The Social Stigma Premium in Executive Compensation in Sin Firms

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Abstract: This paper examines the economic costs of violating social norms, by looking at the compensation of executives of 'sin' firms – firms whose products are viewed negatively in light of prevailing social norms. We define sin firms as firms involved in the production of alcohol, gambling, and tobacco products. We find a statistically and economically significant premium in the compensation of these firms' executives. This premium is consistent across several subcategories of compensation, several broadening samples of 'sin firms', and is present in all the three examined industries. We find that the premium is unlikely to be spurious. We also find that the premium cannot be fully explained by firms' physical characteristics, by increased risk in the form of income risk and pay performance sensitivity, or by managerial ability. We find evidence that the premium is more likely to be the result of a 'stigma' connected to the negative public perception of sin firms' activities than the result of specific executive traits valuable only to sin firms. Our results suggest that sin firms pay their executives more to compensate them for taking on this stigma, and this compensation appears unrelated to the characteristicsof the work the executives perform. We also find that sin firm executives are less likely to hold outside directorships, and that this and the compensation premium may be related.

1. Introduction

The impact of social norms on markets has been gaining in popularity as a research topic in the past several years. A growing body of evidence that social norms matter for business even in situations which written law does not directly impact has begun emerging (see e.g. Glaeser and Scheinkman, 2003). Often, the profit motive and economic rationality are accused of producing outcomes that are socially sub-optimal, and many arguments about the role of politics, public administration, and the state in the economy revolve around similar topics. Part of the interest in research which examines if unwritten and not formally enforced norms can impact markets lies in its potential to shed light on whether and how social pressure can restrain economic tendencies which follow from the basic functioning of the system, but which society may wish to curb, such as the financing of profitable and legal, but morally ambiguous operations. Results in this field can potentially have important implications for our understanding of the economic force of informal institutions, as well as for policy decisions.

We examine the compensation of executives in sin firms – firms which produce alcohol, gambling, and tobacco; all arguably examples of 'moral ambiguity'. These firms' activities violate social norms in the sense that their products, while legal, are considered to be vice and known to be harmful to consumers' physical and/or mental health. The topic of sin firms has emerged several times in recent research on the economic impacts of social norms. As a prime example, previous research has shown that sin firms are shunned by norm-constrained institutional investors – for example, pension funds – presumably because these investors do not wish to be associated with the negative perception sin firms' activities generate (Hong and Kacperczyk, 2009). The authors find that these firms outperform the market by a significant margin, suggesting that they trade cheaper than their physical characteristics would imply. They believe that the documented shunning of sin stocks results in their reduced liquidity and arbitrage possibilities, and allows idiosyncratic risks to enter their valuations. There is thus evidence that social norms can influence the cost of equity.

By looking at executive compensation, we are trying to determine whether social norms can also lead to increased operating costs for sin firms, in particular personnel costs. Executive compensation is a good first step to measure social norms' impact on these costs. A large portion of the cross-sectional variation in executive compensation remains unexplained (Graham et al., 2012), and investigating the impact of social norms on the compensation of top executives can improve our understanding of the driving forces of executive compensation and the principal-

agent relationship. Furthermore, understanding of social norms' impact on executive compensation can serve as a stepping stone to analyzing the impact of these norms on the labour force in general. Such knowledge would be valuable not only to labour market research but to finance as well, as total employee compensation forms an important part of any firm's operating costs, making the implied cost-of-labour impact of social norms potentially significant.

Previous research shows that public perception of a firm can be a relevant factor in executive compensation. CEOs of companies ranked as 'prestigious' require less compensation than others, controlling for firm characteristics (Maug et al., 2012). The authors find evidence that this is because the social status garnered by working for a prestigious firm has value to the CEOs, and they are willing to forgo a part of their financial compensation in exchange. As there is evidence that sin firms are disadvantaged (at least) in the stock market, and that public perception matters to top executives, it seems logical that if a stigma exists in sin firms and matters to executives, they should demand to be compensated for having to bear it. Similarly, it has been described before that the characteristics of executives' firms (particularly their profitability) are important for executives' prospects of receiving seats as outside directors on the boards of other companies (Kaplan and Reishus, 1990). If sin firms are shunned, their executives might also be less desirable as outside directors.

We identify a significant premium in the compensation of sin firm executives, after controlling for a number of firm-level determinants of executive compensation such as firm size, growth, and profitability. The premium is consistent across several components of compensation and robust to a more sensitive definition of sin activity involvement, and statistically unlikely to be the result of random selection of industries with premia. Further supporting the hypothesis that the premium is related to sin activities is the fact that the premium is strongest in the tobacco industry, which is arguably the most disapproved-of of the three (Beneish et al., 2008; Hong and Kacperczyk, 2009), followed by the gambling industry, and finally the alcohol industry. Consistent with predictions of the hypothesis that the cause of the premium is a social stigma in sin firms, we find that the share of compensation unexplained by firm characteristics and career progression of executives who switch jobs between sin firms and non-sin firms is higher while in the sin firm, , suggesting that there is an element of executive compensation specific to sin firms.

We test for several alternative explanations of a compensation premium and find them unlikely: Sin firm executive compensation does not exhibit signs of greater income risk: the part of the

variability of compensation (measured by the coefficient of variation) unexplained by firm characteristics is unable to explain or even significantly affect the compensation premium, and the same is true of the proportion of compensation decreases over increases. Pay performance sensitivity also does not account for the premium: Using the method of Jensen and Murphy (1990) we find a lower pay performance sensitivity in sin firms We employ the firm-level executive ability measure recently developed by Demerjian et al. (2012) and we also construct an estimate of executives' individual contributions to firm excess return. We find that either of these also does not explain the premium.

Finally, we examine the number of personal connections available to executives and directors through seats on the boards of directors of other firms. One possibility is that in the 'set-upon' (by regulators, public opinion, legal action, etc.) sin industries, such connections could be more valuable than elsewhere, which could potentially explain a premium specific to sin, but would make that premium only indirectly related to social pressure. We find evidence that on the one hand, such networks of connections appear to be valued in sin firm *directors*, but on the other, than sin firm *executives* exhibit significantly lower directorial activity and smaller connection networks. This contradicts the hypothesis that this particular potentially sin-specific skill is the source of the premium. We also find that sin executives have shorter tenures, after controlling for firm characteristics, which would be unlikely if they possessed any skills uniquely valuable in sin firms, in which case these firms would presumably be interested in retaining such executives as long as possible. Our findings on the lower directorial activity of sin executives also correspond to predictions of the stigma hypothesis, which implies that because directorial seats are related to success and professional standing as an executive, and possibly also a mark of social status (Kaplan and Reishus, 1990; Maug et al., 2012), stigmatized executives of sin firms should receive them less often.

The remainder of this paper is organized as follows: Section 2 reviews prior research and develops hypotheses, Section 3 presents the research design, Section 4 describes data, Section 5 discusses results, and Section 6 concludes.

2. Literature and Hypotheses

The impact of social norms on business in sin firms – the 'cost of sin' – has seen several recent contributions in the literature. Hong and Kacperczyk (2009) examine the stock returns and ownership structure of sin firms, and find that firms in the tobacco, gambling, and alcohol industries are valued consistently cheaper than their returns would imply: they estimate that sin firms earn a premium of 2.5 percentage points of return per year over comparables, an economically significant amount. They also find that these firms have lower ownership shares of norm-constrained institutions such as e.g. pension funds and a lower analyst following, suggesting their stocks are systematically avoided by a segment of the investor public. They believe this avoidance leads to lower liquidity and arbitrage of these firms' stocks, which causes idiosyncratic risks to enter valuation and cause the stocks to be effectively underpriced. This suggests social norms may have significant cost impacts on sin firms. Such costs may also not be limited to the financial markets: Leventis and Hasan (2012) find that sin firms pay higher fees for external audit. They present several alternative explanations – that auditors work more diligently on sin firm contracts because the costs of failure in the form of reputation loss for the auditor are greater; that auditors do not work harder but extract an insurance-like premium to insulate themselves from these costs; or that the sin firms themselves demand more rigorous audit in order to assure the public of the quality of their reporting and thus improve their public perception.

Beneish et al. (2008) document a particularly striking impact of sin industry involvement in tobacco firms: They find that these firms create value through diversifying acquisitions, which are otherwise generally value-destroying to the bidder shareholders (e.g. Jensen, 1986, Shleifer and Vishny, 1988). They find that the reason tobacco firms undertake these acquisitions is likely to protect themselves against expropriation and litigation by public authorities and private claimants. The acquisitions help this purpose primarily through the geographical expansion of the firms' political connectedness and influence, which presumably improves their chances of defending themselves against such expropriation, and secondarily through divesting the firm of excess cash, which is much easier to claim then physical assets in the event of an expropriation attempt. Benesih el al. also find that this strategy began to be widely employed (and successful in creating shareholder value) for tobacco firms only after 1953, when the adverse effects of smoking on health were conclusively proven. Their results contribute to evidence that social norms may act on sin firms through varied mechanisms, and show that the effects of social norms can lead to substantial structural and operational changes, which can presumably only

be justified by a threat of significant costs. Furthermore, they represent evidence that tobacco firms may be the most 'stigmatized' out of the three sin industries.

The effects of firm perception on the compensation of top executives are explored in Maug et al. (2012), who examine the compensation of CEOs of firms identified as 'prestigious' by their placement in several rankings of firm perception by the general public and business professionals. They find that CEOs of prestigious firms are willing to accept lower compensation, and suggest this is likely because of the increased social status that working for a prestigious firm confers, or possibly because of improved career opportunities gained by working for a popular firm. They also find that the effect is only significant when boards of directors are strong; when they are not the CEOs do not get paid less and extract the benefits of prestige as an additional rent. This implies that prestige is not simply a proxy for better governance, which in itself may be associated with lower executive compensation (e.g. Bebchuk et al., 2002; Bebchuk and Fried, 2003; Yermack, 2006).

Prior research thus shows that social norms can have significant economic impacts. Specifically in sin firms, which violate social norms relating to the morality of business, social norms have been shown to potentially be related to a variety of costs and anomalous behaviours by the firm and/or its environment. We believe that social norms may be related to a 'cost of sin' in sin firms through a premium in the compensation of executives: It has been suggested that executive compensation is sensitive to prestige, or social status, and it stands to reason that firms violating social norms suffer from a loss of status – prior research also indicates that certain market agents avoid interacting with sin firms, likely for this reason and to avoid losing status themselves by association. We therefore believe it is possible that the decreased social status of sin firms may transfer onto their executives and hurt their own social standing, leading to a premium in their compensation awarded as recompense for having to bear this 'sin stigma'.

> **Hypothesis 1**: There is an idiosyncratic premium in executive compensation in sin firms.

Furthermore, prior results indicate that certain sin activities may be more heavily 'stigmatized' than others, in particular tobacco firms, based on their unique and complex counter-expropriation behaviour, as well as observations about the high and mounting level of public

animosity and reprisal against this industry (Beneish et al., 2008; Hong and Kacperczyk, 2009). This suggests that if a premium is present, it would make sense for it to scale with the 'sinfulness' of the individual industries. As a logical extension of that argument, the premium would also be likely to scale with the magnitude of a firm's sin involvement, as not all firms active in the sin industries focus exclusively on norm-violating operations.

> **Hypothesis 2**: The premium in executive compensation is larger when exposure to sin is greater.

In order to look for a sin premium in executive compensation, it is necessary to understand its known determinants. A sizeable body of past research agrees that executive compensation is positively related to firm attributes relevant to shareholder value, such as firm size (e.g. Hartzell and Starks,2003; Gabaix and Landier,2008), growth (Maug et al., 2012), performance (Hartzell and Starks,2003; Roulstone, 2003; Engel et al., 2010), risk (Roulstone, 2003; Maug et al., 2012), the market-to-book ratio popularized by Fama and French (Fama and French, 1993; Roulstone, 2003). Executive compensation may also be influenced by outside career options, and firms in larger industries may pay more in order to remain competitive given the larger offer of other executive jobs in the industry (Coles et al., 2012). Relative importance of the executive within the top management also affects compensation (Engel et al., 2010); our data shows that CEOs in particular receive significantly higher compensation than other top managers. Because strong serial dependence has been documented in executive compensation (e.g. Jensen and Murphy, 1990; Graham et al., 2012), it has become relatively common to include both current and lagged firm characteristics in cross-sectional compensation regressions (Graham et al., 2012).

One of the most discussed features of executive compensation is its performance sensitivity (e.g. Gibbons and Murphy, 1990; Jensen and Murphy, 1990; Frydman and Saks, 2010). Although the relationship has been documented as far back in time as modern records are available (Gabaix and Landier, 2008), evidence is contrary on whether this relationship has been strengthening, weakening, or constant (Gibbons and Murphy, 1990; Frydman and Saks, 2010). In any case, compensation level as well as performance sensitivity are influenced by the power balance between owners and managers (Bebchuk et al., 2002; Bebchuk and Fried, 2003):

Powerful owners are able to curb managers' tendencies to overpay themselves (e.g. Maug et al., 2012), while powerful managers extract pecuniary and non-pecuniary rents from firms (Bebchuk et al., 2002; Grinstein and Hribar, 2004; Yermack, 2006; Maug et al., 2012).

Forced turnover of executives is related to performance in a manner similar to pay performance sensitivity (Coughlan and Schmidt, 1985; Warner et al., 1988; Weisbach, 1988; Huson et al., 2004; Jenter and Lewellen, 2010), and performance-related turnover may in fact be considered an extreme manifestation of pay performance sensitivity. Again, strong owners increase the sensitivity of the performance-turnover mechanism (Jenter and Lewellen, 2010). However, executives may also leave voluntarily or involuntarily for other reasons, such as retirement, firm acquisition, or a better offer elsewhere. The last is presumably related to a higher tendency of executives to leave after exceptionally good performance (Fee and Hadlock, 2003), which combined with an increased chance of being fired after poor performance creates a 'U-shape' in the performance-turnover relationship.

Another attribute that may influence compensation is ability. Demerjian et al. (2012) have recently developed a measure of the collective ability of a firm's executives as the variance in firm efficiency that cannot be attributed to firm characteristics. Another possible proxy for ability is firm performance; studies of turnover events indicate contribution to firm value is relevant for executive compensation (Hayes and Schaefer, 1999; Nguyen and Nielsen, 2010). Individual ability and results also contribute to an executive's career mobility options (Coles et al., 2012). Performance as an executive is likewise important for the offers of outside director seats in other companies (Kaplan and Reishus, 1990; Brickley et al., 1999).

Outside directorships form an important part of an executive's career prospects, and may be considered a mark of status among executives (Kaplan and Reishus, 1990). Additionally to the status mark function of directorships for executives, all directors also receive financial compensation, which, although substantially lower than top executive compensation, is non-trivial, especially if an individual holds multiple directorships (Yermack, 2004). While success as an outside director is related to success in the primary job for an executive, it is also influenced by an individual's actions as a director: Directors who defend shareholder interests successfully are rewarded, often by a higher probability of receiving additional directorships; conversely, failure at defense of shareholder rights leads to a higher probability of losing seats (Farrell and Whidbee, 2000; Coles and Hoi, 2003; Harford, 2003). Because performance of directors is understandably important to owners and the balance of power between managers

and the board can have important implications (Bebchuk et al., 2002; Bebchuk and Fried, 2003; Grinstein and Hribar, 2004; Yermack, 2006; Jenter and Lewellen, 2010; Maug et al., 2012), firms likely hire successful outside executives as directors in order to improve their chances of creating a strong board. However, firms may also hire successful executives as directors for signaling and publicity reasons, as having a successful manager on the board may be seen by potential investors as a sign of a strong board (Kaplan and Reishus, 1990).

Having previously established the possibility that association with a sin firm transfers a stigma of poor public perception upon the executive, we believe it is possible this stigma may also influence executives' activities as outside directors: Prior research suggests that firms hire outside directors not only because of their prior success, but possibly also to send a signal of good governance to owners. Therefore, we believe the presence of the stigma may make sin firm executives less attractive as outside directors in other firms, leading to their lower holdings of outside directorships, and thus further loss of prestige and financial gain which come with directorial seats. It is even possible that the executive compensation premium in sin firms is directly related to this handicap in directorial activities as a concrete manifestation of the adverse effects of the sin stigma we hypothesize the managers to bear.

Hypothesis 3: Sin firm executives are less active as outside directors on the boards of other firms.

3. Research Design

To test the effects of firm sin status on executive compensation we use a standard linear regression model of the form:

$$\boldsymbol{Comp_t = \beta_0 + \beta_1 Sin_t + \sum_i \beta_i Controls + \sum_j \beta_j FE + \varepsilon_t} \quad \textbf{(1)}$$

Consistent with prior research (Roulstone, 2003; Gabaix and Landier, 2008; Maug et al., 2012) we use the total direct compensation as measured in the ExecuComp database (item *'TDC1'*) as

the main compensation measure. We further decompose *TDC1* into salary (*Salary*), bonus (*Bonus*), and other direct compensation (*ODC*) and we estimate the model using these four measures as dependent variables to assess the consistency of the premium across the individual compensation components. *Sin* is a dummy variable equal to 1 if a company is a sin firm and zero otherwise. We use three definitions of *Sin* based on the intensity of a firms' involvement in sin activities. We define our default sin measure (*SIN1*) in a way derived from the approach of Hong and Kacperczyk (2009): We define a sin firm based on the Fama and French (1997) '49 industries' (FF49), as a firm belonging to the alcohol industry (SIC codes in the range 2100 – 2199), the gambling industry, the tobacco industry (SIC codes in the range 2080 – 2085), or the gambling industry (NAICS codes 7132, 71312, 713210, 71329, 713290, 72112, and 721120, as gambling is not separated out of the entertainment industry in the SIC-based FF49 classification).

Our second definition (*SIN2*) includes all firms classified in *SIN1* as well as firms which have at least one segment belonging to the sin industries defined above. *SIN2* corresponds to the primary sample used in Hong and Kacperczyk (2009). Our widest sample, *SIN3*, further enlarges *SIN2* by adding firms which are not in the Hong & Kacperczyk sample but which are flagged with 'alcohol concern', 'gambling concern', or 'tobacco concern' in the MSCI ESG STATS ('MSCI', formerly KLD) database. A relatively peripheral sin involvement is generally sufficient for a firm to be flagged in this database; therefore, this sample may also contain firms the bulk of whose activities is only distantly or not at all related to a sin industry. We expect the sin premium to be largest in firms that meet the most restrictive definition and weaken as the definition broadens. We also disaggregate the sin effect into the three individual industries that constitute the *SIN1* sample, using the dummies *ALC1* for the alcohol industry, *GAM1* for the gambling industry, and *TOB1* for the tobacco industry. Besides being present in each individual industry, we expect sin effects to be strongest in the tobacco industry, followed by the gambling industry, followed by the alcohol industry. This expectation is based on our assessment of the degree of 'disapproval' that these industries' products elicit in public policy and the society in general.

We base our set of control variables (*Controls*) on the recent work of Maug et al. (2012) who examine executive compensation in prestigious firms. These controls generally reflect determinants of executive compensation identified in past research. It is well established that executives in firms that are larger, faster growing, better performing, riskier, or have a higher share of value in future prospects, are paid more. We measure firm size (*CAP*) as the natural

logarithm of the number of shares outstanding times the closing price at the last trading day of the fiscal year (Gabaix and Landier,2008; Hartzell and Starks,2003). We also include sales volume (*SALE*) as an accounting measure of firm size (e.g. Gabaix and Landier, 2008; Roulstone, 2003), measured as the natural logarithm of the dollar value of the firm's sales for the fiscal year. We measure growth by the growth of sales (*SALES_GR*), an accounting measure,(e.g. Maug et al., 2012), computed as the ratio of total dollar sales for fiscal year *t* over total sales for fiscal year *t-1*. We use return on assets (*ROA*) as an accounting measure of profitability (e.g. Engel et al., 2010; Roulstone, 2003). We define ROA as the ratio of the *Income Before Extraordinary Items* (Compustat item no. 18) to total book assets (Compustat item no. 6). We measure market performance by excess return (*XRET*); We define excess return as the difference between the firm's cum-dividend stock market return for the fiscal year and the return on the S&P 500 index for the same fiscal year. Stock performance in some form is used as a control e.g. in Hartzell and Starks (2003), Roulstone (2003).

We use the standard deviation of stock returns (*SD_RET*) as a proxy for firm risk, as in for example Maug et al. (2012), Rousltone (2003). We compute *SD_RET* for fiscal year *t* as the standard deviation of the series of monthly cum-dividend stock returns for the 12 months of *t*, i.e. the 12 consecutive calendar months ending with the firm's fiscal-year-end month. Some executive compensation research (e.g. Roulstone, 2003) also uses the market-to-book ratio (*MB*) as a control. Its properties are discussed in Fama and French (1993), who propose the ratio as a measure of the market's appraisal of the firm's future prospects, and possibly also an indicator of industry status as 'glamour' or 'value'.. We compute *MB* as the ratio of market capitalization at the end of the fiscal year to the book value of equity at the end of the same fiscal year. We use a CEO status dummy variable (*CEO*), which records whether or not the executive has been CEO in the given fiscal year; we do not differentiate by role between the remaining top executives. A CEO dummy is used e.g. in Hartzell and Starks (2003). We also add industry size (*FFSIZE*) to our control set, as it may affect compensation by influencing the number of outside career options and 'tournament incentives' available to executives (Coles et al., 2012). We measure *FFSIZE* as the natural logarithm of the number of firms in the sample that belong to the same FF49 industry classification in a given fiscal year. .

We adjust all dollar amounts and returns we work with for inflation, with the average value of the US CPI for 1982-1984 being the baseline. We Winsorize all ratio variables, stock and market returns and derivative variables, and all compensation variables at 1%. Following Maug et al. (2012), we lag all our main controls except for *CEO* and *FFSIZE* by one year, to allow

for a transmission lag between when results are generated and when they can be incorporated into compensation in a negotiation process between owners and executives. The lagging of controls can also be found e.g. in Hartzell and Starks (2003), Roulstone (2003). Consistent with (e.g. Graham et al., 2012), we also add the non-lagged versions of our performance controls, *SALES_GR*, *ROA*, and *XRET*. The vector *FE* in (1) is a vector of year fixed effect variables, i.e. a set of dummy variables, one for each year in the sample, which are equal to 1 if the fiscal year is equal to the year tracked by the dummy, and zero otherwise. It is necessary to drop one of these variables to avoid the 'dummy trap'; we let the statistics software (Stata) determine which one to drop in each regression.

We cluster standard errors at the firm-executive combination level (ExecuComp variable '*co_per_rol*') as such clustering is recommended to make errors robust to the effects of unobserved factors specific to either firms or individuals (Petersen, 2009). We present the 'economic magnitude' of our sin premium estimates as 'percentage abnormal compensation' (*PAC*), which is the mean residual/fitted ratio in an auxiliary regression estimated with the same controls and on the same sample (including any restrictions that may be in effect), but with the sin dummy of interest excluded. *PAC* assumes that the mean of the random noise in residuals is zero and that any nonzero elements in the mean are attributable to the excluded variable (the sin dummy).

We use the same basic setup in the majority of our regressions, which are generally of the form:

$$\boldsymbol{Y_t = \beta_0 + \beta_1 Sin_t + \beta_2 Sin_t * Int_t + \beta_3 Int_t} + \sum_i \beta_i Controls + \sum_j \beta_j FE + \boldsymbol{\varepsilon_t} \quad (2)$$

The dependent variable *Y* may be the compensation variables, or another variable relevant to the aim of the regression: In regressions examining the directorial activities of sin executives, for example, the dependent variables examined include e.g. the number of outside directorships held by the executive or the average market capitalization of a firm where the executive is an outside director. In regressions where we examine the qualities of firms the dependent variable may be for example the size of the board of directors. The vector of controls in firm-level regressions does not include the individually specific CEO dummy and may include other relevant firm-specific characteristics instead, e.g. the Gompers-Ishii-Metrick *G-index* (a corporate governance quality measure, Gompers et al., 2003). Otherwise the controls used are the same as in (1). In regressions examining firms standard errors are clustered at the firm level.

In our tests regarding sin firm directors, we also use the regression format (2), with the dependent variable being for example the number of other directorial seats held or the average market cap of these other firms. The vectors of control variables in director regressions does not include any of the firm-specific controls used in (1), as they are irrelevant to the activities of a firm's outside directors in other firms where these also hold directorships. In some director regressions *Controls* is an empty vector, while in others it includes relevant director-related characteristics such as the number of directorships held or the market value of firms supervised by the director. In directors regressions we cluster standard errors at the individual level (IRRC Directors database variable '*did*'), as a 'home firm' is not applicable to directors (unless it is the subsample of directors who are also executives, in which case we cluster by *co_per_rol* as previously discussed, and also use the 'home firm' characteristics as controls).

In some regressions we wish to examine whether the effect of a control variable is different in the sin industries than elsewhere. In that case, we use the interaction of the selected control with the sin dummy variables as shown in Equation (2). These interacting variables may be from the original set of controls, or specifically constructed for this purpose. A case of the latter deserving closer explanation is the control variable for executive contribution to excess return (*Contribution*), which we regress on executive compensation. This variable is an alternative to the Demerjian et al. (2012) *MA Score* measure of executive ability, which we construct to gain some measure of executives' individual abilities, as the MA Score is only firm-specific. To obtain *Contribution*, we first perform the auxiliary regression:

$$\boldsymbol{XRET_t = \beta_0 + \beta_1 MRET_t + \beta_2 CAP_{t-1} + \beta_3 MB_{t-1} + \sum_i \beta_i IFE + \sum_j \beta_j FE + \varepsilon_t} \quad \textbf{(3a)}$$

That is, we regress firm excess return (*XRET*) on the market return (*MRET*), firm market cap and M/B ratio, with industry (*IFE*) and year (*FE*) fixed effects and with observations constrained to one per firm-year. We consider the residuals from this regression to be an approximation of excess return adjusted for effects outside managerial control, comparable across firms and time. We then use these residuals as the dependent variable in a second auxiliary regression,

$$\boldsymbol{r_{ft} = \beta_{f0} + \sum_i \beta_{fi} Present_{fti} + \varepsilon_{ft}} \quad \textbf{(3b)}$$

Where *Present* is a set of dummy variables which indicate whether a given executive *i* was present in a firm *f* in a given year *t*, covering all years in which the firm is present in our main

sample and all executives who are present in the main sample as having worked for that firm at any time in the sample. This regression is performed for each firm in the sample separately. We consider the estimated coefficient on $Present_{fi}$ to be an approximation of executive *i*'s average contribution to r_f, which is the firm *f*'s excess return, estimated in (3a) so as to be comparable, over the time the executive has been with the firm. We retain the match of *Present* to an executive's database ID throughout the outlined procedure, allowing us to plug the coefficient estimates of *Present*, collected for all *f*, *t*, and *i*, back into the main dataset as the variable *Contribution*.

We measure pay performance sensitivity following Jensen and Murphy (1993):

$$\Delta \boldsymbol{C_{t,t-1}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 Sin_t} + \boldsymbol{\beta_2 Sin_t} * \Delta \boldsymbol{W_t} + \boldsymbol{\beta_3 Sin_t} * \Delta \boldsymbol{W_{t-1}} + \boldsymbol{\beta_4} \Delta \boldsymbol{W_t} + \boldsymbol{\beta_5} \Delta \boldsymbol{W_{t-1}} + \boldsymbol{\varepsilon_t} \quad (3)$$

where $\Delta C_{t,t-1}$ is the change in executive compensation between *t* and *t-1*, and ΔW_t is change in shareholder wealth defined as firm stock return at *t* times shares outstanding at *t-1*. As in Jensen and Murphy (1993), we consider the pay performance sensitivity to be the sum of the slopes on ΔW_t and ΔW_{t-1}. That implies that the estimate of the pay performance sensitivity difference in the sin industries compared to other firms is given by the sum of $\beta_2 + \beta_3$, and the estimate of the total pay performance sensitivity in sin firms is given by $\sum_{i=2}^{5} \beta_i$. As a robustness check, we also estimate the regression with *Controls* and year fixed effects, as well as using XRET instead of ordinary return to compute ΔW. This last is done on the assumption that marketwide effects are generally outside of the executives' control, and past research shows that owners likely take this distinction into account when evaluating executives (Coughlan and Schmidt, 1985; Gibbons and Murphy, 1990). The *Controls* vector nonetheless includes market return as an additional control variable, on the assumption that while not the primary driver of the pay performance relationship, it can still be relevant for the level of compensation (Gibbons and Murphy, 1990). All other performance-related variables (growth of sales and ROA) are omitted from *Controls* for pay performance sensitivity tests, to avoid collinearity with *XRET*.

To estimate binary outcomes we use probit regressions of the same general form that is described in (2), except that *Y* is now the dependent binary outcome (e.g. whether or not an executive holds any outside directorships, or whether or not an executive will switch employers), and vector of controls is selected from variables relevant to what is being measured and the sample it is being measured on; in general, controls in binary outcome regressions for

firms and executives are similar to the controls used in (1), while director binary outcomes generally lack firm-specific controls and may have director-specific controls or no controls beyond the sin variables and possibly an interacting variable of interest.

4. Data

We use two main data samples: executive compensation and board membership. The executive compensation sample is drawn primarily from the ExecuComp database, with firm accounting data drawn from the Compustat database and firm market data from the CRSP database. The final sample covers the entire period and set of firms and their executives tracked by ExecuComp, with only the finance industries (Fama-French codes 45 – 48, SIC code range 6000 – 6999) excluded. The time range of the sample is 1992 – 2012, inclusive, and there are over 175,000 observations, each of them a firm-executive-fiscal year combination. We adjust all data to match the CRSP definition of fiscal year, i.e. fiscal year is *t* for all companies ending their fiscal years June *t-1* through May *t*. CRSP stock market data is available monthly and we compute annual returns to match the actual month of fiscal year end, nonetheless approximately 2/3 of firms end their fiscal year in December. There are over 2,600 firms, with mean time in sample of 11.6 years (out of 21 years covered). There are over 32,300 executives, with mean time in sample of 3.3 years. The average number of executives per firm per year in sample is 6.1 (one of these is always the CEO).

The sample is reasonably well balanced in terms of annual observation count: Excepting the first year (1992), where the number of observations (5,972) is only 71% of the mean of 8,387, the highest deviation from mean observation count is 15% in 1998 (9,631 observations total). ExecuComp coverage is based on market index membership (generally the S&P 1500), and thus uneven observation count should neither favour nor neglect sin firms. We exclude the financial sector for the reason that both firm structure and compensation rules are quite specific there, and therefore the determinants of executive compensation will likely also be different. Excluding financial firms is common practice in cross-sectional economic research (e.g. Yermack, 2006a). We drop observations where book equity is negative, as these are typically firms in severe distress and may be under a non-standard management regime. We further drop observations where total direct compensation is negative for the year (very few such

observations exist), as these are most likely anomalous cases inconsistent with normal compensation principles.

The board membership sample is drawn from the IRRC Directors database and again contains the full time and firm range available, except for board members of finance firms. This sample has approximately 170,000 observations in the time period 1996 – 2012, each observation being a firm-director-year combination. There are over 24,600 directors with a mean time in sample of 10.2 years (out of 17 years covered), serving on the boards of over 3,300 firms, which have a mean time in sample of 6.5 years. The average number of directors tracked per firm per year is 9.2. The sample is again quite well balanced – the two greatest deviations from the mean of 9,976 obs. per year are -17% in 2007 (8,283 obs. total) and -11% in 1996 (8,856 obs.). There are approximately 33,600 observations which are present in both samples (19% of the executives sample, 20% of the directors sample), i.e. observations of executives who also serve as directors. We base our analysis of the directorial activities of executives on this combined sample.

Sin firms in the *SIN1* sample represent about 2,200 observations (1.3%) of the executive compensation sample. This represents 436 executives (1.3%) in 35 firms (1.3%). By industry, the *SIN1* sample consists of 886 observations (159 executives at 9 firms) in the alcohol industry (*ALC1*), 980 observations (203 executives in 21 firms) in the gambling industry (*GAM1*), and 375 observations (75 executives at 5 firms) in the tobacco industry (*TOB1*). The *SIN2* sample consists of approximately 2,900 observations of 551 executives in 44 firms, about 1.7% of the sample in each case. The *SIN3* sample contains roughly 3,900 observations (2.2%) of 873 executives (2.7%) in 82 firms (3.1%). *SIN2R*, the increment between *SIN1* and *SIN2*, contains 665 observations of 119 executives at 9 firms. *SIN3R*, the increment between *SIN2* and *SIN3*, contains 984 observations of 326 executives at 38 firms. In the board membership sample, the board members of *SIN1* firms represent about 2,400 observations (1.4%) of 483 directors (1.5%) at 28 firms (1.1%). This breaks down into 1,091 observations of 184 directors in 8 firms in *ALC1*, 799 observations of 202 directors in 15 firms in *GAM1*, and 496 observations of 99 directors in 5 firms in *TOB1*. *SIN2* firms represent roughly 3,200 observations (1.8%) of 621 directors (1.9%) in 37 firms (1.4%) and *SIN3* firms account for around 4,700 observations (2.7%) of 1,090 directors (3.4%) in 72 firms (2.7%). SIN2R firms comprise 823 observations of 143 directors in 9 firms, and SIN3R firms consist of 1,502 observations of 490 directors at 35 firms.

5. Results

We document a significant and consistent premium in executive compensation in sin firms (Table 3). The premium is the largest (421,948 USD per annum, inflation-adjusted) and the most significant (*t*-stat 6.80) for our main sin firm definition (*SIN1*) based on company-wide industry classification. The mean ratio of unexplained to explained compensation (*PAC*) is higher by 25.3 percentage points in *SIN1* (not tabulated). The premium decreases as we broaden the definition to *SIN2*, which also includes firms with at least one sin segment (355,981, *t*-stat 6.65), and further decreases when we use the *SIN3* definition, which additionally includes firms with any other involvement in sin activities (276,999, *t*-stat 6.13). Firms that qualify for *SIN2* but not *SIN1* and those that belong to *SIN3* but not *SIN2* still have slightly positive premiums but the statistical significance of these findings is low, also due to the limited number of observations in these sub-groups (164,952, *t*-stat 1.67, and 65,113, *t*-stat 0.81).

Consistent with our expectations the premium is the largest for the tobacco industry (593,261, *t*-stat 3.12) where we expect the perceived sinfulness to be the strongest; it is smaller for gambling (444,728, *t*-stat 5.70), and even smaller but still significant for the alcohol industry (329,408, *t*-stat 3.32). In our sample 17 out of 46 non-financial industries exhibit a statistically significant (at 5%) premium in executive compensation, hence the probability to find a premium in three randomly selected industries is about 4.5%. In addition, the three sin industries feature the first, the fourth, and the eighth largest premium.

Decomposing the total compensation we observe a significant premium in all three components, i.e. in salary (51,832, *t*-stat 7.86), bonus (65,964, t-stat 6.16), and in other direct compensation (292,445, t-stat 5.77). When distinguishing between the CEOs and other executives the premium is significant both for the CEOs (435,295, t-stat 2.94) and for the other executives (396,506, t-stat 7.72) and the mean difference in *PAC* is higher for CEOs (31.5 percentage points) than for non-CEOs (23.5 percentage points). We also observe weak, statistically insignificant evidence on the increase of the premium over time (11,773, *t*-stat 1.37 ~ $p = 0.17$), which should be expected in case the social aversion to sin tends to strengthen over time.

We consider two potential explanations for the documented premium. First, it is conceivable that sin industries are more competitive, the performance of sin firms is more dependent on managerial talent, and hence sin they aim to attract more competent executives and to incentivize them by conditioning their pay on performance. Under this scenario the premium would reflect a compensation for the higher competence and higher risk the sin firm executives face and so it would *not* be directly related to social norms. Alternatively, it is possible that sin firms are shunned by the society, and the social aversion imposes cost on their employees and creates more need for defending the position of the sin firms in the economy. In this case, the premium represents a compensation for the social *stigma* that the sin firms face. Our ensuing analysis provides stronger support for the latter explanation.

We consider several potential explanations for the documented premium – risk, general ability, specific ability, and social stigma. First, we examine whether the sin premium reflects a compensation for higher executive risk. If the performance of sin firms were more dependent on managerial talent they would have incentives to attract more competent executives and to incentivize them by conditioning their pay on performance. the sin firm executives face

We analyze pay performance sensitivity. Following Jensen and Murphy (1990) we regress the change in total compensation ($dTDC1_t$) on the current and past change in shareholder wealth ($dWEALTH_t$, $dWEALTH_{t-1}$) measured by the inflation-adjusted stock return multiplied by company value in the beginning of the year. We then use the sum of the slope coefficients b_1 and b_2 as the main pay performance sensitivity measure. Table 4 shows that the total compensation in sin firms is less sensitive to performance: for *SIN1*, the combined slope of the main effects at *t*, *t-1* is 0.161; the combined slope of the interaction coefficients is -0.113, for a net slope of 0.048 in *SIN1* (30% of the main effect slope). The F-statistic of this regression is 81.18. We find similar results in *SIN2*, *SIN3*, and for the decomposition into *TOB1*, *GAM1*, and *ALC1* (see table).[1] This finding is particularly Sin firms have lower institutional ownership (Hong and Kacperczyk, 2009) and higher institutional ownership is associated with a higher probability of owners disciplining managers (Denis et al., 1997); despite that fact, sin firm

[1] As a robustness check we (i) consider the change only in salary and bonus instead of total compensation, (ii) we include year fixed effects, (iii) we include the controls we use in (Tab 147.14) along with the fixed effects, and (iv) we use excess return instead of simple return. The results are qualitatively unaffected.

shareholders (or their representatives) are generally stronger relative to managers than shareholders of other firms. Greater relative shareholder power furthermore tends to be associated with higher pay performance sensitivity (Bebchuk et al., 2002 and Bebchuk and Fried, 2003); despite these facts, we find lower pay performance sensitivity in sin firms.

Executive turnover can also be related to performance: Badly performing executives may get fired (e.g. Coughlan and Schmidt, 1985; Jenter and Lewellen, 2010) and well-performing executives may get promoted or offered a higher-value job elsewhere (Fee and Hadlock, 2003). We look at the effect of ROA being in top and bottom tercile on the probability that an executive will leave. We find that the probability that an executive will leave in the future conditional on year's *ROA* being in the bottom tercile is lower in sin firms (-0.279, t = -2.27 in *SIN1*), while the probability of leaving in the future conditional on *ROA* in the top tercile is higher (0.195, t = 1.74 in *SIN1*)(Table 5). When only same-year and last-year performance is considered, the effect of performance on the probability of leaving does not appear different in sin firms than elsewhere, regardless of whether the measure used is *ROA* or *XRET* and whether the top and bottom quantiles considered are terciles, quartiles, or quintiles.

Other than income risk factors, the premium could also be caused by individual characteristics of executives, which our main regression is mostly unable to control for. One possibility is a superior average general ability of sin firm executives, which if present could explain the premium as simply compensation for the above-average ability. We use the ability measure developed by Demerjian et al. (2012), the 'MA Score' (*Ability*). This score represents the share of firm efficiency (for details see Demerjian et al., 2012) not attributable to firm-specific factors, and thus likely attributable to the ability of the management team. We find that the impact of *Ability* on compensation is not significantly different in sin firms and that the inclusion of *Ability* and its interaction with the sin dummies into the main regression does not affect the estimate of the premium in any significant manner (Table 6). Furthermore, the hypothesis that the industry mean of *Ability* is higher in sin is rejected at 10% significance for *SIN1*, *SIN2*, and *SIN3*, as well as *TOB1*, *GAM1*, and *ALC1*.

Because the MA Score is a firm-level measure of the collective ability of the management team, we also employ *Contribution*, our own estimate of the individual contribution of executives to excess returns, once these have been adjusted for relevant firm and market characteristics. The construction method of the *Contribution* variable does not allow for direct comparison of means between industries, making it primarily useful as a complement to *Ability*, which does allow

industry comparison, but is not individually specific. *Contribution* can be included in the basic regression, which operates on the individual level, as both a simple and interacting control. It is a weakly significant predictor of executive compensation as a simple control and insignificant in interaction with the sin variables (t = 0.79 for *TDC1* in the *SIN1* interaction). Furthermore, the inclusion of *Contribution* and its interaction with the sin variables does not significantly affect the premium associated with the sin variables themselves in terms of either statistical significance or magnitude.

We next look at changes in the compensation of executives who switch employers, on the assumption that any premia for individual characteristics would remain through a transition. There are 2,090 executives who change jobs (6.5%) in our sample. We find that executives who at some point work in sin and switch jobs to a non-sin firm (or come into sin from a non-sin firm) receive a premium that is smaller and less statistically significant (about 410,136 versus 688,535, or 60%, on *TDC1* in *SIN1*, *t*-stats 1.67 and 3.38, respectively), after controlling for firm characteristics, pay changes related to increasing seniority (proxied by time in sample) and job changes in general. The *PAC* (mean unexplained variance in pay, which we take to be indicative of a premium) estimated from this regression (limited to the sample of executives with more than one job on record) for *TDC1* is 46.9% for executives in *SIN1*, and -4.6% for *SIN1* executives in their other jobs, further suggesting that the premium is idiosyncratic to the sin industries.

Aside from a sin-related stigma, a factor fulfilling the conditions indicated by previously discussed results could potentially also be an individual characteristic of an executive which is only valuable (or more valuable) to sin firms. Such a trait would presumably not be related to firm characteristics or performance, and would also not elicit a premium in a non-sin firm. The distinction between an explanation using such a 'specific ability' and using sin stigma is that while in either case the sin firm is providing the compensation as a consequence of its being a sin firm, an explanation using a sin-specific characteristic still requires the executive to possess this characteristic, while a stigma would place no special performance or trait requirements on the executive whatsoever. One candidate for a specific characteristic that could be the cause of the sin premium is a network of personal connections. Prior research shows that connections in politics and public administration can be an important trait in a senior employee, particularly in sin firms (Beneish et al., 2008). While it is difficult to measure informal personal connections outside the business world, there is ample data for the membership of firms' Boards of

Directors, which enables us to examine the personal networks available to executives and directors (and through them to firms) through the boards on which they sit.

Looking first at sin firm directors, we find that the personal networks of outside board connections accessible to sin directors (measured as the number of distinct individuals a director sits with on all boards other than the board of the firm in question) are significantly larger, by 18.8% of mean in *SIN1*. Furthermore, sin firm shareholders seem to value such connectedness, as evidenced by the inverted relationship between firm G-index and director connectedness in sin firms. The G-index is an indicator counting certain governance features which, if present, limit the ability of shareholders to exercise their rights, and as such is a measure of the balance of power between shareholders and managers and considered a proxy for corporate governance quality (see Gompers et al., 2012) and e.g. Maug et al., 2012). Normally, lower G-index (higher shareholder power relative to managers) is associated with less-connected directors. We hypothesize this is because connectedness is directly related to the number of other boards a director serves on, and that strong owners want directors to have time to focus on the supervision of *their* firm, or alternatively that shareholder power is greater in firms where directors have more time to focus on their duties. In sin firms however, higher shareholder power is strongly associated with better-connected directors, suggesting sin firm owners may value connectedness significantly more than other firms' shareholders (Table 7). Additionally, sin firms are generally firms with better governance as measured by the G-index.

A similar though statistically insignificant effect is found in board size: lower G-index (higher shareholder power) generally means smaller boards, but in sin firms lower G-index is (weakly) associated with larger boards (*p*-value for *SIN1* 0.28), which may be related to the hypothesis that sin firm owners value personal networks of directors: larger boards would mean more directors whose networks the firms may take advantage of. Unparametrically, sin firm boards are 13% larger than other firms' boards for *SIN1*. As there are indications that smaller boards are generally associated with higher valuations and better CEO incentives (Yermack, 2006a), sin firms may be forgoing important benefits by having larger boards. This in turn reinforces the impression that sin firm owners find some idiosyncratic value in larger boards of directors.

Despite the fact that sin firms seem to value personal networks at the board level, the networks accessible through outside directorships to sin firm executives (i.e. the number of distinct individuals they sit with on all boards where they hold a directorship, other than that of the firm where they are employed as executives) are much smaller than the directorial networks of the

executives of other firms, controlling for characteristics of the executive's 'home' firm, which may be relevant to directorial appointments (Kaplan and Reishus, 1990). The estimated negative coefficient on the *SIN1* dummy represents 75.7% of sample mean network size (t = -3.05)(Table 8). The difference in sin executive connectedness is mainly driven by their significantly lower probability to hold any outside directorships at all, which is lower by 45 percentage points in *SIN1* (t-stat -7.98). These results are especially strong in the tobacco industry: networks are estimated to be smaller by 246% of mean (t = -7.31) and the probability of having any outside network at all is lower by 148 percentage points (t = -7.35). Additionally, the gap between the estimate of network size based on firm characteristics with the sin dummy omitted and actual network size explains the premium in the tobacco industry when used as an interacting control. In general, being better connected than the model predicts is associated with higher compensation; in sin firms, being connected worse seems associated with higher compensation, although the statistical significance is low (p = 0.21 for *TDC1* in *SIN1*) and the premium is only affected in the tobacco industry.

These results suggest that even though large networks of connections are a trait that is more valuable in sin firms than elsewhere, sin firm executives do not possess such networks; in fact, their connection networks are smaller than those of their peers in otherwise comparable companies. This makes it unlikely that personal connectedness, which seems to be a trait specifically valued in sin firm *directors*, is the source of the sin premium for *executives*. A piece of indirect evidence against sin executives possessing sin-specific abilities in general is the fact that they have significantly shorter tenure than executives elsewhere, controlling for firm characteristics: If sin executives had any abilities uniquely valuable to sin firms (possibly valuable enough to justify the observed premium in compensation), we would expect that these firms would try to hold on to these uniquely suited executives for as long as reasonably possible, which, if anything, should lead to longer tenures.

In sum, we find evidence of a premium in sin firm executive compensation that does not appear to be spurious or to be a result of increased risk or a higher general ability of sin firm executives. We also do not find support for the hypothesis that the premium is a result of sin executives possessing abilities or traits that are uniquely valuable to sin firms. Because the premium scales as expected with the degree of sin involvement and with what we believe to be the relative 'sinfulness' of the three component industries of sin, and because sin firm executives are significantly less active as outside directors even though such networks, when possessed by outside directors, seem to be more valuable in sin firms than elsewhere, we believe the most

likely explanation for the premium is compensation for a social stigma associated with sin firms. There is even some evidence that the premium may be directly related to the lower directorial activity of sin executives, at least in the tobacco industry.

6. Conclusion

We examine executive compensation in sin firms and find a statistically and economically significant premium. The portion of total executive compensation unexplained by firm characteristics and year fixed effects is 25.3% greater in firms belonging to the tobacco, gambling, or alcohol industries. We find evidence that the premium is not related to firm or income risk, pay performance sensitivity, generic ability, or sin-specific traits or abilities of the executives. We also find that while sin firms seem to value the networks of personal connections that come with high-ranking personnel serving as outside directors on the boards of other firms, as evidenced by sin firms' idiosyncratic attitudes toward board size as it relates to governance quality and the larger personal networks exhibited by their directors, sin firm executives are nonetheless significantly less active as outside directors on the boards of other firms. This suggests that sin firm executives may suffer from a social stigma caused by the poor public perception of the firms they work for, which may make them less desirable as outside directors in other firms. We find support for the hypothesis that this stigma is responsible for both these executives lower activity as directors and for the premium in their compensation. Evidence from the tobacco industry suggests that the two may even be related, with the premium being compensation for the prestige and financial gain lost through the lower likelihood of holding outside directorships.

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Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ALC1	176 133	0,01	0,07	0,00	1,00
GAM1	176 133	0,01	0,07	0,00	1,00
TOB1	176 133	0,00	0,05	0,00	1,00
SIN1	176 133	0,01	0,11	0,00	1,00
SIN2	176 133	0,02	0,13	0,00	1,00
SIN2R	176 133	0,00	0,06	0,00	1,00
SIN3	176 133	0,02	0,15	0,00	1,00
SIN3R	176 133	0,01	0,07	0,00	1,00
TDC1	156 965	1 022,89	1 434,65	71,16	9 277,05
SALARY	176 133	198,00	121,76	19,96	667,83
BONUS	176 133	106,38	191,96	0,00	1 199,79
ODC	156 965	693,76	1 234,36	0,00	7 933,57
CAP $_{t-1}$	174 936	6,53	1,62	-0,44	12,61
SALE $_{t-1}$	175 703	6,39	1,68	0,00	12,21
SALES_GR $_{t}$	172 744	0,10	0,27	-0,50	1,44
SALES_GR $_{t-1}$	171 078	0,11	0,28	-0,50	1,53
ROA $_{t}$	176 055	0,04	0,11	-0,55	0,26
ROA $_{t-1}$	175 705	0,04	0,11	-0,58	0,26
XRET $_{t}$	176 133	0,04	0,33	-0,65	1,46
XRET $_{t-1}$	176 133	0,05	0,34	-0,65	1,53
SD_RET $_{t-1}$	175 254	0,11	0,06	0,00	0,37
MB $_{t-1}$	174 826	2,10	1,58	0,71	10,46
CEO	176 133	0,17	0,38	0,00	1,00
FFSIZE	176 133	6,00	0,84	2,89	7,33
DWEALTH $_{t}$	175 173	85,18	949,25	-4 170,19	5 230,07
DWEALTH $_{t-1}$	139 395	86,99	943,75	-4 134,86	5 247,33
Ability	161 028	0,01	0,14	-0,43	0,55
JOB_NO	176 133	1,06	0,26	1,00	4,00
Time in sample	176 133	4,82	3,86	1,00	21,00
G-index	149 280	8,99	2,63	1,00	18,50

Table 1: Descriptive statistics

Main sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. Sin involvement dummies are defined in Section 3. TDC1 is ExecuComp (EC) *total direct compensation* (item *tdc1*). SALARY is EC item *salary* ; BONUS is EC item *bonus* ; ODC is *other direct compensation* , ODC = TDC1 - SALARY - BONUS. CAP is the natural logarithm of market capitalization (period end price times period end shares outstanding). SALE is the natural logarithm of total sales (Compustat item 12, *Sales (Net)*). SALES_GR is the growth of sales, i.e. $SALES\_GR_t=SALE_t/SALE_{t-1}$. ROA is return on assets, $ROA_t=IB_t/AT_t$, where IB is *Income Before Extraordinary Items* (Compustat item no. 18) and *AT* is total book assets (Compustat item no. 6). XRET is excess return, defined as firm stock return for the fiscal year less market return for the fiscal year. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the *market-to-book* ratio, $MB_t=CAP_t/EQ_t$, where EQ is book common equity (Compustat item 11). CEO is a dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of distinct firms in the *Fama-French 49 Industries* industry for the fiscal year. DWEALTH is the Jensen-Murphy (1990) measure of the change in shareholder wealth, i.e. the firm stock return multiplied by market cap at the end of the previous year. *Ability* is the 'MA Score' metric from Demerjian et al. (2012). JOB_NO is the serial number of executive's employment in the sample (1^{st}, 2^{nd}, etc.). *Time in sample* is the total number of years the executive has been present in the sample up until the year in question, which we use as a proxy for experience. *G-index* is the Gompers-Ishii-Metrick (2003) corporate governance quality index. All financial variables and returns are adjusted for CPI inflation to the mean prices of 1982-84. All continuous variables except FFSIZE and *Ability* are Winsorized at 1% (two-sided).

Table 1: Descriptive statistics

Table 2: Correlation matrix continued

	ALC1	*GAM1*	*TOB1*	*SIN1*	*SIN2*	*SIN2R*	*SIN3*	*SIN3R*	*TDC1*	*SALARY*	*BONUS*	*ODC*	*CAP* $_{t-1}$	*SALE* $_{t-1}$
ALC1	1,000													
GAM1	(0,006)	1,000												
TOB1	(0,004)	(0,004)	1,000											
SIN1	0,610	0,673	0,408	1,000										
SIN2	0,525	0,578	0,350	0,860	1,000									
SIN2R	(0,005)	(0,006)	(0,003)	(0,008)	0,504	1,000								
SIN3	0,446	0,492	0,298	0,731	0,850	0,429	1,000							
SIN3R	(0,006)	(0,007)	(0,004)	(0,010)	(0,011)	(0,006)	0,517	1,000						
TDC1	0,053	0,017	0,050	0,065	0,059	0,007	0,066	0,029	1,000					
SALARY	0,068	0,042	0,056	0,093	0,084	0,007	0,101	0,055	0,641	1,000				
BONUS	0,050	0,029	0,067	0,078	0,080	0,025	0,071	0,005	0,510	0,484	1,000			
ODC	0,045	0,009	0,042	0,051	0,045	0,001	0,052	0,026	0,976	0,548	0,349	1,000		
CAP $_{t-1}$	0,095	0,001	0,080	0,092	0,077	(0,006)	0,100	0,066	0,507	0,494	0,328	0,475	1,000	
SALE $_{t-1}$	0,077	(0,008)	0,060	0,067	0,064	0,012	0,087	0,060	0,408	0,533	0,312	0,360	0,772	1,000
SALES_GR $_{t}$	(0,016)	0,012	(0,020)	(0,010)	(0,008)	0,002	(0,011)	(0,009)	0,064	(0,064)	0,085	0,063	0,015	(0,201)
SALES_GR $_{t-1}$	(0,016)	0,016	(0,021)	(0,008)	(0,007)	(0,001)	(0,015)	(0,017)	0,059	(0,063)	0,024	0,067	0,056	(0,121)
ROA $_{t}$	0,038	(0,003)	0,038	0,037	0,032	(0,000)	0,037	0,019	0,092	0,081	0,142	0,074	0,258	0,176
ROA $_{t-1}$	0,037	(0,001)	0,038	0,038	0,032	(0,001)	0,037	0,017	0,085	0,079	0,082	0,076	0,300	0,198
XRET $_{t}$	(0,008)	0,008	(0,000)	0,000	0,002	0,004	0,002	(0,001)	0,037	(0,008)	0,066	0,032	(0,077)	(0,039)
XRET $_{t-1}$	(0,010)	0,014	0,002	0,004	0,006	0,004	0,006	0,001	0,063	(0,005)	0,049	0,062	0,090	(0,042)
SD_RET $_{t-1}$	(0,059)	0,014	(0,034)	(0,041)	(0,040)	(0,009)	(0,049)	(0,028)	(0,067)	(0,189)	(0,108)	(0,041)	(0,337)	(0,356)
MB $_{t-1}$	0,028	(0,019)	0,047	0,024	0,003	(0,034)	0,001	(0,003)	0,156	(0,041)	0,049	0,174	0,288	(0,162)
CEO	0,006	0,002	0,003	0,006	0,007	0,003	0,007	0,003	0,359	0,512	0,242	0,316	0,012	0,012
FFSIZE	(0,170)	(0,174)	(0,172)	(0,294)	(0,267)	(0,026)	(0,236)	(0,014)	0,038	(0,065)	(0,050)	0,058	0,017	(0,143)
DWEALTH $_{t}$	0,029	0,004	0,041	0,037	0,033	0,002	0,029	0,003	0,121	0,092	0,126	0,106	0,115	0,115
DWEALTH $_{t-1}$	0,038	0,004	0,029	0,038	0,033	(0,001)	0,027	(0,001)	0,144	0,100	0,109	0,135	0,210	0,127
Ability	(0,017)	0,013	(0,017)	(0,008)	(0,005)	0,004	(0,006)	(0,004)	0,033	(0,015)	0,055	0,030	0,076	0,012
JOB_NO	(0,009)	0,004	(0,006)	(0,005)	(0,003)	0,002	(0,002)	0,001	0,112	0,119	0,026	0,111	0,058	0,060
Time in sample	0,008	(0,002)	(0,007)	0,001	0,007	0,012	0,018	0,024	0,227	0,289	0,051	0,220	0,130	0,147
G-index	(0,092)	(0,007)	0,021	(0,053)	(0,047)	(0,002)	(0,036)	0,008	0,037	0,111	0,053	0,024	0,132	0,232

Table 2: Correlation matrix. Standard calculation method used for correlations. For variable definitions see Table 1. Some column header names shortened to fit.

Table 2: Correlation matrix continued

S~_GR $_t$	*S~_GR $_{t-1}$*	*ROA $_t$*	*ROA $_{t-1}$*	*XRET $_t$*	*XRET $_{t-1}$*	*SD_RET $_{t-1}$*	*MB $_{t-1}$*	*CEO*	*FFSIZE*	*DWEA~ $_t$*	*DWEA~ $_{t-1}$*	*Ability*	*JOB_NO*	*Time in sa~*	*G-index*
1,000															
0,307	1,000														
0,192	0,057	1,000													
0,030	0,149	0,578	1,000												
0,128	(0,022)	0,141	(0,036)	1,000											
0,214	0,130	0,158	0,131	0,011	1,000										
0,043	0,086	(0,279)	(0,336)	0,096	0,114	1,000									
0,291	0,309	0,247	0,256	(0,022)	0,255	0,095	1,000								
(0,010)	(0,006)	(0,006)	(0,002)	(0,006)	(0,004)	(0,001)	(0,004)	1,000							
0,115	0,131	(0,045)	(0,050)	0,033	0,036	0,188	0,206	(0,001)	1,000						
0,052	(0,019)	0,094	0,033	0,344	(0,003)	(0,052)	(0,006)	0,003	(0,001)	1,000					
0,098	0,045	0,111	0,095	(0,021)	0,338	(0,086)	0,169	(0,001)	0,004	0,017	1,000				
0,227	0,141	0,305	0,259	0,045	0,104	(0,091)	0,221	(0,002)	0,052	0,004	0,042	1,000			
(0,020)	(0,011)	(0,023)	(0,030)	0,001	0,000	0,019	(0,020)	0,099	0,023	(0,003)	(0,005)	(0,017)	1,000		
(0,082)	(0,089)	0,031	0,035	0,000	(0,010)	(0,064)	(0,064)	0,260	(0,031)	0,005	0,001	0,017	0,281	1,000	
(0,107)	(0,129)	0,019	0,010	(0,006)	(0,016)	(0,154)	(0,131)	(0,000)	(0,081)	0,012	0,007	0,027	0,021	0,056	1,000

Table 2 Continued: Correlation matrix.

Table 3: Premium in executive compensation in sin firms, continued

	TDC1	*TDC1*	*TDC1*	*TDC1*	*TDC1*	*SALARY*	*BONUS*	*ODC*	NON-CEO *TDC1*	CEO *TDC1*
	coef/t	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**
SIN1	421,948***			424,040***		51,832***	65,964***	292,445***	396,506***	435,295***
	(6,80)			(6,83)		(7,86)	(6,16)	(5,77)	(7,72)	(2,94)
SIN2		355,981***								
		(6,65)								
SIN3			276,999***							
			(6,13)							
SIN2R				164,952*						
				(1,67)						
SIN3R				65,113						
				(0,81)						
TOB1					593,261***					
					(3,12)					
GAM1					444,728***					
					(5,70)					
ALC1					329,408***					
					(3,32)					
CAP $_{t-1}$	358,697***	359,700***	359,996***	358,565***	358,627***	18,419***	22,194***	308,412***	281,920***	671,933***
	(44,09)	(44,11)	(44,15)	(44,10)	(44,09)	(29,44)	(19,21)	(44,83)	(41,54)	(27,27)
SALE $_{t-1}$	131,909***	131,269***	130,611***	131,869***	131,976***	24,469***	23,561***	77,414***	101,886***	253,035***

Table 3: Premium in executive compensation in sin firms, continued

	(18,69)	(18,56)	(18,48)	(18,69)	(18,69)	(39,86)	(23,42)	(12,61)	(18,45)	(10,64)
SALES_GR $_t$	379,246***	378,177***	377,733***	378,836***	379,503***	14,162***	57,246***	287,405***	306,872***	620,632***
	(21,56)	(21,50)	(21,46)	(21,55)	(21,59)	(14,24)	(25,66)	(18,35)	(19,05)	(10,65)
SALES_GR $_{t-1}$	90,382***	90,084***	90,547***	90,297***	90,529***	-9,217***	-2,730	93,414***	95,219***	39,348
	(5,98)	(5,97)	(6,00)	(5,98)	(5,99)	(-10,28)	(-1,49)	(6,95)	(6,87)	(0,79)
ROA $_t$	-342,811***	-343,022***	-343,080***	-343,376***	-343,323***	-3,091	80,196***	-396,487***	-346,116***	-450,468***
	(-9,22)	(-9,22)	(-9,22)	(-9,23)	(-9,23)	(-1,14)	(16,40)	(-11,75)	(-10,10)	(-3,84)
ROA $_{t-1}$	-455,586***	-456,279***	-455,781***	-456,100***	-456,353***	-41,467***	-56,901***	-339,462***	-361,538***	-915,634***
	(-12,02)	(-12,04)	(-12,03)	(-12,04)	(-12,04)	(-14,65)	(-11,24)	(-9,99)	(-10,90)	(-7,26)
XRET $_t$	268,611***	268,728***	269,302***	268,463***	268,492***	10,778***	40,254***	209,779***	210,040***	477,915***
	(25,55)	(25,54)	(25,59)	(25,53)	(25,53)	(16,51)	(31,53)	(22,14)	(22,23)	(13,59)
XRET $_{t-1}$	6,368	5,332	5,439	6,241	6,458	1,403**	12,122***	-10,331	-3,025	35,429
	(0,61)	(0,51)	(0,52)	(0,60)	(0,62)	(2,08)	(8,91)	(-1,10)	(-0,32)	(1,04)
SD_RET $_{t-1}$	2 095,629***	2 104,343***	2 114,920***	2 096,015***	2 090,869***	42,165***	86,206***	1 893,944***	1 709,847***	3 593,001***
	(26,34)	(26,45)	(26,59)	(26,34)	(26,33)	(6,57)	(7,55)	(27,00)	(26,22)	(13,39)
MB $_{t-1}$	44,748***	45,273***	45,448***	44,946***	44,523***	-2,824***	-2,515***	49,934***	47,060***	40,780**
	(6,69)	(6,78)	(6,80)	(6,72)	(6,63)	(-6,80)	(-3,21)	(8,47)	(7,80)	(1,97)
CEO	1 234,419***	1 234,529***	1 234,568***	1 234,431***	1 234,476***	157,559***	122,049***	935,950***		
	(55,90)	(55,92)	(55,91)	(55,90)	(55,90)	(89,57)	(38,00)	(49,91)		
FFSIZE	57,266***	54,962***	51,536***	57,696***	58,004***	0,730	-1,146	56,384***	56,839***	64,470**
	(7,06)	(6,77)	(6,37)	(7,10)	(7,15)	(1,11)	(-1,03)	(8,26)	(9,77)	(2,50)
intercept	-3 254,410***	-3 244,014***	-3 221,918***	-3 256,202***	-3 257,687***	-106,905***	-211,805***	-2 857,099***	-2 526,580***	-6 090,372***
	(-45,94)	(-45,74)	(-45,58)	(-45,94)	(-45,96)	(-21,03)	(-24,50)	(-47,08)	(-47,67)	(-25,49)
year fixed effects	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
observations	150 200	150 200	150 200	150 200	150 200	168 048	168 048	150 200	120 926	29 274
Adjusted R^2	0,384	0,384	0,384	0,385	0,385	0,521	0,264	0,333	0,301	0,408

note: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Premium in executive compensation in sin firms

Table 3: Premium in executive compensation in sin firms, continued

Table shows the estimate of the premium in executive compensation in sin firms (various sin firm definitions and categories, see Section 3). Sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. Sin involvement dummies are defined in Section 3. TDC1 is ExecuComp (EC) item *total direct compensation* ; SALARY is EC item *salary* ; BONUS is EC item *bonus* ; ODC is *other direct compensation* . CAP is market capitalization. SALE is the natural logarithm of total sales. SALES_GR is the growth of sales. ROA is return on assets. XRET is excess return. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the *market-to-book* ratio. CEO is a dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of firms in the industry for the fiscal year. All financial variables and returns are adjusted for CPI inflation. All continuous variables except FFSIZE are Winsorized at 1% (two-sided). Estimation method is OLS with year fixed effects (not shown; baseline year automatically selected by Stata software) and standard errors clustered at the firm-executive combination level. Last two columns show results of a regression where the sample is manually split into CEOs and non-CEOs.

Table 4: Pay performance sensitivity in sin firms, continued

	D_TDC1	*D_TDC1*	*D_TDC1*	*D_TDC1*	*D_SALBON*	*D_SALBON*	*D_SALBON*	*D_SALBON*
	coef/t	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**
SIN1	-26,609				12,694**			
	(-1,14)				(2,53)			
DW_SIN1	-0,140***				-0,027***			
	(-4,09)				(-3,34)			
DWL_SIN1	0,027				-0,011			
	(0,92)				(-1,41)			
SIN2		-13,889				17,913***		
		(-0,72)				(2,84)		
DW_SIN2		-0,133***				-0,026***		
		(-4,08)				(-3,21)		
DWL_SIN2		0,016				-0,011		
		(0,57)				(-1,46)		
SIN3			-10,147				12,720**	
			(-0,58)				(2,40)	
DW_SIN3			-0,095***				-0,016*	
			(-3,53)				(-1,96)	
DWL_SIN3			0,011				-0,015**	
			(0,44)				(-2,27)	
TOB1				90,144				13,676
				(1,20)				(1,28)
GAM1				-46,245				9,881
				(-1,51)				(1,18)
ALC1				-32,282				18,430***
				(-0,77)				(2,59)
DW_TOB1				-0,090*				-0,018*
				(-1,79)				(-1,76)
DW_GAM1				-0,469***				-0,019
				(-3,17)				(-0,49)
DW_ALC1				-0,098**				-0,034***
				(-2,22)				(-3,41)
DWL_TOB1				-0,061				-0,015
				(-1,38)				(-1,55)
DWL_GAM1				-0,052				-0,075*

Table 4: Pay performance sensitivity in sin firms, continued

				(-0,42)				(-1,70)
DWL_ALC1				0,084**				-0,002
				(2,12)				(-0,27)
DWEALTH $_t$	0,106***	0,106***	0,106***	0,106***	0,017***	0,017***	0,016***	0,017***
	(15,42)	(15,41)	(15,18)	(15,42)	(5,08)	(5,06)	(4,94)	(5,08)
DWEALTH $_{t-1}$	0,055***	0,055***	0,055***	0,055***	0,005	0,005	0,006	0,005
	(8,09)	(8,13)	(8,00)	(8,09)	(1,55)	(1,55)	(1,62)	(1,55)
intercept	27,304***	27,248***	27,161***	27,304***	9,214***	9,091***	9,074***	9,214***
	(14,59)	(14,54)	(14,44)	(14,59)	(8,07)	(7,96)	(7,88)	(8,07)
year fixed effects	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
observations	118 021	118 021	118 021	118 021	139 228	139 228	139 228	139 228
Adjusted R2	0,012	0,012	0,011	0,012	0,002	0,002	0,002	0,002

note: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Pay performance sensitivity in sin firms

Table shows the estimate of the pay performance sensitivity in sin firms (various sin firm definitions and categories, see Section 3). The model is adapted from Jensen and Murphy (1990). TDC1 is ExecuComp (EC) item *total direct compensation* . SALBON is the sum of EC items *salary* and *bonus* . The prefix D_ denotes first difference, i.e. D_$X = X_t - X_{t-1}$. DWEALTH is the Jensen-Murphy (1990) measure of the change in shareholder wealth. The prefix DW_ denotes interaction with the variable $DWEALTH_t$, i.e. DW_X = X *$DWEALTH_t$. The prefix DWL_ denotes interaction with $DWEALTH_{t-1}$. Following Jensen and Murphy (1990), the total effect of pay performance sensitivity is taken to be the sum of the coefficients on $DWEALTH_t$ and $DWEALTH_{t-1}$ (or on a variable's interactions with them). Sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. All continuous variables are Winsorized at 1% (two-sided). Estimation method is OLS (without with year fixed effects) with standard errors clustered at the firm-executive combination level.

Table 5: The effect of ROA on the likelihood of leaving in the future

	LEFT
	coef/t
SIN_1	-0,002
	(-0,02)
ROA_LOW_SIN_1	-0,279**
	(-2,27)
ROA_HIGH_SIN_1	0,195*
	(1,74)
ROA_LOW	0,067***
	(5,45)
ROA_HIGH	0,030**
	(2,46)
Time in sample	0,008***
	(5,09)
JOB_NO	0,125***
	(6,66)
G-index	-0,002
	(-0,60)
E-index	0,006
	(1,13)
CAP_{t-1}	0,044***
	(7,47)
$SALE_{t-1}$	0,028***
	(4,94)
SD_RET_{t-1}	0,528***
	(5,66)
MB_{t-1}	0,011***
	(3,69)
CEO	-0,262***
	(-20,18)
FFSIZE	0,030***
	(4,50)
intercept	-2,290***
	(-31,06)
observations	73 860
Adjusted R2	0,074

note: *** p<0.01, ** p<0.05, * p<0.1

Table 5: The effect of ROA on the likelihood of leaving in the future

Table shows the estimate of the change in likelihood that a sin firm executive will leave in the future (LEFT) if ROA is in the top (ROA_HIGH) or bottom (ROA_LOW) tercile. Sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. *Time in sample* is the number of years the executive is tracked in the ExecuComp database up until the year in question. JOB_NO is the serial number of the executive's employment in the sample (first, second, etc.). *G-index* is the Gompers-Ishii-Metrick governance quality index. *E-index* is the executive entrenchment index. CAP is market capitalization. SALE is the natural logarithm of total sales. ROA is return on assets. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the market-to-book ratio. CEO is a dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of firms in the industry for the fiscal year. All financial variables and returns are adjusted for CPI inflation. All continuous variables except FFSIZE are Winsorized at 1% (two-sided). Estimation method is probit.

Table 6: Compensation and ability in sin firms

	TDC1	*TDC1*	*TDC1*	*TDC1*	*TDC1*	*SALARY*	*BONUS*	*ODC*
	coef/t	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**	**coef/t**
SIN_1	349,223***			350,393***		45,834***	58,272***	234,951***
	(5,66)			(5,68)		(6,92)	(5,57)	(4,68)
ability_SIN_1	228,451			228,424		60,054	375,506***	-372,111
	(0,47)			(0,47)		(1,26)	(3,87)	(-0,88)
SIN_2		290,249***						
		(5,46)						
ability_SIN_2		93,371						
		(0,21)						
SIN_3			214,008***					
			(4,75)					
ability_SIN_3			44,749					
			(0,11)					
SIN_2R				116,202				
				(1,26)				
SIN_3R				14,332				
				(0,17)				
ability_SIN_2R				56,377				
				(0,07)				
ability_SIN_3R				-0,979				
				(-0,00)				
TOB_1					393,639***			
					(2,81)			
GAM_1					367,769***			
					(5,19)			
ALC_1					243,421**			
					(2,39)			
ability_TOB_1					-3 254,447***			
					(-2,96)			
ability_GAM_1					1 408,184***			
					(2,98)			
ability_ALC_1					294,781			
					(0,34)			

Table 6: Compensation and ability in sin firms

ability	-97,274*	-97,884*	-97,239*	-97,908*	-100,242*	-14,041***	20,789***	-104,645**
	(-1,89)	(-1,90)	(-1,89)	(-1,90)	(-1,94)	(-3,55)	(2,75)	(-2,44)
CAP $_{t-1}$	381,871***	382,905***	383,324***	381,885***	380,416***	19,656***	26,321***	325,059***
	(44,65)	(44,71)	(44,74)	(44,72)	(44,43)	(29,76)	(22,01)	(44,79)
SALE $_{t-1}$	121,541***	120,796***	120,158***	121,472***	122,267***	23,543***	20,829***	71,220***
	(16,24)	(16,13)	(16,05)	(16,29)	(16,32)	(36,40)	(19,96)	(10,95)
SALES_GR $_{t}$	395,153***	393,975***	393,581***	394,791***	395,088***	15,668***	53,203***	306,054***
	(20,85)	(20,80)	(20,76)	(20,86)	(20,86)	(14,05)	(21,94)	(18,21)
SALES_GR $_{t-1}$	112,307***	111,865***	112,339***	112,088***	110,955***	-7,982***	-2,456	112,445***
	(6,94)	(6,92)	(6,95)	(6,94)	(6,85)	(-8,56)	(-1,27)	(7,77)
ROA $_{t}$	-379,429***	-379,349***	-379,478***	-379,538***	-376,770***	-1,987	74,413***	-425,499***
	(-9,76)	(-9,75)	(-9,76)	(-9,76)	(-9,69)	(-0,70)	(14,81)	(-12,10)
ROA $_{t-1}$	-555,027***	-555,735***	-555,456***	-555,275***	-551,530***	-47,354***	-71,971***	-411,903***
	(-14,29)	(-14,30)	(-14,30)	(-14,29)	(-14,18)	(-16,21)	(-14,10)	(-11,82)
XRET $_{t}$	272,421***	272,642***	273,202***	272,343***	271,202***	10,771***	39,976***	213,889***
	(25,11)	(25,12)	(25,16)	(25,10)	(24,99)	(16,12)	(30,70)	(21,86)
XRET $_{t-1}$	20,078*	19,242*	19,261*	19,918*	18,268*	2,275***	13,143***	0,845
	(1,86)	(1,79)	(1,79)	(1,85)	(1,70)	(3,30)	(9,48)	(0,09)
SD_RET $_{t-1}$	1 667,044***	1 674,065***	1 683,844***	1 667,718***	1 658,387***	-1,956	32,248***	1 582,973***
	(20,50)	(20,59)	(20,72)	(20,50)	(20,44)	(-0,30)	(2,81)	(21,84)
MB $_{t-1}$	30,928***	31,368***	31,525***	31,076***	32,273***	-3,954***	-5,417***	41,015***
	(4,33)	(4,39)	(4,42)	(4,35)	(4,49)	(-8,89)	(-6,59)	(6,55)
CEO	1 255,336***	1 255,394***	1 255,438***	1 255,340***	1 255,490***	157,127***	125,140***	953,566***
	(54,72)	(54,73)	(54,73)	(54,72)	(54,74)	(85,42)	(37,20)	(48,73)
FFSIZE	45,191***	43,028***	39,639***	45,462***	45,768***	-0,225	-2,506**	47,155***
	(5,58)	(5,32)	(4,92)	(5,61)	(5,65)	(-0,34)	(-2,25)	(6,92)
intercept	-3 147,814***	-3 137,419***	-3 116,146***	-3 149,403***	-3 147,809***	-96,553***	-290,117***	-2 793,881***
	(-43,49)	(-43,32)	(-43,13)	(-43,55)	(-43,46)	(-17,88)	(-31,28)	(-45,03)
observations	136 871	136 871	136 871	136 871	136 871	153 425	153 425	136 871
Adjusted R2	0,393	0,393	0,392	0,393	0,393	0,524	0,271	0,339

note: *** p<0.01, ** p<0.05, * p<0.1

Table 6: Compensation and ability in sin firms

Table 6: Sin firm executive compensation and executive ability

Table shows the estimate of the premium in executive compensation in sin firms (various sin firm definitions and categories, see Section 3) and how it depends on executive ability. Sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. Sin involvement dummies are defined in Section 3. TDC1 is ExecuComp (EC) item total direct compensation; SALARY is EC item salary; BONUS is EC item bonus; ODC is other direct compensation. *Ability* is the 'MA Score' from Demerjian et al. (2012). CAP is market capitalization. SALE is the natural logarithm of total sales. SALES_GR is the growth of sales. ROA is return on assets. XRET is excess return. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the market-to-book ratio. CEO is a dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of firms in the industry for the fiscal year. All financial variables and returns are adjusted for CPI inflation. All continuous variables except FFSIZE are Winsorized at 1% (two-sided). Estimation method is OLS with year fixed effects (not shown; baseline year automatically selected by Stata software) and standard errors clustered at the firm-executive combination level.

Table 7: Size of directors' personal networks in sin firms

	PNET	***PNET***	***PNET***
	coef/t	**coef/t**	**coef/t**
SIN_1	0,388		
	(0,48)		
gindex_SIN_1	-0,206**		
	(-2,00)		
SIN_2		0,654	
		(0,82)	
gindex_SIN_2		-0,202**	
		(-2,21)	
SIN_3			-0,822
			(-1,31)
gindex_SIN_3			0,043
			(0,57)
AGE	0,062***	0,062***	0,062***
	(9,85)	(9,90)	(9,87)
G-index	0,085***	0,086***	0,082***
	(7,09)	(7,19)	(6,85)
CAP_{t-1}	0,522***	0,513***	0,512***
	(8,60)	(8,45)	(8,41)
$SALE_{t-1}$	0,832***	0,839***	0,840***
	(13,90)	(13,98)	(14,00)
$SALES\_GR_{t}$	-0,549***	-0,538***	-0,540***
	(-5,94)	(-5,82)	(-5,84)
$SALES\_GR_{t-1}$	-1,236***	-1,231***	-1,234***
	(-14,07)	(-14,03)	(-14,08)
ROA_{t}	-0,620***	-0,623***	-0,618***
	(-2,81)	(-2,82)	(-2,80)
ROA_{t-1}	-1,660***	-1,658***	-1,667***
	(-6,53)	(-6,52)	(-6,57)
$XRET_{t}$	0,168***	0,165***	0,163***
	(2,82)	(2,78)	(2,72)
$XRET_{t-1}$	-0,154**	-0,150**	-0,152**
	(-2,48)	(-2,40)	(-2,44)
SD_RET_{t-1}	1,065	1,034	0,957
	(1,62)	(1,58)	(1,46)
MB_{t-1}	0,129***	0,127***	0,127***
	(3,36)	(3,30)	(3,29)
FFSIZE	-0,234***	-0,218***	-0,206***
	(-4,23)	(-4,02)	(-3,83)
Intercept	-7,442***	-7,549***	-7,576***
	(-12,23)	(-12,58)	(-12,66)
observations	166 386	166 386	166 386
Adjusted R2	0,091	0,091	0,091

note: *** p<0.01, ** p<0.05, * p<0.1

Table 7: Size of directors' personal networks in sin firms

Table 7: Size of directors' personal networks in sin firms

Table shows the estimate of the size of directors' personal networks (various sin firm definitions and categories, see Section 3) and how it relates to governance quality. Sample includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-French industries 45-48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. Sin involvement dummies are defined in Section 3. PNET is the size of a director's personal network, which is the number of distinct other directors the director sits with on the boards of all firms where they are a director. AGE is a director's age. *G-index* is the Gompers-Ishii-Metrick corporate governance quality index. CAP is market capitalization. SALE is the natural logarithm of total sales. SALES_GR is the growth of sales. ROA is return on assets. XRET is excess return. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the market-to-book ratio. CEO is a dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of firms in the industry for the fiscal year. All financial variables and returns are adjusted for CPI inflation. All continuous variables except FFSIZE are Winsorized at 1% (two-sided). Estimation method is OLS with year fixed effects (not shown; baseline year automatically selected by Stata software) and standard errors clustered at the firm-executive combination level.

Table 8: Size of executives' personal networks in sin firms

	PNET_E	*PNET_E*	*PNET_E*	*PNET_E*	*PNET_E*
	coef/t	**coef/t**	**coef/t**	**coef/t**	**coef/t**
SIN_1	-0,495***			-0,502***	
	(-3,05)			(-3,09)	
o.SIN_2		-0,438***			
		(-3,35)			
SIN_3			-0,420***		
			(-4,03)		
o.SIN_2R				-0,289	
				(-1,47)	
SIN_3R				-0,370**	
				(-2,40)	
o.TOB_1					-1,605***
					(-7,31)
GAM_1					-0,571***
					(-4,13)
ALC_1					0,001
					(0,00)
CAP $_{t-1}$	0,187***	0,186***	0,187***	0,188***	0,188***
	(8,87)	(8,86)	(8,90)	(8,92)	(8,91)
SALE $_{t-1}$	0,164***	0,165***	0,165***	0,164***	0,164***
	(8,88)	(8,93)	(8,95)	(8,88)	(8,85)
SALES_GR $_{t}$	0,018	0,019	0,019	0,018	0,015
	(0,52)	(0,56)	(0,56)	(0,54)	(0,45)
SALES_GR $_{t-1}$	-0,180***	-0,179***	-0,180***	-0,180***	-0,181***
	(-5,98)	(-5,97)	(-5,98)	(-5,99)	(-6,02)
ROA $_{t}$	-0,127**	-0,127**	-0,125**	-0,125**	-0,124**
	(-2,05)	(-2,04)	(-2,01)	(-2,01)	(-1,99)
ROA $_{t-1}$	-0,464***	-0,463***	-0,463***	-0,464***	-0,461***
	(-6,48)	(-6,46)	(-6,46)	(-6,47)	(-6,43)
XRET $_{t}$	0,062***	0,063***	0,062***	0,063***	0,064***
	(2,90)	(2,90)	(2,89)	(2,91)	(2,97)
XRET $_{t-1}$	-0,062***	-0,061***	-0,062***	-0,062***	-0,062***
	(-2,89)	(-2,84)	(-2,87)	(-2,90)	(-2,87)
SD_RET $_{t-1}$	0,001	-0,004	-0,009	-0,001	0,024
	(0,01)	(-0,02)	(-0,05)	(-0,01)	(0,12)
MB $_{t-1}$	0,001	0,000	0,000	0,001	0,002
	(0,08)	(0,03)	(0,01)	(0,04)	(0,16)
CEO	1,930***	1,930***	1,930***	1,931***	1,930***
	(25,82)	(25,82)	(25,83)	(25,83)	(25,83)
FFSIZE	-0,089***	-0,088***	-0,087***	-0,090***	-0,094***
	(-3,42)	(-3,41)	(-3,43)	(-3,46)	(-3,58)
intercept	-1,444***	-1,448***	-1,458***	-1,441***	-1,421***
	(-7,15)	(-7,22)	(-7,34)	(-7,14)	(-7,03)
observations	140 345	140 345	140 345	140 345	140 345
Adjusted R^2	0,095	0,095	0,095	0,095	0,095

note: *** p<0.01, ** p<0.05, * p<0.1

Table 8: Size of executives' personal networks in sin firms

Table shows the estimate of the size of executives' personal networks (various sin firm definitions and categories, see S
includes all firm-executive-year combinations tracked by ExecuComp 1992-2012 excluding financial services (Fama-F
48, SIC codes 6000-6999) and observations with negative book equity and/or negative TDC1 compensation. Sin involv
defined in Section 3. PNET_E is the size of an executive's personal network, which is the number of distinct directors th
with on the boards of firms where the executive is a director, other than the firm where the person is an executive. CAP
capitalization. SALE is the natural logarithm of total sales. SALES_GR is the growth of sales. ROA is return on assets.
return. SD_RET is the standard deviation of firm monthly stock returns for the fiscal year. MB is the market-to-book ra
dummy equal to 1 if executive is CEO in the fiscal year, 0 otherwise. FFSIZE is the natural logarithm of the number of
for the fiscal year. All financial variables and returns are adjusted for CPI inflation. All continuous variables except FF
Winsorized at 1% (two-sided). Estimation method is OLS with year fixed effects (not shown; baseline year automatical
software) and standard errors clustered at the firm-executive combination level.

Table 8: Size of executives' personal networks in sin firms

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