FORE! An analysis of CEO shirking

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Abstract

Is CEO effort important? Using CEO golf play as a measure of leisure, we observe significant variation in the amount of leisure that golfing CEOs consume. CEOs consume more leisure when they have lower equity-based incentives. Consistent with CEO effort being important and some CEOs shirking their firm responsibilities, we find CEOs that golf frequently are associated with firms that have lower operating performance and firm value. The conclusion that CEO shirking leads to lower performance and market valuations is supported by tests controlling for endogeneity. In general, boards are more likely to replace CEOs who shirk, but CEOs with longer tenures or weaker governance environments appear to avoid disciplinary consequences.

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"The Directors of such [joint-stock] companies, however, being the managers rather of other people's money than of their own, it cannot be well expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."

-Adam Smith, *The Wealth of Nations*, 1776
(quoted by Jensen and Meckling, 1976)

"Most of our managers are independently wealthy, and it's therefore up to us to create a climate that encourages them to choose working with Berkshire over golfing or fishing."

– Warren Buffett, *An Owner's Manual*, 1996

1. **Introduction**

As reflected in the above quotations, the idea that delegated managers may shirk their responsibilities is both old and enduring. Models that incorporate moral hazard in the principal/agent relationship consistently include the premise that agents create value by exerting effort, effort is costly for agents to provide, and effort is difficult for principals to monitor.[1] In the context of publicly-held firms, Jensen and Meckling (1976) argue that one of the ways delegated CEOs may diminish shareholder value is by consuming excessive amounts of leisure. While the importance of executive effort within the corporate structure has been discussed extensively over the last forty years, existing empirical research has eschewed a direct investigation of CEO effort and has instead focused on the (more indirect) relationship between CEO incentives and firm value. However, even if executive incentives are correlated with variation in firm value, the mechanism(s) driving such a relation has not been fleshed out. Although the relationship might be driven by how hard CEOs work, it might also arise from other factors including project selection choices that CEOs make.[2]

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[1] See, for example, Berle and Means (1932), Holmstrom (1979), Grossman and Hart (1983), Haubrich (1994), Baker and Hall (1998), and Edmans, Gabaix, and Landier (2009).
[2] For example, when CEOs face greater incentives to create profits they may be more willing to cut underperforming divisions and employees, and adopt riskier but higher NPV strategies (Morck, Shleifer and Vishny, 1988).

The scarcity of empirical evidence on the relationship between executive effort and firm performance is driven by the fact that CEO effort is difficult to measure. In this paper, we evaluate fundamental questions involving CEO effort by using a novel measure of leisure consumption: the amount of golf a CEO plays. To summarize our results, we find that the amount of leisure consumed by a CEO is a function of her economic incentives, and that some CEOs shirk their responsibilities to the detriment of firm performance and value. Our conclusions regarding CEO effort and firm performance are supported by numerous tests that control for the endogeneity of this relation, including a robust instrumental variable analysis. Furthermore, our results indicate that firms with strong governance characteristics are effective in replacing CEOs that indulge in excessive amounts of leisure.

To conduct this research, we hand-collect golfing records for 363 S&P 1500 CEOs from a database maintained by the United States Golf Association ("USGA"). Among other details, this database contains records for each round recorded in the system by participating golfers from 2008 to 2012. We argue that time spent on the golf course is a valid proxy for leisure both because a plurality of CEOs list golf as their preferred outlet for leisure and because golf commands a significant time commitment.[3] In addition, playing significant amounts of golf may reveal an overall preference for leisure, such that CEO golf frequency is correlated with time allocated to other hobbies or vacations.[4] James Cayne, the former CEO of Bear Stearns, provides an excellent example of this pattern of behavior. Mr. Cayne spent 10 of 21 working days away from the office playing golf or bridge in July 2007, the same month that two Bear Stearns hedge funds collapsed (*The Wall Street Journal*, 2007).

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[3] A round of golf is played over 18 holes and it takes approximately 4 hours to complete the round.
[4] An alternative possibility is that low frequency golfers spend time on different hobbies such as boating or tennis. To control for this, we conduct our analysis only on those CEOs who indicate a preference for golf by reporting scores to the USGA. This possibility biases against finding the relationships documented in this study.

The distribution of golf frequency in Figure 1 demonstrates that many CEOs spend a large amount of time at the golf course. Based on definitions provided by the USGA, more than 57% of the CEOs in the sample are classified as "Core" or "Avid" golfers.[5] The distribution of golf play also has a long tail, with the top quartile (decile) playing a minimum of 22 (37) rounds per year. In fact, some CEOs in the database play in excess of 100 rounds in a year! While some golf rounds may clearly serve a valid business purpose, it is unlikely that the amount of golf played by the most frequent golfers is necessary for a CEO to support her firm.

Our first tests are motivated by central tenants in agency theory and focus on the relation between CEO incentives and effort. Simple univariate tests show that CEOs in the top quartile of golf frequency own a significantly smaller stake in their firm than CEOs in the bottom quartile (1.09% versus 1.82%). This relation continues to hold in multivariate regressions, where we find that CEOs play fewer rounds of golf when they have higher stock ownership or stronger wealth-to-performance sensitivities (WPS). CEOs also play more golf as their tenure increases, which is consistent with entrenched CEOs consuming larger amounts of leisure. Alternatively, golf play is attenuated in firms with higher amounts of leverage, which may serve as another mechanism aligning manager and shareholder interests (Jensen, 1986). Overall, these results support a conclusion that incentives are an important determinant of the amount of leisure CEOs consume.

We next consider whether high levels of CEO leisure represent shirking. In other words, does firm performance suffer when CEOs consume more leisure? We focus on the relation between CEO effort and firm operating performance (ROA) because this is likely to be the most direct link between effort and performance. We find that the highest levels of leisure are

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[5] The golf industry defines a core golfer as an individual that plays 8 to 24 regulation rounds per year and an avid golfer as an individual that plays 25 or more regulation rounds per year.

indeed associated with lower firm operating performance. In years where the CEO played 22 or more rounds, which corresponds to the top quartile of observations, the mean ROA is more than 100 basis points lower than the ROA of firms where the CEO played less frequently. This result is economically significant as the sample mean ROA is just over 5.3 percent.

Before asserting that CEO shirking causes firms to underperform, we must account for the possible endogenous nature of this relation. Although it is possible that lower CEO effort leads to declining firm performance as agency theory would predict, this isn't necessarily the case. An inference of causality is supported by the results of a two-stage-least-squares methodology using the average number of non-cloudy days in the states where firms are headquartered as an instrument for the amount of golf that the CEO plays.

Multiple supplementary tests provide additional support for an inference of causation. First, we focus on within-firm changes of CEO leisure and firm performance and find that changes in the number of golf rounds that a CEO plays are negatively correlated with changes in firm profitability. Second, we show that the relation between CEO leisure and lower firm performance is concentrated in industries where CEO effort may be more important. Smith and Watts (1992) document the use of stronger compensation incentives in fast growing industries, suggesting that CEO effort is most valuable when firms face a dynamic business environment. We find that firms in fast growing industries drive the relation between CEO leisure and firm performance, which would not be expected if causation ran in the opposite direction. These additional results buttress our conclusions that CEO effort is important for firm performance, and that shirking CEOs impair firms' ability to maximize profits.

Given the evidence of a causal link between CEO leisure and operating performance, we consider whether CEO shirking affects firms' market values. Assuming rational expectations, stock values should be derived largely from expected future cash flows. Thus, CEO shirking is more likely to impact investors' expectations of future returns if it is viewed

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as a persistent long-run problem. Our examination reveals that Tobin's Q is lower for firms whose CEO plays golf more frequently. In particular, CEOs in the top golfing quartile are associated with a Tobin's Q that is almost 10% lower than otherwise similar firms. This result is also evident when we instrument for the amount of golf CEOs play using the number of non-cloudy days where firms are headquartered, suggesting that CEO shirking causes lower firm values.

Finally, we consider the extent to which firms are able to discipline shirking CEOs. Not surprisingly, our investigation reveals that the level of golf play is highly persistent for CEOs in our sample. We conjecture that boards may not initially understand the preferences of CEOs, and may later discipline CEOs who reveal a preference for large amounts of leisure. This appears to be the case. In the overall sample, we find that higher golf play is associated with a higher probability of CEO turnover. We provide some evidence that this relationship is more acute for firms with more independent boards and for CEOs who are earlier in their tenure. The loss of job security faced by new CEOs who frequently play golf in a given year appears to be effective, as evidenced by the fact that they are less likely to persist in playing high amounts of golf than are CEO with longer tenures. The evidence for long-tenured CEOs is more consistent with entrenchment. Not only are they more likely to be frequent golfers, but they are more persistent in the amount they play from year to year.

This paper continues as follows. In Section II, we discuss the related literature and develop our hypotheses. Section III discusses the data, identification, and summary statistics. Multivariate results are discussed in Section IV and Section V concludes.

2. Related Literature and Hypothesis Development

As mentioned in the introduction, economists have long warned of the possibility that agents will shirk their responsibilities. In the context of a public corporation, the issue is summarized by Jensen and Meckling (1976) as follows:

> [I]t is likely that the most important conflict arises from the fact that as the manager's ownership claim falls, his incentive to devote significant effort to creative activities such as searching out new profitable ventures falls. He may in fact avoid such ventures simply because it requires too much trouble or effort on his part to manage or to learn about new technologies. Avoidance of these personal costs and the anxieties that go with them also represent a source of on-the-job utility to him and it can result in the value of the firm being substantially lower than it otherwise could be.

Many prior researchers consider the indirect association between executive incentives and firm value and have consistently documented a non-linear relation between CEO ownership and firm value, usually Tobin's Q (Morck, Shliefer, Vishny, 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1991). However, there is significant disagreement over how to interpret such a relationship. While some researchers argue that agency costs are high when CEO ownership is low, Stultz (1988) argues that agency problems are exascerbated when CEO ownership is high. The intuition behind Stultz's argument is that high ownership CEOs are protected from the market for corporate control and therefore entrenched in their jobs. Although high levels of ownership provide direct incentives for the CEO to work hard, increased job security may offset these incentives by giving CEOs flexibility to maximize their personal utility rather than overall firm value.

Other researchers offer an equilibrium view of firm structures consistent with the observed relation between CEO incentives and market valuations. The model of Coles, Lemmon and Meschke (2012) is based on assumptions about the relative productivity of labor and capital, and delivers reasonable justifications for the non-linear ownership/Tobin's Q relation. Their model (which is an extension of Holmstrom and Milgrom, 1987) maintains the

feature that CEO effort is monotonically increasing in ownership and remains positively related to profitability across all ownership levels.

Given the divergent views of extant literature, it is not clear what the expected empirical relationship should be between CEO leisure and ownership levels. Our first investigation aims to break this logjam. Specifically, we hypothesize that the level of golf play is negatively related to a CEO's ownership in her firm or her wealth-to-performance sensitivity.

Our study is the first that we know of to evaluate CEO leisure consumption at public companies. A closely related paper is Bitler, Moskowitz, and Vissing-Jørgensen (2005), which presents an analysis of agency propositions at privately-owned firms and finds a relation between a private entrepreneur's contractual incentives and their effort level.[6] However, it isn't clear that their results could be assumed for public firms. For one, their model has to accommodate issues of voting control that are important for private but not public firms. In addition, as the authors indicate, there are a host of other potentially-important incentive alignment mechanisms for managers of public firms that do not play a significant role in private firms, including reputational capital, competitive labor markets, and the threat of takeover or bankruptcy. Equity incentives may therefore not be needed to motivate optimal effort by public firm executives.

We next hypothesize that if CEO effort is important, high levels of CEO golf play will lead to lower firm operating performance and value. While this connection might seem obvious, there is an ongoing debate as to whether CEO characteristics affect corporate outputs (see, for example, Fee, Hadlock, and Pierce, 2013). In addition, Core and Guay (1999) suggest that directors use equity grants to adjust incentives when they deviate from optimal levels. To the

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[6] By focusing on private firms, they are able to construct a measure of effort based on data taken from the *Survey of Consumer Finances* (1989 – 2001) sponsored by the Federal Reserve Board, In addition to other topics, asked participants about the attributes of private firms they controlled and the number of hours they worked per week.

extent that firms correct the moral hazard problem, we neither expect a decline in operating performance to persist, nor do we expect to find a significant impact on market value (which is based mostly on discounted expected future cashflows).

A few other studies have attempted to answer questions related to the impact of CEO effort on a firm's operating performance. Bennedsen, Perez-Gonzalez, and Wolfenzon (2007, 2012) investigate a sample of small Danish firms and show that firm operating performance declines following the death of a CEO's close relative or when a CEO spends more time in the hospital. Another study by Malmendier and Tate (2009) finds that superstar CEOs are more likely to accept outside engagements that enhance personal wealth and utility, including book writing and serving on multiple boards, and that this corresponds to declining firm performance. What differentiates our research design from these other studies is that our study evaluates CEOs response to incentives and whether there is evidence of CEO shirking, which is a more general problem faced by all firms that must hire and incentivize executives.[7] Neither the death of a relative nor hospitalizations reflect a CEO's choice to exert less effort. In addition, analysis in Bennedsen, Perez-Gonzalez, and Wolfenzon (2007, 2012) is based on data from small firms in Denmark, and the generalizability of conclusions for large U.S. firms is not clear.

Our final area of investigation involves the ability of firms to discipline shirking CEOs. We conjecture that CEOs who play excessive amounts of golf are more likely to be fired. This relationship should be more acute in firms with stronger governance environments (i.e. more independent boards). In addition, boards may only learn about a CEO's preferences for leisure over time. Harris & Holmstrom (1982) outline a model where information asymmetries between principals and agents are reduced as the principals observe the agent over a number

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[7] Malmendier and Tate (2009) also note that their sample of superstar CEOs that golf have handicaps that are approximately 8 % lower than those of other CEOs (the p-value of for the significance of the difference is 0.097). They submit that under the assumption that more play leads to lower handicaps this provides some suggestive evidence that superstar CEOs also consume more leisure.

of periods. Zajac (1990) applied this model to the relationship between directors and CEOs and argues that the superior performance of inside-hire CEOs is consistent with reduced information asymmetries when the new CEO is promoted internally. Zhang (2008) provides further support for this argument, as newly hired CEOs are more likely to be terminated if they were external candidates.

Consistent with existing studies, we hypothesize that CEOs who play large amounts of golf are more likely to be fired early in their tenures as information asymmetries are resolved. CEOs may face less discipline as their tenure increases, and CEOs may also shirk more as they become more entrenched. Berger, Ofek and Yermack (1997) provide evidence that CEOs become more entrenched as their tenure increases, and Coles, Daniel and Naveen (2014) demonstrate that this may be at least partially due to the fact that over time CEOs have a hand in appointing a larger fraction of directors.

3. Data

3.1 Sample Construction

We obtain round-by-round golf information for a sample of S&P 1500 CEOs during the sample period from 2008 to 2012 using the USGA's Golf Handicap and Information Network (GHIN) database. The GHIN database contains all self-reported golf rounds for USGA members and is maintained in order to verify golfers' handicaps and round histories. Variables available for each round recorded in the database include the month and year of play, course difficulty (i.e. rating and slope), golfer's score, and whether the round was played at the golfer's home course. In addition, the database includes the golfer's handicap and a list of courses where she is a member.

In order to obtain historical golfing records for S&P 1500 CEOs, we search the database using each CEO's name. Sample CEOs are identified where there is a unique name

match, the golfer is a member of a course that is located within 60 miles of the firm's headquarters, and the golf course membership is "exclusive" (i.e. private and expensive).[8] Our algorithm identifies 363 golfing CEOs with records in the GHIN system. In order to restrict our sample to firm-years where the CEO's full golfing history is available, we limit firm years to those where the CEO's first round in the system appears prior to the second quarter of the firm's fiscal year. Our final sample is comprised of 1,207 unique CEO-year observations, which represent 16% of the universe of S&P 1500 CEO-year observations during our sample period.[9]

Our analyses investigating the relationship between CEO golfing frequency and firm governance and performance require variables from several other publicly available datasets. These sources include Compustat (accounting variables), CRSP (firm size, stock returns, and return volatility), Execucomp (compensation and incentives), RiskMetrics (firm governance), and Thompson Financial (institutional ownership).

3.2 Golf as Leisure

The frequency of golf play has several appealing properties as a measure of CEO leisure. First and foremost, golf represents an empirically measurable form of leisure in which a significant number of executives participate. According to a 1998 Accountemps survey, 21% of executives list golf as their preferred outlet of leisure. Second, golf represents a leisure activity that commands a significant time commitment. Most rounds of golf extend beyond four hours, and this includes only the length of actual play. In addition, golfers must commute to the course and often spend a significant amount of time practicing or warming up on the

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[8] Our matching algorithm is designed to minimize incorrect matches, but we recognize that we are likely to have omitted a number of golfing CEOs due to the fact that we require a high degree of certainty to establish a match. In particular, there are CEOs in our sample who are likely in the GHIN database, but because they possess a very common name (e.g. Joe Smith), we are not able to precisely identify them.
[9] The universe of S&P 1500 observations consists of 7,519 CEO-years for 2,282 unique CEOs during the 2008 to 2012 sample period.

driving range. Beyond the direct time commitment, playing golf may also be correlated with other forms of leisure consumption. Evidence of this correlation is provided by Yermack (2006), who documents that the presence of an out-of-state golf club membership significantly increases the likelihood that a CEO reports using company aircraft for personal travel. In our sample, over 40% of the CEOs are members at multiple clubs and many of the clubs coincide with vacation destinations.

Although golf represents a direct form of leisure for most participants, some rounds of golf captured in our database likely have a valid business purpose. "Business gets done on the golf course" is a common adage expressed by corporate executives and suggests that at least some of the golfing rounds that we observe reflect an attempt to generate or solidify business relationships.[10] While the above conjecture represents a valid critique to our assessment of golf as a measure of leisure, the observed distribution of CEO golf appears difficult to fully reconcile with this alternative explanation. In particular, the distribution of golf frequency presented in Figure 1 provides evidence that some of the CEOs in our sample spend an inordinate amount of time on the golf course. CEOs in the top decile of the sample play a minimum of 37 rounds per year, and in one extreme example an S&P 1500 CEO played 146 rounds of golf in a single year! A back-of-the-envelope estimate for the minimum number of hours that a CEO in the top decile allocates to golf is more than 220 hours – roughly equivalent to 5.5 weeks of work.[11] These high levels of golf for some CEOs are consistent with a strong leisure component and appear inconsistent with value-maximizing behavior. Our empirical

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[10] A secondary criticism of golf as leisure consumption is the increase in productivity from smartphones and mobile Internet devices. This criticism is tempered by the fact that many prestigious clubs actually prohibit golfers from using these devices on the course and in the clubhouse. A simple Google search of "country club" and "cell phone policy" reveals more than 3,000 hits and a cursory review indicates these policies are intended to restrict phone usage on the course.

[11] We use an estimate of 6 hours per round to account for the time spent playing, commuting, and practicing

strategy is predicated on the assumption that golfing frequency is inversely related to the the amount of effort a CEO expends in pursuit of firm objectives. To the extent that rounds in our sample are motivated by valid business proposes, this biases against finding evidence of the hypothesized results.[12]

We provide additional support for our assertion of golf as a leisure activity in two ways. First, we investigate the change in golfing behavior following CEO retirements. In a sample of 80 CEOs that exit their firm during the sample period, we find that, on average, CEOs increase their golf play from 14 rounds to 20 rounds in the year following retirement. This 42% increase in golfing activity (statistically significant at the 1% level) is consistent with CEOs allocating more time to leisure when they are no longer employed fulltime. A second strategy for validating the characterization of CEO golf as a leisure activity is based on the intuition that leisure consumption is likely to be correlated with the economic cycle. To the extent that firms require more CEO effort during a period of economic contraction, we would expect CEOs to consume less leisure. Figure 2 presents the average number of rounds recorded by CEOs in each year of our sample period, and consistent with this supposition, we find that CEOs played significantly less golf during the 2008 financial crisis.

3.3 Summary Statistics

Leisure activities vary based on personal preferences and our research design identifies CEOs with a revealed preference for golf. Because of our inability to observe the leisure activities of CEOs without records in the GHIN database, we focus our analyses on the sample of CEO-years that can be matched to golfing records.[13]

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[12] If, in fact, a majority of rounds had a valid business purpose, then golf frequency would be positively correlated with effort. We are unaware of any theory that would predict that effort is a decreasing function of incentives and monitoring or that effort destroys value.

[13] In untabulated results we compare sales, enterprise value, market-to-book, market value of equity, leverage, return on assets, institutional ownership, and firm age sample averages for our golfing sample firms that are

Table 1 presents descriptive statistics for the number of rounds played by golfing CEOs during a fiscal year. CEOs play a mean (median) of 15.8 (10) rounds per year. However, the table also highlights significant variation in the time that different CEOs allocate to golf. In particular, for the bottom quartile of CEO-year observations, CEOs play less than one round of golf per year. Alternatively, for the top quartile of CEO-year observations, the average number of rounds is 40.3 (minimum number of rounds is 22).

When considering the total amount of leisure time dedicated to golf, we believe it is also constructive to consider that the amount of time spent practicing is likely to be positively correlated with the frequency of play. This conjecture is consistent with Table 1 statistics showing that the average golf score drops from 94.6 in the first quartile to 89.3 in the fourth quartile – a change from the 31% percentile to the 52% percentile.[14] As such, we believe that our previous estimates of time allocated to golf likely represent a conservative lower bound for the most frequent golfers, although it may also be the case that better golfers just prefer to play more often.[15]

4. Results

4.1 Univariate Statistics

We begin our analyses by splitting the golfing sample of firm years by the median level of CEO golf (10 rounds). Table 2 presents univariate comparisons across these two samples. We find no differences in the mean values of typical firm characteristics across the groups,

members of the S&P 500 to the overall S&P 500, and golfing sample firms that are not members of the S&P 500 to the overall sample of non-S&P 500 firms (that are in the S&P 1500) and find almost no statistical differences, with the exception of MTB, which is slightly lower for the golfing sample and significant at the 10% level.

[14] This is based on the overall distribution of handicaps retrieved from the USGA. See http://www.usga.org/handicapping/articles_resources/Men-s--Handicap-Indexes/

[15] This statistic also confirms the intuition of Malmendier and Tate (2009) that lower handicap CEOs likely play more golf.

including *Sales, Enterprise Value, MVE, Leverage, Firm Age, Tobin's Q, ROA,* or *Institutional Ownership.* However, there is evidence that frequent golfers are paid less, which may suggest they have lower incentives. The values for *Bonus*, *Bonus+Salary,* and *Total Compensation* are economically and statistically lower for the sample with above median frequency golf. The average total compensation is $1.29 million lower for the above median sample, a decrease of nearly 20%.

Our initial empirical tests also investigate the relation between the time CEOs spend on the golf course and a CEO's incentives. Jensen and Murphy (1990) argue that a CEO's percentage ownership in her firm is one of the most appropriate variables to measure a CEO's incentives. Accordingly, we collect *CEO Percent Ownership* from Execucomp for each CEO-year in our sample. In addition, CEOs typically hold a significant number of stock options, which have been increasingly used to align CEO incentives with those of shareholders (Murphy, 2003). In order to measure the combined incentives of a CEO's stock and options we construct *CEO Wealth-Performance Sensitivity* (*CEO WPS*) for each CEO-year as follows[16]:

$$WPS_i = \frac{Total\ Share\ Ownership + \sum \Delta \times Number\ of\ Options}{Number\ of\ Shares\ Outsanding} \times \$1,000 \qquad (1)$$

The measure of WPS used in our study can be interpreted as the change in dollar value of the CEO's firm-specific wealth that is associated with a one thousand dollar change in firm value and is analogous to the pay for performance from direct stock holdings and options as calculated in Jensen and Murphy (1990).

Statistics reported in Table 2 show that the financial incentives of the CEOs in the above median golfing sample appear lower than those of less frequent golfers. *CEO WPS* is

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[16] For each outstanding option, we calculate an individual delta based on time to expiration, strike price, fiscal year-end stock price, 3-year average dividend yield and standard deviation of monthly returns over the prior 60 months. We then calculate the total delta of the option portfolio as the summation of the product of each individual delta and the number of underlying shares.

$9.30 lower (p-value 0.042) and *CEO Ownership* is 0.905% lower (p-value = 0.046). These univariate findings highlight a potentially important relation between incentives and leisure consumption across firms that otherwise appear similar. In the next section, we explore these issues in a multivariate regression setting.

4.2 Determinants of CEO Leisure Consumption

We perform a series of linear regressions using the number of golf rounds played annually by the CEO as the dependent variable. The independent variables of primary interest for evaluating the relations between direct economic incentives and leisure are *CEO Ownership* and *CEO Wealth-Performance Sensitivity* (*WPS*). We also include *CEO Tenure* to determine whether executives consume more leisure as they are in office longer, and may therefore become more entrenched (Yermack, 1997, Coles, Daniel and Naveen, 2014).

We include a number of variables intended to identify whether other forms of discipline or governance have an impact on the amount of leisure executives consume. These include the level of institutional stock ownership (*Institutional Ownership*), the fraction of directors that are not employed by the firm (*Board Independence*), and whether the CEO is also the chairman of the board of directors (*Dual CEO/Chairman*). We include firms' debt to value ratio (*Leverage)* to evaluate whether the necessity of meeting financial obligations motivates greater effort (Jensen, 1986). We also control for the amount firms pay out in dividends (*Dividend/Assets)*. A commitment to dividends could reduce agency costs of free cash flow (Easterbrook, 1984); however, higher dividends payout could also be a stronger indicator of a mature stage of the firm's life-cycle (DeAngelo, DeAngelo, and Stultz, 2006).

Finally, we include additional firm-level characteristics to control for differences in job complexity that might influence the level of golf play. Following Core, Holthausen, and Larcker (1999), we include the natural log of *Enterprise Value* and the natural log of *market-to-book* to control for differences in firm size and growth opportunities, as effort may be more

valuable for a firm with a large base of assets or where new investments are more important.[17]

To control for environments where golf may be important for business negotiations, we include *sales growth* and the *number of acquisitions*. Past stock *returns* and accounting profitability (*ROA*) control for the possibility that CEOs consume more leisure when their firms have performed well in the past. We also include *firm age, return volatility*, and year and industry fixed effects.[18] Fixed effects control for unobservable industry-wide and time-specific trends in the amount of golf that CEOs play.

These regressions are presented in Table 3. Executives' direct economic incentives appear to matter for their consumption of leisure. In the first specification, the coefficient on *WPS* is is -0.042 and is significant at the 1 percent level. We document similar results in the second specification when using *CEO Ownership*, where the coefficient is -0.457 and is significant at the 1 percent level. Both regressions indicate that CEOs with a larger equity stake allocate less time to playing golf. There is also evidence that CEOs consume more leisure as their tenure increases, which may indicate an increased propensity for CEOs to shirk. However, we cannot yet draw this conclusion without evidence that firm performance also suffers. An alternate possibility is that CEOs have a more reasonable work-life balance over time as they learn to be more efficient in their job.

Most of the fundamental firm-level control variables do not show up as significant determinants of the level of CEO leisure, consistent with the univariate statistics presented in Table 2. This suggests that the extent to which CEOs consume leisure may be based more on personal preferences than on their particular work environment. However, the coefficients on *Leverage* are consistently negative and significant, suggesting that CEOs work harder when

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[17] We use enterprise value following Gabaix and Landier (2008), who conclude that the enterprise value is a high quality measure of firm size. All results are consistent when we measure firm size using MVE.

[18] All independent variables are measured as of year t-1.

they have larger debts to repay. In contrast, *Dividends/Assets* comes in positive and significant in each specification. This suggests that dividends play less of a disciplinary role than debt payments, and is more consistent with dividends indicating that a firm is mature and lacks good projects that require reinvestment of cashflows. The third and fourth regression specifications presented in Table 3 include the additional governance variables and indicate that they do not significantly impact the amount of leisure CEOs consume. They also demonstrate that the relation between CEOs' direct economic incentives and leisure consumption is robust to the inclusion of these variables.

Overall, the patterns that we document are consistent with the argument that CEOs allocate more effort to managing their firm when they bear a higher cost for shirking. While these results are highly consistent with theory, they are the first empirical results (that we are aware of) to document that CEO leisure consumption is influenced by ownership/incentives.

4.3 CEO Leisure and Firm Performance

Although we have documented that CEO leisure is correlated with equity-based incentives, whether high levels of leisure are associated with poor performance remains an open question. To analyze the relationship between CEO leisure and firm performance, we implement a multivariate regression framework using the *Return on Assets (ROA)* as the dependent variable.

The independent variables of interest in our regressions measure the level of golfing activity by CEOs. In particular, we include the continuous variable for *Number of Rounds* played during the fiscal year in some specifications. In alternative specifications we divide golf years into quartiles and substitute indicator variables for each quartile of golf frequency (*Golf Quartile 1* (low golf) to *Golf Quartile 4* (high golf)) to evaluate whether or not firm

performance only suffers when CEOs play the most golf.[19] In all specifications we include independent control variables *Enterprise Value* and *MTB* to account for variation in *ROA* that is driven by firm size and growth opportunities.[20] We include *Board Independence* and *Institutional Ownership* to account for performance differences that may be driven by the strength of monitoring. To mitigate concerns about omitted variable bias, we include the variables that were found in Table 3 to be correlated with CEO golf and that also may be independently correlated with firm operating performance. These include *CEO_ownership*, *Dividend/Assets*, *CEO Tenure,* and *Leverage*. We note, however, that the results established below are robust to exclusion of these variables as well. Other controls include *S&P 500 membership*, *Return Volatility, Firm Age,* and year- and industry fixed effects.[21]

The results of these regressions are presented in Table 4 Panel A. We find ROA is higher for growth firms, larger firms, younger firms, and firms with higher dividend payouts.[22] Alternatively, we document lower *ROA* for firms with higher return volatility, higher leverage, and greater board independence. Our investigation also reveals a significant negative relation between CEO golf and firm ROA. In the first regression, where golfing levels are measured using the continuous variable *Number of Rounds*, we find that the coefficient estimate is -0.00023 (p-value=0.037). In the second specification we find that it is the most frequent golfers (*Golf Quartile 4*) that are associated with lower operating performance. The significance of this pattern is confirmed in the final specification, where we only include the indicator for *Golf Quartile 4*. The coefficient on *Golf Quartile 4* of -0.0115 (p-value=0.009), indicates that firms

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[19] Quartile cutoffs are presented in Table 1.

[20] All of the results in this paper are robust when controlling for firm size using dummies based on decile cutoffs which allow for nonlinear relations.

[21] The results are robust to the inclusion of lagged ROA as an independent variable to control for persistence in firm profitability.

[22] In an untabulated supplementary test, we find that there is not a statistically-significant difference in ROA across the golfing CEO sample and other S&P 1500 firms in a regression controlling for industry and year effects.

with CEOs that are the most active golfers are associated with an ROA that is 1.1% lower than other firms in our sample.

Overall our results show that high levels of CEO golf are associated with lower operating performance. In the next section, we address potential concerns regarding endogeneity to determine the extent to which we can assert that this is a causal relationship.

4.4. Endogeneity

It is certainly possible that the relationship between CEO leisure and firm performance is endogenous. Both the level of firm operating performance and the amount of golf the CEO plays may be driven by some other unobserved variable. Another possibility is that low quality CEOs could cause firm underperformance regardless of the amount of effort they put forth, so they optimally choose to play more golf. A third possibility is that the CEOs of firms with poor prospects head out to the golf course, such that causality runs in the opposite direction. In this section we discuss the results of a number of analyses that help discredit these alternatives and support the conclusion that the relation between high CEO leisure and lower firm profitability is causal.

4.4.a. Instrumental variable analysis

The first approach that we employ is an instrumental variable analysis. This approach requires identification of a variable that is endogenous to the amount of golf CEOs choose to play (the relevance criteria), but uncorrelated with firm profitability (the exclusion criteria). We submit that a relevant instrument in this setting is the number of non-cloudy days in the state in which the company's headquarters are located, since golf is an outdoor activity that is far more popular when the weather is favorable. We also argue that this variable satisfies the exclusion criteria, since it is unlikely that the number of non-cloudy weather days would affect firm performance directly.

We collect the number of non-cloudy days in each year for each state from the National Oceanic Atmospheric Administration (NOAA), and conduct a 2SLS analysis. In the first stage, we regress the amount of golf CEOs play onto control variables and the average annual number of non-cloudy days where firms are headquartered (*Non-Cloudy Days*). In the second stage we regress firm ROA onto control variables and the predicted level of golf play from the first stage regression.

Table 4 Panel B presents the IV analysis of the relation between CEO leisure and firm operating performance. We conduct separate analyses measuring CEO leisure using either a continuous *(Number of Rounds)* or discrete *(Quartile 4)* variable. *Quartile 4* is a dummy variable indicating the CEO was in the top quartile of rounds played. The coefficient estimate on *Non-Cloudy Days* from the first stage regression in column 1 is positive and significant when measuring CEO golf play using the continuous variable *Number of Rounds* (coeff. = 0.0374; p-value=0.059). The coefficient on the regression in column 3 using the categorical variable *Quartile 4* is also significant (coeff. = 0.0014; p-value=0.006).[23] In terms of marginal significance these regressions indicate that across the lowest and highest quartile of states ranked by the number of non-cloudy days, CEOs play an average of 15.8% more rounds of golf and are 29.5% more likely to be frequent golfers. The r-squared values for the first stage regressions of 17.1% and 19.1%, respectively, are reasonable but not high. To determine the strength of the instrument, we conduct a partial F-test for the effect of *Non-Cloudy Days* on CEO golf, and find that it is 3.57 and 7.57 for the two regressions, respectively. These tests indicate that our instrument is not strong enough to rule out the potential for serious bias in the second-stage regressions according to Stock, Wright and Yogo (2002), who recommend F-test

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[23] We implement OLS in first-stage regressions predicting the categorical *Quartile 4* since Angrist and Kreueger (2001) demonstrate that limited dependent variable regressions are potentially biased in this context.

values of approximately 10 to ensure against this possibility. We therefore present Anderson-Rubin (AR) statistics for each specification, which is an appropriate test for bias in the second-stage regressions when the model is exactly-identified (i.e., when the number of instruments equals the number of endogenous regressors).

In the second stage regression we find that the coefficient estimate for the fitted value of *Number of Rounds* in Column 2 is -0.0068 (p-value=0.073) and for the fitted value of *Quartile 4* in Column 4 is -0.182 (p-value=0.017). These negative and significant coefficients provide support for the inference that high levels of CEO golf do indeed lead to the observed lower firm operating performance. The AR statistics of 17.5 (p-value = 0.0001) and 17.5 (p-value = 0.0001), respectively, alleviate concern over bias related to the strength of the instrument.

4.4.b. First Differences

The second approach that we employ more directly addresses the concern that unobserved CEO quality might be driving the relationships that we document. In particular, CEOs with low inherent quality may be associated with weak performance, and these low quality CEOs may choose to consume large amounts of leisure because the marginal productivity of their effort is low. Quality is unobservable, which indicates that the estimated relationship between leisure consumption and performance may suffer from an omitted variable bias.

To address this issue we implement performance regressions after annually first-differencing the variables and report our results in Table 5. The dependent variable is Δ *ROA*, which is constructed as $ROA_t - ROA_{t-1}$. In the first specification of Table 5 the variable of interest is Δ *Number of Rounds*, which is equal to *Number of Rounds$_t$ – Number of Rounds$_{t-1}$*. The second and third columns present the same regression but restrict the observations to those where there was an increase (column 2) or a decrease (column 3) in the number of rounds

played by the CEO. All three specifications provide evidence that more CEO golf is associated with lower firm performance. The coefficient in Column 1 on Δ *Number Rounds* of -0.0007 (p-value=0.006) suggests that ROA both deteriorates when CEOs play more golf, and improves when they play less. The subsample results confirm this interpretation. The coefficient on Δ *Number of Rounds* is -0.00117 (p-value=0.044; column 2) when the regression only includes increases in golf play and -0.00042 (p-value=0.031; column 3) when only decreases in golf are evaluated. These results provide evidence that the level of CEO effort matters for firm performance, and suggest that shirking CEOs can contribute to firm value by exerting more effort.

4.4.c. Firm Performance when CEO Effort is Most Important

The negative relation between CEO leisure and firm performance may indicate that CEOs allocate more time to leisure when they expect firm performance to be poor, possibly because there are few projects to evaluate. Although results from section 4.4.a. indicate that this perspective is not correct, we attempt to bolster inference by evaluating the relation between firm performance and CEO leisure in firms where CEO effort is expected to be most valuable. Existing literature documents stronger incentives for CEOs in high growth industries (Smith and Watts, 1992), which suggests that CEO effort is most valuable in rapidly expanding industries.

Table 6 presents regressions that evaluate the relation between CEO leisure and firm performance across high and low growth industries. We first construct indicator variables *High Growth Industry (Low Growth Industry)*, which equal 1 if the firm is in an industry where sales growth is above (below) the median. In Column 1 we interact the continuous variable *Number of Rounds* with each of these indicators. The coefficient on the interaction term *Number Rounds*High Growth* is -0.00044 (p-value=0.011), while the coefficient on *Number Rounds*Low Growth* is insignificantly different from zero. In Column 2, we similarly interact

the discrete variable *Frequent Golfer (Q4)* with *High Growth Industry* and *Low Growth Industry*. Consistent with the first specification, the coefficient on *Frequent Golfer (Q4)*High Growth* is -0.0207 (p-value=0.002) and the coefficient on *Frequent Golfer (Q4)*Low Growth* is insignificantly different from zero. The last two columns present the results of two-stage least squares estimations that instrument for golf play with the number of non-cloudy days as before and demonstrate similar results. By demonstrating that the negative relation between CEO golf frequency and firm performance is concentrated in high growth industries, these analyses strengthen the inference that CEO effort influences firm operating performance. CEOs who play the most golf appear to be shirking their responsibilities in a way that is damaging to their firms.

4.5. The impact of CEO shirking on firm market value

Operating performance appears to suffer when CEOs spend more time away from work, but this doesn't necessarily mean that there will be a noticeable impact on market valuations. Since stock values reflect the marginal investor's expectations of future cash flows, the relationship between CEO golfing levels and firm value should be stronger if CEO leisure is expected to persist. We investigate persistence for high quartile golfers (reported in Table 9) and find an autocorrelation coefficient of 0.68 (t-statistic < 0.001). Given that CEO golf is highly persistent, it is reasonable to expect that investors will assign lower market valuations to those fimrs where CEOs are expected to shirk their responsibilities in the future.

To evaluate the link between shirking and market value, we regress Tobin's Q onto control variables and variables that capture the amount of golf a CEO plays in a manner identical to that reported in Table 4 (for *ROA*). We are also concerned about endogeneity in this context, so we conduct additional 2SLS regressions that instrument for the amount of golf CEOs play with the number of non-cloudy days.

The results presented in Table 7 Panel A support our hypothesis regarding the impact of shirking on firm value. We find Tobin's Q is higher for firms that are smaller, younger, more profitable, have higher dividend payout ratios, more independent boards, and are members of the S&P 500. Using the continuous variable *Number of Rounds* in column 1, we find that the coefficient estimate is -0.00223 (p-value=0.048). Consistent with results in Table 4 for operating performance, we find that it is the most frequent golfers (*Quartile 4*) that are associated with lower Tobin's Q. When we include only the indicator *Quartile 4,* we find a coefficient estimate of -0.109 (p-value=0.028), indicating that firms with CEOs that are the most active golfers are associated with a Tobin's Q that is almost 10% lower than other firms in the sample.

Consistent with analyses presented in Tables 4 and 6, we implement an instrumental variable approach in order to account for the potentially endogenous relationship between CEO golf play and firm value (*Tobin's Q*). Using the number of non-cloudy days to instrument for CEO golf play, we present the results of our 2SLS estimation in Panel B of Table 7. First stage regressions are presented in column 1 for the continuous golf variable *Number of Rounds*, and in column 3 for the discrete variable *Quartile 4* golf. In both regressions we find that the number of non-cloudy days is significantly correlated with the amount of golf play, consistent with earlier reported results. Second stage regressions presented in columns 2 and 4 provide a reasonably clear picture that larger amounts of CEO leisure cause lower firm value. Using the fitted value for *Number of Rounds* we find a coefficient estimate of -0.064 (p-value=0.103). Alternatively, using the fitted value for *Quartile 4* golf, we find a coefficient estimate of -1.725 (p-value=0.037). While the coefficient presented in column 2 is slightly outside of conventional levels of statistical significance (p-value=0.103), when evaluated together with the evidence using *Quartile 4* golf, we believe that a very reasonable conclusion is that high levels of CEO golf do indeed lead to lower firm values. We also include AR statistics in

columns 2 and 4, which are 11.40 (p-value<0.001), in order to alleviate concern over any bias that might be introduced in the second stage regression.

4.6. Do firms discipline shirking CEOs?

Thus far we have provided evidence that CEOs consume more leisure when their economic incentives to maximize firm value are weaker, and that high leisure consumption is associated with weaker firm operating performance and value. In this section, we consider whether and how firms respond when CEOs shirk.

Responsibility for monitoring and incentivizing executives falls primarily on the board of directors. The board has the authority to select, and, when appropriate, replace CEOs. Boards that are more independent should be more likely to discipline a CEO who shirks. However, boards may become less independent over time, compromising their ability to discipline an entrenched CEO (Coles, Naveen and Daniel, 2014).

Table 8 presents regressions that evaluate whether firms discipline CEOs when they consume more leisure. The dependent variable is a dichotomous variable that equals 1 if the CEO leaves her firm in a given year. Independent control variables are consistent with prior analyses and our primary variables of interest include both continuous (*Number of Rounds*) and discrete (*Frequent Golfer*) representations of the amount of golf that a CEO plays in the prior year. In general, results presented in columns 1 and 4 suggest that CEOs are more likely to be replaced when they consume more leisure. The coefficient on *Number Rounds$_{t\text{-}1}$* is 0.0083 (p-value = 0.016) and the coefficient on *Frequent Golfer $_{t\text{-}1}$* is 0.264 (p-value=0.095). Our regression indicates that, holding all else constant, the odds of a CEO being replaced increases by 0.83% for every 1% increase in golf they played in the prior year.

We present additional regression specifications to investigate whether CEO replacement is more likely in firms with more independent boards or when the CEO is earlier in her tenure. We create indicator variables *Strong Board* and *Weak Board* that equal 1 if the

firm's percentage of independent directors are above or below the sample median. In column 2 of Table 8 we find that the interaction *Strong Board*Number of Rounds* is positive and significant (0.0092; p-value=0.073) while *Weak Board*Number of Rounds* is insignificantly different from zero. In a similar manner, we create dummy variables *High Tenure* and *Low Tenure* that equal 1 if the length of time that the CEO has been at her firm is above or below the sample median. In column 3 of Table 8 we find that the interaction *Low Tenure*Number of Rounds* is positive and significant (0.011; p-value=0.005) while *High Tenure*Number of Rounds* is insignificantly different from zero.

Our results in Table 8 that use the continuous variable *Number of Rounds* are consistent with the conclusion that CEOs who play high levels of golf are more likely to be replaced when their firm has a more independent board or when the CEO is earlier in her tenure. However, interaction terms between *Strong Board (Low Tenure)* and the discrete variable *Frequent Golfer* are not significant at conventional levels. While statistically insignificant results might dissuade some readers from drawing inference in this situation, we do point out that the coefficient for *Low Tenure* Frequent Golfer* is positive and has a p-value of 0.101.

Given reasonable evidence that only CEOs with more independent boards or newer CEOs face discipline when they shirk, we evaluate whether shirking is more persistent in these instances. In Table 9 we present regressions where the dependent variable is a dummy for whether the CEO was a *Frequent Golfer* in year *t*. We include lagged values of *Frequent Golfer* to test for persistence in general, and interact *Frequent Golfer$_{t-1}$* with dummy variables *Weak Board* and *Low Tenure* to evaluate whether shirking is more persistent in these instances. Results indicate that there is high persistence in the classification of a CEO as a *Frequent Golfer* (coef=0.680; p-value<0.001). When interaction variables are included in the regression separately, we find that *Frequent Golfer$_{t-1}$ *High Tenure* has a coefficient value of 0.112 (p-value=0.087) and *Frequent Golfer$_{t-1}$ *Weak Board* has a coefficient value of 0.148 (p-

value=0.14). We also include the interaction *Frequent Golfer$_{t-1}$ *CEO Ownership* since ownership is a primary determinant of CEO leisure consumption (see Table 3), but fail to find significant coefficients. Our results indicate high persistence in frequent golfing activity across all CEOs and that persistence increases significantly for CEOs with longer tenure and firms with less independent boards. Coupled with the finding that long-tenured CEOs and those with less independent boards do not face discipline when they play large amounts of golf, these results suggest that persistent shirking may be a problem.

5. Conclusion

This article evaluates the relations between CEO incentives, effort, and firm profitability using the amount of golf that CEOs play to measure their leisure consumption. We find that CEOs consume more leisure when they have weaker economic incentives to maximize firm values. In addition, we provide evidence that some CEOs shirk their responsibilities, by showing that the firms with CEOs who play the most are less profitable. These results are consistent with the fundamental expectations of human behavior that motivate the exploration of principal-agent relationships.

However, the literature also identifies numerous methods for ensuring that agency costs are minimized. Indeed, the sophisticated compensation and governance arrangements found among public firms demonstrate an acute awareness by investors and boards of the potential pitfalls that accompany the separation of ownership and control. Readers may therefore question the extent to which CEOs of public companies are actually able to shirk their duties. If one holds strong priors about the competitiveness and efficiency of the U.S. public markets, they may instead expect an equilibrium where this type of behavior is exceedingly unlikely.

The plausibility of our conclusion that some CEOs shirk are buttressed by additional analyses. For one, we confirm our results with a number of tests that control for the possibly

endogenous relationship between CEO leisure and firm performance. In addition, we find that high levels of leisure consumption are more persistent for CEOs with longer tenure and firms with less independent boards. These results suggest that one consequence of CEO entrenchment that can build over time is that they may slack off and not work as hard as they once did to maximize profitability.

Firms may also make mistakes when hiring new CEOs. Replacing a CEO is an infrequent but necessary challenge and boards must make important decisions based on incomplete information. It is quite possible for boards to at times overestimate a candidate's ability or willingness to exert value-maximizing levels of effort. We find evidence that boards replace CEOs who shirk their firm responsibilities, but that CEOs with longer tenures or weaker governance environments appear to avoid these disciplinary consequences.

Considering the particular setting for our analysis, one must wonder just how costly executive shirking is across the economy. We have analyzed the highest profile executives of high profile firms in a time period of continuing scrutiny: CEOs of U.S. S&P 1500 firms during the period 2008 – 2012. This setting follows many years of intense competition, innovations in governance practices, and increasing regulatory and investor initiatives. The emphasis on corporate governance has arguably been an important driver of the large gains in productivity at U.S. firms over recent decades (Rajan and Zingales, 2004). The extent to which firms appreciate the importance of aligning managers' interests with those of their principals is reflected in the fact that almost all large public companies in the U.S. have now adopted explicit executive stock ownership policies or guidelines (Equilar, 2010).

What lessons are to be drawn if, after all the ground gained to maximize returns on capital in U.S. markets, there is still evidence that some chief executives of reputable and visible companies engage in this form of moral hazard? To the extent that the relations we have identified characterize the much larger group of executives and employees that are subject to

less scrutiny, it seems reasonable to conjecture that the overall level of shirking in our economy may be quite costly. We expect that considerable value could be created through additional efforts to understand and minimize the impediments to motivating optimal exertion on behalf of the agents who control our business enterprises.

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Table 1. Summary of CEO golfing

Table 1, Panel A provides summary statistics for the overall sample of firm years for the 347 CEOs that were identified in the USGA's GHIN database for the period of 2008 to 2012; all statistics are calculated based on the firm's fiscal year. *Number of Rounds* is equal to the number of days where the CEO recorded a round of golf during the firm's fiscal year. Observations are limited to those where the CEO's first round in the GHIN system occurs prior to the start of the fiscal year or in the first 90 days of the fiscal year. Panel B reports the observations for each quartile of frequency; *Quartile 1* is limited to observations with 0 to 2 rounds; *Quartile 2* is limited to observations with 3 to 10 rounds; *Quartile 3* is limited to observations with 11 to 21 rounds; *Quartile 4* limited to observations with 22 or more rounds.

Panel A – Full Sample

	N	Mean	S.D.	Median	P25	P75	Max
Number of Rounds	1,207	15.84	18.81	10	2	22	146
Number of Rounds - Away		4.37	8.30	1	0	6	76
Number of Rounds - Home		11.47	14.78	6	1	17	88

Panel B – Sample by Quartile

	N	Mean	S.D.	Median	P25	P75	Max
Quartile = 1							
Number of Rounds	310	0.41	0.74	0	0	1	2
Number of Rounds - Away		0.05	0.25	0	0	0	2
Number of Rounds - Home		0.36	0.68	0	0	0	2
Average Score		94.60	9.62	95	87	100	127
Quartile = 2							
Number of Rounds	304	6.23	2.35	6	4	8	10
Number of Rounds - Away		1.67	2.37	0	0	3	10
Number of Rounds - Home		4.57	2.58	4	3	6	10
Average Score		93.88	7.16	93	89	97	118
Quartile = 3							
Number of Rounds	271	15.18	3.04	15	13	17	21
Number of Rounds - Away		4.75	4.74	3	0	8	20
Number of Rounds - Home		10.44	5.30	11	7	14	21
Average Score		91.21	5.69	91	87	95	110
Quartile = 4							
Number of Rounds	322	40.30	19.96	34	26	48	146
Number of Rounds - Away		10.76	12.98	6	2	15	76
Number of Rounds - Home		29.54	17.23	25	19	36	88
Average Score		89.31	6.00	89	85	93	109

Table 2. Summary statistics

Table 2 provides descriptive statistics for the fiscal years 2008 to 2012 for the sample of observations where the CEOs golfing records were identified in the USGA's GHIN database. *Sales, Enterprise Value, MTB, Tobin's Q, Leverage, ROA,* and *Firm Age* are collected from Compustat; *MVE* was collected from CRSP; *Institutional Ownership* is collected from Thompson Financial; *E-Index* and *CEO/*Chairman are collected from Riskmetrics. *Salary, Bonus, Salary+Bonus, Total Compensation, WPS, CEO Ownership, and Age* are collected from Execucomp. *Above Median Golf* represents the firm years where the CEO played 11 or more rounds during the fiscal year; *Below Median Golf* represents the firm years where the CEO played 10 or fewer rounds during the fiscal year.

			Comparison of Mean Values			
	Mean	Median	Above Median Golf	Below Median Golf	Diff.	P-Value
Sales	12,409	3,122	13,735	10,569	3,165	(0.184)
Enterprise Value	38,798	8,987	33,697	41,310	-7,613	(0.503)
MVE	13,506	4,142	14,149	12,742	1,406	(0.632)
Leverage	0.22	0.20	0.23	0.23	-0.0003	(0.986)
Firm Age	31.14	25.00	32.45	30.34	2.109	(0.229)
Tobin's Q	1.60	1.31	1.64	1.59	0.0541	(0.568)
ROA	0.05	0.05	0.05	0.06	-0.00423	(0.541)
Governance						
Instit. Ownership	0.70	0.78	0.70	0.70	-0.00276	(0.925)
E-Index	3.11	3.00	3.10	3.10	-0.000235	(0.998)
CEO/Chairman (1/0)	0.60	1.00	0.61	0.62	-0.0121	(0.799)
Compensation						
Salary	962	917	962	986	-24.58	(0.591)
Bonus	471	0	165	773	-608.4**	(0.037)
Salary + Bonus	1,433	950	1,126	1,759	-632.9**	(0.037)
Total Compensation	7,755	5,614	7,076	8,366	-1,290*	(0.099)
CEO Incentives						
WPS	20.04	7.23	16.29	25.59	-9.296**	(0.042)
CEO Ownership	1.33	0.26	0.94	1.84	-0.905**	(0.046)
Age	56.55	57.00	56.93	56.55	0.380	(0.527)
Tenure	9.58	8.00	9.81	10.25	-0.438	(0.534)

Table 3. The determinants of CEO golf frequency

This table presents coefficient estimates from linear regressions of the frequency of golf on measures of CEO equity based incentives during the period of 2008 to 2012. *Number of Rounds* is equal to the number of rounds recorded by the CEO during the fiscal year; WPS_{t-1} is calculated as the dollar value change in the CEOs stock and option portfolio for a \$1,000 change in firm value; *CEO Ownership$_{t-1}$* is collected from Execucomp and represents the CEO percentage ownership. All specifications include year and Fama-French 48 industry indicator variables.

VARIABLES	Number of Rounds			
WPS_{t-1}	-0.0416***		-0.0414***	
	(<0.001)		(<0.001)	
CEO Ownership$_{t-1}$		-0.457***		-0.456***
		(<0.001)		(<0.001)
Leverage	-7.225*	-7.149*	-7.478*	-7.411*
	(0.059)	(0.061)	(0.054)	(0.055)
(Dividend/Asset)$_{t-1}$	1.152***	1.200***	1.168***	1.210***
	(0.006)	(0.006)	(0.005)	(0.005)
Enterprise Value$_{t-1}$	-0.695	-0.599	-0.654	-0.546
	(0.143)	(0.199)	(0.179)	(0.254)
MTB$_{t-1}$	0.319	0.126	0.294	0.124
	(0.783)	(0.913)	(0.804)	(0.917)
Returns$_{t-1}$	-1.254	-1.196	-1.240	-1.189
	(0.350)	(0.374)	(0.358)	(0.379)
ROA$_{t-1}$	0.861	0.223	1.025	0.352
	(0.925)	(0.981)	(0.912)	(0.970)
Return Volatility$_{t-1}$	-2.506	-2.386	-2.235	-2.094
	(0.551)	(0.569)	(0.600)	(0.623)
Sales Growth$_t$	-1.876	-1.923	-1.883	-1.950
	(0.433)	(0.422)	(0.434)	(0.419)
Number of Acquisitions$_t$	0.269	0.283	0.273	0.284
	(0.604)	(0.586)	(0.599)	(0.584)
Firm Age	-0.0187	-0.0189	-0.0183	-0.0174
	(0.661)	(0.659)	(0.667)	(0.683)
CEO Tenure	2.789***	2.792***	2.888**	2.884**
	(0.005)	(0.005)	(0.013)	(0.013)
Institutional Ownership (%)			1.445	1.371
			(0.417)	(0.436)
Board Independence (%)			-0.392	-2.153
			(0.970)	(0.837)
Dual CEO/Chairman (1/0)			-0.254	-0.250
			(0.871)	(0.872)
Industry and Year FE?	Yes	Yes	Yes	Yes
Observations	1,138	1,138	1,138	1,138
R-squared	0.166	0.167	0.166	0.167

Table 4. The relationship between CEO effort and firm operating performance

Panel A presents coefficient estimates from multivariate linear regressions of firm performance on variables that control for past levels of performance and observable firm and CEO characteristics. *ROA* is calculated as earnings before extraordinary items over beginning of period assets; *Number of Rounds* is equal to the number of rounds recorded by the CEO during the fiscal year; *Quartile 1* is an indicator variable equal to 1 for observations with 0 to 2 rounds; *Quartile 2* is an indicator variable equal to 1 for observations with 3 to 10 rounds; *Quartile 3* is an indicator variable equal to 1 for observations with 11 to 21 rounds; *Quartile 4* is an indicator variable equal to 1 for observations with with 22 or more rounds. In *Panel B*, a 2SLS framework is employed where the historical average number of days without heavy cloud cover is used to instrument for golf frequency. All regressions include year and industry indicator variables and p-values are presented in parentheses.

Panel A: Ordinary least squares

VARIABLES	ROA		
Number of Rounds	-0.00023**		
	(0.037)		
Quartile 1		0.0644**	
		(0.019)	
Quartile 2		0.0640**	
		(0.019)	
Quartile 3		0.0618**	
		(0.022)	
Quartile 4		0.0519*	-0.0115***
		(0.052)	(0.009)
Enterprise Value$_{t-1}$	0.00424**	0.00419**	0.00418**
	(0.025)	(0.026)	(0.027)
MTB$_{t-1}$	0.0584***	0.0581***	0.0581***
	(<0.001)	(<0.001)	(<0.001)
(Dividend/Asset)$_{t-1}$	0.00243**	0.00237**	0.00233**
	(0.013)	(0.013)	(0.015)
Return Volatility$_{t-1}$	-0.0375**	-0.0378**	-0.0375**
	(0.016)	(0.016)	(0.016)
Tenure	0.000323	0.000647	0.00069
	(0.912)	(0.822)	(0.811)
SP500 (1/0)	0.00391	0.00454	0.00459
	(0.501)	(0.438)	(0.434)
Institutional Ownership	-0.00597	-0.00605	-0.00614
	(0.475)	(0.468)	(0.461)
Leverage$_{t-1}$	-0.0846***	-0.0848***	-0.0848***
	(<0.001)	(<0.001)	(<0.001)
Board Independence	-0.0539*	-0.0510*	-0.0506*
	(0.062)	(0.076)	(0.077)
CEO Ownership	-0.000245	-0.000279	-0.000267
	(0.605)	(0.554)	(0.569)
Firm Age	-0.000198*	-0.000207*	-0.000210*
	(0.083)	(0.072)	(0.068)
Year and Industry FE	Yes	Yes	Yes
Observations	1,207	1,207	1,207
R-squared	0.481	0.649	0.482

Panel B: Two-stage least squares

VARIABLES	Number of Rounds	ROA	Quartile 4	ROA
Non-Cloudy Days	0.0374*		0.0014***	
	(0.059)		(0.006)	
Number of Rounds (IV)		-0.00680*		
		(0.073)		
Quartile 4 (IV)				-0.182**
				(0.017)
Enterprise Value$_{t-1}$	-1.569***	-0.00617	-0.0414***	-0.00304
	(0.0098)	(0.406)	(0.003)	(0.478)
MTB$_{t-1}$	-0.806	0.0553***	-0.0368	0.0541***
	(0.409)	(<0.001)	(0.146)	(<0.001)
(Dividend/Asset)$_{t-1}$	1.471***	0.0116*	0.0222**	0.00563**
	(0.002)	(0.064)	(0.026)	(0.023)
Return Volatility$_{t-1}$	3.294	-0.0133	0.0999	-0.0175
	(0.452)	(0.709)	(0.417)	(0.540)
Tenure	2.141**	0.0146	0.0700***	0.0128*
	(0.016)	(0.167)	(0.002)	(0.071)
SP500 (1/0)	6.065***	0.0446*	0.185***	0.0370**
	(0.001)	(0.083)	(<0.001)	(0.026)
Institutional Ownership	2.299	0.0106	0.0243	-0.000578
	(0.185)	(0.470)	(0.584)	(0.956)
Leverage$_{t-1}$	-6.369*	-0.133***	-0.110	-0.110***
	(0.089)	(<0.001)	(0.186)	(<0.001)
Board Independence	-7.395	-0.101	0.311	0.00573
	(0.444)	(0.169)	(0.166)	(0.916)
CEO Ownership	-0.352***	-0.00272*	-0.00822***	-0.00182**
	(<0.001)	(0.093)	(<0.001)	(0.033)
Firm Age	-0.0136	-0.000369	-0.000997	-0.000458**
	(0.746)	(0.241)	(0.294)	(0.049)
Year and Industry FE	Yes	Yes	Yes	Yes
AR Test Statistic		17.50		17.50
Observations	1,158	1,158	1,158	1,158
R-squared	0.171		0.191	

Table 5. Changes in CEO golfing and changes in firm performance
This table presents linear regressions of changes in firm performance on changes in golf and changes in observable firm and CEO characteristics. *Change in ROA* is calculated as $ROA_t – ROA_{t-1}$; *Change in Number of Rounds* is calculated as the change in the number of rounds played by the CEO during year t from year t-1. The first specification includes all observations, the second is limited to those where the CEO increased golf frequency or stayed level and the third specification only includes those where the CEO decreased golf frequency.

VARIABLES	Δ ROA		
Δ Number of Rounds	-0.00073***	-0.00117**	-0.00042**
	(0.006)	(0.044)	(0.031)
Δ Ent. Value$_{t-1}$	-0.0520***	-0.0468***	-0.0591***
	(<0.001)	(0.005)	(0.002)
Δ MTB$_{t-1}$	0.0725***	0.0827***	0.0532***
	(<0.001)	(<0.001)	(0.003)
Δ Return Vol.$_{t-1}$	-0.00173	-0.0238	0.0311
	(0.971)	(0.689)	(0.658)
Δ Div/Assets	0.152***	0.184***	-0.196
	(0.004)	(<0.001)	(0.347)
Δ Instit. Ownership	-0.0449	-0.0299	-0.0728
	(0.214)	(0.504)	(0.194)
Δ Leverage$_{t-1}$	0.0469	0.0402	0.0472
	(0.197)	(0.442)	(0.288)
Δ Board Independence	0.00868	-0.0142	0.0668
	(0.873)	(0.834)	(0.376)
Δ CEO Ownership	-0.000795	-0.000394	-0.00251***
	(0.253)	(0.511)	(0.002)
Constant	0.00590**	0.00939**	0.00627*
	(0.011)	(0.031)	(0.072)
Observations	866	502	364
R-squared	0.096	0.119	0.080

Table 6. The relation between CEO effort and firm performance in high and low growth industries

Table 6 presents coefficient estimates from multivariate linear regressions of firm performance on variables that control for past levels of performance and observable firm and CEO characteristics from 2008 to 2012 for the sample of SP1500 firms where the CEO's golf records were identified in the USGA's GHIN database. *ROA* is calculated as earnings before extraordinary items over beginning of period assets. *High Growth Industry* is an indicator that equals 1 if the firm operates in an industry with above median sales growth; *Number of Rounds – High Growth* is equal to the number of rounds recorded by the CEO for firms in high growth industries; *Number of Rounds – Low Growth* is equal to the number of rounds recorded by the CEO for firms in low growth industries. *Frequent Golfer (Q4) - High Growth* is an indicator that equals 1 if the CEO plays 22 or more rounds of golf during the fiscal year and the firm operates in a high growth industry; *Frequent Golfer (Q4) - Low Growth* is an indicator that equals 1 if the CEO plays 22 or more rounds of golf during the fiscal year and the firm does not operate in a high growth industry. In the third and fourth specifications, a 2 stage-least squares framework is employed, where the number of non-cludy days in the firm's headquarter state is used as an instrumental variable for the frequency of golf. All regressions include year and industry indicator variables and p-values are presented in parentheses.

VARIABLES	Return on Assets			
Number Rounds - High Growth	-0.00044**		-0.000376**	
	(0.0114)		(0.0410)	
Number Rounds - Low Growth	-0.000009		0.000911*	
	(0.937)		(0.057)	
Frequent Golfer (Q4) - High Growth		-0.0207***		-0.0176**
		(0.002)		(0.012)
Frequent Golfer (Q4) - Low Growth		-0.00192		0.0278
		(0.717)		(0.171)
Enterprise Value$_{t-1}$	0.00433**	0.00422**	0.00547***	0.00517***
	(0.021)	(0.025)	(0.007)	(0.0097)
MTB$_{t-1}$	0.0577***	0.0576***	0.0597***	0.0599***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
(Dividend/Assets)$_{t-1}$	0.00256***	0.00243**	0.00195**	0.00207**
	(0.009)	(0.011)	(0.040)	(0.020)
Return Volatility$_{t-1}$	-0.0393**	-0.0390**	-0.0422**	-0.0405**
	(0.012)	(0.013)	(0.012)	(0.017)
Tenure	-7.22e-05	0.000159	-0.000802	-0.000950
	(0.980)	(0.957)	(0.794)	(0.766)
SP500 (1/0)	0.00343	0.00398	0.000514	0.000518
	(0.555)	(0.497)	(0.934)	(0.936)
Institutional Ownership	-0.00643	-0.00655	-0.00724	-0.00633
	(0.438)	(0.427)	(0.409)	(0.468)
Leverage$_{t-1}$	-0.0841***	-0.0838***	-0.0832***	-0.0839***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Board Independence	-0.0499*	-0.0487*	-0.0485	-0.0565*
	(0.086)	(0.090)	(0.130)	(0.078)
CEO Ownership	-0.000241	-0.000267	-0.000121	-0.000180
	(0.594)	(0.553)	(0.787)	(0.691)
Firm Age	-0.000198*	-0.000214*	-0.000175	-0.000188
	(0.081)	(0.062)	(0.129)	(0.104)
High Growth Industry	0.0163***	0.0148***	0.0300***	0.0221***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes
Model	OLS	OLS	2SLS	2SLS
Instrument			Non-Cloudy Days	
Observations	1,207	1,207	1,158	1,158
R-squared	0.486	0.487		

Table 7. CEO shirking and firm market value

Panel A presents coefficient estimates from multivariate linear regressions of Tobin's Q on CEO golf frequency and observable firm and CEO characteristics. *Number of Rounds* is equal to the number of rounds recorded by the CEO during the fiscal year; *Quartile 1* is equal to 1 for observations with 0 to 2 rounds; *Quartile 2* is equal to 1 for observations with 3 to 10 rounds; *Quartile 4* is equal to 1 for observations with 10 to 21 rounds; *Quartile 4* is equal to 1 for observations with 22 or more rounds. Panel B provides coefficient estimates from the first and second stage regressions where a 2 stage-least squares framework is employed and the number of non-cloudy days in the firm's headquarter state is used as an instrumental variable for the frequency of golf. All regressions include year and industry indicator variables and p-values are presented in parentheses.

Panel A: Ordinary least squares

VARIABLES	Tobin's Q		
Number of Rounds	-0.00223**		
	(0.0477)		
Quartile 1		1.176***	
		(<0.001)	
Quartile 2		1.186***	
		(<0.001)	
Quartile 3		1.250***	
		(<0.001)	
Quartile 4		1.095***	-0.109**
		(<0.001)	(0.028)
Enterprise Value$_{t-1}$	-0.0518***	-0.0525***	-0.0520***
	(0.002)	(0.002)	(0.002)
ROA$_{t-1}$	4.513***	4.511***	4.501***
	(<0.001)	(<0.001)	(<0.001)
(Dividend/Asset)$_{t-1}$	0.109***	0.107***	0.108***
	(<0.001)	(<0.001)	(<0.001)
Return Volatility$_{t-1}$	-0.0887	-0.0789	-0.0864
	(0.647)	(0.689)	(0.655)
Tenure	0.0546*	0.0592**	0.0579*
	(0.069)	(0.046)	(0.054)
SP500 (1/0)	0.288***	0.295***	0.294***
	(<0.001)	(<0.001)	(<0.001)
Institutional Ownership	-0.0588	-0.0634	-0.0609
	(0.506)	(0.474)	(0.492)
Leverage$_{t-1}$	-0.214	-0.215	-0.217
	(0.136)	(0.137)	(0.131)
Board Independence	0.601**	0.641**	0.632**
	(0.042)	(0.031)	(0.035)
CEO Ownership	-0.00302	-0.00289	-0.00323
	(0.584)	(0.599)	(0.558)
Firm Age	-0.00868***	-0.00885***	-0.00877***
	(<0.001)	(<0.001)	(<0.001)
Year and Industry FE	Yes	Yes	Yes
Observations	1,207	1,207	1,207
R-squared	0.523	0.889	0.524

Panel B: Two-stage least squares

VARIABLES	Number of Rounds	Tobin's Q	Quartile 4	Tobin's Q
Non-Cloudy Days	0.0363*		0.00135***	
	(0.067)		(0.008)	
Number of Rounds (IV)		-0.0640		
		(0.103)		
Quartile 4 (IV)				-1.725**
				(0.037)
Enterprise Value$_{t-1}$	-1.506**	-0.153**	-0.0385***	-0.123***
	(0.012)	(0.040)	(0.005)	(0.005)
MTB$_{t-1}$	-3.605	4.306***	-0.166	4.250***
	(0.658)	(<0.001)	(0.437)	(<0.001)
(Dividend/Asset)$_{t-1}$	1.433***	0.195***	0.0204**	0.138***
	(0.002)	(0.003)	(0.028)	(<0.001)
Return Volatility$_{t-1}$	3.948	0.240	0.130	0.210
	(0.356)	(0.465)	(0.301)	(0.450)
Tenure	2.123**	0.180*	0.0692***	0.164**
	(0.017)	(0.080)	(0.002)	(0.025)
SP500 (1/0)	5.905***	0.681***	0.178***	0.610***
	(0.00140)	(0.00891)	(<0.001)	(<0.001)
Institutional Ownership	2.224	0.0611	0.0209	-0.0450
	(0.196)	(0.678)	(0.635)	(0.691)
Leverage$_{t-1}$	-7.065*	-0.731*	-0.142*	-0.523**
	(0.056)	(0.070)	(0.087)	(0.026)
Board Independence	-7.522	0.0509	0.305	1.058*
	(0.434)	(0.944)	(0.172)	(0.059)
CEO Ownership	-0.357***	-0.0255	-0.00847***	-0.0172*
	(<0.001)	(0.123)	(<0.001)	(0.0667)
Firm Age	-0.00837	-0.00999***	-0.000761	-0.0108***
	(0.839)	(<0.001)	(0.410)	(<0.001)
Year and Industry FE	Yes	Yes	Yes	Yes
AR Test Statistic		11.40		11.40
Observations	1,158	1,158	1,158	1,158
R-squared	0.171		0.190	

Table 8. Firm responses to CEO shirking

Table 8 presents coefficient estimates from multivariate probit regressions of CEO turnover on prior golf frequency and other observable firm and CEO characteristics. The sample consists of SP1500 firms from 2009 to 2012 where the CEOs prior golf records are identified in the USGA's GHIN database. The dependent variable, *CEO Turnover*, is an indicator variable if the CEO in year *t+1* is different from the CEO in year *t. Weak Board* (*Strong Board)* is an indicator if the fraction of independent board members is lower (at or above) than the median level observed in the sample. *High Tenure* (*Low Tenure)* is an indicator of the CEO's tenure is in the top quartile (bottom three quartiles) observed in the sample. All regressions include year and industry indicator variables and p-values are presented in parentheses.

Variables	CEO Turnover					
Number of Rounds$_{t-1}$	0.0083**					
	(0.0161)					
Weak Bd*Num. of Rnds$_{t-1}$		0.00720				
		(0.137)				
Strong Bd*Num. of Rds$_{t-1}$		0.0092*				
		(0.0739)				
High Ten*Num. of Rds$_{t-1}$			-0.00062			
			(0.942)			
Low Ten*Num. of Rds$_{t-1}$			0.011***			
			(0.0053)			
Freq. Golfer$_{t-1}$				0.264*		
				(0.0946)		
Weak Bd*Freq. Golfer$_{t-1}$					0.315	
					(0.238)	
Strong Bd*Freq. Golfer$_{t-1}$					0.234	
					(0.242)	
High Ten*Freq. Golfer$_{t-1}$						0.177
						(0.570)
Low Ten*Freq. Golfer$_{t-1}$						0.297
						(0.101)
Enterprise Value$_{t-1}$	0.163***	0.163***	0.169***	0.161***	0.160***	0.162***
	(0.00398)	(0.00388)	(0.00319)	(0.00501)	(0.00569)	(0.00477)
MTB$_{t-1}$	0.224	0.226	0.237	0.216	0.215	0.220
	(0.154)	(0.150)	(0.129)	(0.170)	(0.174)	(0.158)
(Dividend/Assets)$_{t-1}$	-3.085	-2.967	-2.604	-1.902	-2.023	-1.831
	(0.537)	(0.550)	(0.590)	(0.683)	(0.670)	(0.692)
ROA$_t$	-0.750	-0.748	-0.886	-0.699	-0.686	-0.743
	(0.594)	(0.593)	(0.527)	(0.619)	(0.628)	(0.598)
Returns$_t$	0.0505	0.0493	0.0612	0.0271	0.0262	0.0278
	(0.788)	(0.794)	(0.743)	(0.886)	(0.890)	(0.883)
Return Volatility$_{t-1}$	0.783	0.801	0.784	0.777	0.769	0.771
	(0.269)	(0.270)	(0.272)	(0.270)	(0.278)	(0.275)
Sales Growth	0.155	0.160	0.160	0.137	0.131	0.133
	(0.653)	(0.643)	(0.643)	(0.694)	(0.706)	(0.702)
Firm Age	0.0101**	0.0100**	0.0098**	0.010**	0.0101**	0.0099**
	(0.0423)	(0.0432)	(0.0482)	(0.0442)	(0.0430)	(0.0446)
Institutional Ownership	-0.254	-0.257	-0.257	-0.234	-0.236	-0.236
	(0.347)	(0.344)	(0.342)	(0.387)	(0.382)	(0.383)
High Tenure	0.240	0.241	0.420*	0.219	0.217	0.257
	(0.171)	(0.170)	(0.0663)	(0.212)	(0.216)	(0.208)
Weak Board	-0.225	-0.195	-0.225	-0.221	-0.244	-0.221
	(0.182)	(0.335)	(0.178)	(0.186)	(0.197)	(0.183)
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Model	Probit	Probit	Probit	Probit	Probit	Probit
Observations	647	647	647	647	647	647
Pseudo R2	0.138	0.138	0.141	0.136	0.136	0.136

Table 9. The persistence of CEO shirking

Table 9 presents coefficient estimates from multivariate linear regressions of CEO golf frequency on prior golf frequency, ownership, tenure, and board strength. The sample consists of SP1500 firms from 2009 to 2012 where the CEOs prior golf records are identified in the USGA's GHIN database. The dependent variable, *Frequent Golfer*, is an indicator variable if the CEO recorded 22 or more rounds in year *t*. *Weak Board* (*Strong Board*) is an indicator if the fraction of independent board members is lower (at or above) than the median level observed in the sample. *High Tenure* (*Low Tenure*) is an indicator of the CEO's tenure is in the top quartile (bottom three quartiles) observed in the sample. *CEO ownership* is the percentage of the firm's equity owned by the CEO. *Freq. Golfer$_{t-1}$* is an indicator variable equal to 1 if the CEO played 22 or more rounds in year *t-1*. P-values are presented in parentheses.

VARIABLES	Frequent Golfer$_t$					
Freq. Golfer$_{t-1}$	0.680***	0.677***	0.649***	0.618***	0.678***	0.605***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Freq. Golfer$_{t-1}$*High Ten.			0.112*			0.0997
			(0.0873)			(0.117)
Freq. Golfer$_{t-1}$*Weak Bd.				0.148**		0.147**
				(0.0138)		(0.0213)
Freq. Golfer$_{t-1}$*CEO Own.					-0.00111	-0.0135
					(0.948)	(0.452)
CEO Ownership		-0.0036***	-0.0027**	-0.0031***	-0.0035***	-0.0019*
		(0.00186)	(0.0294)	(0.00499)	(<0.001)	(0.0523)
Weak Board (1/0)		-0.00495	-0.00767	-0.0423*	-0.00477	-0.0423*
		(0.821)	(0.727)	(0.0524)	(0.830)	(0.0527)
High Tenure (1/0)		0.0299	-0.00130	0.0256	0.0300	-0.00116
		(0.233)	(0.961)	(0.305)	(0.230)	(0.965)
Constant	0.0824***	0.0824***	0.0904***	0.0993***	0.0823***	0.104***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Industry and Year FE	No	No	No	No	No	No
Observations	866	866	866	866	866	866
R-squared	0.462	0.464	0.466	0.469	0.464	0.471

Fig. 1. Distribution of Observation by Frequency of Golf

Figure 1 shows the distribution of firm-year observations by the frequency of golf for 363 CEOs of S&P 1500 firms from 2008 to 2012. Rounds for each CEO-year are summed over the fiscal year to determine the aggregate number of rounds played.
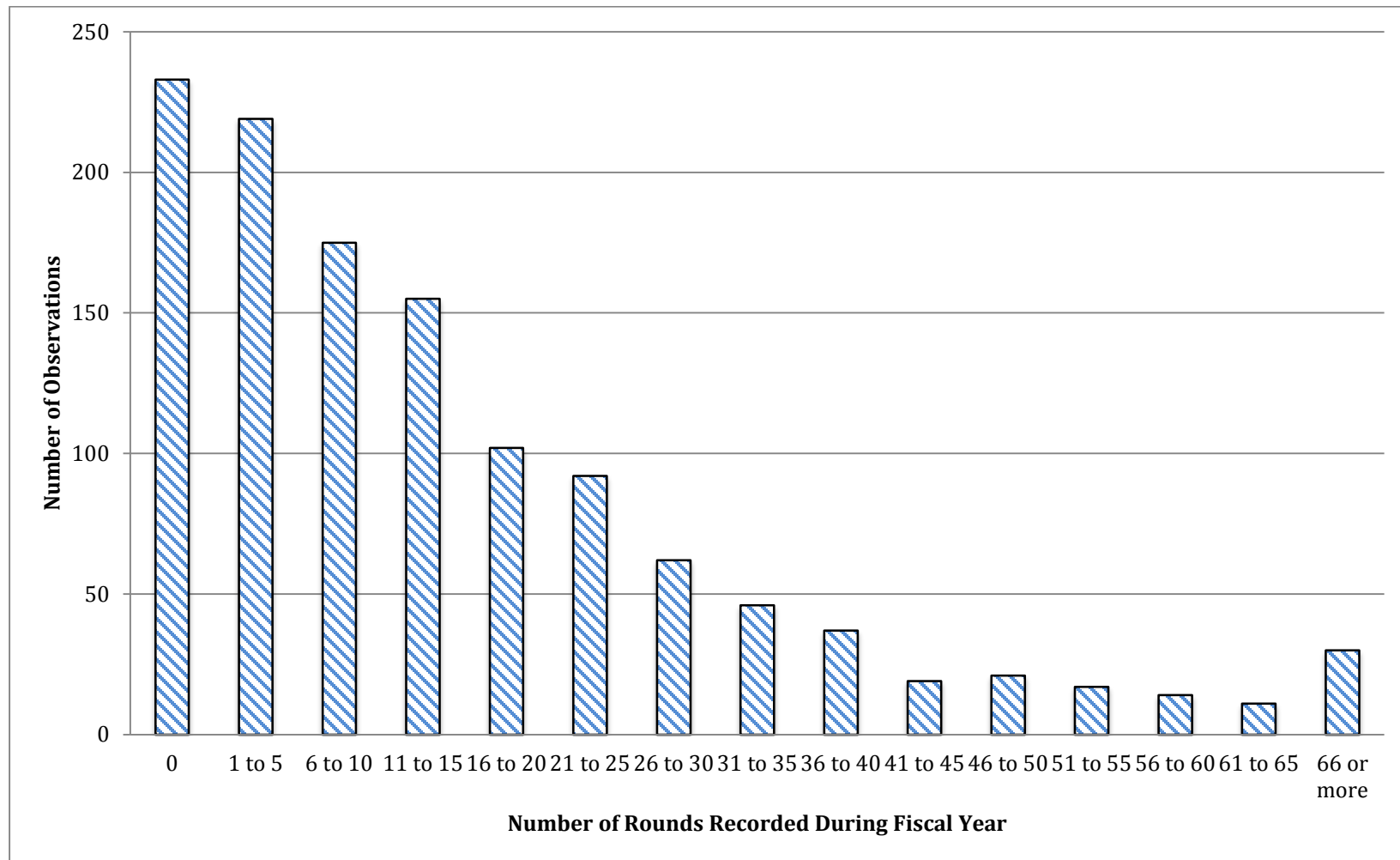
Fig. 2. Average Frequency of Golf by CEOs – 2008 to 2012

Figure 2 shows the average number of golf rounds recorded by 363 CEOs of S&P 1500 firms from 2008 to 2012. Rounds for each CEO-year are summed over the fiscal year to determine the aggregate number of rounds played.