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Abstract

Agency and corporate governance theory assume that CEO effort is important for firm profitability and performance, costly for the CEO to provide and difficult for shareholders to monitor (e.g. Jensen & Meckling, 1976). We empirically analyze the relationship between CEO effort, corporate governance and firm performance using a detailed panel of golfing records for a sample of S&P 1500 CEOs from 2008 to 2012. Consistent with the predictions of fundamental models of agency theory, we find that higher CEO ownership and stronger monitoring are associated with lower leisure consumption and that high levels of CEO leisure correspond to lower firm profitability. We also document that past leisure consumption is an important determinant of the future level and structure of CEO compensation – particularly when the CEO is new – suggesting that boards learn about CEO preferences over time and adjust their incentives accordingly.

March 2014

We thank Bruce Behn, Phillip Daves, Larry Fauver, Alvaro Taboada, Mary Elizabeth Thompson, Jim Wansley, and Tracy Woidtke for their helpful comments. Lee Biggerstaff thanks the Finance Department at the University of Tennessee for providing financial support for this project.

"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

This paper tests a fundamental component of agency theory – the relationship between the incentives and monitoring imposed by the principal and the effort provided by the agent.[1] In the context of a corporation, Jensen and Meckling (1976) suggest that a large potential cost of the agency problem faced by shareholders is lack of effort by the CEO, which can reduce firm value through under investment or poor investment choice. An underlying notion of the agency problem is that effort is costly for the agent to provide, is difficult to monitor, and provides value to the principal.

A key prediction of agency theory is that deviations from value-maximizing effort can be reduced through financial incentives and monitoring by the principal, essentially the raison d'être for corporate governance. However, CEO effort and leisure are difficult to observe and measure, so there is very little direct evidence of the effectiveness of monitoring and incentives in inducing effort. Instead, the existing literature has relied upon firm value and performance to measure CEO effort, which is problematic because these firm-level outcomes represent extremely noisy measures of CEO effort.[2] To our knowledge, this study is the first to measure and exploit the different levels of leisure consumption for a broad sample of CEOs to determine the effectiveness of corporate governance mechanisms, the relationship between leisure and firm performance, and the ability of the directors to monitor leisure and adjust incentives and/or compensation.

[1] Numerous models include effort as a costly good provided by the agent that is important to the principal; see Holmstrom, 1979; Grossman and Hart, 1983; Haubrich, 1994; Baker and Hall, 1998; Edmans, Gabaix, and Landier, 2009.

[2] See Demsetz and Lehn, 1985; Morck, Shliefer, Vishney, 1988; Hermalin and Weisbach, 1991; Woidtke, 2002; Bebchuk, Cremers, and Peyer, 2011.

We evaluate the primary predictions of agency theory using a unique database of CEOs' golfing habits to proxy for their levels of leisure consumption. By studying this rich and detailed record of CEO golfing activity, we are able to document that both financial incentives and the expected strength of monitoring are important determinants of how frequently a CEO is on the golf course. We also find that high levels of golfing activity are associated with weaker operating performance, which confirms the importance of CEO effort in the performance of the firm. Robustness tests confirm that the relationship between performance and leisure consumption is not driven by unobserved omitted variables. Finally, we show that directors adjust their CEOs' incentives in response to revealed preferences for leisure and that this adjustment is primarily made to the incentives of new CEOs, a group where directors have the least information regarding preferences. The observed adjustment is consistent with the resolution of information asymmetries over time.

To perform the analyses in this study, we utilize a hand-collected dataset of golf records for 329 S&P 1500 CEOs extracted from a database of golf records maintained by the United States Golf Association ("USGA"). This database contains records for each round recorded in the system by participating golfers from 2008 to 2012.[3] For each round of golf the database contains the month and year, difficulty of the course, the player's score, the method through which the round was entered into the database, and if the round was at the golfer's home course. Additionally, the database lists the course memberships of each golfer. This database is used to calculate golfers' handicaps and online access is provided to others in the golfing community.[4]

[3] A round of golf is played over 18 holes. The maximum number of players in a group is generally 4 and it takes approximately 4 hours to complete the round.

[4] A golfer's handicap is a numerical representation of golf skill and lower handicaps are assigned to better golfers. Handicaps are calculated based on prior scores and are used as a mechanism to adjust scores for golfers with different skill levels when they are competing.

We use the frequency of golf play as a proxy for the amount time allocated to leisure consumption by the CEO. We argue that golf frequency measures leisure consumption because each round of golf consumes a significant amount of an executive's time and prior studies show that CEO golfing activity is correlated with other forms of leisure consumption, such as the time spent at their vacation homes (Yermack, 2006). The distribution of CEO golf frequency is shown in Figure 1, which 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. Although we treat all golf by CEOs as leisure consumption, there are certainly rounds that have a valid business purpose, which is reflected in the commonly held notion that "business gets done on the golf course". However, the distribution of golf frequency 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 calendar year! This observed behavior appears difficult to justify as value maximizing, but is consistent with an agency problem. Additionally, we document a 42% increase in the frequency of golf in the year following a CEO's departure from the firm, suggesting that CEOs enjoy golf as a hobby and are not merely using it for business purposes. We provide a more detailed discussion of golf as a measure of leisure consumption in Section III.

The separation of ownership and control is a hallmark of the modern corporation, leading to a potentially strong agency conflict between executives and shareholders. Jensen and Meckling (1976) argue that the agency problem faced by shareholders can be mitigated by establishing incentives for the manager that align her interests with those of shareholders and by monitoring the managers' activities. In the modern corporation, these incentives are primarily established through stock and options awarded to the CEO (Jensen and Murphy, 1990; Mehran, 1995). Monitoring strength is a function of the board of directors and is often augmented by large block shareholders and institutional owners. In this study, we find evidence

that stronger monitoring by the board and higher levels of equity-based incentives are associated with lower leisure consumption by the CEO, providing some of the first direct evidence of the efficacy of corporate governance in the labor/leisure decision of CEOs. A simple univariate comparison reveals the relationship between equity-based incentives and time spent playing golf: the average ownership percentage for CEOs in the bottom quartile of golf frequency is 1.82%, which is significantly higher than the 1.10% observed for CEOs in the top quartile.[5] When investigating these relationships in a multivariate framework, we find that CEOs play fewer rounds of golf when they have higher stock ownership, stronger wealth performance sensitivity and when the board of directors has a larger proportion of independent directors.

We document that high levels of leisure are associated with lower firm performance, which supports the argument that CEO effort is an important determinant of firm performance. In the years where the CEO played 22 or more rounds, which corresponds to the top quartile of observations, the mean return on assets (ROA) is more than 125 basis points lower than firms where the CEO played less frequently. This result is economically significant as the sample mean ROA is just over 5.2%.

A potential concern regarding the relationship between leisure consumption and performance is that an unobserved variable is responsible for both high leisure consumption and poor firm performance. In order to address this potential endogeneity bias in our study we perform two separate analyses. The first approach uses a first-difference framework in order to alleviate concerns that unobserved CEO quality might be driving the results that we document. For example, low quality CEOs may choose to allocate large amounts of time to

[5] The bottom quartile corresponds to observations where the CEO recorded less than 3 rounds in the fiscal year; the top quartile consists of observations where the CEO recorded 22 or more rounds during the fiscal year.

golf because the marginal productivity of their labor is low. The second analysis uses a two-stage least squares regression approach in which we specify an instrument for the level of golf play. The instrument that we employ is the number of clear days in the CEO's home state. Results from both analyses support our original findings that CEO leisure is negatively related to firm performance.

A second potential concern is causality. It is certainly possible that CEOs choose to play more golf because they expect firm performance to be poor. To address this concern, we look at the effect of high levels of leisure in industries where CEO effort is predicted to be most valuable. There should be no differential effect across industries if CEOs choose to play more golf because performance is expected to be poor. The existing literature documents stronger incentives for CEOs in high growth (Smith and Watts, 1992) and deregulated industries (Hubbard and Palia, 1995), which suggests that CEO effort is most valuable in these settings. Consistent with this prediction, we document that firms in high growth and deregulated industries drive the relationship between CEO leisure consumption and firm performance. This is not consistent with the notion that CEOs react to poor expected performance by allocating more time to leisure consumption.

This study also contributes to the ongoing debate involving executive compensation and the process by which it is determined. We analyze the relationship between prior leisure consumption and CEO compensation and find evidence that compensation is lower for executives that spent more time playing golf in the prior fiscal year. This relationship is consistent with the optimal contracting hypothesis and indicates that directors evaluate CEO effort when determining the appropriate level of compensation. The coefficient estimate from a multivariate model indicates that CEO total compensation is $13.7k lower for every round played in the prior fiscal year. This finding is important because observable firm and CEO

characteristics explain little of the variation in executive compensation (Graham, Li, and Qiu, 2009).

Finally, we contribute to existing literature that is focused on the information asymmetries that exist between new CEOs and directors and the process by which these asymmetries are resolved. Harris & Holmstrom (1982) provide a model where information asymmetries between principals and agents are reduced as the principals observe the agents over a number of periods. Zajac (1990) argues that superior performance of inside hire CEOs is consistent with lower 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, even when controlling for the performance of the firm. We find evidence that directors react to preferences revealed by new CEOs by analyzing adjustments to CEO equity-based incentives. Specifically, we document that new CEOs receive subsequent compensation that features significantly higher pay for performance sensitivity (PPS) after they reveal strong preferences for leisure consumption. The relationship between past leisure consumption and PPS is significantly weaker for CEOs with longer tenures, which could indicate weaker monitoring by the board as the CEO nominates friendly directors.

This is the first study to empirically measure CEO leisure, which provides direct insight into the effort that CEOs allocate to managing firm resources. This study goes beyond the existing literature by directly linking CEO leisure, corporate governance, and firm performance for a broad sample of large firms. These findings improve our understanding of the importance of corporate governance and the cost of the agency problem. This paper supports and extends two recent studies that provide insight into the relationship between CEO effort and firm performance by identifying external shocks that distract the CEO. Both Bennedsen et al. (2007) and Malmendier and Tate (2009) document that external distractions are associated with lower

firm performance, but the Bennedsen et al. (2007) study is limited to extremely small, Danish firms and the evidence in Malmendier and Tate (2009) relating firm performance to CEO distractions is indirect.

This paper continues as follows. In Section II, we discuss the related literature, explain the underlying assumptions and develop the hypotheses that are tested. Section III discusses the data collection, the merits of using golf frequency to measure leisure, and summary statistics. Multivariate results are discussed in Section IV and Section V concludes.

2. Literature Review and Hypothesis Development

Many economic models assume that CEO effort is an important determinant of firm performance and costly for the CEO to provide, yet the existing literature provides little evidence regarding the relationship between CEO effort, governance mechanisms, and firm performance.[6] The lack of empirical research is driven by the difficulty in measuring the effort provided by the CEO. We use a measure of CEOs' leisure consumption to proxy for the effort they provide, which allows us to empirically test numerous theoretical predictions regarding the ability of governance mechanisms to influence CEO effort and the relationship between effort and firm performance.

An essential assumption of this study is that leisure is inversely related to the effort allocated to managing the assets and investments of the firm. Time is a finite resource and the time allocated to playing golf directly reduces the time available to devote to the firm. Additionally, playing a significant amount of golf may reveal an overall preference for leisure

[6] See Jensen and Meckling, 1976; Holmstrom, 1979; Fama, 1980.

consumption, such that CEO golf frequency may be positively correlated with the time allocated to other hobbies or vacations.[7,8]

The primary tool used to align the interest of managers with shareholders is equity ownership, through either stock or options. Early research into the effectiveness of equity based incentives focused on the relationship between the value of the firm and the amount of equity owned by the CEO and/or management. The relationship between ownership concentration and firm performance/value is generally found to be non-monotonic (Morck, Shliefer, Vishny, 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1991). These studies find increasing firm value as managerial ownership increases from low levels, which is consistent with incentive alignment. The decrease in firm value at higher levels of managerial ownership is attributed managerial entrenchment, where managers with high ownership can engage in projects that provide private benefits without discipline from shareholders or financial markets. In a recent study, Tumarkin (2010) attempts to address the endogeneity between CEO incentives and firm value using econometric instruments, which enables him to analyze the exogenous change in firm value from CEO incentives. He documents that firms with the mean level of CEO incentives have Tobin's Q that is 10% higher than counterfactual firms without CEO incentives. Although these studies are generally consistent with the arguments of Jensen and Meckling (1976), they are not fully satisfying because they jointly test the importance of incentives on CEO effort and the importance of CEO effort on performance. This limitation is driven by the difficulty in measuring CEO effort. This study provides a more complete analysis as CEO leisure consumption provides direct insight into CEO effort, which allows me to test

[7] James Cayne, the former COB/CEO of Bear Stearns provides an excellent example of this conjecture. 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. See "Bear CEO's Handling Of Crisis Raises Issues", *The Wall Street Journal*, November 1, 2007.

[8] An alternative possibility is that low frequency golfers spend time on different hobbies such as boating or tennis. This possibility biases against finding the relationships documented in this study.

the hypotheses separately. Based on the predictions of agency theory, we expect higher CEO ownership and stronger equity-based incentives to be negatively correlated with leisure consumption, as CEOs work harder when they have stronger financial incentives.

Monitoring imposed by shareholders is generally performed by the board of directors and represents an additional channel that can reduce the agency problem faced by shareholders. Strong monitors can terminate an underperforming CEO and set compensation that aligns the interests of managers with shareholders. Independent directors are generally assumed to be better monitors than internal or grey directors because they have less incentive to bow to pressure from the CEO. Further evidence regarding the monitoring quality of independent directors is provided by recent regulations and listing requirements in the United States, which have increased the independence of boards. These regulations were implemented to address concerns that existing board structures did not provide sufficiently strong monitoring.[9]

The existing literature provides further evidence that independent directors provide a stronger level of oversight as higher board independence is associated with increased CEO turnovers (Weisbach, 1988) along with lower overall compensation and higher pay for performance sensitivity (Hwang and Kim, 2009). However, there is mixed evidence on the value of independent directors to shareholders. Nguyen and Nielsen (2010) find negative announcement returns following the deaths of independent directors, which is consistent with the positive nomination announcement returns documented in Rosenstein and Wyatt (1990). Other studies find little correlation between independent directors and firm performance (Bhagat and Black, 1999, 2001; Hermalin and Weisbach, 1991; Klein, 1998). The lack of evidence regarding the monitoring strength of the board and the performance of the firm highlights the difficulty in using firm outcomes to measure the effort of the CEO. We expect

[9] NYSE and Nasdaq mandated that a majority of the board of directors of a listed company be independent in 2003 after the failures of Enron and Worldcom. See http://www.sec.gov/rules/sro/34-48745.htm.

that CEO consumption of leisure will be lower at firms with a higher proportion of independent directors, as boards dominated by outsiders are perceived to be stronger monitors.

Institutional ownership and blockholders also play an important role in corporate governance, especially when the corporate control market is compromised. Shivdasani (1993), Denis and Serrano (1996), and Agrawal and Nasser (2012) provide evidence of the importance of blockholders as a corporate governance mechanism.[10] The dramatic growth in institutional ownership during the 1990s and 2000s increased the importance of these professional investors in the governance environment. Hartzell and Starks (2003) document that higher institutional ownership is associated with stronger pay for performance sensitivity and lower levels of compensation, which is consistent with institutions acting as effective monitors. Chen, Hardford, and Li (2007) provide evidence that independent, long-term institutions can influence managerial decisions. We expect that leisure consumption will be negatively correlated with the strength of monitoring by institutions and/or blockholders.

Although CEO effort is regarded as an important determinant of firm performance, there is relatively little empirical support for this assumption. Two studies link CEO distractions to declines in performance, which is consistent with the importance of CEO effort in firm performance. Bennedsen et al. (2007) analyzes firm performance following the death of a relative for a sample of small, Danish firms and documents performance declines following the relative's death. Malmendier and Tate (2009) find that award winning CEOs are more likely to write books and serve on multiple boards, two activities that may distract the CEO from her duties at the firm. They also find that performance declines at firms following CEO awards, but they do not directly link the new extracurricular activities to underperformance. We expect

[10] Shivdasani (1993) found that blockholders increase the likelihood of a control attempt; Denis and Serrano (1996) documented that management turnover following failed control attempts; Agrawal and Nasser (2012) found higher valuations and higher management turnover sensitivity when blockholders also serve on the board.

that CEOs devoting the most time to leisure will have weaker firm performance as they allocate less effort and time seeking and evaluating investment opportunities.

The amount of effort required of the CEO to maximize performance is likely to vary significantly by firm because of differences in the competitive environment and corporate structure. Smith and Watts (1992) document stronger incentives for CEOs when firms have more valuable growth options and Hubbard and Palia (1995) document stronger CEO incentives following deregulation; these findings are consistent with the notion that strong incentives are needed when CEO effort is more valuable. CEO effort is important in firms with valuable growth options because there are a greater number of new investments to evaluate and these projects have a larger impact on firm performance. Similarly, CEO effort is important for firms in non-regulated industries because the decisions made by the CEO have a large impact on the direction and profitability of the firm. This indicates that deviations from optimal CEO effort will have a larger impact on firm performance in industries where CEO effort is most valuable. We expect that high levels of leisure consumption will have the greatest impact on firm performance when the firm operates in an industry with high growth or in a deregulated industry.

There is significant debate regarding the process of setting executive compensation and the appropriateness of the compensation packages. Directors should have superior information regarding the effort provided by the CEO and observed levels of compensation should reflect the CEO's effort, but there is little empirical evidence that directors consider effort in setting compensation. Ideally compensation contracts should reward CEOs for their efforts in generating returns for shareholders, but there is evidence that CEOs are also rewarded for luck (Bertrand and Mullainathan, 2001). Grinstein and Hribar (2004) find evidence of a relationship between effort and compensation in the context of CEO bonus compensation tied to M&A transactions. They document that transactions requiring higher effort by the CEO are associated

with larger bonuses. Graham, Li, and Qiu (2009) provide insight into the importance of unobservable managerial characteristics in relation to executive compensation. They find that observable firm and manager characteristics only explain 24% of variation in compensation, while unobserved managerial characteristics explain 44% of the variation. It is reasonable to conclude that different levels of effort drive part of the unexplained variation in executive compensation. We therefore expect that the level of compensation will be positively correlated with the level of effort provided by the CEO.

Harris & Holmstrom (1982) outline a model where information asymmetries between principals and agents are reduced as the principals observe the agent over a number 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. The preferences revealed by the CEO early in her tenure are likely to influence the optimal level of incentives needed to maximize shareholder value. Existing empirical evidence suggests that directors use equity grants to adjust incentives when they deviate from ideal levels (Core and Guay, 1999). We expect that directors will make larger adjustments to CEO incentives early in the CEO's tenure, as information asymmetries are resolved. This indicates that directors will provide compensation with stronger incentives when CEOs reveal preferences for high levels of leisure and that the adjustment to incentives will be the greatest for CEOs with short tenures.

3. Data and Empirical Methods

3.1 Sample Construction

The first focus of this study is to analyze the relationship between the time CEOs spend on the golf course and the strength of governance as measured by ownership, total incentives, and monitoring. We also analyze the relationship between high levels of leisure consumption and firm performance. Finally, we look at CEO compensation and incentives to determine if CEO effort is reflected in the level and structure of compensation selected by the board. These analyses require data collection from a multitude of sources including Compustat (accounting variables), CRSP (firm size, stock returns, and return volatility), Execucomp (compensation and incentives), RiskMetrics (firm governance), Thompson (institutional ownership), and the United States Golf Assocation (golfing records).

We use the USGA's database of golf handicaps to determine the frequency of golf for a sample of S&P 1500 CEOs. This system, the Golf Handicap and Information Network (GHIN), is designed as a tool to calculate and maintain golfers' handicaps and to provide a method to verify a playing partner's handicap. We identify each CEO in the USGA records by matching based on name, proximity of the club to firm headquarters, and the exclusivity of the club (i.e. private and expensive).[11] The round-by-round history contains all of the rounds entered into the system and includes the month and year of the round, the golfer's score, the course rating and slope, and whether the round was played at the golfer's home course. The GHIN system is widely populated starting in 2008, but the length of each player's history is driven by the date her regional association became affiliated with the USGA. We include firm years where the CEO's first round in the system is prior to the beginning of the second quarter of the fiscal year.[12] We identify 329 CEOs with records in the GHIN system over the period of 2008 to 2012, which corresponds to 1,149 unique CEO-year observations. This represents

[11] For club proximity, we look for clubs within 60 miles of the firm's headquarters.
[12] This truncation eliminates observations where the full year of golf records is not observed.

almost 14% of the universe of S&P 1500 observations over the sample period, which consists of 8,250 CEO-years for 2,499 unique CEOs.

3.2 Golf Frequency as Leisure Consumption

The frequency of golf is a reasonable measure of leisure consumption as many CEOs play a substantial amount of golf, the direct time commitment for a single round is considerable, and numerous rounds are played at vacation destinations. The distribution of golf frequency is displayed in Figure 1 – the long tail of the distribution highlights that CEOs frequently spend a large amount of time playing golf. The time it takes to play a single round is significant as most rounds extend beyond 4 hours, not including any time spent driving to the club, shopping in the pro-shop, changing clothes, warming up, or socializing after the round. It is not unusual for golfers to spend the majority of the day at a golf club to play a single round. Finally, it is common for CEOs to play golf while staying at their vacation properties. Yermack (2006) documents that the presence of an out of state 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.[13] Beyond the direct time commitment, high levels of golf may reveal a strong preference for leisure, such that golf consumption may only represent the tip of the iceberg.

Clearly, some of the rounds played by CEOs have a valid business purpose, which leads to a natural critique of using golf to measure leisure consumption. The notion that "business gets done on the golf course" is commonly held and suggests that the observed patterns of golf reflect an attempt to generate or solidify business relationships by the CEO.[14]

[13] Approximately 50% of the CEOs with multiple memberships are members at clubs that belong to different golf associations, with each association representing the clubs in a specific geographic area (commonly a state).

[14] 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 golf courses actually prohibit golfers

Although a valid concern, the high level of golf observed for some executives is consistent with a strong leisure component – the CEOs in the top decile played a minimum of 37 rounds per fiscal year, which is difficult to reconcile with value maximizing behavior. In fact, 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.[15] We document further evidence supporting the leisure focus of golf by studying the change in golf following CEOs' retirements. In a sample of 80 CEOs that exit their firm during the sample period, we find that the average number of rounds increases from 14 during the last year of employment to 20 in the year following the retirement. This difference is statistically significant at the 1% level and represents an increase of 42%, which is consistent with CEOs allocating more time to leisure when they are no longer employed fulltime. To the extent that some rounds in our sample could be deemed as having a valid business propose, it would bias against finding proposed results.[16] Additionally, we attempt to control for the importance of golf in business by including the number of acquisitions and prior sales growth, as well as industry and year indicator variables in multivariate analyses.[17]

3.3 Variable Construction and Summary Statistics

The primary variables used to measure CEO incentives in this study are *CEO Percent Ownership* and *CEO Wealth-Performance Sensitivity* (*CEO WPS*). Jensen and Murphy (1990) argue that percent ownership is the most appropriate variable to measure a CEO's incentives

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 curtail phone usage on the course.

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

[16] In this study, we assume that golf frequency is inversely related to the effort provided the firm. If the 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, that effort destroys value, and that compensation would adjust downward as effort increases.

[17] We use the number of acquisitions and prior sales growth to control for settings where CEO networking and negotiating are expected to most valuable.

from stock ownership; we collect *CEO Percent Ownership* from Execucomp for each CEO. CEOs also hold significant numbers of options, which provide financial incentives for increasing shareholder wealth. To measure the combined incentive strength of stock and options we use *CEO WPS*, which is defined as the change in dollar value of the executive's firm-specific wealth associated with a one thousand dollar change in firm value and is calculated as:

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

For each outstanding option, we calculate an individual delta based on time to expiration, strike price, the 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. The measure of WPS used in this study is analogous with the pay for performance from direct stock holdings and options as calculated in Jensen and Murphy (1990).

Table 1 provides summary statistics for observable firm and CEO characteristics for the sample of firm years linked to golfing records ("the golfer sample") and the overall sample of S&P 1500 firm years over the period of 2008 to 2012. The golfer sample consists of large, profitable firms with highly compensated CEOs. The mean values of sales, enterprise value, MVE, and ROA are larger for the golfing sample, but the importance of these differences is tempered by the fact that 48% of observations in the golfer sample are for S&P 500 firms versus 27% for the overall universe.[18] For example, the average firm in the S&P 1500 universe has a MVE of $7.2 billion versus $11.6 billion in the golfer sample. When you restrict the

[18] In untabulated results, we compare the sample of firm characteristics of golfing CEOs from S&P 500 firms to the universe of S&P 500 firms don't find significant differences; similarly, the differences between the non-S&P 500 golfing sample and the universe of non-S&P 500 firms are insignificant with the exception of MTB, which is slightly lower for the golfing sample and significant at the 10% level.

samples to firms in the S&P 500, the overall average MVE is $22.4 billion and the average for the golfer sample is $22.2 billion.

The leisure activities of CEOs are likely to vary based on personal preferences and we have identified a group with a revealed preference for golf. Because of the inability to observe the leisure consumption of CEOs without records in the GHIN system, we focus my analyses on the sample of CEO-years that are matched to golfing records. Figure 2 shows the distribution of the sample of firm years linked to golfing records and the S&P 1500 universe by Fama-French 12 industry and shows that financial services and manufacturing appear to be overweight in the golfing sample and business equipment is underweight. To account for these systematic differences in the distribution of industries, we include indicator variables for Fama-French 48 industries in all multivariate regressions.

There is significant variation in the time spent playing golf by CEOs, which is highlighted in Table 2, but it is clear that that many CEOs devote a significant amount of time to playing golf. 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 – based on these definitions approximately 57 percent of the CEOs in my sample would be considered a core or avid golfer. In the top quartile of CEO-year observations, the minimum number of rounds is 22, which represents a time commitment of 88 to 132 hours annually – this is 2 to 3 weeks of work based on a 40-hour workweek.[19] Additionally, the amount of time spent practicing is likely to be correlated with the frequency of play, such that the time allocated by the most frequent golfers is significantly higher than suggested by their

[19] This represents a lower bound of the time commitment. It is common for golfers to omit rounds from the GHIN system when they only play 9 holes, practice rounds, and rounds where the format does not follow regulation play (i.e. best ball, scramble, match-play). Additionally, many individuals spend time hitting range balls and practicing chipping/putting on days where they don't play any golf.

play alone. This is evident as the average handicap drops from 16.6 in the first quartile to 12.4 in the fourth quartile – a change from the 31% percentile to the 52% percentile.[20]

Figure 3 provides another interesting perspective into the leisure/labor choice during periods of economic uncertainty, as the average number of rounds played is significantly lower in 2008 than over the remainder of the sample period. There is also a slight dip in 2011, a year in which stock returns were largely flat and much lower than the returns in 2009, 2010, or 2012.

We begin our analysis by looking at univariate comparisons of firm characteristics across CEO-years with above/below median golf in Table 3. The median frequency of golf for all CEO-years is 10 rounds, thus we divide the golfer sample into those observations with 0 to 10 rounds and those with 11 or more rounds. Overall, there are very few statistical differences in firm characteristics between the samples of above- and below-median frequency golfers as the mean values of *Sales, Enterprise Value, MTB, MVE, Tobin's Q, Leverage, ROA, Institutional Ownership, E-Index,* and *Blockholder* do not have differences that are statistically significant. The most striking pattern is the difference in compensation measures between the two samples as mean values for *Bonus*, *Total Current Compensation, Total Compensation* are economically and statistically lower for the sample with above median frequency. The average total compensation is $1.695 million higher for the below median sample, an increase of nearly 30%. Additionally, the financial incentives of the CEOs in the above median sample appear lower than the sample of less frequent golfers as the *Wealth Performance Sensitivity* is $8.23 lower (p-value 0.081) and the *CEO Ownership* is .845% lower (p-value = 0.066).

Overall, this pattern highlights an important relationship between incentives, compensation, and leisure consumption across firms that appear otherwise similar. CEOs with stronger financial incentives play less golf than CEOs with weaker financial incentives, which

[20] 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/

is consistent with financial incentives aligning the interests of CEOs with shareholders. The negative relationship between the frequency of golf and compensation is consistent with the conjecture that compensation should be correlated with the effort required of the job. This analysis does not distinguish between a CEO that recorded 11 rounds and one that recorded 30, but there may be important variation in firm and governance characteristics across these observations. To provide a more thorough analysis of the relationship between CEO effort and corporate governance, we utilize a linear regression framework in the next section.

4. Results

4.1 Determinants of CEO Leisure Consumption

To analyze the importance in governance mechanisms in the labor/leisure decision of CEOs, we perform a series of linear regressions using the natural log of the number of rounds played annually as the dependent variable. Table 4, Panel A presents coefficient estimates from simple univariate regressions of golf frequency on CEO incentives and measures of internal and external monitoring. We document a significant negative relationship between existing equity-based incentives and the frequency of golf, which indicates that equity based incentives are effective in aligning the interest of the CEO with shareholders. The coefficient estimates on *Institutional Ownership* and *Board Independence* are negative, but not significant. Overall, this indicates that financial incentives and monitoring are both important in the labor/leisure choice of CEOs.

We utilize a multivariate framework in Panel B of Table 4, which provides coefficient estimates of linear regressions of CEO golf frequency on measures of incentives and monitoring along with observable firm and CEO characteristics. Across all specifications, we include CEO- and firm-level variables to control for differences in preferences and job complexity that might influence the consumption of leisure. We draw from the executive

compensation literature to determine the appropriate control variables, as executive compensation should reflect the effort provided by the CEO. Following Core, Holthausen, and Larcker (1999), we include the natural log of beginning of period enterprise value and the natural log of the ratio of market-value to book-value to control for differences related to 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.[21] We control for past stock returns and accounting profitability to account for prior performance in the labor/leisure decision. To control for firms where golf may be important for business negotiations, we include sales growth and the number of acquisitions. We include firm age to account for the stage of the business cycle of the firm and CEO tenure to control for horizon concerns that may impact the leisure consumption of CEOs (Gibbons and Murphy, 1992). We include year and Fama-French 48 industry indicator variables to control for unobserved differences across the sample period and across firms in different industries.

Overall, very few control variables are significant determinants of CEO leisure consumption, which is consistent with the similar firm characteristics shown between observations with high and low golf as shown in Table 3.[22] The coefficient on *Enterprise Value* is negative, but lacks significance in all specifications, which is consistent with larger firms requiring more effort from their CEOs. There is a positive and significant correlation between firm age and leisure consumption, with CEOs at older firms devoting larger amounts of time to golf. This could reflect a reduced workload for top executives at older firms or it could reflect a shift away from traditional hobbies for CEOs at younger, new-economy firms.

[21] 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.

[22] To facilitate presentation of results, we suppress control variables with insignificant coefficient estimates. These variables include *Returns$_{t-1}$, Leverage, Return Volatility$_{t-1}$, Sales Growth, and Number of Acquisitions.*

In the first two specifications of Table 4, Panel B we analyze the relationship between CEO incentives and leisure consumption using the percent of equity owned by the CEO and the sensitivity of the CEO's firm-specific wealth to changes in firm value. In all regressions we use lagged values of right hand side variables to help establish causality. In the first specification, the variable of interest is *Wealth-Performance Sensitivity*. This variable captures the dollar change in the CEO's firm specific wealth from a $1,000 change in firm value. The coefficient on *Wealth-Performance Sensitivity* is -0.00218 and is significant at the 1% level. We document similar results in the second specification when using *CEO Ownership*, which is equal to the CEOs equity ownership percentage excluding options. The coefficient on *CEO Ownership* is -0.0266 and is significant at the 1 percent level, which indicates that CEOs with a larger equity stake allocate less time to leisure consumption. This pattern is consistent with arguments of Jensen and Meckling (1976), where CEOs allocate more effort to managing firm assets when they bear a higher cost of shirking. Although highly consistent with theory, this is the first evidence that day-to-day CEO leisure consumption is influenced by ownership/incentives.

Monitoring the CEO is another tool that can be used to reduce the agency problem faced by shareholders (Jensen and Meckling, 1976). Shareholders with small stakes have little incentive or ability to monitor managers (Shleifer and Vishny, 1986) and generally abdicate their responsibility to directors, which may have a conflict of interest of their own. Presumably, the strength of monitoring by the board is a function of the fraction of members that are independent. Additionally, concentrated institutional owners and blockholders have the ability and incentive to reduce agency costs. To analyze the effectiveness of monitoring by outsiders, we use the percentage of the firm that is owned by institutions (*Institutional Ownership*) and an indicator that is equal to one if a blockholder owns 5 percent or more of the firm's stock (*Blockholder*). In general, we find that monitoring by concentrated owners is associated with

lower leisure consumption by the CEO. The coefficient on *Institutional Ownership* is -0.157 and the coefficient on *Blockholder* is -0.0908, but neither is significant at conventional levels. These results suggest that outside equity holders limited ability to shape the leisure consumption of CEOs. To analyze the monitoring by the board of directors, we include *Board Independence*, which represents the fraction of the board composed of independent directors. The coefficient estimate for *Board Independence* is -1.603 with a p-value of 0.0208, which is consistent with reduced leisure consumption for CEOs with more independent boards, where the strength of monitoring is presumably stronger. In the final two specifications, we include measures of financial incentives and monitoring together and confirm that equity based incentives and monitoring both influence the labor/leisure decisions of CEOs.

4.2 Leisure Consumption and Firm Performance

4.2.a – The Level of Firm Performance

Analogous to the lack of evidence linking CEO effort to incentives and monitoring, the current literature provides very little evidence that CEO effort is correlated with firm performance. Shirking by the CEO is a large presumed cost of the agency problem (Jensen and Meckling, 1976) and distracted CEOs have been associated with low performance in a handful of studies (Bennedsen et al., 2007; Malmendier and Tate, 2009). To analyze the relationship between CEO leisure and firm performance, we categorized firm-years into quartiles based on the frequency of golf by the CEO. The primary variable of interest is *Frequent Golfer (Q4)*, which is an indicator variable equal to 1 if the CEO played 22 or more rounds during the year.

Although we have documented strong evidence that CEO effort is influenced by both equity based incentives and strength of monitoring, it remains an open question if high levels of observed leisure are associated with poor performance. Recent research has documented that CEO turnover is tied to the performance of the firm, which could provide a powerful incentive for CEOs to curtail their leisure if it negatively impacts firm performance (Jenter and Lewellen,

2010). Table 5, Panel A provides insight into correlation between firm performance and CEO leisure consumption, where performance is measured by ROA, industry adjusted ROA, and ROE. Using all three measures, firm performance is lower on average for firm-years where the CEOs allocated the most time to leisure, as the average values for *Quartile* 4 are smaller than *Quartiles 1* to *3*. The underperformance is economically significant as the mean ROA for the firms in *Quartile 4* is 131 basis points lower than other firms in the sample (p-value = 0.019). This provides preliminary evidence that shirking by the CEO is associated with weaker performance, but this setting does not control for firm characteristics that might influence firm performance. To provide a more robust analysis of the relationship between leisure and firm performance, we utilize multivariate linear regressions that control for firm and executive characteristics that impact the performance of the firm. In all specifications we include *Enterprise Value* and *MTB* to account for varying profitability that is driven by size and growth opportunities and we include *Return Volatility* to measure the relative risk of the firm. We include *Board Independence* and *Institutional Ownership* to account for performance differences that are driven by the strength of monitoring. We control for past profitability using lagged values of the dependent variable and capture the different levels of incentives using *CEO Ownership*. Additionally, we control for time- and industry-specific unobservable characteristics using year and Fama-French 48 industry indicator variables.

Panel B of Table 5 contains the coefficient estimates from the multivariate analyses of firm performance. In the first specification, firm performance is measured by ROA, in the second specification we use industry-adjusted ROA, and in the third specification we use ROE. We find higher returns for firms with greater growth options and lower returns for firms with higher stock return volatility; also, we find that past performance is closely tied to future performance when measured using ROA or industry-adjusted ROA. We document lower returns for firms with higher leverage as interest expense reduces the earnings available to

shareholders. We do not find any significant differences in performance from CEO equity based incentives or institutional ownership monitoring, but we do document that firms where the same individual serves as both CEO and Chairman of the Board have lower return on assets.

Across all three specifications, the variable of interest is *Frequent Golfer (Q4)*, which is an indicator variable that equals 1 for firm-year observations where the CEO recorded 22 or more rounds in the GHIN database. In the first specification, the coefficient on *Frequent Golfer (Q4)* is -0.0139 and is significant at the 1% level, which is economically significant as well since the sample mean ROA is 5.22%. This result is confirmed using industry-adjusted ROA in the second specification, where the coefficient on *Frequent Golfer (Q4)* is -0.0144 and significant at the 1% level. Switching to ROE in the third specification provides further evidence of the relationship between shirking and underperformance. In this specification the coefficient on *Frequent Golfer (Q4)* is -0.0288 (p-value = 0.0407). These results confirm that shirking by the CEO is strongly correlated with weaker firm performance and emphasizes the importance of strong monitoring and incentives to ensure that CEOs provide sufficient effort to maximize shareholder value.

4.2.b – Firm Performance when CEO Effort is Most Important

A potential concern regarding the relationship between firm performance and CEO leisure consumption is the direction of causality. A potential interpretation of the negative relationship between high levels of leisure consumption and firm performance is that CEOs choose to allocate a significant amount of time to leisure when they expect firm performance to be poor, possibly because there are few projects to evaluate.

To address this concern, we look at the relationship between firm performance and CEO leisure consumption in firms where CEO effort is expected to be most valuable. If CEO effort is driving firm performance, then high levels of leisure should have the greatest effect on firms where effort is expected to be most valuable. Conversely, if CEOs are simply reacting

to poor expected performance, then the relationship between operating performance and leisure consumption should be relatively constant across different types of firms. The existing literature documents stronger incentives for CEOs in high growth (Smith and Watts, 1992) and deregulated industries (Hubbard and Palia, 1995), which suggests that CEO effort is most valuable in these industries.

We analyze the differential effect of leisure consumption on firm performance for firms based on industry growth and regulation. Firms in high growth industries are expected to have a greater number of investment opportunities that merit evaluation and thus have a higher demand for CEO effort. Firms in low growth industries are expected to focus on the efficiency of existing operations, which requires less effort from the CEO. Similarly, firms in non-regulated industries have a greater demand for CEO effort because the CEO has greater influence over the direction of the firm.

We begin this analysis by analyzing the relationship between CEO leisure consumption and firm performance in high and low growth industries in Table 6, Panel A. We construct three indicator variables to perform this analysis. The first variable, *High Growth Industry*, is equal to 1 if the firm is in an industry where the industry median sales growth is above the overall median sales growth. The second variable, *Frequent Golfer (Q4) – High Growth*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a high growth industry. The final variable, *Frequent Golfer (Q4) – Low Growth*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a low growth industry. The basic regression framework is consistent with the main analyses of firm operating performance found in Table 5, Panel B. In all 3 specifications, the coefficient on *Frequent Golfer (Q4) – High Growth* is negative and significant, while the coefficient estimate for *Frequent Golfer (Q4) – Low Growth* is negative and insignificant. This analysis reveals that the relationship between

high levels of leisure consumption and firm performance is driven by firms in high growth industries.

We also look at the relationship between firm performance and CEO leisure consumption in regulated and non-regulated industries in Table 6, Panel B. We construct three indicator variables to perform this analysis. The first variable, *Regulated Industry*, is equal to 1 if the firm is in one of the following Fama-French 48 industries: Utilities, Banking, Insurance, or Trading. The second variable, *Frequent Golf (Q4) - Regulated*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a regulated industry. The final variable, *Frequent Golf (Q4) – Non-Regulated*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a non-regulated industry. We document a negative and significant coefficient for *Frequent Golf (Q4) – Non-Regulated* across all 3 specifications, while *Frequent Golf (Q4) – Regulated* has an insignificant coefficient. For both *Frequent Golf (Q4) – Non-Regulated* and *Frequent Golfer (Q4) – High Growth*, the magnitudes of the coefficients are approximately 100 basis points larger than the coefficient estimate for *Frequent Golfer (Q4)*, which indicates that CEO effort is more important in these industries and deviations from optimal levels of CEO effort are particularly damaging. These results do not support the argument that CEOs choose to play more golf when they expect firm performance to be poor.

4.2.c – Endogeneity

It is certainly possible that the relationship between CEO leisure and firm performance is endogenous. If unobservable/omitted variables drive both golf play and firm performance, such a relationship would certainly cloud inference in our study. In order to address this potential endogeneity bias we perform two separate analyses. The first implements a first-difference framework in order to alleviate concerns that unobserved CEO quality might be driving the relationships that we document. In the second approach, we employ two-stage least

squares and use the frequency of sunny days as an instrument for the amount of golf that a CEO plays. The results from both analyses support our original findings.

The first possibility that we consider is that 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. We use a first-difference framework to address this potential bias and report our results in Table 7. In this framework, the dependent variable and independent variables are measured as differences across firm year observations. In the first specification, the dependent variable is *Change in ROA*, which is constructed as $ROA_t - ROA_{t-1}$. The second specification uses *Change in Industry Adjusted ROA* and the third specification uses *Change in ROE,* these variables are calculated in the same manner as *Change in ROA.* In panel A of Table 7 the variable of interest is *Change in Frequent Golfer (Q4)* and is equal to *Frequent Golfer (Q4)*$_t$ - *Frequent Golfer (Q4)*$_{t-1}$. This allows *Change in Frequent Golfer (Q4)* to take the value of -1, 0, and 1. In Panel B the variable of interest is *Change in Rounds Played,* which is equal to *Number of Rounds Played*$_t$ – *Number of Rounds Played*$_{t-1}$.

We document that firm performance declines after the enterprise value of the firm grows and changes in the market-to-book ratio lead changes in firm performance. Additionally, firms appear to experience performance declines following increases in return volatility. In Panel A, the coefficient on *Change in Freq. Golfer (Q4)* is negative and significant across all specifications. In the first specification, the coefficient is -0.0128 (p-value=0.007), which indicates that firm performance declines significantly when the CEO begins allocating a large amount of time to golf and that firm performance improves significantly when the CEO stops allocating a large amount of time to golf. The inferences are similar when using *Change in Industry Adjusted ROA* and *Change in ROE* as the dependent variable. These results are

confirmed in Panel B as the coefficient on *Change in Rounds Played*, is negative and significant across all specifications. Overall, these results indicate that CEO effort is important for firm performance and the relationship is not driven by low quality CEOs allocating large amounts of time to leisure consumption.

The second approach that we use to address potential endogeneity problems in our study is two-stage least squares. In order to implement this analysis we require an instrumental variable that is correlated with the amount of golf CEOs choose to play, but is uncorrelated with firm profitability (ROA). We believe a valid instrument in this particular setting is the number of clear days in the state in which the company's headquarters are located.

We collect number of clear days in each year for each state from the National Oceanic Atmospheric Administration (NOAA). In Table 8 we present the first stage regression where CEO golf play (an indicator for frequent golf play) is the dependent variable and independent variables include firm and CEO characteristics used in previous regressions, as well as the *Number of Clear Days* in a CEO's home state. The coefficient estimate on *Number of Clear Days* is 0.0009 (p-value=0.0395) and the regression r-squared is 0.188.

In the second stage regression we repeat our primary regression analysis that was presented in Table 5. In particular, we use ROA as our dependent variable and include independent variables for firm and CEO characteristics that are identical to those used in the first stage regression. In addition, we include the fitted value for frequent golfer (Quartile 4) from the first stage regression. We find that the coefficient estimate for the fitted value of Quartile 4 is -0.235 (p-value=0.0595) and is consistent with all of our primary results.

4.3 CEO Leisure Consumption and Compensation

Ideally, CEO compensation should help reduce the agency problem faced by shareholders by providing incentives that help align the interests of the CEO with shareholders. The growth in CEO compensation and the relatively weak incentives established by some

compensation packages provide ammunition for parties who feel that compensation may reflect a cost of the agency problem (Bebchuk and Fried 2003). Effective directors should be able to monitor the effort provided by the CEO and set compensation accordingly. The univariate results in Table 3 provide preliminary evidence that compensation is correlated with leisure consumption as the average bonus, total current compensation, and total compensation is significantly lower for the sample of observations where the CEO recorded more than 10 rounds in the GHIN system over the fiscal year. To provide a more robust analysis of this relationship, we rely on linear regressions using CEO total compensation as the dependent variable in Table 10.

In these regressions, we include a number of control variables to capture differences in compensation that arise from performance and job complexity. Total compensation is positively correlated with prior year stock returns and sales growth, consistent with rewarding CEOs for prior performance. Firm age is positively associated with CEO compensation, while CEO ownership is negatively associated with compensation, which is consistent with the existing literature. Additionally, we include the compensation from the prior year to determine if there is incremental information from prior leisure consumption in the current year compensation decision.

We use three different independent variables to measures the leisure consumption of the CEO in the previous year. The first, *Above Median Frequency*$_{t-1}$, is an indicator variable that equals 1 if the CEO recorded 11 or more rounds in the GHIN system in the prior fiscal year. The second, *Quartile* $_{t-1}$, takes the value of 1 to 4 to correspond with quartile that the CEO's frequency of golf based on the overall distribution. Finally, *Number of Rounds*$_{t-1}$ is equal to the number of rounds recorded by the CEO in the GHIN system in the prior fiscal year. The coefficient estimates for *Quartile* $_{t-1}$ *and Number of Rounds*$_{t-1}$ are negative and significant in which indicates that CEOs earn less compensation when they allocate more time to leisure.

The difference in compensation is economically significant – the coefficient on *Number of Rounds$_{t-1}$* is -13.77, which indicates that compensation is $13,770 lower for every round of golf played. This is consistent with directors monitoring and setting compensation based on the effort provided to the firm by the CEO.

In addition to setting the level of compensation, directors are responsible for implementing a compensation structure that aligns the incentives of the CEO with shareholders. Core and Guay (1999) provide evidence that directors use equity grants in response to deviations from the optimal level CEO incentives; additionally the authors document that CEO incentives increase over her tenure. High levels of leisure consumption by the CEO potentially indicate that the existing level of incentives are too weak and need to be adjusted via equity based compensation grants. Adjustments to CEO incentives are most likely to be necessary early in her tenure, because her existing level of incentives are likely to be low and the directors of the firm learn more about her preferences and abilities.

To measure the strength of incentives from CEO compensation, we use pay-for-performance sensitivity (PPS) which measures the change in the value of the CEO's equity based compensation for the $1,000 change in firm value. Table 10 provides coefficient estimates from linear regressions of PPS on prior leisure consumption and an array of control variables. Consistent with prior literature, we document lower PPS at larger firms and increased PPS at firms with greater risk. We also find that PPS is significantly lower for new CEOs, which is consistent with Core and Guay (1999). We control for the tenure of the CEO using either tenure fixed effects or indicator variables that are constructed using the quartile breakpoints of the sample distribution of tenure (*Tenure = 2 to 5 years, Tenure = 6 to 8 years, Tenure = 9 to 13 years)*.

We measure the prior leisure consumption of the CEO using *Ln(Number of Rounds$_{t-1}$)*, which captures the frequency of golf during the prior fiscal year. In the first specification, the

coefficient on *Ln(Number of Rounds$_{t-1}$)* is 0.00335 (p-value = 0.952); the results in the third specification are very similar. This indicates that overall, directors do not adjust incentives based on the consumption of leisure by CEOs. This is surprising, but it could reflect that existing incentives are optimal for many CEOs. Information asymmetry between the CEO and directors regarding talent and preferences is likely to be greatest early in the CEOs tenure, such that directors may make large adjustments to CEO incentives when leisure preferences are originally revealed.

To test this possibility, we interact the frequency of golf with the tenure quartile indicators, which allows the relationship between prior leisure and incentives to change over a CEO's career. The specifications with these interactions are found in columns 2 and 4 of Table 10. The coefficient estimate on *Ln(Number of Rounds$_{t-1}$) * Tenure_2_5,* is positive and significant at the 5% level, while the coefficient estimates on the other interactions are negative and insignificant. This indicates that directors provide strong incentive adjustments to CEOs early in their tenure after they reveal a strong preference for leisure consumption. Overall, this pattern is consistent the reduction of information asymmetries between CEOs and directors over time and directors adjusting incentives for CEOs based on revealed preferences.

5. Conclusion

Financial models generally assume that CEO effort is important for firm performance and costly for the CEO to provide, but difficulty in measuring effort has limited financial economists' ability to test these theories. We measure CEO leisure using the frequency of golf during the fiscal year, which provides a proxy for the level of effort provided by the CEO. This measure allows me to test the power of incentives and monitoring in CEOs labor/leisure decision, the importance of CEO effort in firm performance, and the existence of ex-post settling between the CEO and shareholders.

We document that CEO leisure consumption is lower for firms where the CEO has stronger incentives and/or monitoring by directors is strongest. This confirms the importance of these governance mechanisms in preventing shirking as predicted by Jensen and Meckling (1976). Specifically, we find that higher CEO ownership and stronger monitoring by independent directors are associated with lower leisure consumption. The relationship between CEO leisure consumption and corporate governance is incomplete without analyzing the performance of the firm. It's possible that existing incentives and governance are optimal for all firms, such that observed levels of leisure consumption are consistent with maximizing shareholder value. Alternatively, high levels of leisure consumption could reflect shirking by the CEO as a result from sub-optimal governance, which would result in underperformance. In this study, we find evidence of the latter as we also document that high levels of leisure by the CEO are associated with lower firm performance. We find that ROA is 1.39% lower in firm-years where the CEO played 22 or more rounds during the year, which is highly economically significant, as mean ROA is 5.22% over the sample period. The relationship between leisure and performance is most pronounced in high growth and non-regulated industries, which is consistent with the hypothesis that CEO effort is more important in these industries. This provides evidence that shirking by the CEO can represent a problem for shareholders.

Ideally compensation should reflect the effort of the CEO in generating returns for shareholders, but there is existing evidence that CEO compensation reflects rent seeking by powerful CEOs. We analyze the level and composition of CEO compensation as a function of prior leisure consumption and observable firm and CEO characteristics. We document lower compensation for CEOs who allocate more time to leisure consumption, which is consistent with directors observing the effort provided by the CEO. We find that PPS is higher for CEOs who allocate more time to leisure consumption, but this relationship is muted as the tenure of

the CEO increases. This is consistent with directors using strong incentives for as information asymmetries are reduced regarding the CEO's leisure preferences.

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Table 1 – Summary Statistics

Table 1 provides descriptive statistics for the fiscal years 2008 to 2012 for the intersection of firms covered by Execucomp, CRSP, and Compustat along with 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* were collected from Compustat; *MVE* was collected from CRSP; *Institutional Ownership* and *Blockholder* were collected from Thompson Financial; *E-Index* and *CEO/*Chairman were collected from Riskmetrics. *Salary, Bonus, Salary+Bonus, Total Compensation, WPS, CEO Ownership, and Age* were collected from Execucomp.

	S&P 1500 Firms					Golfing Sample				
	N	Mean	Median	P10	P90	N	Mean	Median	P10	P90
Sales	7,546	6,485	1,426	228	13,146	1,149	10,578	2,566	330	21,386
Enterprise Value	7,546	20,907	3,536	494	34,457	1,149	33,104	7,336	817	62,366
MVE	7,546	7,247	1,620	269	15,284	1,149	11,558	3,406	355	25,163
MTB	7,546	1.301	1.031	0.371	2.423	1,149	1.249	1.033	0.346	2.291
Tobin's Q	7,545	1.637	1.311	0.928	2.728	1,149	1.609	1.306	0.951	2.659
Leverage	7,546	22.10%	18.95%	0.00%	48.60%	1,149	23.78%	21.35%	0.09%	49.34%
ROA	7,546	4.37%	4.29%	-3.87%	14.32%	1,149	5.22%	4.54%	-0.96%	14.55%
Institutional Ownership	7,546	68.24%	78.27%	0.00%	100.00%	1,149	68.65%	78.03%	0.00%	99.91%
E-Index	6,575	3.11	3.00	2.00	5.00	1,063	3.12	3.00	2.00	5.00
Blockholder (1/0)	7,546	0.80	1.00	0.00	1.00	1,149	0.79	1.00	0.00	1.00
Firm Age	7,546	28	22	11	58	1,149	30	24	11	59
SP500	7,546	0.273	0.000	0.000	1.000	1,149	0.485	0.000	0.000	1.000
Salary	7,546	816	763	413	1,222	1,149	954	900	514	1,400
Bonus	7,546	231	-	-	450	1,149	470	-	-	680
Salary + Bonus	7,546	1,047	832	440	1,533	1,149	1,423	946	538	1,983
Total Compensation	7,546	5,363	3,635	962	11,442	1,149	7,322	5,240	1,377	14,114
CEO/Chairman (1/0)	6,566	0.54	1.00	0.00	1.00	1,063	0.62	1.00	0.00	1.00
WPS	7,545	27.74	9.51	1.29	64.75	1,149	22.34	8.03	1.33	51.52
CEO Ownership	7,546	1.98	0.35	0.00	4.50	1,149	1.49	0.32	0.00	3.20
Age	7,540	56	56	47	65	1,174	56	56	48	63
Tenure	7,546	9	7	3	18	1,174	10	8	2	19

Table 2 – Descriptive Statistics – CEO Golf Characteristics

Table 2, Panel A provides summary statistics for the overall sample of firm years from S&P 1500 firms for the 329 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	1,149	15.38	18.27	10	2	22	146
Number of Rounds - Away	1,149	4.34	8.33	1	0	6	76
Number of Rounds - Home	1,149	11.03	14.13	6	1	16	88

Panel B – Sample by Quartile

	N	Mean	S.D.	Median	P25	P75	Max
Quartile = 1							
Number of Rounds	296	0.44	0.76	0	0	1	2
Number of Rounds - Away	296	0.06	0.27	0	0	0	2
Number of Rounds - Home	296	0.38	0.70	0	0	1	2
Average Score	83	93.6	8.89	94	86	100	123
Quartile = 2							
Number of Rounds	296	6.27	2.35	6	4	8	10
Number of Rounds - Away	296	1.70	2.36	1	0	3	10
Number of Rounds - Home	296	4.56	2.62	4	3	6	10
Average Score	296	93.7	7.06	93	89	97	118
Quartile = 3							
Number of Rounds	262	15.21	2.98	15	13	17	21
Number of Rounds - Away	262	4.85	4.80	4	0	8	20
Number of Rounds - Home	262	10.36	5.29	11	7	14	21
Average Score	262	91.3	5.53	91	87	95	110
Quartile = 4							
Number of Rounds	295	39.65	19.74	33	26	48	146
Number of Rounds - Away	295	10.83	13.30	7	1	15	76
Number of Rounds - Home	295	28.82	16.53	25	20	35	88
Average Score	295	88.9	5.93	88	85	92	110

Table 3 – Univariate Comparison by Frequency of CEO Golf

Table 3 provides summary statistics for the sample of firm years from Execucomp for the 329 CEOs that were identified in the USGA's GHIN database for the period of 2008 to 2012 separately for the firm-years where the CEO recorded more than 11 rounds (*Above Median*) and where the CEO recorded 10 or less rounds (*Below Median*).

	Comparison of Mean Values			
	Above Median	Below Median	Difference	P-Value
Size & Age				
Sales	11,276	9,923	1,353	(0.537)
Enterprise Value	28,284	37,638	-9,354	(0.391)
MVE	11,139	11,953	-813.6	(0.760)
Leverage	23%	24%	-0.0088	(0.662)
SP500	50%	47%	0.0278	(0.579)
Firm Age	31.50	29.20	2.295	(0.177)
Valuation				
MTB	1.25	1.25	0.00873	(0.929)
Tobin's Q	1.64	1.58	0.0571	(0.548)
ROA	5%	5%	0.000582	(0.937)
Governance				
Institutional Ownership	68%	69%	-0.0109	(0.726)
E-Index	3.12	3.13	-0.00975	(0.925)
Blockholder (1/0)	79%	79%	0.00458	(0.906)
CEO/Chairman (1/0)	62%	63%	-0.0108	(0.824)
Compensation				
Salary	930	976.1	-45.81	(0.306)
Bonus	150	770.2	-620.2**	(0.028)
Salary + Bonus	1,080	1,746	-666.0**	(0.024)
Total Compensation	6,449	8,144	-1,695**	(0.025)
CEO Incentives				
WPS	18.100	26.330	-8.230*	(0.081)
CEO Ownership	1.059	1.904	-0.845*	(0.066)
Age	56.499	56.130	0.369	(0.537)
Tenure	9.747	10.100	-0.353	(0.615)

Table 4 – Determinants of CEO Golf Frequency

Table 4, Panel A presents results from univariate linear regressions of the frequency of golf on measures of CEO equity based incentives and strength of monitoring during the period of 2008 to 2012. *Ln (Number of Rounds)* is equal to the natural log of 1 plus 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; *Institutional Ownership* is the percentage of outstanding stock that is owned by 13-F reporting institutions; *Blockholder (1/0)* is an indicator variable that equals 1 if the a 13-F institution owns 5% or more of the outstanding equity; *Independent Director Count* is equal to the number of directors listed in Riskmetrics as independent. Panel B presents multivariate linear regressions that control for observable firm and CEO characteristics. Coefficient estimates from the following independent variables are suppressed in the interest of brevity: *Returns*$_{t-1}$*, Leverage, Return Volatility*$_{t-1}$*, Sales Growth, and Number of Acquisitions*. All specifications include year and Fama-French 48 industry indicator variables.

Panel A – Univariate Analysis of Golf Frequency

VARIABLES	Dependent Variable = Ln (Number of Rounds)				
WPS_{t-1}	-0.00234***				
	(<0.001)				
CEO Ownership$_{t-1}$		-0.0286***			
		(<0.001)			
Institutional Ownership			-0.105		
			(0.395)		
Blockholder (1/0)				0.0207	
				(0.823)	
Board Independence					-0.453
					(0.455)
Constant	2.179***	2.167***	2.196***	2.108***	2.400***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	1,149	1,149	1,149	1,149	1,063
R-squared	0.007	0.010	0.001	0.000	0.001

Panel B - Multivariate Analysis of Golf Frequency

VARIABLES	Dependent Variable = Ln (Number of Rounds)							
Enterprise Value	-0.0248	-0.0203	-0.0148	-0.0185	0.00436	-0.00718	-0.00566	-0.000195
	(0.432)	(0.514)	(0.632)	(0.551)	(0.897)	(0.830)	(0.872)	(0.996)
ROA_{t-1}	0.748	0.713	0.797	0.774	0.558	0.570	0.479	0.438
	(0.210)	(0.230)	(0.189)	(0.199)	(0.411)	(0.396)	(0.478)	(0.515)
Firm Age	0.136*	0.140*	0.127*	0.132*	0.177**	0.155**	0.181**	0.185**
	(0.0689)	(0.0617)	(0.0892)	(0.0787)	(0.0240)	(0.0454)	(0.0228)	(0.0195)
Tenure	0.0486	0.0551	-0.0151	-0.0146	-0.0605	-0.0413	-0.00718	-0.000160
	(0.510)	(0.452)	(0.827)	(0.832)	(0.390)	(0.614)	(0.934)	(0.999)
WPS_{t-1}	-0.00218***						-0.00202**	
	(0.008)						(0.0247)	
CEO $Ownership_{t-1}$		-0.0266***						-0.0250***
		(<0.001)						(0.00380)
Institutional Ownership			-0.157				-0.184	-0.202
			(0.193)				(0.403)	(0.358)
Blockholder (1/0)				-0.0908			0.0781	0.0923
				(0.316)			(0.623)	(0.563)
Board Independence					-1.603**		-1.542**	-1.648**
					(0.0208)		(0.0309)	(0.0209)
CEO/Chairman (1/0)						-0.0408	0.0106	0.0116
						(0.692)	(0.919)	(0.912)
Industry and Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Control Variables[a]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,149	1,149	1,149	1,149	1,063	1,063	1,063	1,063
R-squared	0.183	0.184	0.179	0.179	0.184	0.179	0.188	0.189

[a] – additional control variables include *MTB, $Returns_{t-1}$, Leverage, Return $Volatility_{t-1}$, Sales Growth, and Number of Acquisitions*

Table 5 – Firm Performance & CEO Effort

Table 5, Panel A provides mean levels of firm performance from 2008 to 2012 for the sample of SP1500 firms where the CEO's golf records were identified in the USGA's GHIN database. Average performance measures are reported separately based on the frequency of golf by the CEO during the fiscal year; *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 10 to 21 rounds; *Quartile 4* limited to observations with 22 or more rounds. Panel B 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; *FF48 Adj. ROA* is calculated as *ROA* minus the median *ROA* for firms in the same Fama-French 48 industry; *ROE* is calculated as earnings before extraordinary items over beginning of period book value of equity; *Frequent Golfer (Q4)* is an indicator variable that is equal to 1 if the CEO recorded 22 or more rounds during the fiscal year.

Panel A – Average Firm Performance by Golf Frequency

	ROA	FF48 Adj. ROA	ROE
Average Values			
Quartile 1 (0 to 2 rounds)	5.66%	1.28%	10.70%
Quartile 2 (3 to 10 rounds)	5.79%	1.20%	13.10%
Quartile 3 (11 to 21 rounds)	5.58%	1.20%	16.20%
Quartile 4 (22+ rounds)	4.37%	-0.004%	10.10%
Differences			
Quart. 4 - Quart. 1	-0.0129*	-0.0127*	-0.006
	(0.069)	(0.054)	(0.779)
Quart. 4 - Quart. 1, 2, 3	-0.0131**	-0.0123**	-.0312**
	(0.019)	(0.023)	(0.044)
Observations	1,131	1,131	1,111

Panel B – Multivariate Analysis of Firm Performance

VARIABLES	Dependent Variable = ROA	FF Adj. ROA	ROE
Enterprise Value	0.00245	0.00241	-0.00161
	(0.206)	(0.207)	(0.833)
MTB	0.0404***	0.0380***	0.0555***
	(<0.001)	(<0.001)	(0.002)
ROA_{t-1}	0.308***		
	(<0.001)		
FF Adj. ROA_{t-1}		0.333***	
		(<0.001)	
ROE_{t-1}			0.389***
			(0.002)
Return $Volatility_{t-1}$	-0.0331**	-0.0350**	-0.339***
	(0.039)	(0.025)	(<0.001)
Tenure	0.000851	0.000260	-0.00147
	(0.762)	(0.926)	(0.868)
SP500 (1/0)	0.00400	0.00406	0.0364
	(0.517)	(0.503)	(0.119)
Institutional Ownership	-0.00560	-0.00487	0.0594
	(0.469)	(0.528)	(0.147)
Leverage	-0.0487***	-0.0478***	-0.0922
	(<0.001)	(<0.001)	(0.393)
Board Independence	-0.0531*	-0.0529*	-0.135
	(0.0736)	(0.0739)	(0.118)
CEO Ownership	0.000217	0.000233	-0.00614
	(0.639)	(0.621)	(0.242)
CEO/Chairman (1/0)	-0.00669*	-0.00623	-0.000202
	(0.0885)	(0.108)	(0.991)
Frequent Golfer (Q4)	-0.0139***	-0.0144***	-0.0288**
	(0.00276)	(0.00157)	(0.0407)
Industry and Year FE	Yes	Yes	Yes
Observations	1,131	1,131	1,111
R-squared	0.524	0.481	0.376

Table 6 – Firm Performance & CEO Effort in High Growth and Non-Regulated 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; *Ind. Adj. ROA* is calculated as *ROA* minus the median *ROA* for firms in the same Fama-French 48 industry; *ROE* is calculated as earnings before extraordinary items over beginning of period book value of equity. In panel A, *High Growth Industry* is an indicator that equals 1 if the firm operates in an industry with above median sales growth; *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 Panel C, *Regulated Industry* is an indicator that equals 1 if the firm operates in the following Fama-French 48 Industries: Utilities, Banking, Insurance, or Trading; *Frequent Golf (Q4) - Regulated*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a regulated industry; *Frequent Golf (Q4) – Non-Regulated*, is equal to 1 if the CEO played 22 or more rounds during the year and the firm is in a non-regulated industry.

Panel A – Firm Performance in High and Low Growth Industries

VARIABLES	Return on Assets	Ind. Adj. Return on Assets	Return on Equity
Enterprise Value$_{t-1}$	0.00250	0.00243	-0.00127
	(0.191)	(0.202)	(0.866)
MTB$_{t-1}$	0.0390***	0.0379***	0.0516***
	(<0.001)	(<0.001)	(0.006)
Return on Assets$_{t-1}$	0.317***		
	(<0.001)		
Ind. Adj. Return on Assets$_{t-1}$		0.333***	
		(<0.001)	
Return on Equity$_{t-1}$			0.394***
			(0.00196)
Return Volatility$_{t-1}$	-0.0356**	-0.0358**	-0.348***
	(0.0262)	(0.0224)	(0.000179)
Tenure	0.000519	0.000261	-0.00275
	(0.855)	(0.927)	(0.755)
SP500 (1/0)	0.00320	0.00397	0.0334
	(0.603)	(0.514)	(0.145)
Institutional Ownership	-0.00590	-0.00500	0.0588
	(0.440)	(0.516)	(0.147)
Leverage$_{t-1}$	-0.0470***	-0.0474***	-0.0885
	(<0.001)	(<0.001)	(0.408)
Board Independence	-0.0490	-0.0529*	-0.119
	(0.101)	(0.0761)	(0.171)
CEO Ownership	0.000241	0.000230	-0.00612
	(0.590)	(0.624)	(0.238)
CEO/Chairman (1/0)	-0.00741*	-0.00658*	-0.00218
	(0.0577)	(0.0905)	(0.899)
High Growth Industry	0.0181***	0.00581	0.0661***
	(<0.001)	(0.168)	(<0.001)
Frequent Golfer (Q4) - High Growth	-0.0224***	-0.0195***	-0.0584***
	(<0.001)	(0.003)	(0.003)
Frequent Golfer (Q4) - Low Growth	-0.00520	-0.00889	0.000376
	(0.364)	(0.113)	(0.982)
Year and Industry Fixed Effects	Yes	Yes	Yes
Observations	1,131	1,131	1,111
R-squared	0.532	0.482	0.385
Q4 High Growth = Q4 Low Growth			

Panel B – Firm Performance in Regulated and Non-Regulated Industries

VARIABLES	Return on Assets	Ind. Adj. Return on Assets	Return on Equity
Enterprise Value$_{t-1}$	0.00222	0.00219	-0.00190
	(0.253)	(0.253)	(0.804)
MTB$_{t-1}$	0.0400***	0.0376***	0.0551***
	(<0.001)	(<0.001)	(0.00236)
Return on Assets$_{t-1}$	0.310***		
	(<0.001)		
Ind. Adj. Return on Assets$_{t-1}$		0.335***	
		(<0.001)	
Return on Equity$_{t-1}$			0.390***
			(0.00185)
Return Volatility$_{t-1}$	-0.0306*	-0.0326**	-0.335***
	(0.0542)	(0.0360)	(0.000340)
Tenure	0.00120	0.000597	-0.00111
	(0.670)	(0.830)	(0.901)
SP500 (1/0)	0.00520	0.00523	0.0381
	(0.402)	(0.390)	(0.106)
Institutional Ownership	-0.00555	-0.00482	0.0594
	(0.466)	(0.527)	(0.146)
Leverage$_{t-1}$	-0.0463***	-0.0454***	-0.0893
	(<0.001)	(<0.001)	(0.413)
Board Independence	-0.0540*	-0.0537*	-0.136
	(0.0673)	(0.0678)	(0.115)
CEO Ownership	0.000158	0.000175	-0.00621
	(0.730)	(0.706)	(0.237)
CEO/Chairman (1/0)	-0.00712*	-0.00665*	-0.000707
	(0.0709)	(0.0877)	(0.968)
Regulated Industry	-0.0192	-0.00626	0.0365
	(0.157)	(0.546)	(0.443)
Frequent Golfer (Q4) - Regulated	-0.0239***	-0.0242***	-0.0419*
	(<0.001)	(<0.001)	(0.0576)
Frequent Golfer (Q4) - Non-Regulated	0.00240	0.00151	-0.00801
	(0.515)	(0.675)	(0.611)
Year and Industry Fixed Effects	Yes	Yes	Yes
Observations	1,131	1,131	1,111
R-squared	0.529	0.485	0.377
Q4 Regulated = Q4 Non-Regulated			

Table 7 – Change in Firm Performance

Table 7, Panel A presents coefficient estimates from multivariate linear regressions of changes in firm performance on variables that control for past changes in performance and changes in observable firm and CEO characteristics. *Change in ROA* is calculated as $ROA_t - ROA_{t-1}$; *Change in Ind. Adj. ROA* is calculated as $Ind.\ Adj.\ ROA_t - Ind.\ Adj.\ ROA_{t-1}$; *Change in ROE* is calculated as $ROE_t - ROE_{t-1}$; *Change in Freq. Golfer (Q4)* is equal to $Freq.\ Golfer\ (Q4) - Freq.\ Golfer\ (Q4)_{t-1}$. Table 7, Panel B presents coefficient estimates from specifications that are identical to Panel A with the exception of the inclusion of *Change in Number of Rounds* in place of *Change in Freq. Golfer (Q4). 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.

Panel A – First Difference – Firm Performance & Frequent Golf

VARIABLES	Change in ROA	Change in Ind. Adj. ROA	Change in ROE
Constant	0.0046**	0.0026	0.0129*
	(0.0457)	(0.246)	(0.0676)
Change in Ent. $Value_{t-1}$	-0.0286***	-0.0295***	-0.0641*
	(0.007)	(0.00684)	(0.0920)
Change in MTB_{t-1}	0.0749***	0.0537***	0.102**
	(<0.001)	(<0.001)	(0.0110)
Change in Return $Vol._{t-1}$	-0.101***	-0.0253	-0.724***
	(0.008)	(0.499)	(<0.001)
Change in ROA_{t-1}	-0.211***		
	(<0.001)		
Change in Ind. Adj. ROA_{t-1}		-0.188***	
		(0.002)	
Change in ROE_{t-1}			-0.0957
			(0.198)
Change in Instit. Ownership	-0.0405	-0.0299	0.0622
	(0.242)	(0.351)	(0.567)
Change in $Leverage_{t-1}$	0.0218	0.0235	0.558
	(0.466)	(0.432)	(0.101)
Change in Board Independence	0.0412	0.0123	-0.182
	(0.521)	(0.823)	(0.610)
Change in CEO Ownership	-0.0009	-0.0019*	-0.0257
	(0.252)	(0.0956)	(0.281)
Change in CEO/COB	-0.0009	0.0074	0.0313*
	(0.888)	(0.247)	(0.0558)
Change in Freq. Golfer (Q4)	-0.0128***	-0.0130***	-0.0358**
	(0.007)	(0.0035)	(0.012)
Observations	915	915	900
R-squared	0.138	0.090	0.117

Panel B – First Difference – Firm Performance & Number of Rounds

VARIABLES	Change in ROA	Change in Ind. Adj. ROA	Change in ROE
Constant	0.00467**	0.00266	0.0131*
	(0.045)	(0.239)	(0.064)
Change in Ent. Value$_{t-1}$	-0.0281***	-0.0291***	-0.0640*
	(0.008)	(0.00747)	(0.092)
Change in MTB$_{t-1}$	0.0744***	0.0533***	0.101**
	(<0.001)	(5.82e-06)	(0.012)
Change in Return Vol.$_{t-1}$	-0.102***	-0.0263	-0.726***
	(0.007)	(0.481)	(<0.001)
Change in ROA$_{t-1}$	-0.216***		
	(<0.001)		
Change in Ind. Adj. ROA$_{t-1}$		-0.193***	
		(0.002)	
Change in ROE$_{t-1}$			-0.0955
			(0.199)
Change in Instit. Ownership	-0.0398	-0.0292	0.0636
	(0.254)	(0.364)	(0.558)
Change in Leverage$_{t-1}$	0.0236	0.0253	0.564*
	(0.431)	(0.400)	(0.098)
Change in Board Independence	0.0431	0.0141	-0.177
	(0.500)	(0.798)	(0.619)
Change in CEO Ownership	-0.000892	-0.00190*	-0.0257
	(0.237)	(0.0892)	(0.280)
Change in CEO/COB	0.000109	0.00842	0.0342**
	(0.986)	(0.177)	(0.039)
Change in Number of Rounds	-0.00064**	-0.00059**	-0.0015***
	(0.0121)	(0.0245)	(0.009)
Observations	915	915	900
R-squared	0.142	0.094	0.117

Table 8 – 2 Stage Least Squares

Table 10 presents coefficient estimates from 2SLS regressions where the first stage is used to predict the indicator for frequent golfer and the second stage uses return on assets as the dependent variable. The *number of clear days* is used as an instrumental variable and is calculated as the average number of sunny days in the state where the firm maintains its headquarters. The sample consists of SP1500 firms from 2008 to 2012 where the CEOs golf records were identified in the USGA's GHIN database.

VARIABLES	1st Stage Quartile 4 (1/0)	2nd Stage Return on Assets
Enterprise Value$_{t-1}$	-0.0572***	-0.0104
	(<0.001)	(0.189)
MTB$_{t-1}$	-0.0314	0.0367***
	(0.254)	(<0.001)
Return on Assets$_{t-1}$	0.0847	0.317***
	(0.725)	(<0.001)
Return Volatility$_{t-1}$	0.104	-0.00194
	(0.416)	(0.957)
Tenure	0.0653**	0.0158
	(0.0135)	(0.150)
SP500 (1/0)	0.218***	0.0527*
	(<0.001)	(0.0678)
Institutional Ownership	-0.00616	-0.00696
	(0.892)	(0.543)
Leverage$_{t-1}$	-0.0833	-0.0788***
	(0.341)	(0.00313)
Board Independence	-0.0385	-0.0614
	(0.871)	(0.295)
CEO Ownership	-0.00643***	-0.00133
	(0.003)	(0.207)
CEO/Chairman (1/0)	-0.0234	-0.0123
	(0.484)	(0.179)
Number of Clear Days	0.000882**	
	(0.0395)	
Quartile 4 (IV = Clear Days)		-0.235*
		(0.0595)
Industry and Year Fixed Effects	Yes	Yes
Observations	1,094	1,094
R-squared	0.188	

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9 – CEO Compensation

Table 8 presents multivariate analyses of CEO compensation of frequency of golf and observable firm and CEO characteristics. *Above Median Golf Freq$_{t-1}$* is an indicator variable equal to 1 if the firm's CEO recorded 11 or more rounds in the prior fiscal year; *Quartile$_{t-1}$* ranges from 1 to 4 – it is equals to 1 for observations where the CEO played 0 to 2 rounds in the prior fiscal year; it is equals to 2 for observations where the CEO played 3 to 10 rounds in the prior fiscal year; it is equals to 3 for observations where the CEO played 11 to 21 rounds in the prior fiscal year; and it is equals to 4 for observations where the CEO more than 21 rounds in the prior fiscal year. *Ln(Number of Rounds$_{t-1}$)* is equal to the natural log of the number of rounds recorded by the CEO in the prior fiscal year.

VARIABLES	Dep. Var. = Total Compensation		
Enterprise Value$_{t-1}$	0.00155	0.00146	0.00146
	(0.533)	(0.558)	(0.557)
MTB$_{t-1}$	-632.3***	-629.2***	-624.2***
	(0.001)	(0.001)	(0.002)
Returns$_{t}$	212.1	208.2	200.4
	(0.435)	(0.446)	(0.461)
Returns$_{t-1}$	1,070***	1,061***	1,046***
	(<0.001)	(<0.001)	(<0.001)
Sales Growth	2,915***	2,933***	2,905***
	(<0.001)	(<0.001)	(<0.001)
Return Volatility$_{t-1}$	-1,839*	-1,777*	-1,783*
	(0.055)	(0.061)	(0.062)
Firm Age	16.60**	16.94**	16.32**
	(0.034)	(0.031)	(0.038)
Leverage$_{t-1}$	220.3	188.4	129.9
	(0.743)	(0.778)	(0.846)
Institutional Ownership	546.2	532.9	559.1
	(0.172)	(0.181)	(0.161)
Board Independence	494.5	412.2	196.5
	(0.822)	(0.852)	(0.929)
E-Index	-330.2***	-340.1***	-347.2***
	(0.002)	(0.002)	(0.001)
SP500 (1/0)	2,159***	2,185***	2,184***
	(<0.001)	(<0.001)	(<0.001)
CEO Ownership	-49.84**	-50.61***	-50.85**
	(0.014)	(0.001)	(0.01)
CEO/Chairman (1/0)	433.3*	438.4*	444.9*
	(0.088)	(0.084)	(0.079)
Ln(Tenure)	-39.43	-44.29	-36.85
	(0.869)	(0.852)	(0.877)
Total Compensation$_{t-1}$	0.568***	0.567***	0.565***
	(<0.001)	(<0.001)	(<0.001)
Above Median Freq.$_{t-1}$	-247.8		
	(0.294)		
Quartile$_{t-1}$		-180.4*	
		(0.070)	
Number of Rounds$_{t-1}$			-13.77**
			(0.011)
Year and Industry Fixed Effects	Yes	Yes	Yes
Observations	953	953	953
R-squared	0.711	0.712	0.712

Table 10 – Pay Performance Sensitivity

Table 9 presents coefficient estimates from multivariate regressions of pay performance sensitivity on prior golf frequency and other observable firm and CEO characteristics. The sample consists of SP1500 firms from 2008 to 2012 where the CEOs golf records were identified in the USGA's GHIN database. The dependent variable, *Pay Performance Sensitivity*, is equal to the dollar value change in the CEOs stock and option portfolio for a $1,000 change in firm value. *Tenure = 2 to 5 Years* is an indicator that is equal to 1 for firms-years were the tenure of the CEO 2 to 5 years; *Tenure = 6 to 8 Years* and *Tenure = 9 to 13 years* are similarly constructed. *Ln(Number of Rounds$_{t-1}$)* is equal to the natural log of the number of rounds recorded by the CEO in the prior fiscal year. *Ln(Number of Rounds$_{t-1}$)*Tenure_2_5, Ln(Number of Rounds$_{t-1}$)*Tenure_6_8, Ln(Number of Rounds$_{t-1}$)*Tenure_9_13, Ln(Number of Rounds$_{t-1}$)*Tenure_14_plus* allow the impact of prior golf vary based on CEO tenure. In the third and fourth specifications the tenure group indicators are replaced with CEO tenure fixed effects.

VARIABLES	Dep. Var. = Pay Performance Sensitivity			
Enterprise Value$_{t-1}$	-0.330***	-0.335***	-0.334***	-0.337***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB$_{t-1}$	-0.135	-0.129	-0.155	-0.150
	(0.306)	(0.328)	(0.273)	(0.291)
Returns$_{t-1}$	0.191	0.213	0.191	0.214
	(0.725)	(0.696)	(0.706)	(0.675)
Return Volatility$_{t-1}$	4.767**	4.733**	4.936**	4.954**
	(0.0164)	(0.0166)	(0.0138)	(0.0138)
Sales Growth	-0.342	-0.358	-0.360	-0.384
	(0.587)	(0.572)	(0.525)	(0.502)
Tenure = 2 to 5 Years	-0.799*	-1.541**		
	(0.0646)	(0.0499)		
Tenure = 6 to 8 Years	-0.536	-0.643		
	(0.189)	(0.343)		
Tenure = 9 to 13 Years	0.0203	-0.122		
	(0.967)	(0.877)		
Ln(Number Rounds$_{t-1}$)	0.00335		0.0355	
	(0.952)		(0.506)	
Ln(Number Rounds$_{t-1}$) * Tenure_2_5		0.252**		0.248**
		(0.0149)		(0.0164)
Ln(Number Rounds$_{t-1}$) * Tenure_6_8		-0.0649		-0.0818
		(0.511)		(0.419)
Ln(Number Rounds$_{t-1}$) * Tenure_9_13		-0.0453		-0.0292
		(0.654)		(0.781)
Ln(Number Rounds$_{t-1}$) * Tenure_14_plus		-0.132		0.00231
		(0.448)		(0.987)
Industry and Year FE?	Yes	Yes	Yes	Yes
Tenure FE?	No	Yes	No	Yes
Observations	1,027	1,027	1,027	1,027
R-squared	0.142	0.145	0.171	0.173

Figure 1 – Distribution of Observation by Frequency of Golf

Figure 1 shows the distribution of firm-year observations by the frequency of golf for 329 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.

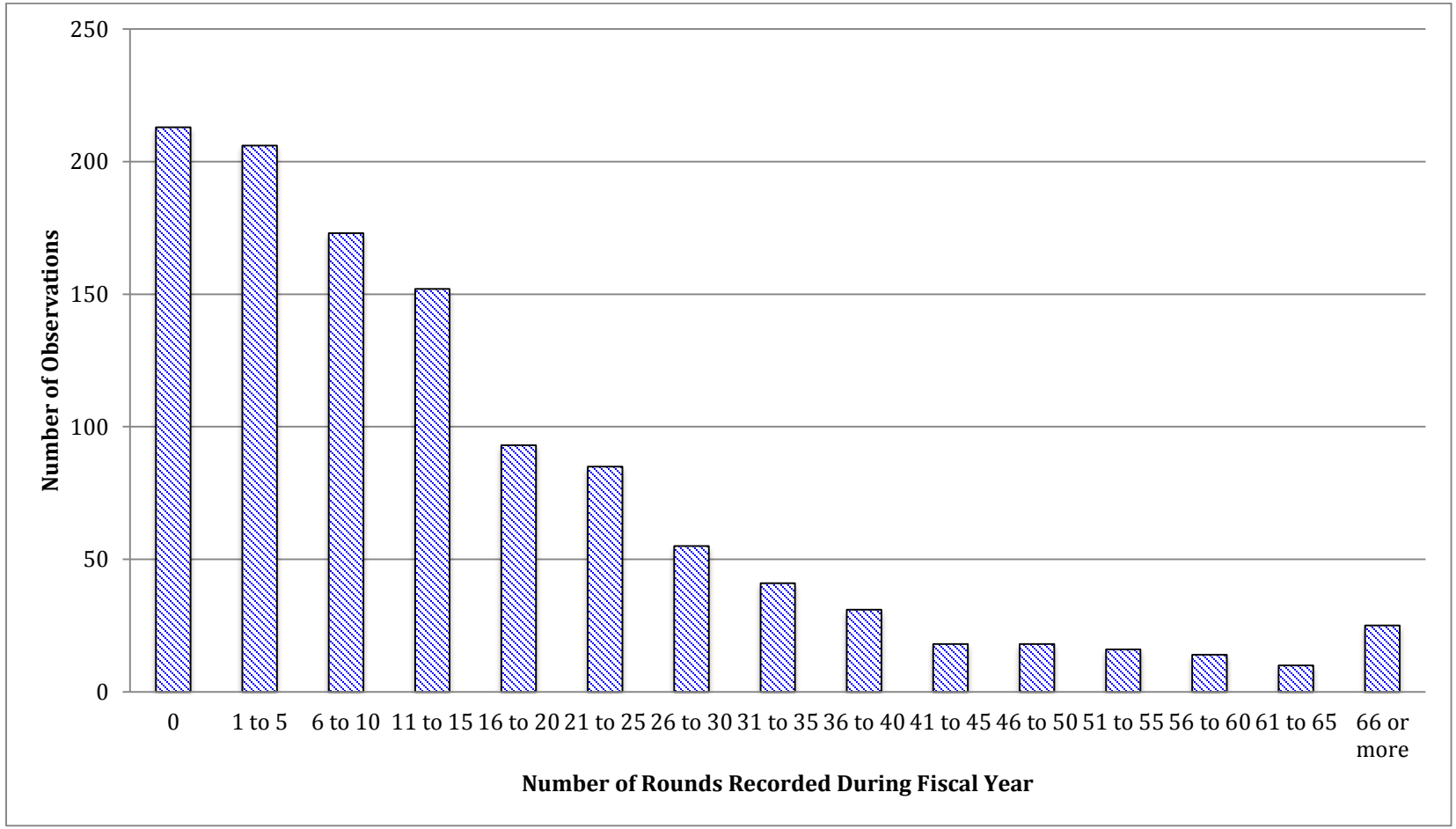

Figure 2 – Distribution of Samples by Industry

Figure 2 shows the distribution of firm-year observation by Fama-French 12 industry for 329 CEOs of S&P 1500 firms and the universe of S&P 1500 firms from 2008 to 2012.

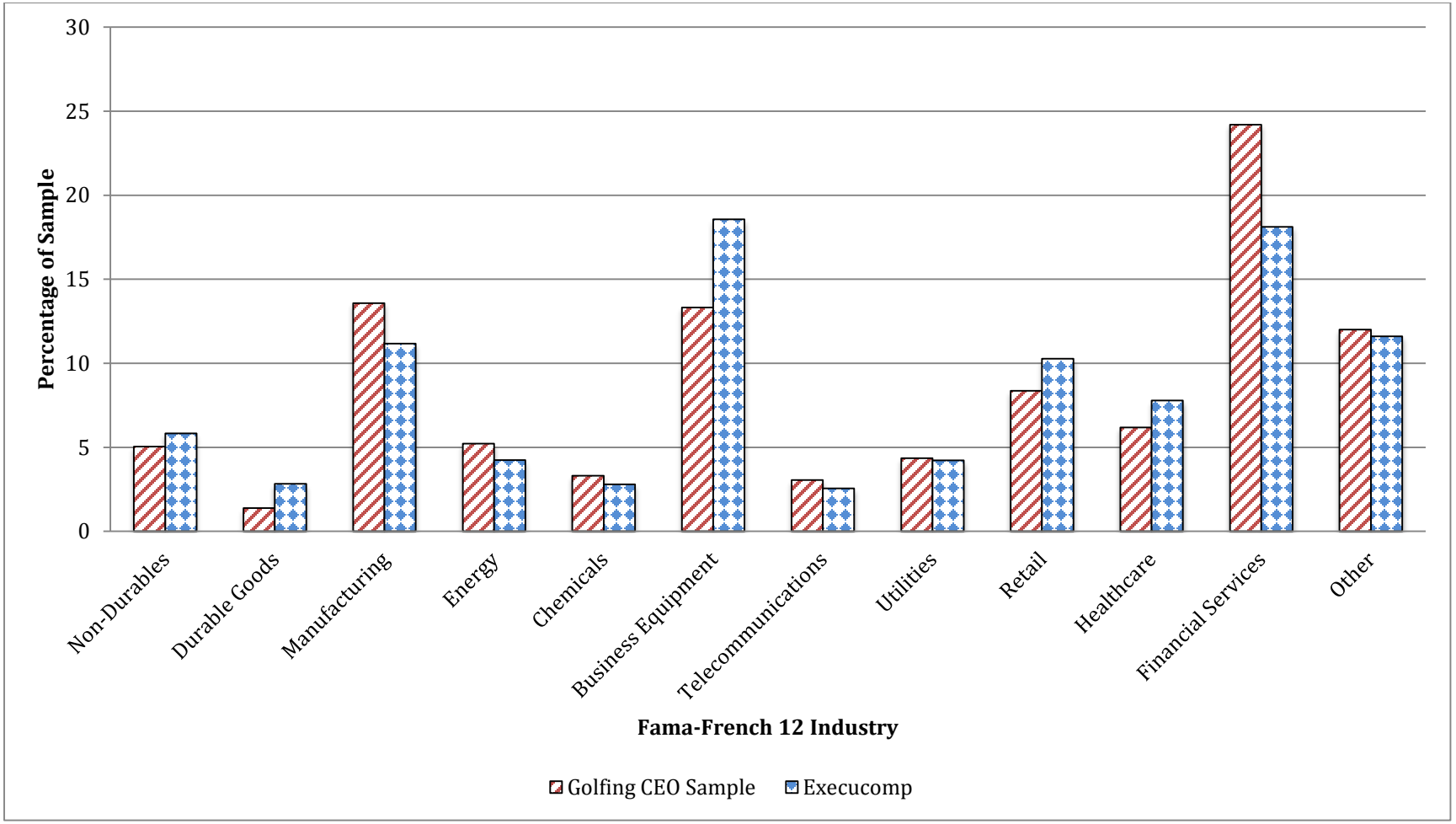

Figure 3 – Average Frequency of Golf by CEOs – 2008 to 2012

Figure 3 shows the average number of golf rounds recorded by 329 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.