature by examining impacts of CEO overconfidence on SOP dissent votes with a data set of listed German companies.

Our results indicate that SOP dissent is negatively associated with CEO overconfidence for firms with higher accounting-based (ROA) as well as market-based performance (Tobin's Q). Thereby, the negative association is stronger for Tobin's Q. Regarding sensitivity analysis, we implement variations in our CEO overconfidence proxy as the proxy is based on M&A activity in the UK (Doukas and Petmezas, 2007). Henceforward, we adjust our M&A proxy for Germany and require fewer M&A-transactions compared to the UK and classify CEOs as overconfident when they conduct three deals in three or fewer years or execute multiple acquisitions within one year. Mostly, we find significant evidence that SOP dissent is negatively associated with CEO overconfidence for firms with higher accounting-based (ROA) and market-based (Tobin's Q) performance, suggesting that our results are robust.

Our results have several important implications for legislation, practice, and research. First, European legislation efforts are a step in the right direction. However, the issues of excessive CEO compensation will remain. Second, equity-based compensation of CEOs appears to be a working corporate governance mechanism for reducing agency conflicts as shareholders reduce their SOP dissent with increasing CEO equity-based compensation. However, Malmendier and Tate (2005a) provide evidence that overconfident CEOs perceive equity-based compensation as particularly attractive and thus, the corporate governance of equity-based compensation is questioned. Third, higher sustainable performance decreases SOP dissent significantly. Finally, CEOs use SOP proposals during a higher firm performance to hedge themselves against the disapproval of shareholders during a weaker firm performance.

We critically acknowledge our research design as well as our research methodology and provide research recommendations for upcoming studies in behavioral SOP research. An interesting topic for future research is to create German overconfidence proxies (e.g. through short-term goodwill impairments) and the conduct of experiments to dig into the voting behavior of shareholders when CEOs are overconfident.

## 8 Appendix

**Table 10:** Excessive compensation

	(1)
	LOG_TOT_COMP
LOG_TA	0.298** (2.431)
BTM	-0.263*** (-3.839)
RET	-0.0168 (-1.039)
LAG_RET	-0.00178 (-0.210)
ROA	0.0158*** (2.780)
LAG_ROA	-0.00771* (-1.822)
DELTA_DPS	0.0157 (0.437)
Year	Yes
Constant	4.186** (2.338)
Observations	557
mean VIF	2.34
R-squared	0.248

*Excessive compensation model following Core et al. (2008) and Obermann (2018b). Fixed-effects panel regression with robust std. errors. Natural logarithm of total board compensation (LOG\_TOT\_COMP) as the dependent variable. Control variables are the natural logarithm of total assets (LOG\_TA), book-to-market ratio (BTM), annual market return (RET), lagged market return (LAG\_RET), return on assets (ROA), lagged return on assets (LAG\_ROA), change in dividends per share (DELTA\_DPS) and dummies for year effects. Parentheses contain the t statistics. Mean VIF is tabulated. \*\*\*, \*\* and \* denote statistical significance at the 1, 5 and 10% level, respectively.*

## References

- Adams, R. B. & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94, 291-309.
- Ahmed, A. S. & Duellman, S. (2013). Managerial Overconfidence and Accounting Conservatism. *Journal of Accounting Research* 51, 1–30.
- Alicke, M. D., Klotz, M. L., Breitenbecher, D. L., Yurak, T. J. & Vredenburg, D. S. (1995). Personal Contact, Individuation, and the Better-Than-Average Effect. *Journal of Personality and Social Psychology*, 68, 804-825.
- Alissa, W. (2015). Boards' Response to Shareholders' Dissatisfaction: The Case of Shareholders' Say on Pay in the UK. *The European Accounting Review*, 24, 727-752.
- Balsam, S., Boone, J., Liu, H. & Yin, J. (2016). The impact of say-on-pay on executive compensation, *J. Account Public Policy*, 35, 162-191.
- Bates, K., & Hennessy, D. (2010). Tilting at windmills or contested norms? Dissident proxy initiatives in Canada. *Corporate Governance: An International Review*, 18, 360–375.
- Becht, M., Franks, J., Mayer, C. & Rossi, S. (2009). Returns to shareholder activism: Evidence from a clinical study of the hermes UK focus fund. *Review of Financial Studies*, 22, 3093-3129.
- Ben-David, I., J. R. Graham, & Harvey, C. R. (2013). Managerial Miscalibration. *Quarterly Journal of Economics*, 128, 1547–1584.
- Bosse, D. A. & Phillips, R. A. (2016). Agency Theory and Bounded Self-Interest. *Academy of Management Review*, 42, 1–56.
- Brunarski, K. R., Campbell, T. C. & Harman, Y. S. (2015). Evidence on the outcome of Say-On-Pay votes: How managers, directors, and shareholders respond, *Journal of Corporate Finance*, 30, 132-149.
- Burns, N. & Minnick, K. (2013). Does say-on-pay matter? Evidence from say-on-pay proposals in the United States. *The Financial Review*, 48, 233-258.
- Cai, J. & Walkling, R. A. (2011). Shareholders' say on pay: Does it create value?. *Journal of Financial and Quantitative Analysis*, 46, 299-339.
- Chamberlain, G. (1978). Omitted Variable Bias in Panel Data: Estimating the Returns to Schooling. *Annales de l'inséé*, 30, 49–82.
- Cheng, B., Ioannou, I. & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal* 35, 1-23.
- Chih, H.-L., Chih, H.-H., & Chen, T.-Y. (2010). On the Determinants of Corporate Social Responsibility: International Evidence on the Financial Industry. *Journal of Business Ethics*, 93, 115–135.
- Chowdhury, S. D., & Wang, E. Z. (2009). Institutional activism types and CEO compensation: A time-series analysis of large canadian corporations. *Journal of Management*, 35, 5–36.
- Clarke, K. A. (2005). The Phantom Menace. Omitted Variable Bias in Econometric Research. *Conflict Management and Peace Science*, 22, 341–352.
- Clarke, K. A. (2009). Return of the Phantom Menace. Omitted Variable Bias in Political Research. *Conflict Management and Peace Science*, 26, 46–66.
- Core, J. E., Guay, W. & Larcker, D. F. (2008). The power of the pen and executive compensation. *Journal of Financial Economics*, 88, 1-25.
- Cullinan, C. P., Mahoney, L. & Roush, P. B. (2017). Are CSR activities associated with shareholder voting in director elections and say-on-pay votes?. *Journal of Contemporary Accounting and Economics*, 13, 225-243.
- De Falco, S. E., Cucari, N. & Sorrentino, E. (2016). Voting Dissent and Corporate Governance Structures: The Role of Say on Pay in a Comparative Analysis. *Corporate Ownership & Control*, 13, 188-197.
- Deb, P., David, P. & O'Brien, J. (2017). When is cash good or bad for firm performance?. *Strategic Management Journal*, 38, 436-454.
- Deshmukh, S., Goel, A. M. & Howe, K. M. (2013). CEO overconfidence and dividend policy. *Journal of Financial Intermediation*, 22, 440-463.
- Doukas, J. A. & Petmezas, D. (2007). Acquisitions, Overconfident Managers and Self-attribution Bias. *European Financial Management*, 13, 531–577.
- Ertimur, Y., Ferri, F., & Stubben, S. R. (2010). Board of directors' responsiveness to shareholders: Evidence from shareholder proposals. *Journal of Corporate Finance*, 16, 53–72.
- Ertimur, Y., F. Ferri, & Muslu, V. (2011). Shareholder Activism and Shareholder Pay. *Review of Financial Studies*, 24, 535–592.
- Ertimur, Y., Ferri, F. & Oesch, D. (2013). Shareholder Votes and Proxy Advisors: Evidence from Say on Pay. *Journal of Accounting Research*, 51, 951-996.
- Eulerich, M., Kalinichenko, A. & Theis, J. C. (2014). Say-on-Pay: an empirical investigation of voting likelihood and voting behavior in German Prime Standard companies. *Journal of Management Control*, 25, 119-133.
- Falato, A., Kadyrzhanova, D. & Lel, U. (2014). Distracted directors: Does board busyness hurt shareholder value?. *Journal of Financial Economics*, 113, 404-426.

- Fama, E. F. & Jensen, M. C. (1983). Agency Problems and Residual Claims. *Journal of Law & Economics*, 26, 327–349.
- Ferri, F. & Maber, D. A. (2013). Say on pay votes and CEO compensation: Evidence from the UK. *Review of Finance*, 17, 527-563.
- Ferri, F., & Oesch, D. (2016) Management influence on investors: Evidence from shareholder votes on the frequency of say on pay. *Contemporary Accounting Research*, 33, 1337–1374.
- Ferris, S. P., Jayaraman, N. & Sabheral, S. (2013). CEO Overconfidence and International Merger and Acquisition Activity. *The Journal of Financial and Quantitative Analysis*, 48, 137-164.
- Fisch, J., Palia, D. & Solomon, S. D. (2018). Is Say on Pay All about Pay: The Impact of Firm Performance. *Harvard Business Law Review*, 8, 101-129.
- Gervais, S., J. B. Heaton, & Odean, T. (2011). Overconfidence, Compensation Contracts, and Capital Budgeting. *Journal of Finance*, 66, 1735–1777.
- Gillan, S. L. & Starks, L. T. (2000). Corporate governance proposals and shareholder activism. The role of institutional investors. *Journal of Financial Economics*, 57, 275–305.
- Hall, B. J. & Murphy, K. J. (2002). Stock options for undiversified executives. *Journal of Accounting and Economics*, 33, 3-42.
- Ham, C., Lang, M., Seybert, N., & Wang, S. (2017). CFO Narcissism and Financial Reporting Quality. *Journal of Accounting Research*, 55, 1089-1135.
- Hauser, R. (2018). Busy directors and firm performance: Evidence from mergers. *Journal of Financial Economics*, 128, 16-37.
- Hayward, M. L. A. & Hambrick, D. C. (1997). Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris. *Administrative Science Quarterly*, 42, 103–127.
- Heaton, J. B. (2002). Managerial Optimism and Corporate Finance. *Financial Management* 31, 33-45 & 1457-1498.
- Heckman, J. J. (1979). Sample Selection Bias as a Specification Error. *Econometrica*.
- Hirshleifer, D., A. Low, & Teoh, S. H. (2012). Are Overconfident CEOs Better Innovators?., *Journal of Finance*, 67, 1457–1498.
- Hooghiemstra, R., Kuang, Y. F. & Qin, B. (2015). Say-on-Pay Votes: The Role of the Media. *European Accounting Review*, 24, 753-778.
- Hooghiemstra, R., Kuang, Y. F., & Qin, B. (2017). Does obfuscating excessive CEO pay work? The influence of remuneration report readability on say-on-pay votes. *Accounting and Business Research*, 47, 695–729.
- Hribar, P. & Yang, H. I. (2016). CEO Overconfidence and Management Forecasting. *Contemporary Accounting Research*, 33, 204-227.
- Hsieh, T.-S., Bedard, J. C. & Johnstone, K. M. (2014). CEO Overconfidence and Earnings Management During Shifting Regulatory Regimes. *Journal of Business Finance & Accounting*, 41, 1243-1268.
- Hsieh, T.-S, Wang, Z. & Demirkan, S. (2018). Overconfidence and tax avoidance: The role of CEO and CFO interaction. *Journal of Accounting and Public Policy*, 37, 241-253.
- Humphery-Jenner, M., Liscic, L. L., Nanda, V. & Silveri, S. D. (2016). Executive overconfidence and compensation structure. *Journal of Financial Economics*, 119, 533-558.
- Iacobucci, D., Schneider, M. J., Popovich, D. L. & Bakamitsos, G. A. (2016). Mean centering helps alleviate ‘micro’ but not ‘macro’ multicollinearity. *Behavior Research Methods*, 48, 1308-1317.
- Jensen, M. C. & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3, 305–360.
- Jensen, M. C. (1986) Original version: Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*. *American Economic Association*, 76, 323–329.
- Kahneman, D. & Tversky, A. (1986). Rational Choice and the Framing of Decisions. *Journal of Business*, 59, 251–278.
- Kent, P., Kercher, K. & Routledge, J. (2018). Remuneration committees, shareholder dissent on CEO pay and the CEO pay-performance link. *Accounting and Finance*, 58, 445-475.
- Kim, C. & Bettis, R. A. (2014). Cash is surprisingly valuable as a strategic asset. *Strategic Management Journal*, 35, 2053-2063.
- Kimbro, M. B. & Xu, D. (2015). Shareholders have a say in executive compensation. Evidence from say-on-pay in the United States. *Journal of Accounting and Public Policy*, 35, 19–42.
- Kruger, J. (1999). Lake Wobegon be gone! The ‘below-average effect’ and the egocentric nature of comparative ability judgments. *Journal of Personality and Social Psychology*, 72, 221-232.
- Larcker, D. F., McCall, A. L., & Ormazabal, G. (2015). Outsourcing shareholder voting to proxy advisory firms?. *The Journal of Law and Economics*, 58, 173–204.
- Larwood, L. & Whittaker, W. (1977). Managerial Myopia: Self-Serving Biases in Organizational Planning. *Journal of Applied Psychology*, 62, 194–198.
- Leuz, D., Nanda, D. & Wysocki, P. (2003). Earnings Management and Investor Protection: An international comparison. *Journal of Financial Economics*, 69, 505-527.

- Malmendier, U. & Tate, G. (2003). Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction. *Working Paper*.
- Malmendier, U. & Tate, G. (2005a). CEO Overconfidence and Corporate Investment. *The Journal of Finance*, 60, 2661-2700.
- Malmendier, U. & Tate, G. (2005b). Does Overconfidence Affect Corporate Investment? CEO Overconfidence Measures Revisited. *European Financial Management*, 11, 649-659.
- Malmendier, U. & Tate, G. (2008). Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction. *Journal of Financial Economics*, 89, 20-43.
- Malmendier, U., Tate G. & Yan, J. (2011). Overconfidence and Early-Life Experiences: The Effect of Managerial Traits on Corporate Financial Policies. *The Journal of Finance*, 66, 1687-1733.
- McCahery, J. A., Sautner, Z. & Starks, L. T. (2016). Behind the Scenes: The Corporate Governance Preferences of Institutional Investors. *Journal of Finance*, 71, 2905-2932.
- McCarthy, S., Oliver, B. & Song, S. (2017). Corporate social responsibility and CEO confidence. *Journal of Banking and Finance*, 75, 280-291.
- Monem, R. & Ng, C. (2013). Australia's 'two-strikes' rule and the pay-performance link: Are shareholders judicious?., *Journal of Contemporary Accounting and Economics*, 9, 237-254.
- Nier, J. A. (2004). Why Does the "Above Average Effect" Exist? Demonstrating Idiosyncratic Trait Definition. *Teaching of Psychology*, 31, 54-55.
- Obermann, J. (2018a). Can management-sponsored non-binding remuneration votes shape the executive compensation structure? Evidence from Say-on-Pay votes in Germany. *The European Journal of Finance*, 24, 1609-1630.
- Obermann, J. & Velte, P. (2018). Determinants and consequences of executive compensation-related shareholder activism and say-on-pay votes: A literature review and research agenda. *Journal of Accounting Literature*, 40, 116-151.
- Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. *Journal of Finance*, 53, 1887-1934.
- Park, C. & Kim, H. (2009). The Effect of Managerial Overconfidence On Leverage. *International Business & Economics Research Journal*, 8, 115-126.
- Pepper, A. & Gore, J. (2015). Behavioural Agency Theory. New Foundations for Theorizing About Executive Compensation. *Journal of Management*, 41, 1045-1068.
- Renneboog, L. & Szilagyi, P. G. (2011). The role of shareholder proposals in corporate governance. *Journal of Corporate Finance*, 17, 167-188.
- Roll, R. (1986). The Hubris Hypothesis of Corporate Takeovers. *The Journal of Business*, 59, 197-216.
- Ross, S. A. (1973). The Economic Theory of Agency: The Principal's Problem. *American Economic Review*, 63, 134-139.
- Rossi, S. & Volpin, P. F. (2004). Cross-country determinants of mergers and acquisitions. *Journal of Financial Economics*, 74, 277-304.
- Rouen, E. Rethinking Measurement of Pay Disparity and Its Relation to Firm Performance. *Working Paper*.
- Sauerwald, S. & Su, W. (2017). CEO Overconfidence and Impression Management Through CSR Reporting. *Academy of Management Proceedings*.
- Sauerwald, S., van Oosterhout, J. H., & van Essen, M. (2016). Expressive shareholder democracy: A multilevel study of shareholder dissent in 15 western European Countries. *Journal of Management Studies*, 53, 520-551.
- Schrand, C. M. & Zechmann, S. L. C. (2012). Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53, 311-329.
- Shieh, G. (2011). Clarifying the role of mean centering in multicollinearity of interaction effects. *British Journal of Mathematical and Statistical Psychology*, 64, 462-477.
- Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers?., *Acta Psychologica*, 47, 143-148.
- Todeschini, R., V. Consonni, A. Mauri, & Pavan, M. (2004). Detecting "bad" regression models: multicriteria fitness functions in regression analysis. *Analytica Chimica Acta*, 515, 199-208.
- Weimar, J. & Pape, J. (1999). A Taxonomy of Systems of Corporate Governance, Corporate Governance. *An International Review*, 7, 152-166.
- Wiseman, R. M. & Gomez-Mejia, L. R. (1998). A Behavioural Agency Model Of Managerial Risk Taking. *Academy of Management Review*, 23, 133-153.
- Yang, J., E. Zengxiang Wang & An, Y. (2012). Canadian exceptionalism. Shareholder proposals, filer identities, and voting outcomes., *Managerial Finance*, 38, 456-484.
- Zheng, X.; El Ghouli, S. Guedhami, O. & Kwok, C. C. Y (2012). National culture and corporate debt maturity. *Journal of Banking and Finance*, 36, 468-488.