Do directors perform for pay? ☆

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ABSTRACT

Many corporations reward their outside directors with a modest fee for each board meeting they attend. Using a large panel data set on director attendance behavior in publicly-listed firms for the period 1996–2003, we provide robust evidence that directors are less likely to have attendance problems at board meetings when board meeting fees are higher. This is surprising since meeting fees, on average roughly $1,000, represent an arguably small fraction of the total wealth of a representative director in our sample. Thus, corporate directors appear to perform for even very small financial rewards.

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1. Introduction

> Outside directors aren't in it for the money, or so they say. (Black et al., 2006, p. 48)

A thousand dollars is a trivial amount for directors of large US firms, many of them top executives and CEOs. Nevertheless, that is exactly how much many firms pay their outside directors to attend board meetings. Thus, the question arises whether firms are able to influence director attendance by means of such low meeting fees.

A natural response to this question is that it should not matter that monetary rewards are small; a thousand dollars is better than nothing, so directors should be more willing to attend meetings when they are paid something. After all, a central tenet of economic theory is the principle that people respond to incentives. However, many psychologists and economists have questioned the effectiveness of monetary rewards as a means of improving performance. Research shows that people respond differently to changes in monetary rewards, depending on whether these changes occur on the intensive margin (i.e. changes in the value of monetary rewards) or the extensive margin (i.e. paying versus not paying for

performance). Individuals commonly perform better when paid more rather than less, but they may also perform better if they are not paid at all rather than paid only a small amount (Gneezy and Rustichini, 2000b). This "pay-enough-or-don't-pay-at-all" effect suggests that the relationship between monetary incentives and performance may be non-monotonic, with a discontinuous drop in performance when rewards increase from zero to a small positive value. These findings call into question the effectiveness of relatively small board meeting fees.

In this paper, we employ director-level data for S&P 1,500 firms for the period 1996–2003 to study outside directors' attendance behavior. Since data on directors' actual attendance at meetings are generally not available, we examine whether or not directors were named in proxy statements according to the SEC's requirement that firms disclose the names of directors who attended fewer than 75% of the meetings they were supposed to during the previous fiscal year. Thus, we examine directors with relatively severe attendance problems. Our main finding is that as board meeting fees increase attendance records improve.

We discuss many possible explanations for our findings. Our results do not appear to be driven by omitted variable problems, measurement error or econometric misspecification. We also rule out reverse causality and selection or sorting of directors with good attendance records to firms that pay high meeting fees as the main explanations for our findings. Instead, our results appear to be driven by an incentive effect: directors seem to change their attendance behavior in response to changes in meeting fees.

Our findings are surprising because meeting fees in our sample are on average roughly $1,000 (in 2003 dollars) for each meeting attended.[1] Thus, board meeting fees constitute a very small fraction of the total wealth of a representative director in our sample. Given the evidence on the "pay-enough-or-don't-pay-at-all" effect, one might expect that when a firm shifts from not paying meeting fees to paying $1,000 per meeting, attendance would not change or even decrease. In contrast, we find that $1,000 appears to be "enough" pay: our most conservative estimates suggest that such a change would reduce attendance problems by roughly 10%. Thus, the attendance-pay sensitivity is surprisingly large and economically significant.

The primary contribution of this paper is to improve our understanding of the effectiveness of director compensation. The proper design of compensation schemes for corporate directors is a central, but unresolved, issue in the recent governance debate. For example, Shleifer and Vishny (1988) recommend compensating outside directors with stock. Recent work by Yermack (2004) provides evidence that the incentives outside directors face through compensation, reputation, and retention decisions are sizeable.[2] In contrast, Stout (2003) believes that performance-based compensation for corporate directors is not only ineffective, but may interfere with non-pecuniary motives of directors, with unintended adverse consequences for their performance. She mentions the size of the monetary amount paid to directors in support of her view: "If we look at financial rewards alone, whether paid in cash or in shares, directors seem to have little reason to break a sweat in the boardroom" (p. 4).

None of these studies analyze meeting fees as a means of providing incentives. We conjecture that meeting fees were probably viewed as being too small to matter. Since that was also our prior, we were puzzled by the fact that some firms bother to pay them. Our results provide a possible explanation for this apparent puzzle: meeting fees exist because they induce directors to skip fewer meetings, which is important if they are to play an effective role in decision-making in the boardroom. Our paper therefore complements the prior literature on director compensation by providing evidence, for the first time, that directors appear to respond to financial rewards by giving up more of their time to the firm, even when these rewards are relatively small.

Since most of the directors in our sample are (or were) executives of other firms, our findings contribute more broadly to the literature on executive compensation and executive motivations. Our work is relevant for the debate about whether executive pay-for-performance incentives are too small or not (e.g. Jensen and Murphy, 1990; Haubrich, 1994; Hall and Liebman, 1998). In particular, our results suggest that the size of financial rewards provided to executives may not be as important as once thought; executives appear to respond even to relatively small financial incentives. Although our findings may appear surprising, we conjecture that one reason why directors and executives may respond to small rewards is because these rewards convey information (see Bénabou and Tirole, 2003). For example, a shift towards more performance-based compensation not only serves to align directors' and executives' interests with those of shareholders, but it also tells directors and executives that more attention to shareholder value maximization is being called for. Thus, the informational content of monetary rewards has an additional incentive effect. In our case, higher meeting fees may signal that firms are demanding more board attendance. Thus, directors respond to higher meeting fees by attending more meetings.

Gneezy and Rustichini (2000a, b) argue convincingly that in many cases it is impossible to analyze the pure effect of monetary rewards holding information and beliefs constant. Depending on the specifics of the situation, changes in the information that agents have may induce an effect on behavior that goes either in the same or in the opposite direction of what was intended by the introduction of monetary rewards. Our evidence—that meeting fees affect attendance in the "right" direction—suggests that many firms are able to transmit the "right" type of information to directors by means of

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[1] Even if they are partially explained by selection or reverse causality (i.e. directors with good attendance records choosing to pay themselves more for attending meetings), our results still seem surprising because these explanations also require that directors are motivated by small financial rewards.

[2] Other papers studying variation in director compensation are Brick et al. (2004), Becher et al. (2005) and Ryan and Wiggins (2006).

meeting fees. Since most of the empirical literature on executive compensation implicitly assumes that performance-based compensation only affects behavior through its effect on executives' wealth, an additional contribution of our results is to highlight that the "incentive multiplier" effect of information may also be important.[3]

The structure of this paper is as follows. In Section 2, we discuss the theoretical arguments underlying our empirical analysis. Section 3 describes the data. We present some suggestive evidence in Section 4 and embark on a more rigorous data analysis in Section 5. We try to distinguish between incentive and selection effects in Sections 6 and 7. We discuss measurement errors in Section 8. We interpret our findings in Section 9. We conclude in Section 10.

2. Theoretical arguments

Here we discuss two leading hypotheses that may explain a correlation between attendance and meeting fees: incentives and selection. We define these hypotheses broadly. We say that meeting fees have incentive effects if changes in meeting fees affect the attendance behavior of directors. Meeting fees have selection (or sorting) effects if directors self-select or are chosen to be on the boards of firms in a manner that is correlated with meeting fees. This can occur, for example, if directors who expect to have good attendance records choose to work for firms that pay high meeting fees. In our empirical analysis, we try to differentiate between these two explanations. We note, however, that they are not mutually exclusive. We also discuss the possibility of reverse causality. Since directors influence their own compensation, directors who expect few or no attendance problems may choose to pay themselves higher meeting fees.

2.1. Incentive effects of meeting fees

One does not need a sophisticated theory to understand why people respond to monetary incentives. However, when changes in monetary incentives have informational content, some subtle issues may arise. We provide a brief discussion of these issues in Section 2.1.1.

In spite of the obvious appeal of the idea that directors attend more meetings when they are paid more for doing so, our findings appear puzzling because directors are generally quite wealthy, while meeting fees are indisputably low. In Sections 2.1.2 and 2.1.3, we briefly discuss some reasons why the size of fees might matter.

2.1.1. How monetary rewards can induce directors to attend more meetings

Every time a director decides whether or not to attend a board meeting, she must compare the benefits and costs of doing so. Most directors have high-level jobs (they are usually top executives in other firms), other directorships, and extracurricular activities they devote time to. Thus, the most obvious cost of attending a meeting is the opportunity cost of time. But, not attending a meeting may also impose costs on a director: she may damage her reputation as a dedicated director, lose an opportunity to influence key decisions, put her reelection in jeopardy, etc. On top of all this, she loses her meeting fee. A higher meeting fee will therefore tilt the balance towards attending the meeting. In this case, meeting fees provide direct incentives for directors to attend meetings, but it is not the only or necessarily the main reason why they do so.

Another explanation involves signaling. Some firms may have a greater demand for attendance than other firms. These firms might signal that they value attendance more by offering larger meeting fees. Because they wish to make a good impression, directors attend more, not because they care about the fee, but because they learn from the signal that their firm cares about attendance. This explanation suffers from all the usual problems of signaling stories. For example, it is not necessarily clear why firms should choose meeting fees as signals. However, it is consistent with a positive correlation between meeting fees and attendance.

We do not differentiate between the direct incentives and the signaling explanations, because it is unlikely that they can be disentangled empirically. In situations in which contracts are incomplete, changes in contractual arrangements will not only affect agents' choice sets, but will also convey new information (see Bénabou and Tirole, 2003). If the informational content of changes in monetary rewards induces individuals to change their beliefs, it is not possible to estimate the pure effect of monetary rewards holding beliefs constant. Gneezy and Rustichini (2000a, b) argue that such considerations may explain some of their findings that monetary rewards can have perverse effects.

While these two explanations are observationally equivalent in our sample, we do not see this as a problem, because both of them have the same practical implication: once one raises meeting fees, attendance will increase. In both cases, firms get what they pay for. For simplicity, we group both stories under the label of "incentives."

2.1.2. Can low monetary rewards induce directors to attend more meetings?

Although most people would agree that corporate directors care about money, one may have doubts about the extent to which they respond to small financial incentives. It may be that, once they reach the top, directors are motivated mainly by

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concerns about power and prestige, reputation and career concerns, implicit incentives, and the like. If this were true, the whole discussion about optimal financial incentives for directors would be a moot point (see Stout, 2003).

Indeed, the view that financial incentives for directors are too small to motivate them is shared by many scholars. Quoting Black et al. (2006):

> What motivates outside directors to try hard? Their direct financial stake in the firm is commonly a small fraction of their net worth and a tiny fraction of the value of the firm. Most are busy people who are modestly compensated for serving as directors relative to the opportunity cost of their time, and compensated mostly through a flat fee, which gives them little incentive to work hard at the margin (p. 5).[4]

According to this view, we should not expect to see any relationship between meeting fees and directors' attendance behavior.

2.1.3. Can low monetary rewards induce directors to attend fewer meetings?

Monetary rewards could also have perverse effects on incentives. For example, the introduction of meeting fees could reduce the provision of effort by directors because it breaks a reciprocity norm (see e.g. Fehr et al., 1996) according to which directors reciprocate for pay that is unconditional with good attendance. It may also substitute extrinsic for intrinsic motivation (see e.g. Deci, 1971). In this case, directors may be less motivated to attend meetings because they perceive the fee to be their only reward. There are numerous examples in both the psychology and the economics literature of cases in which the introduction of monetary rewards worsened individual performance.[5] Two studies are particularly worth mentioning.

Gneezy and Rustichini (2000a) find that the introduction of a monetary fine for parents who arrived late to pick up their children at day-care centers led to a significant increase in the number of late parents. They argue that parents viewed the *fine as a price*: by putting a monetary price on late-arrivals, parents could more easily justify their behavior. In our context, similar considerations could affect the behavior of directors with respect to attendance at meetings. In firms that do not pay meeting fees, directors might be compelled to attend out of a sense of duty. In firms that pay meeting fees, however, directors can assign a monetary price to missing a meeting, which is the value of the meeting fee. Thus, attendance might be lower in firms that pay meeting fees because directors perceive the price of skipping a meeting as being low.

Gneezy and Rustichini (2000b) provide experimental evidence that, although individuals commonly perform better when paid more rather than less, they also perform better if not paid at all rather than paid only a small amount. Thus, monetary rewards are only effective when they are large "enough". Because meetings fees are small, it is plausible that firms that pay fees might end up having worse attendance records than the ones that do not pay fees. Of course, how much of a payment will be considered "enough" will vary across contexts, and is, in the end, an empirical question.

2.2. Director selection on meeting fees

A related story can explain a positive correlation between meeting fees and attendance. Suppose that directors know whether or not they are likely to experience attendance problems in the future. The ones who anticipate not having attendance problems will prefer to work for companies that pay high meeting fees, everything else constant. The ones who anticipate having attendance problems will choose to work for companies that pay no or low meeting fees and more fixed pay. Therefore, heterogeneity in meeting fees across firms will provide incentives for directors to select the firms they will work for. This sorting argument is similar to the direct incentives argument, except that it operates on a different margin: direct incentives affect behavior on the intensive margin (i.e. the work intensity) while sorting affects behavior on the extensive margin (i.e. the participation decision).

2.3. Reverse causality

Suppose that directors anticipate whether they will have attendance problems. Since directors influence their own compensation, the boards that expect few or no attendance problems may choose to pay higher meeting fees. Meeting fees may be justified to outsiders as a means of providing incentives for attendance, but since no attendance problem is expected, meeting fees may really just represent a disguised increase in director pay.

If causation runs from attendance to meetings fees, and not the other way around, directors do not perform for pay; rather, they get paid because they expect to perform. We attempt to control for this possibility with instrumental variables methods.

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[4] Black et al. (2006) argue that the liability risk that outside directors face is also fairly small.
[5] See Frey and Jegen (2001) for a survey of the empirical literature on the crowding effects of monetary rewards.

3. Data description

Our initial sample consists of an unbalanced panel of director-level data for S&P 500, S&P MidCaps, and S&P SmallCap firms collected by the Investor Responsibility Research Center (IRRC, 1997–2003) for the period 1996–2003. This dataset is in part based on an IRRC annual publication (*Board Practices/Board Pay: the Structure and Compensation of Boards of Directors at S&P 1,500 Companies*). It contains information on director attendance and director characteristics, such as the number of other directorships each director holds, the director's tenure as director, gender, age and retirement status, from company proxy statements. Some director data are collected from annual reports or company websites.

The Securities Exchange Act of 1934 requires corporations to list in their proxy statements the name of each incumbent director who during the previous fiscal year attended fewer than 75% of the aggregate of the total number of meetings of the board and the total number of meetings held by all board committees on which he served while a director. For all but two directors in our sample, the IRRC reports whether they were named in the proxy as having attendance problems.[6] Because other director characteristics were not collected in a consistent manner, we perform several steps to clean the data, which we describe in more detail in the Appendix. Next, we exclude from our sample directors who are not explicitly paid compensation for their board service, such as executive or inside directors. Because directors are often appointed in the middle of the proxy year, we further restrict our sample to directors who were appointed prior to a given proxy year. This ensures that we consider only directors who are not artificially constrained from attending board meetings.

To obtain information on the number of regular board meetings during each fiscal year and data on director compensation, such as the board meeting fees, the number of shares and options granted to directors, and the size of the annual retainer, we merge our data with ExecuComp. Our final sample of director attendance and compensation data consists of 77,135 directorships (director-firm years) in a sample of 2,213 firms whose number varies from 1,077 in 1996 to 1,406 in 2003. We obtain additional financial data not available in ExecuComp from CRSP. We assign firms to industries based on IRRC's classification.

We choose to value director options using a procedure that is as close as possible to ExecuComp's procedure for valuing options for the top 5 executives in each firm. To price the options we use the Black-Scholes formula, assuming continuously paid dividends. Estimates of firm volatility, dividend-yield and the risk-free rate are from ExecuComp. Expiration of director options usually occurs in ten years; we use seven years to be consistent with ExecuComp.[7]

Table 1 shows descriptive statistics for selected firm, board and director characteristics. We define return on assets (ROA) to be net income divided by the book value of assets. Stock performance is the firm's raw return for the year net of the CRSP value-weighted index, both compounded continuously. Total director compensation is the sum of the annual retainer, total meeting fees and the value of all stock-based compensation. For comparison purposes, we convert all director compensation and financial variables into 2003 dollars using the CPI-U. The boards of our sample firms hold on average 7.24 regular board meetings per year. 1,526 (68.96%) firms pay their directors to attend board meetings during the whole sample period and 382 (17.26%) firms never pay their directors to attend board meetings. Firms exhibit a general tendency to eliminate board meeting fees. During the sample period, more firms eliminate meeting fees (192) than introduce them (113), and more than 50% of the firms that introduce meeting fees do so in 2002 and 2003 (67 firms). The average meeting fee for regular board meetings is $1,014 in 2003 dollars, with a maximum board meeting fee of $8,000. The average fixed compensation each director receives, the sum of the cash annual retainer and the value of annual share and option grants, is $86,028.

In 1,887 (17.83%) firm-years at least one director on the board has attendance problems. At the individual level, however, directors' attendance records are quite good. They have attendance problems in only 3.12% of director firm-years.

4. Meeting fees and attendance: a first look

We start analyzing the correlation between meeting fees and attendance by examining what happened to directors' attendance in the 192 firms that eliminated meeting fees. In Table 2, Panel A, we report the frequency of firms eliminating meeting fees by year.[8] In Panel B, we provide summary statistics for selected firm and board characteristics at the firm-year level for these firms. In the first column, we show summary statistics prior to the elimination of meeting fees. In the second

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[6] Although the SEC has a 75% threshold, the way in which attendance problems are reported across firms varies. Some firms may have a different threshold or they may report only attendance problems for board meetings. Regardless of the threshold (even if it is greater than 75%), we assume that if a firm reports the name of a director in the proxy, from the point of view of the firm, that director has an attendance problem. Since most firms use the 75% threshold, we do not believe that this biases our results.

[7] In most firms, the exercise price of an option is the stock price on the date of the grant. Since directors are generally elected at the annual meeting of the shareholders, the majority of firms grant directors shares and options at the annual meetings. Thus, we use the market price of shares at the end of the month of each firm's annual meeting at the beginning of the fiscal year as the exercise price of the options as well as the price of the stock granted during that year.

[8] Although there are more firms eliminating meeting fees per year in the post-Sarbanes-Oxley (SOX) years (2002 and 2003), almost two-thirds of all fee eliminations in our sample are pre-SOX. The average year of fee elimination is 2000.

Table 1
Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm Characteristics					
Ln(Assets) (assets in millions)	10,584	7.524	1.678	2.698	14.050
Volatility	9,721	0.418	0.200	0.102	1.899
ROA (return on assets)	10,583	2.758	17.976	−587.973	59.59
Stock Performance	8,831	−0.037	0.48	−3.774	3.078
Board Characteristics					
Board Meeting Fee (in thousands)	10,585	1.014	0.846	0	8
Director Compensation (in thousands)	9,703	86.028	193.934	0	7,972.834
Total Director Compensation (in thousands)	9,428	92.049	190.696	0	7,972.834
# Board Meetings	10,271	7.239	3.098	1	36
Board Size	10,585	9.668	3.025	3	39
Director Characteristics					
Attendance Problem Dummy	77,133	0.031	0.174	0	1
# Other Directorships	77,135	1.009	1.370	0	10
Tenure as Director in years	73,465	9.781	7.718	0	63
Female Dummy	77,001	0.108	0.310	0	1
Director Age in years	77,126	60.441	8.476	25	98
Retired Dummy	77,135	0.227	0.419	0	1

The sample consists of an unbalanced panel of director level data from 2,213 firms for the period 1996–2003 which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. The IRRC Director data consist of director level data for S&P 500, S&P MidCap and S&P SmallCap firms. Data on attendance and director level characteristics are from IRRC. Data on board meetings, director compensation and most financial data are from ExecuComp. We obtain additional financial information from Compustat and CRSP. We exclude directors from our sample who were not paid director compensation for their board service (inside directors). We also exclude all directors in a given fiscal year who were appointed that year. Return on Assets (ROA) is defined as net income divided by the book value of assets (in percentage points). Volatility is the standard deviation of previous 60 month stock returns. Stock Performance is the firm's raw return for the year net of the CRSP value-weighted index, both compounded continuously. Attendance Problem is a dummy variable which is equal to one in a given fiscal year if a firm disclosed in its proxy statement that a director attended fewer than 75% of the meetings he was supposed to during that year. Director Compensation is the sum of the cash annual retainer plus the value of annual share and option grants. Total Director Compensation is the sum of Director Compensation and # Board Meetings times Board Meeting Fee. Options were priced following the method in ExecuComp. We used the stock price at the end of the month of the firm's annual meeting for the exercise price of the options, as well as to value stock grants. All compensation and financial numbers have been converted to 2003 dollars using the CPI-U. Retired Dummy is equal to 1 if the proxy indicated that the director retired from his primary occupation. The number of observations varies because of missing data.

column, we show summary statistics after the elimination of meeting fees. We restrict the sample to firms with no missing data for any variable, which leaves us with 160 firm-year observations in the pre-elimination sample and 183 firm-years in the post-elimination sample.

The result of this comparison is striking. In 13.8% of firm-years in the pre-elimination sample, at least one director had attendance problems. After the elimination of meeting fees, this number almost doubles—it jumps to 25.1%. The difference between the two is statistically significant at the 1% level (*t*-statistic of 2.66). Thus, firms that eliminate meeting fees experience a substantial increase in director attendance problems. As we will show below, this is a robust finding. Our analysis here thus illustrates that our main result does not depend on the specific econometric procedures or control variables we use: the results are evident even from simple comparisons of means.[9]

Panel B also shows that there appears to be almost no economically significant difference in mean board or firm characteristics before and after the elimination of fees. Other than attendance behavior, only total director compensation appears to have changed significantly. It is much larger in the post-elimination sample: After eliminating meeting fees, firms pay their directors on average $138,635, while they used to pay their directors $99,657 (assuming that directors attend all meetings).[10]

In Panel C, we perform a different comparison. We provide summary statistics for two different sub-samples: all firm-years in which firms pay a meeting fee and those in which firms do not pay meeting fees. To facilitate the comparison, we restrict our sample to the set of firms for which we have complete data for all years. Although the differences in attendance behavior across columns appear to be smaller, the results are similar to those in Panel B. In particular, attendance records are worse in the sample of firm-years with no meeting fees. In 21.6% of those firm-years, at least one director experienced

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[9] Because most of the firms that introduce fees do so very late in our sample period, we do not perform the same comparison for such firms.

[10] Our sample restriction to firms that have no missing data implies that there are no data from 2002 or 2003 in Panel B. Thus, the increase in total compensation post-elimination cannot be attributed to the overall increase in director compensation after SOX.

Table 2
Comparison of firms that pay board meeting fees to firms that do not pay board meeting fees

Panel A: Frequency distribution of years in which meeting fees were eliminated during our sample period (192 firms)

	Number of firms eliminating meeting fees	Cumulative percent of firms eliminating meeting fees
1997	26	13.54
1998	23	25.52
1999	28	40.10
2000	29	55.21
2001	20	65.63
2002	33	82.81
2003	33	100.00

Panel B: Summary statistics for firms that eliminated meeting fees during our sample period

	Prior to the elimination of meeting fees (160 firm-years)	Post elimination of meeting fees (183 firm-years)
Attendance Problem Dummy	0.138	0.251
Number of Attendance Problems	0.091	0.100
Ln(Assets)	7.999	8.300
Volatility	0.415	0.424
Stock Performance	−0.02	0.044
ROA	5.017	3.725
Board Meeting Fee	1.368	0.000
Director Compensation	89.206	138.635
Total Director Compensation	99.657	138.635
Annual Retainer	17.910	28.193
# Board Meetings	7.619	7.557
Board Size	10.025	10.426
# Other Directorships	1.164	1.254
Tenure as Director	9.626	9.652
Female Dummy	0.125	0.134
Director Age	59.930	59.918
Retired Dummy	0.237	0.244

Panel C: Comparison of summary statistics for firm-years in which firms paid fees to those in which they did not

	Paid fees (1955 observations)	Did not pay fees (602 observations)
Attendance Problem Dummy	0.187	0.216
Number of Attendance Problems	0.106	0.114
Ln(Assets)	7.618	7.834
Volatility	0.419	0.461
ROA	3.775	2.986
Stock Performance	0.018	0.012
Board Meeting Fee	1.326	0.000
Director Compensation	82.568	128.141
Total Director Compensation	92.101	128.141
Annual Retainer	18.062	24.724
# Board Meetings	7.349	7.189
Board Size	9.814	9.339
# Other Directorships	1.038	1.104
Tenure as Director	9.923	9.670
Female Dummy	0.104	0.099
Director Age	60.546	59.727
Retired Dummy	0.266	0.249

This table shows sample averages of financial data, director compensation data, and board and director characteristics for firms that pay their directors board meeting fees and firms that do not pay their directors board meeting fees. All averages are calculated using only the observations for which data on all variables are available. All director characteristics are firm level averages for all directors who were paid for board service and who were not appointed in a given fiscal year. Panel A shows the frequency distribution of years for which meeting fees were eliminated. In panel B, we restrict our sample to firms that initially paid meeting fees and then eliminated them. The first column shows sample averages for the time period prior to the elimination of meeting fees. The second column shows sample averages after the elimination of meeting fees. The number of observations varies between the period prior and post elimination because of our restriction to observations for which all variables are available. The first column in panel C shows sample averages for all firm-year observations in which firms paid meeting fees. The second column shows sample averages for all firm-year observations in which firms did not pay meeting fees.

attendance problems, as compared to 18.7% of firms-years with meeting fees. This difference, however, just fails to be statistically significant at conventional levels (*t*-statistic of 1.59, with *p*-value of 11%). Most other characteristics are similar across columns. However, total director compensation is again larger in the sample of firm-years with no meeting fees:

Firms that do not pay meeting fees pay their directors on average \$128,141, while firms that pay meeting fees pay their directors \$92,101.[11]

The results from this second comparison also suggest that there is a relationship between attendance problems at the firm level and the presence of meeting fees, at least in the raw data. However, the differences between Panels B and C also suggest that it is important to control for firm and director characteristics. Because there is more heterogeneity in Panel C—since it compares two different samples of firms—it is not surprising that the differences in attendance behavior are smaller, possibly due to correlations between attendance behavior, director compensation, and other firm and director characteristics.

The results from the two comparisons also suggest that directors are better paid in firms that do not use meeting fees or have eliminated them. Thus, it appears that directors of firms that do not pay meeting fees are paid *more* for doing *less*. A benign explanation for this fact is that directors of firms that do not pay meeting fees have better *unobservable* characteristics. However, it is hard to understand why these better qualities are not always reflected in firm valuations: in our data, the market to book value of assets is 2.37 for the pre-elimination sample and 2.35 for the post-elimination sample, while it is 2.1 for firms that pay fees and 2.3 for the ones that don't.[12] Furthermore, operating performance (ROA) is always higher for firms that pay fees. Nonetheless, this possibility requires us to consider the hypothesis of director selection on meeting fees seriously.[13]

5. Directorship-level analysis

In this section, we use director-level data to study the relationship between meeting fees and director attendance problems. Our dependent variable is a dummy variable that is equal to 1 if the proxy reports that the director had attendance problems and is 0 otherwise. In order to interpret the results correctly, one should keep in mind that the Attendance Problem Dummy indicates those directors who experienced considerable attendance problems, i.e. they missed more than the threshold level of 25% of the meetings they were supposed to attend. Clearly, reputational concerns will cause directors to avoid crossing the threshold. Thus, it is not surprising that the proportion of observations in which directors are reported as having attendance problems is small: 3.12%. Nevertheless, even when using this conservative measure of extreme attendance problems, as we show below, the effects of meeting fees on attendance are statistically and economically significant.

We estimate a Probit model of the probability that a director experiences attendance problems as a function of the meeting fee paid by the firm and other controls. We use three sets of controls. Because a director's attendance decision will plausibly be affected by board characteristics, such as the total compensation he receives, as well as the number of board meetings and board size, our first set of controls contains total director compensation (excluding meeting fees), the number of board meetings, and board size.[14] Total compensation could have an effect on attendance if, as in efficiency wage theories, directors who are paid more attend more meetings because they care more about keeping their jobs. Board size could also affect director attendance because of potential free-riding behavior. The larger the board is, the less noticeable is the absence of any given director.

It is also plausible that the opportunity cost of attending meetings increases as directors accumulate more directorships in other firms (see e.g. Ferris et al., 2003; Fich and Shivdasani, 2006). Thus, one might expect a positive relationship between a director's attendance problems and the number of directorships he has. To control for personal characteristics that may affect a director's attendance, our second set of controls consists of the number of other directorships, director tenure, gender, age, and the director's retirement status. Finally, because of reputational concerns directors may care more about attending meetings in bigger, better-known firms. Their incentives for attendance might also increase in more unpredictable and complex environments, because board decisions may be more important. Thus, we include firm level controls such as the logarithm of the book value of total assets to proxy for firm size, stock return volatility to proxy for uncertainty and complexity, and ROA and Stock Performance. In all specifications, we adjust our standard errors for heteroskedasticity and group correlation within directorship (director-firm) units.

Column I of Table 3 reports our estimates when we use the number of other directorships in addition to our first set of controls. We find that higher meeting fees are associated with a reduced likelihood that a director will experience attendance problems. Consistent with the idea that the number of directorships raises a director's opportunity cost of time, the coefficient on the number of other directorships is positive and statistically significant. More board meetings appear to decrease the likelihood that a director experiences attendance problems. This effect may be attributed to the fact that the threshold for attendance problems is measured in percentages, so it may be easier to cross the threshold in a firm with fewer meetings. Consistent with free-riding behavior, board size is associated with an increased likelihood of attendance

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[11] The results are similar if we restrict our attention to pre-SOX firm-year observations.

[12] The market value of assets is defined as the book value of assets minus the book value of equity plus the market value of equity.

[13] Another possibility is that in firms with fewer checks on directors, director pay is higher and meeting fees are not used. Because our main focus in this paper is on the relationship between meeting fees and attendance, we do not examine the correlation between meeting fees and total director compensation further, but leave it for future research.

[14] While these variables plausibly affect director attendance, it is also possible that they are jointly determined with attendance. To the extent that this is true, the results should be viewed with care. However, excluding controls for board characteristics only marginally affects the results that follow.

Table 3
Director level regressions of Attendance Problem Dummy on Board Meeting Fees

Dependent variable: Attendance Problem Dummy				
	I	II	III	IV
Board Meeting Fee	−0.053***	−0.060***	−0.054***	−0.005**
[*marginal effects*]	[−0.004]	[−0.004]	[−0.003]	[−0.005]
	(−3.47)	(−3.49)	(−3.11)	(−2.00)
# Other Directorships	0.049***	0.054***	0.058***	0.007***
	(6.16)	(5.48)	(5.74)	(4.12)
Director Compensation	0.077	−0. 164*	0. 093	−0.017*
	(1.05)	(1.66)	(1.05)	(−1.86)
# Board Meetings	−0.024***	−0.021***	−0.021***	−0.001**
	(−6.16)	(−4.54)	(−4.25)	(−2.09)
Board Size	0.025***	0.044***	0.039***	0.004***
	(7.43)	(8.50)	(7.21)	(5.20)
Female Dummy	–	−0.154***	−0.145***	−0.004
		(−3.67)	(−3.42)	(−0.66)
Tenure as Director	–	−0.008***	−0.008***	−0.001**
		(−2.83)	(−2.97)	(−2.18)
Director Age	–	−0.004*	−0.004*	−0.001***
		(−1.84)	(−1.84)	(−2.92)
Retired Dummy	–	−0.131***	−0.111***	−0.006
		(−3.87)	(−3.15)	(−1.48)
Ln(Assets)	–	−0.042***	−0.047***	−0.006***
		(−4.04)	(−4.12)	(−3.82)
Volatility	–	0.205**	0.252**	0.022
		(2.37)	(2.37)	(1.58)
ROA	–	−0.001	−0.001*	−0.001
		(−1.62)	(−1.74)	(−1.49)
Stock Performance	–	0.005	0.034	0.003
		(0.19)	(1.29)	(0.69)
Observations	69,330	55,010	54,842	11,285
Year and industry dummies	No	No	Yes	Yes
Estimation method	Probit	Probit	Probit	2SLS

The sample consists of an unbalanced panel of director data from 2,213 firms for the period 1996–2003 which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. We exclude directors from the sample who were not paid director compensation for their board service (inside directors) and all directors in a given fiscal year who were appointed that year. The dependent variable is a dummy variable that is equal to one if the director was named in the proxy as having attended fewer than 75% of the meetings he was supposed to attend during the previous fiscal year. Board Meeting Fee and Director Compensation are measured in (thousands of) 2003 dollars. Remaining sample characteristics are as in Table 1. Columns I to III display results of Probit regressions. Column IV displays results of the second stage of a two-stage least square regression that uses meeting fees in year $t−2$ as the instrument for meeting fees in year t. The sample in column IV is restricted to directors that were appointed in year $t−1$. The specifications in Columns III and IV include year and industry dummies. Standard errors are adjusted for potential heteroskedasticity and for group correlation at the directorship (director-firm) level. Robust z-statistics or t-statistics are in parentheses. Marginal effects for Board Meeting Fee are reported in square brackets. The coefficients on Director Compensation are multiplied by 1000. The effect of the constant term is omitted.

*** Significance at 0.01 level.
** Significance at 0.05 level.
* Significance at 0.10 level.

problems. We find no statistically significant effect of total director compensation (excluding meeting fees) on attendance problems.

In the specifications in columns II and III, we include the remaining director characteristics and firm level controls. In column III, we also include industry and year dummies. The effect of meeting fees on attendance problems is robust to the inclusion of these variables. Furthermore, this effect is always statistically significant at the 1% level. Interestingly, women appear to have fewer attendance problems than men. Director tenure, age and retirement status are all associated with a decreased likelihood of attendance problems, consistent with the idea that older and retired directors have lower opportunity costs of time. Firm size is also associated with a decreased likelihood of attendance problems, while volatility is positively correlated with attendance problems. Performance measures are not robustly related to attendance. Overall, the results are intuitive, which suggests that our model is reasonably well-specified.

In square brackets beneath the estimated coefficients of the effect of board meeting fees, we report the marginal effect of a change in meeting fees on the probability that a director experiences attendance problems, evaluated at the means of the data. These effects help us assess the economic significance of the role of meeting fees. They indicate that an increase in meeting fees by 1,000 dollars would decrease the probability that an average director has attendance problems by approximately 0.003–0.004. Given that the fraction of directors with attendance problems in the sample is 0.031, this amounts to a decrease in attendance problems by roughly 10–12%. Thus, it seems that even moderate meeting fees are effective at reducing attendance problems.

One possible objection to a causal interpretation of the findings is that they may be driven by the *disguised extra pay* hypothesis, i.e. powerful directors may increase meeting fees when they anticipate that they will have fewer attendance problems. We believe that this possibility is remote because total director compensation is much larger in firms that do not pay meeting fees in our sample. If anything, it seems that directors who have discretion over their compensation structures would prefer to choose more fixed pay and no meeting fees. Nevertheless, we address potential reverse causality using the following approach. For each firm-year, we restrict our sample to include only directors appointed in the prior year. For example, for the year of 1998, we use only directors that were appointed in 1997. In this restricted sample we can use meeting fees in 1996 as an instrument for the meeting fee in 1998 to estimate a causal effect of meeting fees on attendance. The reasoning is as follows. Meeting fees are likely to be autocorrelated over time because changes in compensation structure occur infrequently. However, directors who were appointed in 1997 could not have played any role in determining the 1996 meeting fee. Therefore, the 1996 meeting fee should be a valid instrument for meeting fees in this restricted sample, i.e. it should be correlated with the 1998 meeting fee but uncorrelated with attendance problems of directors appointed in 1997 during fiscal 1998.[15]

When we restrict the sample in this manner, the number of usable observations drops dramatically (almost five times). This makes it more difficult to document a result, however we believe that the results are nevertheless suggestive. In column IV of Table 3, we report the results of an Instrumental Variables estimation of a linear probability model in the restricted sample, in which the instrument for meeting fees in year t is the meeting fee in year $t-2$. The results are very similar to the Probit results. They suggest that an increase in meeting fees of 1,000 dollars would decrease the probability that an average director has attendance problems by approximately 0.005, an effect that is statistically significant at 5%.

Our conclusion is that a good deal of the effect of meeting fees on attendance operates through the attendance behavior of newly appointed directors. Although our results do not completely rule out reverse causation, they suggest that a major part of the correlation between meeting fees and attendance problems can be explained by a causal relation running from meeting fees to attendance behavior.

6. Meeting fees and attendance: incentives or selection?

There are two leading explanations for the result that higher meeting fees are associated with better director attendance records. One is a direct incentive effect: directors attend more meetings if paid more for doing so. As we explain in Section 2, this case includes the possibility that the desired behavior is induced through signaling. Another explanation is selection (sorting): directors self-select or are chosen to be on the boards of firms in a manner that is correlated with meeting fees. We attempt to differentiate between them using the following reasoning:

Suppose that there is a directorship-specific component in attendance, d_{if}, such that

$$Pr(\text{attendance problems}_{ift}) = f(\boldsymbol{\beta}\mathbf{x}_{ift} + d_{if} + u_{ift}), \tag{1}$$

where i indicates a director, f indicates the firm, t the year, u_{ift} is the error term and $\mathbf{x}_{ift}$ is the vector of explanatory variables which includes the meeting fee. If the selection story is true, d_{if} is correlated with meeting fees, and hence $\mathbf{x}_{ift}$. Thus, we can test for the empirical relevance of selection by testing for a correlation between $\mathbf{x}_{ift}$ and d_{if}. To do this, we use Hausman's (1978) specification test applied to the comparison of random-effects versus fixed-effects models. If d_{if} is a random effect, then it is uncorrelated with $\mathbf{x}_{ift}$. In this case, random-effects and fixed-effects estimates of the model in (1) will not differ systematically, so we can test the null that they are equal to assess the importance of selection.

Because we cannot estimate Probit regressions with fixed-effects, we use a linear probability model when estimating random and fixed-effects models. Table 4 displays the results. The first column displays the results of a random-effects regression of our preferred specification (i.e. including time and industry effects) with individual directorship effects as in (1). This procedure assumes that $\mathbf{x}_{ift}$ and d_{if} are uncorrelated. We find that accounting for directorship effects with the random-effects procedure does not have a significant impact on the results: the effect of meeting fees on attendance problems is negative and statistically significant at 5%. The point estimate for the marginal effect of meeting fees, -0.002, is also very similar to the -0.003 marginal effect implied by the Probit model.

The second column displays the directorship fixed-effects estimates. The effect of meeting fees on attendance problems is still negative but not statistically significant. This is not surprising; since many of our explanatory variables (including meeting fees) vary little over time, fixed-effects estimates are bound to be imprecise.

When we perform Hausman's specification test, we obtain a χ^2-test statistic of 18.68 (with 18 degrees of freedom), which yields a p-value of 0.41.[16] Thus, the test does not reject the null that the random-effects model is appropriate. This is evidence against the hypothesis that selection is the sole explanation for the effect of meeting fees on attendance.

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[15] Of course, our instrument is not valid if there is an omitted variable correlated both with meeting fees in 1996 and with the strategy for the selection of new directors in 1997, which is also related to the expected attendance patterns of these directors. Our identifying assumption requires that no such omitted variable exists. This is true if the selection of directors depends only on their observable characteristics included on the right-hand side of our regressions. We are thus assuming away the possibility of selection on unobservables, where unobservable (to the econometrician) characteristics of prospective directors correlated with attendance problems are observed by the board and used in the hiring decision.

[16] The difference between the estimated coefficients for the meeting fees using each method is also not statistically significant.

Table 4

Random and fixed effect estimates of linear probability model of Attendance Problem Dummy on Board Meeting Fees

Dependent variable: Attendance Problem Dummy				
	I	II	III	IV
Board Meeting Fee	−0.002** (−2.34)	−0.001 (−0.56)	−0.002* (−1.80)	0.000001 (<0.01)
# Other Directorships	0.004*** (4.99)	0.003 (1.54)	0.005*** (4.83)	0.004** (2.09)
Director Compensation	−0.007* (−1.85)	−0.012 (−1.46)	−0. 013*** (−3.12)	−0.023*** (−3.14)
# Board Meetings	−0.001*** (−3.27)	0.0002 (0.57)	−0.001*** (−3.16)	−0.0001 (−0.55)
Board Size	0.002*** (5.83)	0.001 (0.98)	0.003*** (6.48)	0.002*** (4.21)
Female Dummy	−0.009*** (−2.89)	–	−0.007** (−2.17)	–
Tenure as Director	−0.0004*** (3.01)	0.001 (0.25)	−0.0004*** (−3.67)	−0.0003 (−1.18)
Director Age	−0.0003** (−2.40)	−0.002 (−0.50)	−0.0002* (−1.87)	−0.004 (−1.04)
Retired Dummy	−0.006*** (−2.95)	−0.005 (−1.50)	−0.006*** (−2.92)	−0.005* (−1.75)
Ln(Assets)	−0.003*** (−3.83)	−0.002 (−0.55)	−0.004*** (−5.47)	−0.006*** (−5.03)
Volatility	0.014* (1.87)	0.005 (0.32)	0.014* (1.94)	0.003 (0.26)
ROA	−0. 105 (−1.48)	−0.042 (−0.51)	−0. 094 (−1.29)	−0.069 (−0.61)
Stock Performance	0.002 (1.27)	0.003 (1.33)	0.002 (1.34)	0.003 (1.63)
Observations	54,948	55,010	54,948	55,010
Number of individual effects	15,643	15,665	11,896	11,910
Type of individual effects	Directorship	Directorship	Director	Director
Estimation method	Random effects	Fixed effects	Random effects	Fixed effects

The sample consists of an unbalanced panel of director data from 2,213 firms for the period 1996–2003. We exclude directors from the sample who were not paid director compensation for their board service (inside directors) and directors in a given fiscal year who were appointed that year. The dependent variable is a dummy variable that is equal to one if the director was named in the proxy as having attended fewer than 75% of the meetings he was supposed to attend during the previous fiscal year. Board Meeting Fee and Director Compensation are measured in 2003 dollars. Remaining sample characteristics are as in Table 1. The specification in column I (III) is a random effects regression with directorship (director) effects. This specification includes year and industry dummies. The specification in column II (IV) is a fixed effects regression with directorship (director) effects. This specification omits the female dummy and industry dummies since they are collinear with the fixed effects. Standard errors are adjusted for potential heteroskedasticity. Robust z-statistics or t-statistics are in parentheses. The coefficients on Director Compensation and ROA are multiplied by 1000. The effect of the constant term is omitted.

   *** Significance at 0.01 level.
   ** Significance at 0.05 level.
   * Significance at 0.10 level.

Our use of directorship effects allows for three types of individual effects: firm, director, and the match between firm and director. On the one hand, this is desirable because it controls for both omitted firm effects and the characteristics of the director-firm match. On the other hand, it eliminates an important source of variation that occurs only across firms. An alternative is to estimate the same model using *director* effects only. We report these in columns III and IV. The results are similar, i.e. we cannot reject that the random-effects model is correct. The marginal effect of meeting fees is still −0.002, although now only significant at 10% (*p*-value of 0.07).[17]

The statistical evidence in favor of the random-effects model does not imply the absence of selection effects. It is plausible that directors with different patterns of attendance behavior will self-select to firms with different characteristics. However, our evidence indicates that as long as the selection is based on the control variables and industry and year dummies included on the right-hand side, the remaining individual effect can be modeled as a random effect uncorrelated with $\mathbf{x}_{ift}$. The estimated negative marginal effect of meeting fees on attendance problems seems thus to be due to an incentive effect: increasing meeting fees appears to induce directors to attend more meetings, rather than attract directors with better attendance characteristics.

We believe that the evidence against selection as the sole explanation is quite strong. Still, for the sake of robustness, we investigate whether there is direct evidence of an incentive effect using a fixed-effects model. In Table 4, the fixed-effects estimates of the effect of meeting fees are not statistically significant. The problem with fixed-effects in our case is that our main explanatory variable (meeting fees) and many control variables vary little over time for a given directorship. Thus, fixed-effects regressions may fail to detect relationships in the data even when they exist.[18]

To apply the fixed-effects method to our data, we estimate a more parsimonious specification in which only board-level variables and the directorship fixed-effects are included (i.e. the same specification as in the first column of Table 3). To help identify a pure incentive effect, we restrict the data to directors who were on the board of their firms during the whole

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[17] When we perform Hausman's (1978) specification test, we obtain a χ^2-test statistic of 22.92 (with 18 degrees of freedom), which yields a p-value of 0.19.

[18] See for example Hamermesh (2000) and Zhou (2001).

Table 5
Fixed effect estimates of linear probability model of Attendance Problem Dummy on Board Meeting Fees for long-tenure directors

Dependent variable: Attendance Problem Dummy				
	I	II	III	IV
Board Meeting Fee	−0.005** (−2.00)	−0.009*** (−2.86)	−0.005** (−2.26)	−0.007** (−2.05)
# Other Directorships	0.003 (1.38)	0.003 (1.38)	0.003 (1.58)	0.003 (1.35)
Director Compensation	−0. 015** (−2.25)	−0.009 (−1.28)	−0. 011 (−1.61)	−0.008 (−1.20)
# Board Meetings	−0.008 (−0.02)	−0. 150 (−0.37)	−0. 585 (−1.46)	−0.180 (−0.44)
Board Size	0.002* (1.88)	0.002 (1.53)	0.002*** (2.61)	0.002 (−1.60)
Observations	39,943	28,426	28,426	28,426
Number of individual effects	10,218	7,417	6,290	7,417
Type of individual effects	Directorship	Directorship	Director	Directorship
Sample type	Directors with firms whole sample period	Directors with firms whole sample period and firms pay fees whole sample period	Directors with firms whole sample period and firms pay fees whole sample period	Directors with firms whole sample period and firms pay fees whole sample period
Variables in nominal or 2003 values?	2003 values	2003 values	2003 values	Nominal values

This table shows fixed effect regressions for directors who are on the board of their firms throughout the whole sample period. The sample consists of an unbalanced panel of director data from 2,213 firms for the period 1996–2003. We exclude directors from the sample who were not paid director compensation for their board service (inside directors) and all directors in a given fiscal year who were appointed that year. The dependent variable is a dummy variable that is equal to one if the director was named in the proxy as having attended fewer than 75% of the meetings he was supposed to attend during the previous fiscal year. Board Meeting Fee and Director Compensation are measured in 2003 dollars, except in column IV where these variables are in nominal values. Remaining sample characteristics are as in Table 1. Columns I, II and IV include fixed directorship (director-firm) effects. Column III includes fixed director effects. In columns II to IV, we restrict our sample to the set of directors of firms that pay meeting fees throughout the whole sample period and who are on the board during the whole sample period. Robust *t*-statistics are in parentheses. The coefficients on Director Compensation and # Board Meetings are multiplied by 1000. The effect of the constant term is omitted.
  *** Significance at 0.01 level.
  ** Significance at 0.05 level.
  * Significance at 0.10 level.

sample period. Thus, we estimate how a director's attendance record changes as meeting fees change within a firm-director unit. By construction, these results cannot be explained by directors self-selecting into firms with different meeting fees. Under the assumption that all the other firm and director control variables vary little over time and can be reasonably expected to be indistinguishable from the directorship fixed-effects, we can estimate (1) by fixed-effects methods.

We report the results in Table 5. In column I, we report a statistically significant marginal effect of meeting fees on attendance problems of -0.005. In column II, we report the results of the same fixed-effects procedure after further restricting the sample to directors in firms that pay meeting fees during the whole period. This allows us to disentangle a director's reaction to a change in the dollar value of meeting fees from his reaction to a change in firm policy from paying to not paying meeting fees. After restricting the sample in this manner, we obtain a statistically significant marginal effect of meeting fees on attendance problems of −0.009.

This last piece of evidence is quite striking. Because we have included director-firm fixed effects and restricted the sample to directors who have not joined or left the board, our estimates reflect only changes in attendance behavior due to within-directorship changes in meeting fees. Because we have further restricted the sample to firms that pay meeting fees, our estimates reflect only changes in attendance behavior due to changes in meeting fees at the intensive margin (i.e. changes in the amount of meeting fees), not to discrete changes in compensation policy (i.e. to pay or not). Column III shows that the results are again similar if we use director rather than directorship fixed effects.

These results are surprising because they imply that directors may respond to very small changes in the real value of meeting fees over time. Firms do not adjust fees every year, thus their real value varies over time due to inflation, i.e. inflation induces *exogenous* variation in real meeting fees. One concern with relying on inflation-induced variation is that there might exist an omitted time-varying variable that is correlated with the inflation index which may explain the results.[19] Adding a variable that increases linearly with time to the fixed-effects specifications of Table 5 leads to difficulties in interpretation, as it is indistinguishable from a time trend that does not vary across firms or directors, and also virtually indistinguishable from the price deflator. Thus, we deal with possible spurious inflation effects by estimating a fixed-effects

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[19] For example, suppose that directors with longer tenures are more likely to have attendance problems. Director tenure will mechanically grow over time for all directors, while the real value of meeting fees will decrease over time because adjustments to nominal values of fees are infrequent. Thus, a negative relation between meeting fees and attendance problems may be due to the omitted effect of tenure. While this is a plausible explanation, the evidence in Table 3 suggests that directors with longer tenure are significantly less likely to have attendance problems.

model with fees in nominal values. In column IV we present the results. We find a significant marginal effect of meeting fees on attendance problems of −0.007, which is very similar to the value obtained for the inflation-adjusted meeting fees. Thus, we conclude that inflation adjustment cannot be the sole explanation for our findings.

To summarize the results, we show that: (i) using a specification test, we cannot reject the null that the random-effects model is well-specified, which is evidence against the hypothesis that director selection on meeting fees is the only explanation for our findings; and (ii) in a fixed-effects model without infrequently-changing firm and individual controls, within-firm increases in meeting fees are associated with reductions in attendance problems of directors who do not leave the firm. This is the strongest evidence supporting an incentive effect. We also consider alternative explanations, but fail to find support for them.

7. Related evidence

In this section, we investigate the incentive and selection hypotheses further by analyzing some of their indirect implications.

7.1. Meeting fees and director turnover

An implication of the selection hypothesis is that director turnover should be positively correlated with changes in meeting fees. If some directors prefer to work for firms that pay high meeting fees while others prefer to work for firms that pay low meeting fees, when a firm changes its director compensation structure, one would expect to see some directors leaving and some joining the board. We test this implication by examining whether past changes in meetings fees predict director turnover at the firm level.

We examine director turnover as in Yermack (2004) and Srinivasan (2005) by estimating Probit regressions of the likelihood an outside director departs the board. Srinivasan (2005) suggests it is important to account for staggered elections, thus we merge our data to the IRRC Corporate Governance Data. For every 2 years from 1990 to 2006, these data contain a dummy which is equal to one if the board is staggered for most firms in our sample. We fill in data on the missing years using lagged staggered board information.

As in Yermack (2004), our dependent variable, Director Departure, is defined to be one in a given year if the director does not appear in the following year's proxy statement. We construct our main explanatory variable as follows. For each firm-year, we take the difference between current meeting fees and their levels in the prior year and lag it one period. Because both positive and negative changes in meeting fees should increase director turnover if the selection hypothesis is true, our main independent variable is the absolute value of this lagged difference.

Table 6 displays the results of Probit regressions of Director Departure on our measure of meeting fee changes. As Yermack (2004) and Srinivasan (2005) do, we consider the fact that director turnover may be correlated with CEO turnover by including a dummy which is equal to one if CEO tenure is one year or less. We also include a dummy which is equal to one if the director is a member of the Audit committee. To control for staggered elections, we include a Staggered Board dummy in column I and restrict our sample to firms without staggered boards in column II. Because another major cause of director turnover is M&A activity, we further restrict the sample in column II to firm-years in which the number of director departures was smaller than 5 (all but 1% of firm-year observations). We include year and industry dummies and correct all standard errors for heteroskedasticity and group correlation at the directorship level.

As in Yermack (2004) and Srinivasan (2005), CEO turnover is significantly positively related to director turnover, especially in the sub-sample of firms without staggered boards, as one might expect. Audit committee members are less likely to depart the board, while retired and older directors are more likely to depart the board. Other factors related to turnover are board size, the number of board meetings, total director compensation, past accounting performance, and stock return volatility. Changes in meeting fees are not good predictors of turnover.

In columns III and IV, we perform a robustness check by estimating Poisson regressions of the number of director departures at the firm level. We include only firm level variables and year dummies. We also lag Stock Performance one period to ensure our results are not sensitive to timing concerns. Again, we find that changes in meeting fees are not good predictors of turnover.

7.2. Attendance and director turnover

If firms provide financial incentives to affect attendance, it is plausible that they also use other incentive mechanisms, such as the retention decision. If the retention decision is used to provide incentives for attendance, we would expect that directors with poor attendance behavior will not be asked to stand for reelection.

To examine this hypothesis, we first construct a measure of poor attendance behavior, Fraction of Years with Attendance Problems,[20] which is the fraction of years a director was named as having attendance problems from his appointment up to and including the current fiscal year. We then estimate a Probit in the director-level sample in which the dependent

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[20] We thank our referee for suggesting the use of the fraction rather than the number of years.

Table 6
Meeting fees and director turnover

	Dependent variable: Director Departure		Dependent variable: # of Director Departures	
	I	II	III	IV
Abs(Lagged Change in Board Meeting Fee)	−0.021 (−0.50)	−0.048 (−0.75)	−0.046 (−0.58)	−0.0003 (−0.01)
Director Compensation	−0.139 (−1.54)	−0.175 (−1.17)	−0.181 (−0.99)	−0.234 (−0.81)
# Board Meetings	0.016*** (4.61)	0.020*** (3.24)	0.033*** (5.24)	0.025** (2.36)
Board Size	0.019*** (4.29)	0.026*** (3.41)	0.116*** (13.95)	0.123*** (8.76)
Ln(Assets)	0.030*** (3.33)	0.025* (1.73)	0.022 (1.31)	0.025 (0.93)
Volatility	0.310*** (3.36)	0.476*** (3.16)	0.178 (1.08)	0.186 (0.71)
New CEO	0.130* (1.83)	0.256** (2.51)	0.178 (1.44)	0.378** (2.02)
Staggered Board	0.005 (0.22)	–	0.012 (0.28)	–
# Other Directorships	−0.011 (−1.31)	−0.012 (−0.92)	–	–
Female Dummy	0.055 (1.58)	0.087 (1.54)	–	–
Tenure as Director	0.006*** (4.71)	0.007*** (3.19)	–	–
Director Age	0.017*** (9.49)	0.010*** (3.61)	–	–
Retired Dummy	0.315*** (12.05)	0.299*** (6.76)	–	–
Audit Committee Member	−0.082*** (−3.82)	−0.095*** (−2.69)	–	–
Stock Performance	−0.028 (−1.16)	−0.043 (−1.16)	–	–
One-period Lagged Stock Performance	–	–	−0.049 (−1.01)	−0.104 (−1.29)
Observations	29,854	10,942	4,604	1,770
Sample type	Director level	Director level, no staggered boards, <5 departures	Firm level	Firm level, no staggered boards, <5 departures

This table presents evidence on factors related to non-executive director turnover. Columns I and II show Probit regressions of Director Departure on the absolute value of the one period lagged difference between current and previous year's meeting fees (Abs(Lagged Change in Board Meeting Fee)) in the non-executive director level data. Director Departure is a dummy variable that is equal to one if the director left the board in the following fiscal year. New CEO is a dummy which is equal to 1 if the CEO began his tenure in the current year. Audit Committee Member is a dummy which is equal to 1 if the director is a member of the audit committee. This information is contained in the IRRC director level data. Staggered Board is a dummy which is equal to 1 if directors are elected every three years. This information is available for every two years from 1990 to 2006 for most sample firms in IRRC's Corporate Governance Data. We filled in missing years with lagged Staggered Board. Columns III and IV show the results of firm-level Poisson regressions of the Number of Director Departures on Abs(Lagged Change in Board Meeting Fee). Number of Director Departures is the number of non-executive directors who departed the following fiscal year. Remaining sample characteristics are as in Table 1. The sample is restricted to firms without staggered boards and with fewer than 5 director departures in a given year in columns II and IV. All specifications include year dummies. Columns I and II include industry dummies. Standard errors are adjusted for potential heteroskedasticity and for group correlation within directorship (firm) in columns I and II (columns III and IV). Robust z-statistics are in parentheses. The coefficients on Director Compensation are multiplied by 1000. The effect of the constant term is omitted.

   *** Significance at 0.01 level.
   ** Significance at 0.05 level.
   * Significance at 0.10 level.

variable is Director Departure. Since some directors play a more active role in the boardroom, they are less likely to have attendance problems and to be replaced. Thus, we include two variables that measure the relative importance of each director: the sum of committee chair positions directors hold and a dummy indicating membership on the Audit committee. It is also possible that directors with attendance problems are simply too busy to serve and thus more likely to leave the board. We cannot distinguish between voluntary and involuntary departures, but we attempt to control for this effect by including all proxies for directors' opportunity costs of time that are available to us, i.e. the number of other directorships, director tenure, age and retirement status, in addition to other director, board and firm characteristics. Because involuntary departures may be more likely to be based on relative performance than voluntary departures, we also examine a different explanatory variable, Worse Than Average Attendance, which is a dummy that is equal to one if a director's Fraction of Years with Attendance Problems is below the board-level average of this variable. All regressions include year and industry dummies and all standard errors are adjusted for heteroskedasticity and group correlation at the directorship level.

In Table 7, we report the results. In columns I and II (III and IV), we use Fraction of Years with Attendance Problems (Worse Than Average Attendance) as the main explanatory variable. In columns I and III, we include a staggered board dummy. We restrict the sample to firms without staggered boards and fewer than 5 departures in columns II and IV. The results are generally consistent with expectations. For example, older directors are more likely to depart from the board, while directors with more chairmanships and Audit committee members are less likely to depart. Consistent with our hypothesis, past attendance behavior and relative attendance behavior are significantly positively related to the likelihood of director departure, which suggests that retention decisions may be a means of disciplining directors with poor attendance records. While this evidence is not directly related to the incentive effects of meeting fees, it is consistent with the hypothesis that firms use incentives to improve attendance.

Table 7
Probit of Director Departure on Past Attendance Records

Dependent variable: Director Departure				
	I	II	III	IV
Fraction of Years with Attendance Problems	0.687*** (6.38)	0.666*** (3.96)	–	–
Worse Than Average Attendance	–	–	0.256*** (5.98)	0.227*** (3.02)
# Chairmanships	−0.152*** (−5.09)	−0.140*** (−2.69)	−0.154*** (−5.18)	−0.143*** (−2.75)
Board Meeting Fee	−0.061*** (−3.59)	−0.046 (−1.64)	−0.063*** (−3.66)	−0.046* (−1.66)
# Other Directorships	−0.010 (−1.04)	−0.007 (−0.43)	−0.010 (−1.03)	−0.008 (−0.44)
Director Compensation	−0.127 (−1.40)	−0.035 (−0.32)	−0.127 (−1.41)	−0.034 (−0.32)
# Board Meetings	0.020*** (4.94)	0.014* (1.79)	0.020*** (4.93)	0.014* (1.73)
Board Size	0.024*** (4.60)	0.010 (1.07)	0.024*** (4.54)	0.010 (1.05)
Female Dummy	0.0482 (1.11)	0.163** (2.29)	0.045 (1.04)	0.159** (2.24)
Tenure as Director	0.006*** (3.60)	0.006** (2.11)	0.006*** (3.57)	0.006** (1.99)
Director Age	0.018*** (8.43)	0.016*** (4.64)	0.018*** (8.39)	0.016*** (4.67)
Retired Dummy	0.326*** (10.17)	0.325*** (5.83)	0.324*** (10.13)	0.321*** (5.77)
Ln(Assets)	0.034*** (3.14)	0.023 (1.26)	0.033*** (3.09)	0.022 (1.23)
Volatility	0.315*** (2.98)	0.357* (1.93)	0.321*** (3.05)	0.365** (1.98)
Stock Performance	0.010 (0.40)	−0.004 (−0.08)	0.010 (0.37)	−0.003 (−0.06)
Audit Committee Member	−0.063** (−2.42)	−0.070 (−1.58)	−0.066** (−2.56)	−0.075* (−1.70)
New CEO	0.035 (0.45)	0.204* (1.76)	0.034 (0.44)	0.199* (1.72)
Staggered Board	0.061** (2.21)	–	0.059** (2.14)	–
Observations	20,638	7,610	20,638	7,610
No staggered boards, <5 departures?	No	Yes	No	Yes

The table shows non-executive director level Probit regressions of Director Departure on Fraction of Years with Attendance Problems. This variable measures the fraction of years in which the director was named as having attendance problems on a given board up to and including the current fiscal year. The dependent variable, Director Departure, is a dummy variable that is equal to one if the director left the board in the following fiscal year. # Chairmanships is the number of audit, compensation, nominating, corporate governance or executive committee chair positions the director holds. These data are available in the IRRC director level data. Worse Than Average Attendance is a dummy which is equal to 1 if a director's Fraction of Years with Attendance Problems is below the board level average of this variable for a given fiscal year. Remaining sample characteristics are as in Tables 1 and 6. The sample is restricted to firms without staggered boards and with fewer than 5 director departures in a given year in columns II and IV. All specifications include year and industry dummies. Standard errors are adjusted for potential heteroskedasticity and for group correlation at the directorship level. Robust z-statistics are in parentheses. The coefficients on Director Compensation are multiplied by 1000. The effect of the constant term is omitted.
   *** Significance at 0.01 level.
   ** Significance at 0.05 level.
   * Significance at 0.10 level.

8. Measurement errors

Some corporations only pay meeting fees if the number of meetings exceeds a threshold. Unfortunately, ExecuComp usually does not differentiate between fees paid per meeting and fees paid for a threshold number of meetings. While this could bias our results due to measurement error, we expect fees paid for a threshold number of meetings to have similar effects on attendance behavior as fees paid per meeting. To examine this hypothesis, we restricted our sample to a sub-sample of unregulated Fortune 500 firms in 1998 (358 firms in total) for which we had hand-collected director compensation data directly from the proxies. We identified 46 firms (12.7%) that paid fees conditional on the total number of meetings attended. We also identified 4 firms that penalized directors for poor attendance.

We replicate our Probit regressions as in Table 3 in this sub-sample (excluding the four firms with penalties) and find that our results for meeting fees are robust to adding a dummy for the existence of fees that depend on the total number of meetings attended. Consistent with incentive explanations, the coefficient on this dummy is significantly negatively related to the probability of attendance problems. We do not report these results here for the sake of brevity, but they are available upon request.

These results are interesting not only because they suggest that measurement error is not affecting the results qualitatively, but also because they show that firms that do not pay fees for each meeting may still use threshold meeting fees or extra penalties for missing meetings to provide incentives for attendance.

9. Interpretation

It is useful to summarize our analysis. The finding that attendance problems are negatively correlated with meeting fees is robust across different specifications and econometric procedures. Thus, we find it unlikely that this correlation is spurious. Furthermore, although we cannot unambiguously discard selection on meeting fees as a possible explanation for

our findings, the evidence we provide in the previous sections gives little support to this hypothesis and favors a more direct incentive effect of meeting fees on directors' attendance behavior.

The evidence is certainly consistent with the conventional view that contingent rewards increase effort. Although many strong believers in the power of monetary incentives will find our evidence reassuring, we conjecture that even those will be somewhat surprised by such a robust effect induced by a relatively small reward. Thus, it is important to consider other possible explanations.

Our evidence is not consistent with the idea that small meeting fees crowd out directors' intrinsic motives for attending meetings. However, the cross-sectional distribution of nominal meeting fees suggests that firms may be aware of potential crowding out effects of extremely low meeting fees: firms that pay meetings fees almost always pay at least a thousand dollars. The largest mass of the distribution occurs at $1,000 (31.52%) and in only 7.5% of firm-years do firms pay a positive amount less than $1,000. This is an interesting example of how suppliers of incentives in the real world are not naive; they take possible behavioral responses of agents into account when designing reward structures (see Glaeser, 2003, for arguments along this line).

Although possible, we find that behavioral explanations such as reciprocity or gift-exchange norms, which would predict that directors reciprocate to a "gift" of meeting fees with better attendance, are not leading candidates to explain our findings. By offering meeting fees, a firm may enhance directors' goodwill and increase their willingness to give more of their time to the firm. However, most firms that do not pay meeting fees pay higher cash annual retainers, which are usually enough to keep cash payments to directors roughly the same across firms that pay and the ones that do not pay meeting fees. Thus, it is not clear why directors should perceive meeting fees as a "gift." The gift-exchange hypothesis has more bite to explain the correlation between total director compensation and attendance problems. As in efficiency wage theories, directors should provide more effort if paid more. The relationship between total compensation (not including meeting fees) and attendance problems is indeed negative in most of our specifications, but not always statistically significant.[21]

We believe that a more reasonable explanation for the robust effect of meeting fees on attendance is that, on top of the direct incentive effect, meeting fees convey information. This provision of information is important because there is a lot of heterogeneity in the criteria used by boards to evaluate the individual performance of directors (Conger et al., 2000). For the sake of the argument, assume that there are only two types of boards: "tough" boards value director attendance, while "soft" boards do not care if directors attend at all. When a newly appointed director joins a board, he is uncertain about the type of the board. When facing a compensation schedule that provides pay for attendance, the director rationally assumes that he is sitting on a tough board. Boards that pay low or no meeting fees signal that they are soft, i.e. they do not care about attendance.

Regardless of whether directors attend meetings in order to earn money or to respond to firms' signals, the practical implications of our findings concerning the ability of compensation structures to motivate directors are similar. If directors only care about the money, our evidence suggests that modest financial rewards can motivate even high net-worth individuals. Thus, proposals to align shareholders' and directors' incentives by means of stock-based compensation have merit even when the amounts involved are small.[22]

If directors respond to meeting fees primarily because of their informational content, it is reasonable to expect that boards can use the structure of director compensation to send other signals as well. For example, if directors are unsure about how much focus they should put on shareholder value maximization, firms that place more weight on shareholder value may signal this with more stock-based compensation to directors. If directors interpret the signals correctly, even small grants of shares and options may influence the mindset of directors.

10. Final remarks

We believe that the empirical regularity we document in this paper, that directors have fewer attendance problems when board meeting fees are higher, is important for many reasons. To our knowledge, this is the first direct evidence that corporate directors respond to compensation contracts in the way that they are assumed to. Furthermore, since the magnitudes of board meeting fees are arguably small relative to the wealth of most directors, our results suggest that members of top management teams may be sufficiently responsive to financial incentives to justify the attention the debate on governance gives to director compensation. Our results may be also useful for understanding executive compensation contracts in general.

To date little has been written on the motivations of directors and top executives. One reason for this is that it is difficult to measure their responses to contracts. In order to examine whether contracts provide the incentives they are assumed to, one needs data on contracts and agents' actions or inputs, preferably at the individual level.

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[21] Reciprocity norms would also imply that directors may want to "punish" firms that do not pay fees. Since their total cash pay is roughly the same in firms that pay and those that do not pay meeting fees, it seems unlikely that directors should be revengeful towards firms that are not paying them any less than others. Actually, firms that do not pay meeting fees pay their directors significantly more, once one takes equity-based pay into account. Thus, if anything, it appears that meeting fees are negatively correlated with "gifts" offered to directors.

[22] Yermack (2004) provides evidence that the financial incentives directors face actually appear quite large. Our results complement his by suggesting that these incentives also appear to be effective.

Because researchers usually cannot directly observe directors' and managers' actions, most studies focus on the provision of variable pay and its effects on firm outcomes, such as financial or accounting measures of performance, or firm policies, such as investment and capital structure. These provide at best a very indirect test of whether directors' and managers' behaviors are affected by variable pay. In contrast, our data provide us with a unique opportunity to link part of the amount of variable pay directors receive (meeting fees) directly to directors' choices of inputs (attendance at meetings).

Our results also add to the literature testing whether incentives matter. Our paper complements previous studies that have found that the provision of financial incentives in firms affect performance (e.g. Lazear, 2000; Knez and Simester, 2001; see Prendergast, 1999, for a survey) in two main ways. First, most papers in this literature have examined this issue for workers at lower levels in corporate hierarchies, for whom financial incentives might be expected to have a stronger impact. Second, most of these papers have examined changes in output in response to performance pay. In contrast, we are able to document that inputs change in response to variable pay, i.e. that directors attend more meetings as meeting fees increase.

The most puzzling aspect of our findings is not that directors respond to incentives, but rather that they appear to be motivated by relatively small rewards. An interesting example of wealthy individuals responding to very small financial incentives is documented in Spy Magazine (1990). Spy Magazine conducted an experiment in which 58 of the wealthiest Americans were sent checks for $1.11 to see if they would cash them. To make sure that the checks actually reached the designated people, the checks were sent to their home addresses. Of the 58 people, 26 deposited the checks. The article contains images showing that the checks were personally endorsed by the members of the list of wealthy people. These 26 were then sent checks for $0.64, with the result that 13 people cashed the checks. Two of the final 13 people then deposited checks for $0.13.

Most people find it difficult to believe that high net worth individuals would bother to exert effort in exchange for small amounts of money. We are skeptical as well, but this example and the empirical puzzle we document in this paper challenge this view. More research is probably needed before we reach a full understanding of the role of meeting fees and directors' reaction to them.

Appendix A. Data cleaning

The IRRC data we use to construct our sample has various data issues concerning director characteristics which we address.

A.1. Age

In some cases, directors were listed as being younger than 20. We eliminated these observations.

A.2. Tenure

The IRRC data contains a variable which indicates the year a director was first appointed to the board. In some cases, there are multiple entries for a director at a given firm. We take the minimum value of these as a measure of the year a director was first appointed to the board. Our proxy for a director's tenure on the board is the difference between the current year and the year he began service. In cases where no beginning date was available for the director, we define tenure to be missing. In cases in which the director's departure date is less than his beginning date, tenure is negative, or tenure is greater than the director's age, we define tenure to be missing.

A.3. Retired

To determine whether a director is retired, we use data on directors' titles available in the IRRC data. We classify a director as retired if his title contains the word "retired". We also classify a director as retired if data on his primary employer contained the word "retired". We are careful to account for changes in spelling. To account for missing information on a director's retirement status, we also classify directors over the age of 70 as being retired.

A.4. Gender

The IRRC data contains a variable called gender, however this data is quite incomplete and inconsistent for the same director. To complete it, we use a director's first name to determine whether a director is male or female. In cases in which the name was difficult to classify, we used the internet to try and determine the director's gender. If this was not possible, we classified gender as missing. We also ensured that a director's gender was classified consistently across his directorships.

A.5. Number of other directorships

The IRRC data contains data from company proxy statements on the number of other directorships a director has. We cross-checked this data using the number of other directorships directors hold within the sample. In cases in which the IRRC measure was less than the within-sample measure, we set the number of other directorships equal to the within-sample measure. In all other cases, we retained the IRRC measure.

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