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ORIGINAL PAPER

Hunting and Fishing CEOs: Environmental Plunderers or Saviors?

Thomas Covington[1] · **Steve Swidler**[2] · **Keven Yost**[3]

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Abstract
CEOs who participate in hunting and fishing benefit by appreciating natural environments and permanently consuming natural resources. We examine whether CEOs who hunt and fish make different environmental decisions and find that firms led by CEOs who obtain the most hunting and fishing licenses have lower environmental performance as measured by MSCI-KLD. This effect is strongest in the environmental category of climate change but also extends to pollution, waste, and the protection of natural capital. Furthermore, firms led by CEOs with the most hunting and fishing licenses are significantly more likely to pay a regulatory settlement for an environmental regulatory infraction.

Keywords CEO · CSR · Sustainability

JEL Classification A13 · G30 · Q50

Introduction

Recent research in the corporate finance literature finds that chief executive officers' (CEOs') life experiences influence their firms' corporate social responsibility (CSR). Hunting and fishing, also colloquially known as sporting activities, are recreational activities many CEOs participate in that may influence the CEO's environmental decisions. However, the a priori effect is unclear.On the one hand, participating CEOs (sportspersons) benefit from spending time in and enjoying the natural environment.[1] This enjoyment leads many sportspersons to advocate for protecting the environment so they may continue appreciating outdoor recreation. On the other hand, executive hunting or fishing leads to the consumption of natural capital and possibly translates to corporate indifference to the environment.[2] Given conflicting experiential implications, it is important to examine the effect of a CEO's sporting participation on their firm's environmental sensitivities.

Hunting and fishing are popular recreational activities in the United States, as indicated by over 35 million individuals who obtained sporting licenses between 2011 and 2016 (U.S. Census Bureau, 2018). We hand-collect the sporting licenses issued by 21 states to 3065 CEOs who led S&P 1500 firms between 2003 and 2018 and use each CEO's licenses as a proxy for their sporting experience intensity. The data indicate that over 30% of in-sample CEOs, or three times the national rate, purchase at least one license, and many purchase numerous licenses. This high participation rate among CEOs makes it critical to document environmental decision-making in light of executive sporting participation.

Anecdotal stories of CEO sportspersons are abundant. For example, both Martha Stewart and Ted Turner profess to be avid anglers who enjoy spending time in natural environments (The Martha Stewart Blog, 2009). Their account illustrates the enjoyment of nature that sportspersons receive from sporting activities. However, other stories portray CEOs' sporting activities as unethical due to the embedded environmental consumption. The People for the Ethical Treatment of Animals (PETA), a two-million-member nonprofit organization and media publication, named GoDaddy

✉ Keven Yost
yostkev@auburn.edu

[1] Loyola Marymount University, Los Angeles, USA

[2] Lafayette College, Easton, USA

[3] Auburn University, Auburn, USA

[1] We use the term *sportsperson* for all individuals that hunt or fish.

[2] We fully recognize that some anglers release the fish they catch. Research indicates that between 20.9% and 28.3% of fish caught and released in angling tournaments subsequently die from trauma sustained during the catch (Wilde, 1998).

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CEO Bob Parsons as the 2011 Scummiest CEO of the Year for hunting an elephant in Zimbabwe (Kretzer, 2011). In another example, Jimmy John's Sandwiches has faced multiple boycotts due to the founder and former CEO Jimmy John Liautaud's participation in African trophy hunting (Tyko, 2019).

We use the number of sporting licenses each CEO obtains as a proxy for the CEO's sporting activity intensity and then classify each CEO as a non-, casual, or enthusiast sportsperson. We separate CEOs into high and low sporting participation intensities because life experiences' effects are cumulative. Then, we investigate if firms led by a sportsperson have different environmental performance than those led by a non-sporting CEO, as measured by MSCI (formerly KD) sustainability ratings. Our findings indicate that firms led by a CEO with high sporting participation intensity have lower environmental scores than firms led by non-sportspersons. However, we find no significant result in the set of firms led by a CEO with a low participation intensity, indicating that the effect accrues with experience.

The environmental scores we create from MSCI are composed of strengths factors that measure decisions firms make and concerns factors relating to adverse outcomes firms incur. Our findings also suggest that the lower scores are due to their firms making fewer pro-environmental decisions. Further tests show that the main effect is on climate change decisions but extends to pollution and preserving natural capital. The results suggest that the incidence of natural capital resource consumption dominates the motives to protect the environment and that sporting experience affects CEOs' decisions across various types of environmental choices.

Measuring environmental consumption is difficult. However, when a firm makes fewer positive environmental decisions, it is likely subject to greater risk of suffering negative environmental outcomes. Therefore, we next investigate if firms led by CEO sportspersons are more likely to violate a congressional environmental protection act. Our findings indicate that firms led by enthusiast sportspersons are more likely to sustain a major financial settlement for violating one of those protective acts. This result implies that the influence of CEO sporting activity on firm decisions has direct financial costs, paid as a legal settlement, and indirect reputational costs.

To our knowledge, this paper is the first to use hunting and fishing licenses acquired by CEOs to measure personal environmental recreation. By linking these sporting activities to the environmental outcomes of their firms, we contribute to the literature investigating the effects of life experiences on managerial decision-making and, specifically, on firm environmental performance. Further, the quantity of hunting and fishing licenses procured provides us with a non-binary measure of CEO environmental recreation and allows us to measure the intensity of sporting activity.

We also contribute to the line of environmental, social, and governance (ESG) literature that documents how executive characteristics affect firm ESG outcomes. Gillan et al. (2021) highlight the need for additional inquiry into the managerial traits that drive firm-level ESG outcomes. Our analysis begins to fill this void by documenting that CEO sporting participation intensity impacts firm environmental decisions.

Literature Review and Hypothesis Development

The analysis draws upon upper echelons theory which posits that executives make decisions based on their own perspectives of strategic circumstances, shaped by their experiences, values, and personal traits (Hambrick, 2007; Hambrick & Mason, 1984). Here, we focus on the CEO's hunting and fishing experiences to examine the effect on the firm's environmental performance. Upper echelons theory largely builds upon bounded rationality (Cyert & March, 1963; March & Simon, 1958), the notion that complex and uncertain situations cannot be fully understood objectively, but instead are subject to individual interpretation (Mischel, 1977).

In one example, Wang et al. (2024) appeal to upper echelons theory to examine the organizational resilience of firms led by CEOs with military experience. They find that during the Covid-19 pandemic, firms with military experienced CEOs are more robust and recover faster than do other firms. Additionally, Malmendier et al. (2011) and Benmelech and Frydman (2015) demonstrate that military service affects the decision-making of executives.

Research shows that the behavioral consistency principle guides CEOs to make similar decisions across various choice domains. For example, older executives are more conservative in their decision-making (Bertrand & Schoar, 2003), as are CEOs who grew up during the Great Depression (Malmendier et al., 2011). CEO overconfidence is another characteristic that researchers show affects many firm outcomes, such as dividend policy (Malmendier et al., 2011), estimating external financing costs (Deshmukh et al., 2013), and innovation (Galasso & Simcoe, 2011).

Researchers also conclude that a host of CEO characteristics affect their firm's CSR decisions (Gillan et al., 2021). For example, firms led by female CEOs have better performance than those with males (Manner, 2010; McGuinness et al., 2017; Borghesi et al., 2014). Similarly, research finds improved performance in firms led by a younger CEO or one with greater ability (Borghesi et al., 2014; Yuan et al., 2019). Not all CEO traits lead to positive effects on CSR. For example, more risk-averse CEOs

lead to an increase in greenhouse gas emissions (Hossain et al., 2022), and more overconfident CEOs engage in less CSR (McCarthy et al., 2017).

Research also shows that specific life experiences affect a CEO's awareness and commitment to CSR issues. For example, firms led by CEOs with daughters make decisions that result in more positive social outcomes, especially those concerning diversity (Cronqvist & Yu, 2017). The authors also determine that the effect is strongest following a CEO's first daughter's birth and attribute their results to increased female exposure that elevates the CEO's awareness of women's social issues. Similarly, firms led by married CEOs also make decisions that lead to better social performance (Hegde & Mishra, 2019). The authors conclude that married life promotes pro-social values among family members that translates into CEOs' pro-social decision-making. Additionally, CEOs that experience childhood poverty or receive religious schooling also increase CSR engagement through greater commitment to CSR principles (Xu & Ma, 2022a, 2022b).

Recent research indicates that a CEO's personal experiences in nature affect their firm's environmental decisions. For example, firms tend to release less waste material in factories close to the CEO's hometown (Li et al., 2021). The authors determine that CEOs preserve the areas from their childhood to a greater degree compared to other locations. Additionally, CEO childhood exposure to nature in urban green spaces positively correlates with their firm's propensity to engage in pro-environmental programs (Zhi, 2022). Both findings imply that experiences with nature increase pro-environmental decision-making.

Sporting activities are recreational activities that enable participants to spend time in and experience nature. When participants increase their exposure to natural environments, it raises their awareness of ecological concerns each time they participate (Bixler et al., 2002, 2011; Dunlap & Heffernan, 1975). In turn, the increased environmental awareness leads to increased pro-environmental behavior, such as recycling and adopting green technology (Berns & Simpson, 2009; Teisl & O'Brien, 2003; Theodori et al., 1998).

Other research determines that hunting and fishing have a consumptive effect on the environment. Each successful sporting excursion depletes natural capital (Brown & Cameron, 2000). Research also suggests a negative relation between sportspersons and climate change concerns. The National Research Council uses hand-collected survey data to detail both the extent of disbelief in climate change held by sportspersons and the difficulty in educating those sportspersons about climate change (Coyle, 2010). Denial occurs despite the close-felt effects of climate change on hunting and fishing, and the author attributes lower climate change awareness to social values held by sportspersons. In a similar study, Love-Nichols (2020) details an increased rate of climate skepticism held by sportspersons that the author also ascribes to the social values of the hunting and fishing communities.

Other studies find a relation between participation in outdoor recreation and the participant's environmental sensitivity or empathetic perspective toward the environment (Chawla, 1998; Hungerford & Volk, 1990). A facet of environmental sensitivity is that each additional significant life experience in the outdoors leads to a causal change in sensitivity (Bustam et al., 2005; Chawla, 1998). This point implies that sensitivity increases as more outdoor experiences accrue and that changes in sensitivity are not solely in the pro-environmental direction since negative experiences may occur as well.

Bunea (2020) examines a line of analysis that bridges theories on the work–nonwork interface with the literature on serious leisure of executives. She bases her study on interviews of 16 CEOs and organizes their thoughts into six themes. Bunea labels one theme as, "Serious leisure as a fountain of resources," where CEOs maintain that serious leisure activities help form who they are. Bunea et al. (2023) further develop the importance of serious leisure activities and state that, "through its defining characteristics (effort in mastering a skill, perseverance through adversity, a special ethos, a strong identity, a leisure career), can both promote and harm leaders' performance at work."

Bunea (2020) further distinguishes serious leisure from casual leisure activities and thereby suggests that intensity of participation must be considered. Her definition of serious leisure follows Stebbins (1982, p. 3) who states that it is, "the systematic pursuit of an amateur, hobbyist or volunteer activity that is sufficiently substantial and interesting for a participant to find a 'career' there in the acquisition and expression of its special skills and knowledge." Thus, any analysis of the impact of CEO leisure activities must differentiate between serious and casual participation and motivates separating CEOs with sporting licenses into casual and enthusiast groups.

With the extant research, we form two competing hypotheses operating on the notions that CEOs make consistent decisions across different dimensions and that CSR engagement is both discretionary and influenced by a manager's values (Hemingway & Maclagan, 2004). The first hypothesis proposes a positive relation between hunting and fishing and the pro-environmental behavior of the firm. This hypothesis denotes sportspersons CEOs as environmental saviors with increased awareness and care for environmental issues born out of their outdoor experience. Their raised level of environmental consciousness leads them to make more environmentally responsible decisions, which extends to the decisions they make in their firms. We refer to the following as the *Savior hypothesis*:

H1: CEOs who hunt and fish lead firms with better environmental performance that increases with the CEO's sporting activity participation rate.

A competing hypothesis follows the literature that notes sportspersons consume natural resources in their sporting activities, are skeptical of climate change, and often make consistent decisions across various choice domains. This hypothesis portrays sporting CEOs as environmental plunderers whose environmental consumption and degradation extend to the decisions they make in their firms. Therefore, we name our second hypothesis the *Plunderer hypothesis*:

H2: CEOs who hunt and fish lead firms with worse environmental performance that falls with the CEO's sporting activity participation rate.

The two hypotheses are mutually exclusive, so if one is true, the other must be false. A third possibility is that the null is true, and hunting and fishing experiences do not affect CEO leadership and firm environmental policies.

Data

This analysis considers all CEOs of firms in the S&P 1500 index between 2003 and 2018 while excluding the CEOs of financial and regulated utility firms. The Lexis Nexis Public Records (LNPR) database provides information on the sporting licenses each CEO obtains, including the state and date of issuance, type of license, and if the CEO is a resident or non-resident. Our dependent variables come from the MSCI environmental, social, and governance (ESG) dataset the corporate finance literature frequently employs. We add firm-level controls from Compustat, BoardEx & the Thompson Reuters 13-F database, and CEO-level controls from Execucomp. The sample is the intersection of the above sources and contains 3065 CEOs who led 1674 distinct firms for 15,096 firm-years. The remainder of this section details the creation of our dependent and explanatory variables and discusses our selection of control variables.

We construct our dependent variables from the MSCI database that measures a firm's CSR performance using indicator variables denoting if a firm has specific strength and concern factors. Because our two hypotheses relate a CEO's sporting activity to their firm's environmental performance, we only consider MSCI's environmental factors. Our main dependent variable is a net Environmental Score in line with existing research.[3] To create the net score, we first create the Environmental Strengths variable by counting all the firm's strength factors in that year. In Panel A of Table 1, the median in-sample firm has zero strengths, and the most strengths any firm has is six. Next, we construct Environmental Concerns through a similar method. As with the strengths, the median firm has zero concerns, but the most any firm has is five. Then, we deduct the concerns from the strengths to create our primary dependent variable, Environmental Score. In line with other researchers (e.g., Cronqvist & Yu, 2017; McCarthy et al., 2017) and to facilitate the interpretation of the results, we then normalize this variable with a minimum of zero, which results in a median Environmental Score of 5 and a maximum of 11.

Additionally, MSCI categorizes most of its environmental strength factors into four categories. The Environmental Opportunities category contains three strength factors capturing investments in clean technology, green buildings, and renewable energy. The Pollution and Waste category contains four strength factors. Third, the Climate Change category has five strength factors related to carbon output. In 2012, MSCI introduced a fourth category, Natural Capital, containing three strength factors covering the protection of wildlife and natural spaces. There are also four uncategorized strength factors: communications, property, plant and equipment, management systems, and a miscellaneous other strength factor. We classify the four uncategorized strength factors as environmental opportunities due to the similarity in the scope of items covered.[4] MSCI does not categorize its environmental concern factors. Therefore, we match each concern factor with its corresponding strength factor for categorization. We then create a normalized net categorical score for each of the four categories in the same manner as Environmental Score. Panel A shows that the median in-sample firm scores two in the climate category and one in the other three categories.

Until 2014, MSCI included a concern factor that measures if a firm violated a congressional protection act and pays major regulatory settlement, defined as $40,000 or more on average across the previous 3 years.[5] We use this factor to create our dummy variable Regulatory Settlement, which takes the value of one if the firm pays a major regulatory settlement and zero otherwise. As shown in Panel A of Table 1, MSCI identifies 6% of the 10,993 firm-year

[3] See for example Borghesi et al. (2014) and Hegde and Mishra (2019), among others.

[4] Our results for *Environmental Opportunities* hold without including the uncategorized strength factors.

[5] The environmental protection acts are the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Toxic Substance Control Act (TSCA), Endangered Species Act (ESA), Clean Water Act (CWA), Safe Water Drinking Act (SWDA), Resource Conservation and Recovery Act (RCRA), Clean Air Act (CAA) Atomic Energy Act (AEA), and Mine Act (MA).

Table 1 Summary statistics

Panel A: dependent variables

Variable	N	Mean	SD	Median	Min	Max
Environmental score	15,096	5.244	0.974	5	0	11
Environmental strengths	15,096	0.434	0.929	0	0	6
Environmental concerns	15,096	0.190	0.601	0	0	5
Environmental opportunities score	15,096	1.204	0.503	1	0	4
Pollution score	15,096	1.994	0.305	2	0	4
Climate score	15,096	1.094	0.395	1	0	3
Natural capital score	5600	1.029	0.310	1	0	4
Regulatory settlement	10,993	0.060	0.238	0	0	1

Panel B: distribution of CEO sporting licenses by state of issuance and license type

Issuance state	Fishing licenses	Hunting licenses	Combination licenses	Total sporting licenses
Alaska	0	114	970	1084
Arkansas	98	225	75	398
Connecticut	31	22	14	67
Florida	811	196	140	1147
Georgia	38	196	246	480
Illinois	2	27	3	32
Massachusetts	29	55	6	90
Minnesota	0	10	0	10
Mississippi	6	36	11	53
Missouri	59	203	34	296
Montana	10	77	19	106
Nebraska	5	63	16	84
Nevada	0	35	0	35
New Jersey	1	0	0	1
North Carolina	10	8	7	25
North Dakota	9	74	0	83
Ohio	28	68	24	120
Oregon	90	108	396	594
Utah	2	10	21	33
Virginia	70	145	72	287
Wisconsin	37	73	19	129
Total	1336	1745	2073	5154

Panel C: classification of CEO sportsmen

Number of sporting licenses obtained	Number of CEOs	Sporting classification
0	2134	Non-sportsperson
1	311	
2	165	Casual sportsperson
3	72	($n=664$)
4	64	
5	52	
6	45	
7	31	Enthusiast sportsperson
8	26	($n=267$)

Table 1 (continued)

Panel C: classification of CEO sportsmen						
Number of sporting licenses obtained		Number of CEOs				Sporting classification
9		13				
10		18				
11–20		78				
> 20		56				
Total		3065				
Panel D: firm-level variables						
Variable	*N*	Mean	SD	Median	Min	Max
Log (total assets)	15,096	7.592	1.543	7.445	4.627	11.836
Book leverage	15,096	0.204	0.170	0.192	0.000	0.869
Return on assets	15,096	0.051	0.085	0.056	−0.330	0.271
Log (boardsize)	15,096	2.179	0.250	2.197	0.000	2.996
Institutional ownership (%)	15,096	0.796	0.181	0.836	0.000	0.999
Blockholder	15,096	0.936	0.245	1	0	1
Tobin's Q	15,096	3.255	3.264	2.355	0.506	22.607
Cash-to-assets	15,096	0.121	0.115	0.086	0.000	0.550
Panel E: CEO-level variables						
Variable	*N*	Mean	SD	Median	Min	Max
CEO casual sportsperson	3065	0.217	0.419	0	0	1
CEO enthusiast sportsperson	3065	0.085	0.280	0	0	1
CEO age	15,096	55.940	7.363	56	28	96
CEO ownership (%)	15,096	0.020	0.054	0.003	0.000	0.876
Log (CEO tenure)	15,096	1.927	0.765	1.946	0.003	4.140
Female CEO	3065	0.030	0.171	0	0	1

All variables are defined in Appendix A1

observations between 2003 and 2014 as paying a major regulatory settlement.

LNPR aggregates public records on individuals from various sources, including state-level agencies. Two examples are the respective Secretary of State's office, which registers business licenses and similar corporate filings, and the sporting license-issuing wildlife management agency. We identify each CEO in the LNPR database through their executive role with the firm as listed on filed corporate documents and then obtain their sporting license records.[6] By identifying each CEO through their position with the firm, we ensure correct identification in the LNPR database. However, each state has a regulation determining what specific personal information is public or private, and 21 states consider their sporting license registry a public record.

State-level wildlife agencies issue sporting licenses to residents and non-residents for a nominal fee.[7] Additionally, most states issue three types of sporting licenses: fishing, hunting, and a combination hunting and fishing license. Each license grants the holder the privilege of participating in the respective type(s) of sporting activity and is valid only in the issuing state for a specified period. The U.S. Census Bureau reports that between 2011 and 2016, more than 35 million Americans obtained a fishing license, and more than 11 million obtained a hunting license (U.S. Census Bureau, 2018). These figures highlight the popularity of sporting activities.

[6] For some CEOs, we must match on roles the CEO held at other firms due to LNPR only reporting a maximum of 50 executive roles per individual. For those CEOs, we verify their employment history using the Bloomberg Terminal System.

[7] In our sample, slightly more than 60% of licenses are non-resident licenses. A hand survey of state-level regulations indicates that 2017 annual hunting licensing fees range from $10 in Montana for residents, to $183 for non-residents in Washington.

Panel B of Table 1 presents our sporting license data by both the issuing state and the license type. We identify 5154 licenses that CEOs in our sample procure from 21 states. Both Alaska and Florida each issue approximately 20% of the licenses. Oregon, Georgia, and Arkansas issue about 12, 9, and 8% of the licenses, respectively. The remaining 16 states issue the final 28% of licenses. More than 40% of the licenses in our sample are combination hunting and fishing licenses. Approximately, 34% of licenses are hunting licenses, and the remaining 26% are fishing licenses. The high percentage of CEOs who obtain a combination license or both hunting and fishing licenses prevents any analysis between hunters and anglers.

Panel C of Table 1 shows the distribution of CEOs by the number of sporting licenses they obtain. Slightly more than 30% of CEOs purchase at least one license in our sample. 311 CEOs (10.1%) only purchase one license; the most sporting licenses of any CEO in our sample is 81. Also, conditional on procuring at least one license, the median CEO purchases two licenses.

We posit that a CEO's sporting license record is a representative proxy for their sporting participation rate due to the commitment of both time and monetary resources CEOs expend to obtain each license. Consistent with Bunea (2020), who delineates between casual and serious leisure, we separate CEOs into low-, high-, and non-participating sportspersons by creating two dummy variables. The first variable, CEO Casual Sportsperson, captures CEOs with a low participation rate and takes the value of one if a CEO purchases between one and five sporting licenses and zero otherwise. CEO Enthusiast Sportsperson, a second dummy variable, captures CEOs with a high participation rate and takes a value of one if the CEO obtains more than five licenses and zero otherwise.[8] CEOs who procure no sporting licenses are the third reference group in all analyses.Table 1 shows that approximately 22% of CEOs are casual sportspersons, while more than 8% are enthusiast sportspersons.

We include several firm-level variables from Compustat, BoardEx, and the Thompson Reuters 13-F database known to correlate with CSR performance, and Table 1 Panel D lists their summary statistics. Several studies (e.g., McGuiness et al., 2017; Hegde & Mishra, 2019) indicate that a positive relation exists between firm size and CSR performance. Therefore, we control for a firm's size with the log of its total assets. More profitable firms have better CSR performance (Borghesi et al., 2014), and we control for a firm's profitability through its Return on Assets (ROA). Less financially constrained firms also perform better (Hong et al., 2012). Therefore, we include Book Leverage, calculated as the ratio of total debt to total debt plus common equity, to control for leverage. Firms with more cash on hand can make more CSR investments, and the ratio of Cash-to-Assets proxy for the firm's balance sheet liquidity. Several studies (e.g., Gillan et al., 2010; Albuquerque et al., 2019) find a positive relation between firm value and CSR, which we proxy with Tobin's Q. The natural logarithm of the number of members who sit on the firm's board of directors (Log (Boardsize)) measures the internal monitoring of the CEO. Gloßner (2019) details various effects of institutional equity ownership on firm CSR performance. We capture institutional ownership through two variables: the percent of a firm's common equity held by institutional owners (Institutional Ownership %) and the Blockholder dummy variable that captures the presence of an investor who owns 5% or more of the firm's equity.[9]

Panel E of Table 1 reports the summary statistics for several CEO-level control variables from Execucomp. A CEO's power correlates positively with the value they receive from engaging in CSR initiatives (Li et al., 2018). The log of a CEO's tenure (in years) controls for their power, and the median in-sample CEO is in their role for 6 years. The median CEO in our sample is 56 years old, and research indicates their age negatively correlates with firm CSR investment (Borghesi et al., 2014; Hegde & Mishra, 2019). Therefore, we control for the CEO's age and its square. Female leaders also invest more in CSR, and we include a dummy variable that captures the 3% of in-sample female CEOs (Cronqvist & Yu, 2017; Hegde & Mishra, 2019).

Table 2 presents the correlation matrix. Our first explanatory variable, CEO Casual Sportsperson, has an insignificant correlation with both Environmental Score and Environmental Strengths but a positive and significant correlation with Environmental Concerns. CEO Enthusiast Sportsperson, our second explanatory variable, has a negative and significant correlation with Environmental Score, a negative and insignificant correlation with Environmental Strengths, and a positive and significant relation with Environmental Concerns. Together these results indicate a negative correlation exists between CEO sporting activity and firm environmental performance. Additionally, both sporting dummy variables have a negative and significant correlation with Female CEO, indicating that females are less likely to participate in sporting activities.

[8] Our results are robust to different license number cutoffs between casual and enthusiast sportspersons. Appendix A2 illustrates the effect of choosing various cutoff levels and shows that at lower levels there is no statistically different impact on environment between firms with casual sportspersons and those led by enthusiasts. This suggests possible misclassifying of CEOs between the two categories. However, starting at five licenses as the cutoff, statistical differences between the impact on the environment become significant and suggest a reasonable boundary for segregating the two sportsperson categories.

[9] A blockholder is an institutional investor who owns at least 5 percent of common equity.

Table 2 Correlation matrix

Variable	CEO casual sportsperson	CEO enthusiast sportsperson	Environmental score	Environmental strengths	Environmental concerns	Environmental opportunities score
CEO casual sportsperson	1					
CEO enthusiast sportsperson	−0.167***	1				
Environmental score	−0.0119	−0.0576***	1			
Environmental strengths	0.00303	−0.00976	0.804***	1		
Environmental concerns	0.0241**	0.0788***	−0.380***	0.244***	1	
Environmental opportunities	−0.0103	0.0148	0.666***	0.793***	0.147***	1
Pollution	−0.0111	−0.0522***	0.516***	0.312***	−0.358***	0.106***
Climate change	0.00657	−0.0280***	0.637***	0.770***	0.159***	0.393***
Natural capital	0.0194*	−0.0101	0.388***	0.509***	0.159***	0.181***
Log (total assets)	0.0360***	0.0308***	0.260***	0.494***	0.345***	0.347***
Book leverage	0.0690***	0.0531***	0.0771***	0.132***	0.0801***	0.0766***
ROA	−0.0258**	0.0143	0.0728***	0.0801***	0.00579	0.0498***
Log (boardsize)	0.0442***	0.0637***	0.173***	0.331***	0.233***	0.225***
Institutional ownership	−0.000313	−0.0321***	−0.0123	−0.0748***	−0.0963***	−0.0187*
Blockholder	−0.0156	−0.00357	−0.00462	−0.0950***	−0.140***	−0.0608***
Tobin's Q	−0.0219**	−0.0219**	0.129***	0.104***	−0.0484***	0.0416***
Cash-to-assets	−0.0571***	−0.0952***	0.0180*	−0.0647***	−0.130***	−0.0307***
CEO age	−0.0207*	−0.0299***	0.0167*	0.0436***	0.0406***	0.0278***
CEO ownership	−0.0134	−0.0192*	−0.0489***	−0.101***	−0.0772***	−0.0806***
Log (tenure)	−0.00738	−0.0407***	−0.0261**	−0.0665***	−0.0608***	−0.0494***
Female CEO	−0.0586***	−0.0443***	0.0283***	0.0207*	−0.0139	0.00215

Variable	Pollution score	Climate change score	Natural capital score	Log (total assets)	Book leverage	ROA	Log (boardsize)
Pollution	1						
Climate change	0.184***	1					
Natural capital	0.112***	0.360***	1				
Log (total assets)	−0.00347	0.424***	0.283***	1			
Book leverage	0.0244**	0.122***	0.0887***	0.366***	1		
ROA	0.0412***	0.0740***	0.0358***	0.0569***	−0.191***	1	
Log (boardsize)	0.0146	0.292***	0.152***	0.595***	0.246***	0.0370***	1
Institutional ownership	−0.0353***	−0.0702***	−0.0613***	0.00138	0.0193*	0.0551***	−0.0556***
Blockholder	−0.0247**	−0.0751***	−0.0153	−0.145***	−0.00504	−0.0256**	−0.111***
Tobin's Q	0.0876***	0.119***	0.0725***	0.000263	0.110***	0.240***	0.0328***
Cash-to-assets	0.0322***	−0.0498***	−0.0505***	−0.315***	−0.356***	0.0647***	−0.243***
CEO age	−0.0167*	0.0380***	0.0351***	0.0808***	0.0374***	0.0251**	0.0387***
CEO ownership	0.00339	−0.0761***	−0.0505***	−0.196***	−0.114***	0.0196*	−0.187***
Log (tenure)	−0.00578	−0.0405***	−0.0392***	−0.0857***	−0.0524***	0.0544***	−0.126***
Female CEO	0.0257**	0.0236**	0.0578***	−0.00204	−0.0113	0.0101	0.00893

Variable	Institutional ownership	Blockholder	Tobin's Q	Cash-to-assets	CEO Age	CEO ownership	Log (tenure)	Female CEO
Institutional ownership	1							

Table 2 (continued)

Variable	Institutional ownership	Blockholder	Tobin's Q	Cash-to-assets	CEO Age	CEO ownership	Log (tenure)	Female CEO
Blockholder	0.453***	1						
Tobin's Q	0.00256	−0.0177*	1					
Cash-to-assets	0.0119	0.0311***	0.164***	1				
CEO age	−0.0457***	−0.0181*	−0.0426***	−0.0788***	1			
CEO ownership	−0.157***	−0.0104	0.000390	0.0904***	0.131***	1		
Log (tenure)	−0.0305***	0.00438	−0.00184	0.0361***	0.367***	0.297***	1	
Female CEO	−0.00659	−0.0158	0.0216**	0.00822	−0.0447***	0.00537	−0.0697***	1

All variables are defined in Appendix A1

***, **, * denote significance at the 1, 5, and 10% levels.

Empirical Results

Specification

Our two hypotheses operate on the notion that some firms make different environmental choices due to hunting and fishing experience affecting their CEO's decision-making. To investigate these hypotheses, we use the following ordinary least squares (OLS) specification:

$$ENV_{i,t+1} = Intercept + CEO\ Casual\ Sportsman_{i,t} + CEO\ Enthusiast\ Sportsman_{i,t} + FirmControls_{i,t} + CEO\ Controls_{i,t} + \lambda_{i,t} + \varepsilon_{i,t} \quad (1)$$

where ENV is one of the dependent variables from MSCI. Environmental Score is the dependent variable in the main results, but subsequent tests use Environmental Strengths, Environmental Concerns, the four categorical net scores, or the Regulatory Concern dummy variable. The variables of interest are the two sportsperson dummies that capture the effect of a sportsperson with a high or low participation rate leading the firm. Equation 1 also includes the previously defined firm and CEO-level controls. $\lambda_{i,t}$ represents industry (Fama–French 48-Industry Classification) and year fixed effects, and $\varepsilon_{i,t}$ is the residual.[10]

Some form of selection bias may exist in our sample that draws either a CEO or a firm to the other based on the CEO's propensity to hunt or fish. For example, a firm may select its CEO based on the expected comradery a sportsperson provides other managers or their expected environmental views. Such a relation would diminish the sporting effect that we want to document. We lead our dependent variables by 1 year (t + 1) to alleviate this concern, as is common practice in the corporate finance literature.[11]

We begin our analysis by considering if firms with a CEO sportsperson have different overall environmental performance. Table 3 presents results that use Eq. 1 with Environmental Score as the dependent variable. Specification 1 includes industry and year fixed effects to account for industry commonality and time trends in environmental performance. The coefficient for CEO Casual Sportsperson is −0.034 and insignificant, implying no difference in Environmental Score between firms with a casual and a non-sporting manager. However, the coefficient for CEO Enthusiast Sportsperson is −0.152 ($p = 0.007$). The magnitude of the coefficient indicates that firms with a manager who regularly participates in sporting activities have an approximately 3% (= −0.152 / 5) lower Environmental Score than the median in-sample firm. This effect also equates to about 15.6% (= −0.152 / 0.974) of one standard deviation in the score distribution. A test of differences between the coefficients for our sportsperson dummies determines they are different at the 5% significance level. This test confirms that the debased performance in firms led by sportspersons does not occur unless its manager is an enthusiast.

Consistent with the previous literature, several control variables significantly and positively relate to firm environmental performance. The coefficient for the log of total assets indicates that larger firms have higher environmental performance, while the positive correlation with ROA shows that more profitable firms also perform better. The Blockholder coefficient suggests that firms with large shareholders have higher environmental scores. This result is consistent with the notion that large shareholders monitor investments toward reducing the incident rate of costly outcomes

[10] All results remain consistent with Fama–French 49, SIC 2-digit, or SIC 3-digit industry fixed effects.

[11] See for example: McCarthy, Oliver, and Song (2017) and Hegde and Mishra (2019).

Table 3 CEO sporting activity on firm environmental score

	(1) Env. score	(2) Env. score
CEO casual sportsperson	−0.034	−0.090
	(0.035)	(0.055)
CEO enthusiast sportsperson	−0.152***	−0.248**
	(0.056)	(0.101)
Log (total assets)	0.180***	−0.110***
	(0.017)	(0.040)
Book leverage	−0.134	0.306***
	(0.088)	(0.116)
Return on assets	0.293**	0.047
	(0.121)	(0.125)
Log (boardsize)	0.044	−0.041
	(0.101)	(0.089)
Institutional ownership (%)	−0.463***	−0.187**
	(0.077)	(0.095)
Blockholder	0.157**	0.211***
	(0.063)	(0.061)
Tobin's Q	0.021***	0.004
	(0.005)	(0.006)
Cash-to-assets	0.196*	0.076
	(0.114)	(0.114)
CEO age	0.040***	−0.005
	(0.014)	(0.018)
CEO age squared	−0.000***	0.000
	(0.000)	(0.000)
CEO ownership (%)	−0.007***	−0.003
	(0.002)	(0.002)
Log (CEO tenure)	−0.001	0.036*
	(0.015)	(0.021)
Female CEO	0.032	0.103
	(0.074)	(0.138)
Intercept	−3.151***	0.162
	(0.677)	(0.598)
N	15,096	15,096
Adj. R-sq	0.250	0.510
Industry and year fixed effects	Yes	No
Firm and year fixed effects	No	Yes
CEO casual sportsperson vs. CEO enthusiast sportsperson (*p*-value)	0.049**	0.136

All variables are defined in Appendix A1

Standard errors are in parentheses and clustered at the firm level

***, **, * denote significance at the 1, 5, and 10% levels

since adverse environmental events are costly for the firm (Gloßner, 2019). Last, the positive coefficients for Tobin's Q and Cash-to-Assets imply that growth firms and more liquid firms have better environmental performance.

The coefficient for CEO age is positive and significant, while its square is negative, implying that firms with an older CEO have better performance at a decreasing rate. Similar studies (e.g., Borghesi et al., 2014; Hegde & Mishra, 2019) report a negative relation between a firm's CEO's age and CSR performance. However, those studies generally consider a composite score of social and environmental factors, while we only utilize the environmental factors. Our results indicate that a CEO's age may affect environmental and social performance differently. Institutional Ownership and CEO Ownership both have significant negative coefficients, implying that firms with higher external ownership or larger CEO ownership stakes have worse CSR performance.

One or more unobserved firm-level variables may drive the results in specification 1. To alleviate this concern, specification 2 uses firm in place of industry fixed effects. The coefficient for CEO Casual Sportsperson is insignificant and has a magnitude of −0.090, while the coefficient for CEO Enthusiast Sportsperson is −0.248 (p=0.014). Specifically, firms led by an Enthusiast Sportsperson have an approximately 5% (=−0.248 / 5) lower Environmental Score than the median in-sample firm. This figure also equates to about 25.5% (=−0.248 / 0.974) of one standard deviation in the distribution of Environmental Score. A test of differences between the coefficients for our two sporting dummies fails to indicate they differ.

The coefficients for both sportsperson dummies in specification 2 are consistent in sign but higher in absolute magnitude than in specification 1, where we applied industry fixed effects. It is important to note that the firm fixed effects model in specification 2 measures the within-firm variation where two types of sportspersons (non-, casual, or enthusiast) CEOs lead the firm at different times in our sample. This measurement issue exists because we consider a CEO's sporting participation rate static over time; casual sportspersons are always casual participants and the same for enthusiasts. We only have data on one CEO for most in-sample firms. This lack of intra-firm variation results in the firm fixed effects model absorbing any CEO-based effects for those firms with only one in-sample CEO. Because of these potentially confounding measurement issues, our subsequent analysis only considers industry fixed effects.

Even after controlling for factors that may impact the firm and CEO, and regardless of whether we employ industry and year or firm and year fixed effects, the evidence suggests a consistent and significantly negative effect of CEO Enthusiast Sportsperson on firm environmental score. The likely collinearity among control variables and changing from industry to firm fixed effects causes some control variable coefficients to gain or lose statistical significance. These differences highlight the role that unobserved variables, for which firm fixed effects account, play in determining firm-level environmental performance. However, the coefficient on our variable of focus, CEO Enthusiast Sportsperson, remains significantly negative.

Table 4 CEO sporting activity on firm environmental strengths and concerns

	(1) Env. strengths	(2) Env. concerns
CEO casual sportsperson	−0.014	0.020
	(0.031)	(0.022)
CEO enthusiast sportsperson	−0.105***	0.048
	(0.039)	(0.041)
Log (total assets)	0.306***	0.126***
	(0.016)	(0.012)
Book leverage	−0.297***	−0.164**
	(0.079)	(0.071)
Return on assets	0.284***	−0.008
	(0.106)	(0.073)
Log (boardsize)	0.132	0.089**
	(0.109)	(0.042)
Institutional ownership (%)	−0.564***	−0.101**
	(0.081)	(0.045)
Blockholder	0.048	−0.109**
	(0.047)	(0.048)
Tobin's Q	0.023***	0.002
	(0.005)	(0.002)
Cash-to-assets	0.297***	0.101*
	(0.111)	(0.058)
CEO age	0.057***	0.017*
	(0.012)	(0.009)
CEO age squared	−0.000***	−0.000
	(0.000)	(0.000)
CEO ownership (%)	−0.005***	0.002
	(0.002)	(0.001)
Log (CEO tenure)	−0.022	−0.021**
	(0.015)	(0.009)
Female CEO	0.085	0.052
	(0.087)	(0.045)
Intercept	−3.663***	−0.512
	(0.391)	(0.691)
N	15,096	15,096
Adj. R-sq	0.381	0.319
Industry and year fixed effects	True	True
CEO casual sportsperson vs. CEO enthusiast sportsperson (*p*-value)	0.037**	0.522

All variables are defined in Appendix A1

Standard errors are in parentheses and clustered at the firm level

***, **, * denote significance at the 1, 5, and 10% levels

The results of Table 3 support our Plunderer Hypothesis but not our Savior Hypothesis. Firms with a CEO who frequently participates in sporting activities have lower environmental performance. These results indicate that the consumptive environmental views incurred from substantial experiences hunting and fishing overshadow any protective attitudes and extend to the decisions a CEO's firm makes.

However, a firm's Environmental Score is composed of two parts: strengths and concerns. Di Guili and Kostovetsky (2014) note that it is easier to affect the strengths since they are decisions the firm makes, compared to the concerns, which are outcomes the firm experiences. Therefore, if managerial preferences drive the results, the effect should center on strengths, not concerns.

Table 4 repeats the previous analysis but uses environmental strengths and concerns as separate dependent variables to verify that the previous results are due to managerial decisions. In specification 1, the dependent variable is Environmental Strengths. Both sporting coefficients have a negative sign, implying an overall negative relation between managerial sporting activity and pro-environmental decision-making. The coefficient for CEO Casual Sportsperson is −0.014 but insignificant. However, the coefficient for CEO Enthusiast Sportsperson is significant at −0.105 ($p = 0.007$). The median in-sample firm has zero strengths, preventing us from comparing the sportsperson effect against the median firm. The magnitude of the coefficient is equivalent to 11.3% (= −0.105 / 0.928) of one standard deviation in the distribution of Environmental Strengths. A test of differences between our two sporting dummy coefficients indicates that the two coefficients are different at the 5% significance level. Again, this difference implies that lower environmental performance is not present in firms led by a Casual Sportsperson, only in those with an enthusiast.

Environmental Concerns is the dependent variable in specification 2. The coefficients for both sportsperson dummies are positive but insignificant, indicating that firms led by a sportsperson do not experience different environmental outcomes. A test of differences between the two sportsperson coefficients determines that the difference is insignificant. Specification 2 indicates no difference in firm-level environmental outcomes based on the CEO's participation in sporting activities, as measured by MSCI. Table 4 shows that the lower performance in enthusiast sportspersons' firms is due to fewer positive environmental decisions, not from incurring more adverse outcomes. The centralization of the effect in the environmental strengths is consistent with existing research that determines CEO discretion affects pro-CSR decisions resulting in strengths, rather than concerns. (Manner, 2010). These results support our plunderer hypothesis since making fewer pro-environmental decisions indicates environmental insensitivity.

We next investigate which categories of environmental performance managerial sporting experiences affect for two reasons. First, the effect that our previous findings document may concentrate on one or more environmental categories. This possibility is consistent with the notion that outdoor recreationists care more for environmental issues

Table 5 CEO sporting activity on environmental categories

	(1) Environmental opportunities	(2) Pollution	(3) Climate change	(4) Natural capital
CEO casual sportsperson	−0.016	−0.013	−0.006	0.012
	(0.017)	(0.011)	(0.014)	(0.016)
CEO enthusiast sportsperson	−0.008	−0.038*	−0.057***	−0.033*
	(0.025)	(0.020)	(0.018)	(0.020)
Log (total size)	0.124***	−0.005	0.087***	0.061***
	(0.007)	(0.006)	(0.006)	(0.008)
Book leverage	−0.120***	0.045	−0.114***	−0.085**
	(0.041)	(0.030)	(0.038)	(0.042)
return on assets	0.142**	0.094***	0.034	−0.018
	(0.064)	(0.036)	(0.044)	(0.064)
log (boardsize)	0.045	−0.009	0.054	0.051
	(0.036)	(0.036)	(0.038)	(0.036)
Institutional ownership (%)	−0.140***	−0.064**	−0.212***	−0.209***
	(0.038)	(0.026)	(0.033)	(0.044)
Blockholder	0.004	0.001	0.042*	0.070
	(0.028)	(0.020)	(0.022)	(0.064)
Tobin's Q	0.007***	0.003**	0.009***	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
Cash-to-assets	0.121**	−0.008	0.097**	0.029
	(0.055)	(0.036)	(0.043)	(0.057)
CEO age	0.020***	0.003	0.025***	0.009
	(0.006)	(0.004)	(0.006)	(0.006)
CEO age squared	−0.000***	−0.000	−0.000***	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
CEO ownership (%)	−0.002**	−0.001*	−0.002***	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Log (CEO tenure)	−0.007	−0.000	−0.004	−0.007
	(0.008)	(0.005)	(0.007)	(0.008)
Female CEO	0.032	−0.003	0.021	−0.027
	(0.039)	(0.022)	(0.035)	(0.038)
Intercept	−1.407***	−0.268	−1.319***	−0.792***
	(0.209)	(0.282)	(0.184)	(0.224)
N	15,096	15,096	15,096	5,600
Adj. *R*-sq	0.271	0.091	0.272	0.234
Industry and year fixed effects	Yes	Yes	Yes	Yes
CEO casual sportsperson vs. CEO enthusiast sportsperson (*p*-value)	0.760	0.230	0.009***	0.069*

All variables are defined in Appendix A1

Standard errors are in parentheses and are clustered at the firm level

***, **, * denote significance at the 1, 5, and 10% levels

closely related to their preferred type of recreation than more distantly related problems (Dunlap & Heffernan, 1975). Second, our plunderer and savior hypotheses may simultaneously be true but in different categories. For example, sportspersons might be concerned about pollution since it degrades the natural habitats they use for hunting and fishing. However, at the same time, they are skeptical about climate change despite noting its effects on natural habitats

(Love-Nichols, 2020). Such competing effects might net out against each other.

Table 5 investigates categorical performance using Eq. 1 but separately tests the four categorical scores: Environmental Opportunities, Pollution and Waste, Climate Change, and Natural Capital. In specification 1, the dependent variable is Environmental Opportunities, which contains factors generally related to investments, technology, and renewable energy sources. This category has no a priori relation between sporting activities and the breadth of topics it contains. Therefore, we do not expect managerial sporting activity to affect the firm in this category. Consistent with our expectation, the coefficients for both sportsperson dummies are insignificant and provide no support for either hypothesis. Additionally, a t-test indicates that the two sportsperson coefficients are not significantly different, implying no effect in this environmental category.

The next category is Pollution and Waste. Sportspersons use natural habitats to enjoy their recreation, and pollution emission alongside waste inaction degrades those areas. Their personal use of the environment suggests motivation to reduce pollution and waste to ensure that a sufficient quantity and quality of natural habitats remain to sustain their recreation. On the other hand, not enacting pollution and waste controlling measures depreciates outdoor recreation quality through environmental degradation.

Both sporting dummy coefficients are negative in specification 2 of Table 5, implying an overall negative relation between managerial sporting activity and pollution and waste performance. The coefficient for Casual Sportsperson is − 0.013 but insignificant, while the coefficient for CEO Enthusiast Sportsperson is larger in magnitude at − 0.038 ($p = 0.058$). This magnitude implies that firms led by an enthusiast have an approximate 2% (= − 0.038 / 2) lower Pollution and Waste Score than the median firm in our sample. It is also equivalent to 12.5% (= − 0.038 / 0.305) of one standard deviation in the score. Last, a test for differences between the sporting coefficients determines that they are not statistically different. The results of specification 2 indicate that firms led by an Enthusiast Sportsperson enact fewer pollution and waste controlling measures, which is indicative of plundering, not saving the environment.

Climate Score, primarily a function of carbon output, is the next category we consider. Research indicates that climate change has many detrimental effects on hunting and fishing, such as loss of habitat, migration pattern changes, and lack of game sustenance (National Research Council, 2011). Therefore, as with pollution and waste, sportspersons have the self-serving motivation to reduce carbon output to preserve their recreational activity. Not enacting carbon-reducing measures again indicates plundering the environment by reducing environmental quality.

In specification 3, the results indicate an overall negative relationship between firms with a sportspersons manager and their Climate Score. The coefficient for CEO Casual Sportspersons is − 0.006 and insignificant, but the coefficient for the enthusiast sportspersons is significant at − 0.057 ($p = 0.002$). The magnitude of the coefficient indicates that firms led by an Enthusiast Sportsperson have an approximately 5.7% (= − 0.057 / 1) lower Climate Score than the median in-sample firm. The coefficient magnitude also equals 14.4% (= − 0.057 / 0.395) of one standard deviation in the score distribution. Additionally, a t-test determines that the difference between the casual and enthusiast dummy coefficients is significant ($p = 0.009$). This last finding indicates that the debased performance in the climate category is mainly in those firms led by an enthusiast.

MSCI introduced the Natural Capital Score in 2014, and our sample includes 5600 observations between 2014 and 2018. This category has the clearest relation with hunting and fishing since it directly measures impacts on natural habitats and animal populations. In specification 4, the coefficient for Casual Sportsperson is insignificant and has a magnitude of 0.012. The coefficient for CEO Enthusiast Sportsperson is mildly significant and larger in absolute magnitude at − 0.033 ($p = 0.100$). This equates to a 3.3% (= − 0.033 / 1) decrease in the Natural Capital Score for firms led by an Enthusiast Sportsperson compared to the median in-sample firm. The magnitude also equates to 10.6% (= − 0.033 / 0.310) of one standard deviation in the score distribution. A test of differences between the two sportsperson coefficients finds they are slightly different ($p = 0.069$), again indicating that the effects on the firm's environmental performance do not manifest unless the CEO is an enthusiast.

Table 5 remains consistent with our previous results and indicates that firms led by enthusiast sportspersons make fewer positive environmental decisions concerning pollution and waste, climate change, and natural capital. Additionally, this effect is the most substantial in carbon-reducing decisions and is consistent with the previous literature that documents a heightened climate change skepticism in sportspersons. As in the earlier tables, these results support our plunderer hypothesis, indicating that the consumptive side of hunting and fishing transfers to the environmental performance of an Enthusiast Sportsperson's firm. Also, consistent with the previous tables, we find no support for our Savior Hypothesis.

Regulatory Settlement

The results thus far indicate that firms led by enthusiast sportspersons have lower environmental performance due to making fewer pro-environmental decisions across

environmental categories. It is possible that making fewer positive environmental decisions increases the probability of non-compliance with environmental regulations if those positive decisions prevent regulatory infringements. Li et al. (2021) document this effect and determine that firms discharge less waste at locations near the CEO's hometown. The authors determine that managerial preference toward their childhood locale influences their decision on where to make environmentally friendly investments.

MSCI includes a factor that denotes if a firm pays major environmental regulatory settlements. A benefit of analyzing only large settlements is that the associated violations are more likely to receive a higher level of media attention (Elsasser & Dunlap, 2013), negatively affecting corporate reputation and future financial performance (Miles & Covin, 2000). Negative media coverage of this type has spillover externalities on future CSR performance because unethical CEO-CSR activities lose stakeholder support in future CSR initiatives (Ogunfowora et al., 2018). Hence, we not only analyze those violations likely to incur the highest total economic costs for firms but those that are also most likely to result in the most significant decline in CSR performance. We use this factor to create our regulatory settlement dummy variable. We then use the dummy on the left-hand side of a logistic specification of Eq. 1. Due to perfect collinearity, we do not include fixed effects.

Table 6 reports the results. The coefficient for CEO Casual Sportsperson is 0.036 but not significant. However, the coefficient for CEO Enthusiast Sportsperson is significant with a magnitude of 0.579 ($p < 0.001$), equivalent to a 57.4% increase in the log-odds ratio of major regulatory settlement. An F-test of the overall effect of CEO sporting activity indicates that managerial hunting and fishing significantly ($p < 0.001$) affect the probability of regulatory non-compliance. We also test for differences between firms led by casual and enthusiast sportspersons and find they are significant ($p = 0.002$).

Table 6 indicates that firms with a CEO who is an Enthusiast Sportsperson are more likely to suffer a costly environmental event that violates federal regulation. This result is not present in firms led by either a casual or a non-sportsperson, consistent with our previous finding that a manager's sporting experiences do not affect their decisions unless they are a sporting enthusiast. These results again support our Plunderer Hypothesis.

Robustness Tests

It is possible that a CEO's affiliation with either the Democrat or Republican party correlates with the propensity to obtain sporting licenses and CSR decisions. Most of the existing research on the relation between managerial politics and CSR indicates that firms led by Democrats perform better (i.e., Di Guili & Kostovetsky, 2014), except for Borghesi et al. (2014), who find that a CEO's political party does not affect their firm's CSR.

To ensure the manager's party affiliation does not drive our previous results, we first obtain each CEO's voter registrations from LNPR and identify 52% of in-sample CEOs that ever register with either the Republican or Democratic party. Next, we create the dummy variable, CEO Democrat, that takes the value of one if the CEO is registered with the Democratic party during that fiscal year and zero otherwise. CEOs who register with the Republican party act as the mutually exclusive reference group.[12] Then, we replicate our main results on this subsample of CEOs while controlling for their party affiliation with the dummy variable Democrat CEO.

In Table 7, Environmental Score is the dependent variable in all specifications. The democrat dummy is omitted in specification 1 to establish the baseline sporting effect in the subsample of CEOs who register with either party. These coefficients for the two sporting dummies remain consistent in sign and magnitudes with Table 3. Specification 2 includes the democrat dummy to account for the CEO's party. The casual and Enthusiast Sportsperson coefficients are consistent in sign and magnitude with their base specifications, albeit the Enthusiast Sportsperson is only significant at the 10% level. The democrat dummy is insignificant, indicating that a CEO's party does not affect their firm's environmental performance. In specification 3, we interact the democrat dummy with our two sporting indicator variables to investigate partial effects. Neither interacted coefficient is significant, implying that the impact of hunting and fishing does not vary between members of different parties. Table 7 results reject any confounding effect of a manager's political party.

Despite leading our dependent variables by 1 year, another remaining concern is selection bias between the firm and the CEO. It is possible that a latent variable, such as comradery, connects the CEO's sporting participation with the firm's inclination to hire that CEO. To help alleviate this concern, we match observations where an Enthusiast Sportsperson helmed the firm with an observation from a firm in the same industry (Fama–French 49 Industry Classification)

[12] No CEOs in our sample transition between parties during their in-sample tenure.

and year where a non-sportsperson led the firm. The algorithm considers all firm-level control variables when matching observations. We do not include the observations where a Casual Sportsperson led the firm because our previous results indicate differences between enthusiasts and non-sportspersons. Then, we verify that the matched sample does not differ between the observations with a non-sportsperson CEO and those with an Enthusiast Sportsperson. Finally, we recompile our previous results on the matched subset with Environmental Score and the six categorical scores as dependent variables.

Table 8 reports the results, and panel A shows the results of logit regressions with the CEO Enthusiast Sportsperson dummy as the dependent variable. In specification 1, we conduct a pre-match analysis and include all firm-year observations where the firm was led by either a non- or an Enthusiast Sportsperson. Several control variables significantly relate to the CEO Enthusiast Sportsperson dummy. However, in specification 2, none of those controls are significant in the matched subsample. This lack of significance in the firm-level variables indicates that the matched panel is balanced. The decrease in the *R*-squared value from 9.4% in specification 1 to 0.7% in specification 2 further indicates that firms do not select their CEO based on these variables.

Panel B of Table 8 computes differences in the dependent and firm-level control variables between observations with and without a CEO Enthusiast Sportsperson in the matched subsample. None of the control variables significantly differ between the firm-years led by an enthusiast and a non-sportsperson. The lack of significant differences further indicates that the firms led by a non-sportsperson are not dissimilar from those with an Enthusiast Sportsperson based on the selection variables. However, the pairwise t-tests indicate that firms led by an Enthusiast Sportsperson have lower environmental and natural capital scores than those led by a non-sportsperson. These differences indicate that environmental performance differs between similar firms with different types of sportsperson CEOs at a univariate level.

In Panel C, we recompute our main specification with each of the five scores as separate dependent variables. The coefficient for CEO Enthusiast Sportsperson is significant in each of the specifications except 2, where Environmental Opportunities Score is the dependent variable. These results are similar to those in Tables 3 and 5. They also indicate that selection concerns between the firm and CEO do not drive the negative relation between CEO Enthusiast Sportspersons and Environmental Scores that we document.

To help enforce the notion that CEO sportsperson preferences drive the effects we document thus far, we next analyze changes in Environmental Score surrounding CEO turnover. Specifically, we are interested in the scenario where the firm changes from a CEO who is an Enthusiast Sportsperson to a non-sportsperson or vice versa. We identify 138 such transitions in our sample. Then, we compute the change in Environmental Score and each firm-level dependent variable between $t-1$ and $t+1$ for each transition, where $t=0$ is the year of the CEO transition.[13] Baghdadi et al. (2022) perform a similar analysis to determine that pilot CEOs lead to a lower effective tax rate in the firm they manage.

Table 9 reports the results. The coefficient for the change in CEO Enthusiast Sportsperson is significant and negative at -0.176. This sign of the coefficient indicates that a change from a non- to an Enthusiast Sportsperson is related to a downward change in the firm's Environmental Score. Alternatively, a converse change from an enthusiast to a non-sportsperson CEO is associated with an upward change in the firm's Environmental Score. The results of Table 9 indicate that CEOs who are enthusiast sportspersons do lead to changes in the firm's Environmental Score.

We argue that having sporting license data from only 21 states does not affect the inferences of our results for three reasons. First, over 60% of our CEO sporting licenses are non-resident licenses. The high percentage of non-resident licenses helps mitigate this concern because each CEO can procure a sporting license from any in-sample state. Second, the effect we document is in the pool of CEOs who obtain more than five sporting licenses, which decreases the probability that a few unreported licenses for any CEO would sway the results. Third, in unreported results, we identify CEOs who do not have a reported sporting license but live in a non-reporting, top five hunting or fishing license-issuing state. Those CEOs have the highest probability of having an unreported license. We then re-run our main results while including the dummy variable that captures those CEOs. The results remain unchanged, and the magnitude of the coefficient on the dummy variable is indistinguishable from zero, assuaging concerns that missing licenses from non-reporting states bias our results.

Conclusion

Upper echelons theory suggests that CEO experiences affect strategic decision-making, and recent research examines executive activities that may influence CSR. We investigate if CEOs who experience the outdoors through hunting and fishing, collectively called sporting activities, make different environmental decisions in their firms. Existing research proposes two converse ethical channels through which sporting activities might affect the participant's environmental views. The first channel proposes that sportspersons work to save the environment

[13] This results in the possible values of -1 and 1 for *Δ CEO Enthusiast Sportsperson*.

due to a protective connection with the environment that hunting and fishing promote. Alternatively, the second channel operates on the notion that sporting activities consume wildlife from the environment combined with a documented bias toward climate skepticism present in the sporting community.

We identify CEOs who participate in hunting and fishing through their sporting licenses, as reported by the license-issuing regulator in 21 states. Our results show that almost one-third of CEOs purchase at least one license, and many CEOs purchase multiple licenses. Collectively, more than 30% obtain at least one license. This rate of CEO's sporting participation is almost three times the national average, indicating how widespread these activities are in the pool of senior corporate managers. Then, we separate CEOs into high, low, and no-participation intensities and test if firms led by a CEO with either sporting intensity make less or more favorable environmental decisions than those with a manager who does not hunt or fish. Prior research documents the need to control for the degree of participation in leisure activities, so we separate CEOs with sporting licenses into casual and enthusiast groups.

The evidence consistently implies that firms led by CEOs with a high sporting intensity make less favorable environmental decisions regarding climate change, pollution, and natural capital. On average, this effect is equal to approximately 5% of the median firm's environmental performance. The significance and impact of this effect are non-trivial. For example, firms led by a sporting enthusiast are significantly more likely to incur a significant financial settlement for violating a federal environmental protection act, highlighting the severity of the environmental underperformance that we document in this study. Overall, these results support the hypothesis that sporting CEOs plunder rather than save the environment, but only when they accrue sufficient sporting experience.

Our results add to several strands of literature and have implications for future research. Specifically, we contribute to the line of literature that addresses the effects of managerial behavioral consistency and experiential learning on firm-level outcomes, and more specifically on environmental outcomes. Since the effect that we document manifests when the CEO has accrued a certain threshold of experience, as measured through their participation intensity, this suggests that other experientially generated biases might also be impacted by a minimum experience threshold or intensity. How managers experience environmental resources impacts the environmental decisions their firms make.

Table 6 CEO sporting activity on major environmental regulatory settlements

	(1) Regulatory settlemen
CEO casual sportsperson	0.036
	(0.105)
CEO enthusiast sportsperson	0.579***
	(0.129)
Log (total size)	0.623***
	(0.037)
Book leverage	0.646**
	(0.312)
Return on assets	−1.043*
	(0.633)
Log (boardsize)	0.563**
	(0.240)
Institutional ownership (%)	−1.289***
	(0.282)
Blockholder	0.218
	(0.146)
Tobin's Q	−0.028
	(0.019)
Cash-to-assets	−2.074***
	(0.637)
CEO age	0.093
	(0.070)
CEO age squared	−0.001
	(0.001)
CEO ownership (%)	−0.015
	(0.013)
Log (CEO tenure)	−0.155**
	(0.066)
Female CEO	−0.161
	(0.319)
Intercept	−11.287***
	(2.007)
N	10,993
Pseudo R-sq	0.202
Year fixed effects	True
Overall effect of CEO sporting activity (*p*-value)	0.000***
CEO casual sportsperson vs. CEO enthusiast sportsperson (*p*-value)	0.002***

All variables are defined in Appendix A1

Standard errors are in parentheses and clustered at the firm level

***, **, * denote significance at the 1, 5, and 10% levels

Table 7 CEO sporting activity and political registration on firm environmental score

	(1) Env. Score	(2) Env. Score	(3) Env. Score
CEO casual sportsperson	−0.034	−0.022	0.004
	(0.035)	(0.046)	(0.047)
CEO enthusiast sportsperson	−0.152***	−0.144*	−0.141*
	(0.056)	(0.074)	(0.078)
CEO Democrat		0.031	0.077
		(0.057)	(0.063)
CEO casual sportsperso*n* × CEO democrat			−0.257
			(0.158)
CEO enthusiast sportsperso*n* × CEO democrat			0.434
			(0.128)
Log (total assets)	0.180***	0.137***	0.138***
	(0.017)	(0.024)	(0.024)
Book leverage	−0.134	−0.085	−0.093
	(0.088)	(0.118)	(0.118)
Return on assets	0.293**	0.314*	0.280
	(0.121)	(0.172)	(0.171)
Log (boardsize)	0.044	0.018	0.014
	(0.101)	(0.163)	(0.162)
Institutional ownership (%)	−0.463***	−0.489***	−0.489***
	(0.077)	(0.115)	(0.114)
Blockholder	0.157**	0.134	0.133
	(0.063)	(0.094)	(0.095)
Tobin's Q	0.021***	0.023***	0.024***
	(0.005)	(0.006)	(0.006)
Cash-to-assets	0.196*	0.059	0.090
	(0.114)	(0.183)	(0.182)
CEO age	0.040***	0.026	0.023
	(0.014)	(0.019)	(0.019)
CEO age squared	−0.000***	−0.000	−0.000
	(0.000)	(0.000)	(0.000)
CEO ownership (%)	−0.007***	−0.010***	−0.010***
	(0.002)	(0.003)	(0.003)
Log (CEO tenure)	−0.001	0.028	0.031
	(0.015)	(0.020)	(0.020)
Female CEO	0.032	0.123	0.135
	(0.074)	(0.135)	(0.136)
Intercept	−3.151***	−1.814***	−1.792***
	(0.677)	(0.643)	(0.646)
N	7980	7980	7980
Adj. R-sq	0.250	0.232	0.231
Industry and year fixed effects	Yes	Yes	Yes
CEO casual sportsperson vs. CEO enthusiast sportsperson (*p*-value)	0.049**	0.123	0.358

All variables are defined in Appendix A1

Standard errors are in parentheses and clustered at the firm level

***, **, * denote significance at the 1, 5, and 10% levels

Table 8 CEO Sportspersons and firm environmental performance—matched sample

Panel A: pre-match psm regression and post-match diagnostic regression		
	Dependent variable: CEO sporting enthusiast	
	Pre-match	Post-match
	(1)	(2)
Log (total assets)	−0.166**	−0.154
	(0.065)	(0.122)
Book leverage	0.910*	1.419
	(0.517)	(0.914)
Return on assets	1.744**	−1.878
	(0.695)	(1.911)
Log (boardsize)	1.210***	0.381
	(0.407)	(0.671)
Institutional ownership	−0.536	−0.845
	(0.416)	(1.031)
Blockholder	0.148	−0.068
	(0.200)	(0.718)
Tobin's Q	−0.021	0.118
	(0.022)	(0.102)
Cash-to-assets	−2.696***	0.341
	(0.864)	(1.614)
Industry & year fixed effects	Yes	Yes
Observations	11,438	1054
Pseudo R-sq	0.094	0.007

Panel B: post-match differences test				
Variable	Firm year observations with a CEO enthusiast sportsperson ($n=527$)	Firm year observations with a CEO non-sportsperson ($n=527$)	Difference	*t*-statistics
Dependent variables				
Environmental score	4.956	5.120	−0.164***	−2.582
Environmental opp score	1.175	1.202	−0.027	−0.913
Pollution score	1.924	1.954	−0.030	−1.414
Climate score	0.989	1.034	−0.046*	−0.094
Natural capital score	1.011	1.048	−0.036***	−3.268
Independent variables				
Log (total assets)	7.833	7.902	−0.077	−0.838
Book leverage	0.236	0.222	0.014	1.570
Return on assets	0.049	0.053	−0.004	−1.246
Log (boardsize)	2.228	2.229	0.001	0.110
Institutional ownership	0.838	0.840	−0.002	−0.336
Blockholder	0.989	0.989	0.000	0.000
Tobin's Q	2.212	2.155	0.057	0.785
Cash-to-assets	0.075	0.079	0.004	−0.801

Panel C: post-match OLS regressions					
	(1)	(2)	(3)	(4)	(5)
	Environmental score	Environmental opportunities score	Pollution score	Climate score	Natural capital score
CEO enthusiast sportsperson	−0.223***	−0.038	−0.050*	−0.063*	−0.043***

Table 8 (continued)

Panel C: post-match OLS regressions					
	(1)	(2)	(3)	(4)	(5)
	Environmental score	Environmental opportunities score	Pollution score	Climate score	Natural capital score
	(0.084)	(0.034)	(0.026)	(0.032)	(0.016)
Log (Total assets)	0.091*	0.147***	−0.042**	0.057***	0.028***
	(0.053)	(0.022)	(0.018)	(0.019)	(0.010)
Book leverage	0.096	−0.218*	0.186*	−0.072	0.029
	(0.313)	(0.123)	(0.101)	(0.140)	(0.078)
Return on assets	−1.144	0.351	−0.410	−0.753**	−0.239
	(0.886)	(0.388)	(0.306)	(0.295)	(0.204)
Log (boardsize)	−0.259	−0.065	−0.024	0.060	−0.060
	(0.239)	(0.109)	(0.079)	(0.085)	(0.045)
Institutional Ownership	−0.268	−0.202	−0.343***	−0.187	−0.078
	(0.359)	(0.176)	(0.114)	(0.139)	(0.079)
Blockholder	0.537	0.081	0.087	0.078	0.112
	(0.339)	(0.135)	(0.091)	(0.094)	(0.092)
Tobin's Q	0.093**	0.002	0.028**	0.040***	0.012*
	(0.040)	(0.015)	(0.012)	(0.014)	(0.007)
Cash-to-Assets	0.455	0.231	0.246	0.179	0.172
	(0.551)	(0.231)	(0.181)	(0.195)	(0.111)
CEO Age	0.121**	0.062**	−0.006	0.030	0.014**
	(0.053)	(0.024)	(0.016)	(0.021)	(0.006)
CEO Age Sq	−0.001**	−0.001**	0.000	−0.000	−0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CEO Ownership	−0.553	−0.518	−0.274	0.362	0.075
	(1.095)	(0.539)	(0.247)	(0.454)	(0.192)
Panel C Continued					
Log (CEO tenure)	0.005	−0.013	0.045**	−0.024	−0.014
	(0.052)	(0.023)	(0.018)	(0.024)	(0.010)
Female CEO	−0.234	0.139	−0.046	−0.116**	−0.061**
	(0.168)	(0.129)	(0.050)	(0.058)	(0.026)
Intercept	1.322	−1.548**	2.768***	−0.216	0.435*
	(1.603)	(0.725)	(0.539)	(0.694)	(0.242)
Industry & year fixed effects	Yes	Yes	Yes	Yes	Yes
N	1,054	1,054	1,054	1,054	1,054
Adj. R-sq	0.252	0.241	0.132	0.283	0.079

All variables are defined in Appendix A1

Robust standard errors are in parentheses

***, **, * denote significance at the 1, 5, and 10% levels

Table 9 Change in firm environmental score surrounding CEO turnover

	(1) Δ Environmental score
Δ CEO enthusiast sportsperson	−0.176**
	(0.070)
Δ Log (total assets)	−0.366
	(0.458)
Δ Book leverage	0.925
	(1.587)
Δ ROA	1.555
	(1.924)
Δ Log (boardsize)	−0.473***
	(0.170)
Δ Institutional ownership (%)	0.178
	(0.469)
Δ Tobin's Q	0.048
	(0.029)
Δ Cash-to-assets	0.316
	(2.019)
Δ CEO age	0.015*
	(0.008)
Δ CEO ownership (%)	0.010
	(0.023)
Δ Female CEO	−0.059
	(0.363)
Intercept	−2.252***
	(0.821)
Year fixed effects	Yes
N	138
Adj. R-sq	0.128

All variables are defined in Appendix A1

Robust Standard errors are in parentheses

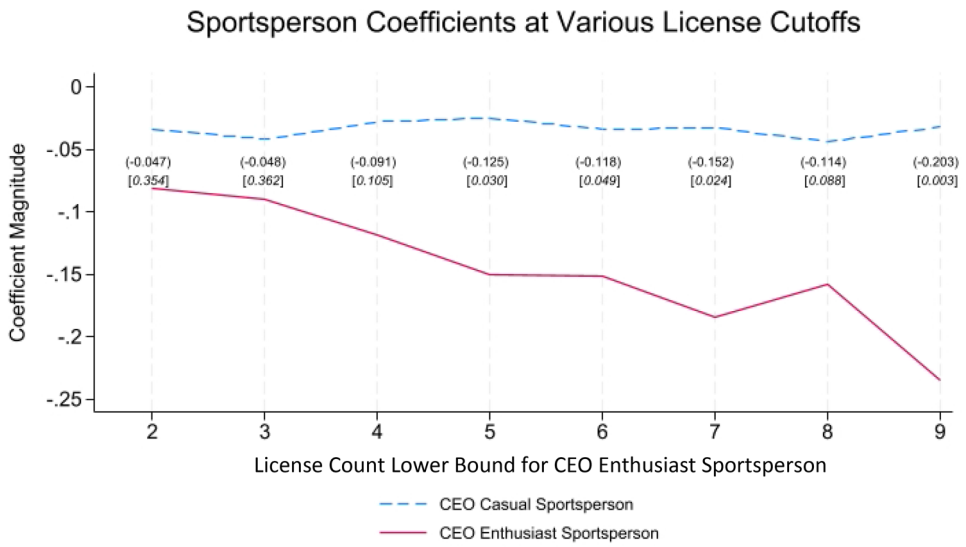
***, **, * denote significance at the 1, 5, and 10% levels

Appendix A1: Variables

Variable	Definition
Environmental score	ENV strengths—ENV Concerns (MSCI)
Environmental strengths	Sum of environmental strength factors (MSCI)
Environmental concerns	Sum of environmental concern factors (MSCI)
Environmental opportunity score	Sum of environmental opportunity strengths—sum of environmental opportunity concerns (MSCI)
Pollution score	Sum of pollution strengths—sum of pollution concerns (MSCI)
Climate change score	Sum of climate change strengths—sum of climate change concerns (MSCI)
Natural capital score	Sum of natural capital strengths—sum of natural capital concerns (MSCI)
Regulatory compliance	Binary variable equal to 1 if the firm incurs $40,000 or more, on average, in environmental regulatory settlements, and 0 otherwise (MSCI)
CEO casual sportsperson	Binary variable equal to 1 if the CEO obtains between one and five sporting licenses, and 0 otherwise (LNPR)
CEO enthusiast sportsperson	Binary variable equal to 1 if the CEO obtains more than five sporting licenses, and 0 otherwise (LNPR)
Log (total assets)	Natural log of total firm assets (Compustat)
Leverage	Firm leverage (Compustat)
ROA	Firm return on assets (Compustat)
Log (boardsize)	Natural log of the number of directors on the firm's board (BoardEx)
Institutional ownership (%)	Percentage of firm equity owned by institutional investors (Thompson Reuters)
Blockholder	Dummy variable equal to one if the firm has one or more investors holding > 5% of total firm equity, and 0 otherwise (Thompson Reuters)
Tobin's Q	Market value of assets over replacement value of assets (Compustat)
Cash-to-assets	Ratio of firm cash and cash-equivalents to firm total assets (Compustat)
CEO age	CEO age in years (Execucomp)
CEO ownership (%)	CEO firm ownership, in percent (Execucomp)
Log (CEO tenure)	Natural log of CEO tenure (Execucomp)
Female CEO	Dummy variable equal to 1 if the CEO is female, and 0 otherwise (Execucomp)

The variable source is in parentheses

Appendix A2: Segregating Casual vs. Enthusiast Sportspersons at Various License Cutoffs



Coefficients for CEO Casual and Enthusiast Sportspersons, assuming different cutoff levels between the two categories.

Data availability Due to a confidentiality agreement, supporting data is not available.

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