Risky Business: CEO Risk Tolerance and Non-GAAP Earnings

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Abstract

CEO influence on non-GAAP earnings is a growing area of research. Risk-taking by CEOs is one way to gauge the extent of CEO influence on firm outcomes, especially non-GAAP earnings. This research examines the association between CEO sports hobbies, a proxy for CEO risk-taking, and their company's non-GAAP earnings. In addition to the risk-tolerance of the CEO, non-GAAP earnings are the result of firm size, equity, return on assets, and changes in revenue. The extent of CEO influence was evaluated by a regression analysis of non-GAAP earnings using firm characteristics with CEO risk-taking measures and control variables such as CEO age, CEO gender, CEO tenure, and board independence. The results indicate that as *SportsRisk* increases, the likelihood of non-GAAP earnings that exceed GAAP earnings decreased. When the data was split into high and low-risk categories, the likelihood of non-GAAP earnings exceeding GAAP earnings was higher for those with high-risk activities, but the magnitude of non-GAAP exclusions was higher for the low-risk activities. Further, the data indicated that non-GAAP exclusions were more persistent for the low-risk activities.

Keywords: non-GAAP earnings, risk-taking, CEO influence, sports, hobbies

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Introduction

Risk is necessary to get a reward. Tope Awotonda, CEO of Calendly, attributes his company's success to his ability to take risks (Pompliano, 2021). Business leaders, and particularly CEOs, must be comfortable with taking risks. As the leader of the business, the CEO takes risks when making strategic decisions, managing rivals, and communicating or disclosing their company's success or minimizing their company's failures. CEOs often practice risk-taking outside the office when participating in hobbies including risky sports. Abdel-Meguid et al. (2021) found a connection between CEO narcissism and their firm's non-GAAP earnings, which is a form of communication or disclosure of firm success or failure. Is it possible the risk CEOs take in sports reflect the risk they willingly take in business?

There is widespread agreement that a CEO influences the tone and culture of their company (Black et al., 2021; Brown et al., 2012; Quigley & Hambrick, 2012), but there is little understanding of the mechanics of how their influence is instilled in the company. When upper management, specifically a CEO, is adventurous, their adventurous nature may encourage risk-taking within the company (Cain & McKeon, 2016). Their personality attributes, like risk tolerance and risk aversion, can influence the company's innovation process, appetite for corporate mergers, and stakeholders' assessment of the firm (Cain & McKeon, 2016; Ouyang et al., 2022; Sunder et al., 2017).

There is some evidence CEOs enjoy risky hobbies, but little evidence describes how their risk-taking influences their firm. A growing body of literature connects firm outcomes with CEO influences from personality characteristics. Non-GAAP earnings may be able to link CEO sports

risk to the risk CEOs choose when influencing the firm and disclosing information about the firm.

Historically, firms have provided information for investors to inform their investment decisions, and as the person in charge, the CEO has proprietary information regarding the firm's internal processes (Black & Gao, 2022; Nagar et al., 2003). When the CEO discloses proprietary information, Nagar et al. (2003) suggests some firms' financial indicators are impacted. For instance, as a result of disclosures, share price and trading volume may increase, and the firm's cost of capital may decrease. When disclosures are made with transparency, the firm and its stakeholders' benefit. However, if the CEO can influence disclosures to benefit their self-interests, the firm and its stakeholders are at risk. According to Dreman (2001), disclosures benefiting the CEO may lead to "fuzzy" numbers, which lead to "fantasy earnings." To prevent these types of disclosures, the Securities and Exchange Commission (SEC) has implemented regulations to protect investors.

The Securities and Exchange Commission (SEC) mandate that public companies use Generally Accepted Accounting Practices (GAAP) for financial reporting. However, most firms also provide information considered non-GAAP (Govindarajan et al., 2021). Non-GAAP earnings have been criticized by the SEC as misleading, if not opportunistic (Ciesielski & Henry, 2017). When firms present opportunistic non-GAAP earnings, they may be trying to improve their market value.

In addition, studies have shown that firms using non-GAAP earnings are more likely to have problems with their financial reporting. Howard Scheck, former chief accountant for the SEC's Division of Enforcement, described non-GAAP metrics as a factor for fraud risk (Leone, 2010).

This study will explore several ideas by investigating how the CEO's risk tolerance influences their firm's non-GAAP earnings. The first idea is whether firms with CEOs involved in risky sports hobbies are an indicator of non-GAAP earnings exceeding GAAP earnings. Secondly, whether exclusions from GAAP earnings for firms with CEOs with risky hobbies are an indicator of a positive association with the increase in CEO risky hobbies. Finally, whether those exclusions from GAAP earnings persisting for more than one period are associated with CEOs with risky bobbies. The research question is

How and to what degree is a CEO's sports hobby risk an indicator of non-GAAP earnings?

While CEO personal characteristics like narcissism have been related to non-GAAP earnings, there is a void in the literature for CEO risk-taking and non-GAAP earnings. Research regarding the risk tolerance of CEOs in their personal lives, for instance, their sports hobbies, will provide insight into the CEO's influence on non-GAAP measures.

Literature Review

Theoretical Review

One theory explaining why management's personality characteristics impact the strategy leading to non-GAAP earnings disclosures is the upper-echelon theory (Hambrick & Mason, 1984). Oreg and Berson (2018) describe how leaders' personalities may shape the firm's outcomes. They posit that firm leaders interpret strategy based on their personality characteristics. These strategy interpretations trickle down the organization and become embedded in the firm's culture and environment (Oreg & Berson, 2018). Given the CEO's role and broad control to influence firm strategy, CEO character traits may affect the firm outcomes and may have advantages and disadvantages for the firm (Hambrick & Quigley, 2014). As explained by Hambrick and Quigley (2014), research on the overall CEO influence is symbiotic with research on specific attributes of management, including the CEO. While research on the overall influence of the CEO is done under the umbrella of upper echelon theory, the specific attributes of the CEO are related if not entangled to the latter. This research relies on the upper echelon theory as the basis for correlating the CEO characteristic of risk tolerance to non-GAAP earnings.

Non-GAAP Earnings

Although non-GAAP earnings appear on most companies' financial disclosures, they are not under the jurisdiction of GAAP rules (Arena et al., 2021; Henry et al., 2020). Disclosing non-GAAP earnings is one way for firms to help investors better understand the company's financial position. However, because management may define non-GAAP earnings to give a more opportunistic view, some, including the SEC, fear non-GAAP earnings will provide misleading

information (Arena et al., 2021). Opportunistic non-GAAP earnings may occur when managers make their firm's earnings look better than regular GAAP earnings. Doyle et al. (2013) discuss how some firms may reclassify expenses that occur regularly as non-recurring, increasing the possibility that investors rely upon a distorted version of earnings.

Researchers disagree on the use of non-GAAP earnings. According to Black et al. (2021), non-GAAP measures are not a clear signal of an overly optimistic earnings presentation. Black et al. (2021) suggest non-GAAP earnings primarily increase useful information available to investors and other stakeholders. Other researchers criticize non-GAAP earnings because they are usually unique to one company and lack comparability to other companies (Henry et al., 2020).

The SEC regulations prohibit misleading non-GAAP measures. Regulation G, passed in 2003, cautions against the public use of non-GAAP measures without a clear explanation. However, the SEC has not clearly defined what constitutes a misleading non-GAAP measure.

CEO Influence

CEO personality and experience have been a subject for researchers studying CEO influence. According to Chen et al.(2015), firms with an overconfident CEO may have an optimistic forecast and the CEO is less open to feedback. Koch-Bayram and Wernicke (2018) found that CEOs with a military background are less likely to be involved in fraudulent activity and more likely to comply with internal controls.

Extant literature on CEOs and their influence on non-GAAP earnings has focused on cash holdings and compensation (Black et al., 2021; Lim & Lee, 2019; Tong, 2010). Lim and

Lee (2019) examined CEOs of Korean firms and found increased CEO tenure was related to a decrease in firm cash holdings.

Proxies provide valuable information when there are no direct measures of CEO influence. Both Black et al. (2021) and Abdel-Meguid et al. (2021) successfully used proxies to explain CEO influence on non-GAAP earnings. Black et al. (2021) used short-term bonuses and long-term incentive plan payments as proxies for CEO short and long-term focus on firm performance. Their study did not show a relationship between short-term bonuses and aggressive non-GAAP earnings. They found a connection between long-term incentive plan payments and aggressive non-GAAP earnings but found a negative association between long-term incentive plan payouts and the likelihood and magnitude of non-GAAP exclusions. Abdel-Meguid et al. (2021) researched CEO characteristics by using the photos of CEOs in annual reports, then measured their size and quantity as a measure of CEO narcissism.

Risk Tolerance

Research in sensation seeking by Zuckerman (1971) found thrill, adventure seeking, experience seeking, and disinhibition are related to risk-taking. Similarly, increased energy levels and impulsivity are closely related to sensation-seeking, also known as risk-taking. Further, the tendency for sensation-seeking declines with age.

Some researchers have examined risk-taking by CEOs. Luo et al. (2022) examined CEO sports risk and their firm's tax aggressiveness. Their sports-risk measure considers the injuries from various sports over the total amount of people participating in the activity. Their innovative measure uses information from the National Electronic Injury Surveillance System (NEISS) and

the U.S. Census Bureau. Although Luo et al. (2022) applied their sports risk measure to self-reported hobbies, their calculations provide valuable insight into risks taken by CEOs.

Ouyang et al. (2022) researched CEO risky hobbies in relation to the evaluation of firms by credit stakeholders. Their interviews with senior bank officers and loan officers complemented loan data collected from the DealScan database. Findings by Ouyang et al. (2022) indicate firms with CEOs with a private pilot's license to fly private aircraft incur a higher cost of debt. The higher cost of debt is due to banks' perception of firms with a risk-taking CEO, in this case flying aircraft, as having a higher default risk. This information may help understand why some CEOs either do not disclose their hobbies or why some corporate policies restrict CEO risky hobbies.

CEO Sports Hobbies

There are many reasons to participate in sports as a hobby. Research on the effect of sports hobbies like golf finds learning the game increases neural plasticity, which benefits everyone (Shea, 2011). Bunea (2020) posits CEOs use their hobbies as a relief from the stress of their work. As a former CEO, Bunea interviewed 25 CEOs for her qualitative research on CEO hobbies. Most of those interviewed claimed their serious leisure activities helped them maintain the mental stamina for their work. Bunea (2020) also notes hobbies can create a sense of fulfillment.

Some researchers have explored why some participants in risky sports activities move to other sports or discontinue risky sports activities altogether. Shoham et al. (2000) theorized participants in risky sports activities were able to support their identity construction. In addition, Shoham et al. (2000) found as participants practice their risky sport and achieve proficiency, the

activity may no longer be attractive. According to Shoham et al. (2000), one explanation for those who continue risky sports is the comradery with other participants. The relationships formed when participating in risky sports transcended social status and wealth.

Research by Biggerstaff et al. (2017) evaluates CEO effort as it relates to firm performance using leisure activity to represent a lack of effort. They show firms with CEOs who spend significant time golfing have lower profitability. Biggerstaff et al. (2017) suggest some CEOs are incentivized to play golf or shirk their duties when there is no economic reward to motivate them. They also find leisure activities increase with the length of time the CEO has spent in their job. Within the table of sports risk developed by Luo et al. (2022), golf is a low-risk hobby, and CEOs who look for ways to avoid work may be attracted to a sport they perceive to have low risk. Based on the research by Biggerstaff et al. (Biggerstaff, 2017), firms with CEOs who golf may be too involved with their sport to design and communicate their firm's non-GAAP earnings.

Control Variables

The longer a CEO stays with a firm, the more they are able to exert power and authority (Chen, 2014). The more experience a CEO has, the more confidence they have in executing strategy even when risky. In addition, the more experience a CEO has, the more likely their top management team will engage in risk-taking activity to carry out the CEO's strategy.

According to Hinchcliffe (2021), the list of Fortune 500 firms has only 41 female CEOs. According to Zalata et al. (2018), female CEOs are more risk-averse than their male counterparts. This difference shows in their firm's financial reporting. After the Sarbanes Oxley Act, classification shifting was reduced in female CEO firms while it remained constant for male

CEO firms. Zalata et al. (2018) point out female CEOs may be risk-averse but not necessarily more ethical than male CEOs.

Board independence may impact CEO risk-taking (Frankel et al., 2011; Luo et al., 2022). Frankel et al. (2011) found an association between lower-quality non-GAAP earnings and low board independence. Using board independence for this study will help determine whether CEO sports risk impacts non-GAAP earnings.

Hypothesis Development

According to Govindarajan et al. (2021), firms typically report non-GAAP earnings higher than GAAP earnings. Black et al. (2017) posit there are certain conditions where firms are less likely to report non-GAAP earnings. Among those conditions are that they have avoided earnings management in the past and have earnings that meet current earnings targets. However, (Black et al., 2017) suggest these types of disclosures have a low cost to the firm. According to Trentmann (2021), a selection of 60 publicly-traded firms in 2020 reported non-GAAP earnings in excess of $132 billion of their GAAP earnings collectively. In order to investigate if a firm's CEO's risk-tolerance increases non-GAAP earnings, the first step is to confirm the probability firms with a CEO who have a hobby that is a sport with a high risk have non-GAAP earnings higher than GAAP earnings. Therefore, the first hypothesis is as follows:

> *H1: Firms run by CEOs that engage in riskier sports hobbies are more likely to have non-GAAP earnings that exceed GAAP earnings than firms run by CEOs that do not engage in riskier sports hobbies.*

The presentation of earnings using GAAP may be complex and challenging for the general public to understand (Hallas, 2019). When earnings are complex, adjustments may

provide a simpler interpretation, thus providing an argument for disclosing non-GAAP earnings. However, adjustments for items decreasing GAAP earnings have proliferated since the last SEC pronouncement on non-GAAP adjustments (Linnane, 2022). One example is Bristol Meyers Squibb, whose 2021 non-GAAP adjustments were larger than any other S&P 500 firm at $10 billion, making their non-GAAP earnings per share more than double that of their GAAP earnings per share. According to Frankel et al. (2011), non-GAAP earnings may provide some advantages to management since they can make the firm performance look better. When non-GAAP adjustments are advantageous to management they are described as opportunistic. Non-GAAP adjustments may increase GAAP revenue or decrease GAAP expenses. Whether the impact is to GAAP revenue or GAAP expenses the result is an increase in non-GAAP earnings. This study examined the difference between non-GAAP earnings and GAAP earnings with the assumption that adjustments are related to expenses or income-decreasing items. Based on this information, the second hypothesis is:

> *H2: CEO involvement in risky sports hobbies is positively associated with the magnitude of income-decreasing items excluded from their firm's non-GAAP earnings.*

While non-GAAP earnings may provide extra details to enhance the understanding of the financial statements, exclusions from GAAP earnings could help users see how earnings might appear without non-reoccurring items. (Ciesielski & Henry, 2017). According to Brown, Call, Clement & Sharp (2014), analysts omit some earnings components because they believe it is a one-time occurrence. However, something that appears to be a one-time occurrence may occur multiple times and show up consistently or persistently in non-GAAP exclusions. Based on this, the last hypothesis is:

H3: Firms led by CEOs with riskier sports hobbies have non-GAAP exclusions that are persistent.

There is a gap in the literature addressing how CEOs' character traits, such as risk tolerance, influence non-GAAP earnings. This study builds on the work of previous researchers who have used proxies when researching non-GAAP earnings and researchers who have studied and collected non-GAAP earnings to fill that gap.

Method

Sample Selection

The sample selection began with the list of CEOs from research performed by Bunea (2020). The CEOs were reviewed to determine if their company was listed in the Fortune 500, whether the company was publicly traded, and whether the CEOs' tenure included January 2018 through December 2019. Contained within the review for each company and their CEO was confirmation of their leisure activity on the risk measure developed by Luo et al. (2022).

The search for additional CEOs within the Fortune 500 companies was done by searching the list of companies at the website for the Fortune 500 and then looking for information about their sports interest in their Wikipedia or results from a Google search. Based on Abdel-Meguid et al. (2021), it was estimated 50 firms (10% of 500) of the Fortune 500 would have a CEO with a sports hobby. A random search of firms within the Fortune 500 listing for 2018 resulted in 50 CEOs who met all criteria.

The non-GAAP data came from "hand-gathered" data from Bentley et al. (2018). According to Bentley et al. (2018), one problem with analyzing non-GAAP information is the lack of a large-scale database. However, Kurt Gee, an author who has collaborated on several papers analyzing non-GAAP earnings, has provided a website with publicly available data sets containing firm-specific non-GAAP earnings per share and links to data from the SEC. This study used a subset of the Bentley et al. (2018) data set from fiscal 2018 – 2019.

Data for GAAP earnings per share, book to market, the size of equity, and return on assets were gathered from Compustat, North America Fundamentals. Most data items were gathered from Compustat Fundamentals Quarterly, but two were retrieved from Compustat

Fundamentals Annual. The final sample size is outlined in Table 1. This sample size is less than the samples used in other studies. The time constraints of research for a dissertation prevented gathering more data. Additional constraints were due to limited resources, such as access to Execucomp. However, this sample size and accompanying research can provide insight into the relationship between CEO risk tolerance and non-GAAP earnings.

Table 1
Sample Selection

	Number of Observations
Beginning number of firm CEOs with sports hobbies	50
Firm-quarter observations (January 1, 2018, to December 2019 quarters multiplied by number of firms) (8 * 51)	400
Less firm-quarters without 8K filings	(71)
Less firm-quarters with Compustat data errors	(2)
Less firm quarters without non-GAAP EPS	(103)
Final firm-quarter sample	227

Model 1: Binary Logistic Regression

The model below tests H1. A positive coefficient was expected on *SportsRisk.*

$$Exceed_{i,q} = \beta_0 + \beta_1 Sports\ Risk_{i,q} + \beta_2 BTM_{i,q} + \beta_3 SizeEquity_{i,q} + \beta_4 ROA_{i,q} + \beta_5 CEOAge + \beta_6 CEOTenure + \beta_7 Gender + \beta_8 BoardIndependence + Industry + Year\text{-}Quarter + \varepsilon_{i,q}$$

Model 2: Multivariate Regression

The model below tests H2. Similar to H1, A positive coefficient was expected on Sports Risk.

$$NonGAAPExclusions_{i,\,q} = \beta_0 + \beta_1 SportsRisk_{i,\,q} + \beta_2\, BTM_{i,\,q} + \beta_3 SizaEquity_{i,\,q} + \beta_4 ROA_{i,\,q} + \beta_5\, CEOAge + \beta_6 CEOTenure + \beta_7 Gender + \beta_8 BoardIndependence + Industry + Year\text{-}Quarter + \varepsilon_{i,q}$$

The model for H3 examines exclusions in non-GAAP earnings. Following their model, two dependent variables are created. According to Frankel (2011) and Abdel-Meguid (2021), using two models with two different dependent variables increases the likelihood of discovering the repercussion of exclusions for future earnings. The first dependent variable, *FutureGAAPEarnings* uses earnings per share data from Compustat summed over quarters q + 1 through q + 4 for each year. A second model using the dependent variable, *FutureOperatingIncome*, uses operating income per diluted share then summed over quarters q +1 through q +4. This figure is adjusted with an implied dilution factor for earnings per share. According to Frankel et al. (2011), FutureGAAPEarnings may contain expenses occurring on a regular basis, such as depreciation. However, FutureOperatingIncome is less likely to contain expenses that occur regularly. A comparison of the coefficients for the two models helps to clarify the persistence of non-GAAP earnings. In addition, the coefficient of non-GAAP earnings signals the relevance and impact on future earnings. According to Frankel et al. (2011), if the coefficient on *NonGAAPExclusions* are zero, the expenses excluded from earnings are irrelevant or non-recurring. Based on prior research, if the coefficient on *NonGAAPExclusions* is negative, it is an indication of expenses that recur. A negative coefficient is expected on

NonGAAPExclusions. Additionally, a negative interaction is expected for *NonGAAPExclusions*SportsRisk*.

The models for H3 are presented below.

Model 3a: Multivariate Regression

FutureGAAPEarnings H3:

$$FutureGAAPEarnings_{i,q+1\ to\ q+4} = \beta_0 + \beta_1 Non\text{-}GAAPEarnings_{i,q} + \beta_2 NonGAAPExclusions_{i,q} + \beta_3 SportsRisk_{i,q} + \beta_4\ Non\text{-}GAAPEarnings_{i,\,q} * SportsRisk_{i,q} + \beta_5 NonGAAPExclusions_{i,\,q} * SportsRisk_{i,q} + Industry + Year\text{-}Quarter + \varepsilon_{i,q}$$

Model 3b: Multivariate Regression

Future Operating Income H3:

$$Future\ Operating\ Income_{i,q+1\ to\ q+4} = \beta_0 + \beta_1 Non\text{-}GAAPEarnings_{i,q} + \beta_2 NonGAAPExclusions_{i,q} + \beta_3 SportsRisk_{i,q} + \beta_4\ Non\text{-}GAAPEarnings_{i,\,q} * SportsRisk_{i,q} + \beta_5 NonGAAPExclusions_{i,\,q} * SportsRisk_{i,q} + Industry + Year\text{-}Quarter + \varepsilon_{i,q}$$

Based upon the outcome of these calculations, there may be evidence of an association between the CEO's risky hobbies and their firm's non-GAAP earnings.

Results

Descriptive statistics for Model 1 and Model 2 (Table 2 Panel A) show the mean of *Exceed* is .674 suggesting 67.4% of firm-quarters had non-GAAP earnings exceeding GAAP earnings. This sample required CEO firms to rank within the Fortune 500 list for 2018 and have a publicly identified sports hobby. Ranking among the Fortune 500 is a requirement for this

study; therefore, firms in the Fortune 500 may have higher motivation to have non-GAAP earnings that are higher than GAAP earnings.

In addition, *NonGAAPExclusions* has a mean of 0.294 (Table 2 Panel A.) Frankel et al. (2011) analyzed *NonGAAPExclusions* in their study of board independence pre- and post-SEC scrutiny. They found the mean of *NonGAAPExclusions* pre-SEC scrutiny using first quarter 1998 through second quarter 2001 of 0.24 and post-SEC scrutiny using third quarter 2001 through fourth quarter 2005 of 0.15 . It should be noted that this study's mean of *NonGAAPExclusions* is closer to pre-SEC scrutiny.

Crosswise correlations (Table 2 Panel B) display a negative but not significant relationship between the variables *SportsRisk* and *NonGAAPExclusions*. This correlation is different from what was expected in Hypothesis 2. The relationship suggests that as the magnitude of exclusions from GAAP earnings increases, *SportsRisk* decreases. *SportsRisk* is negatively but not significantly associated with *Exceed*. This relationship indicates that as firms are more likely to have non-GAAP earnings that exceed GAAP earnings, their CEO sports hobby has a decreased risk. *SizeEquity* is negatively and significantly correlated with *SportsRisk*, suggesting that as firms increase in size, their CEO sports risk decreases. *CEOIndependence* is negatively and significantly associated with *SportsRisk* using Pearson's correlation. This implies as CEOs become their firm's board chair, they are less likely to have publicly identified risky sports hobbies. However, Spearman's correlation for the same relationship is positive and nonsignificant, leaving a question about this relationship.

Table 2

Descriptive Statistics and Correlations H1 and H2

Panel A: Descriptive Statistics H1 and H2

	Mean	Median	Std. Deviation	Minimum	Maximum
NonGAAPExclusions	0.294	0.160	0.785	-1.910	3.520
Exceed	0.674	1.000	0.470	0.000	1.000
SportsRisk	0.199	0.070	0.246	0.000	1.190
BTM	0.292	0.209	0.284	-0.265	1.181
SizeEquity	4.789	4.786	0.462	3.841	5.879
ROA	0.022	0.018	0.015	0.000	0.079
CEOAge	57.767	58.000	4.233	49.000	68.000
CEOTenure	7.335	6.000	4.161	2.000	25.000
CEOMale	0.943	1.000	0.233	0.000	1.000
CEOIndependence	0.542	1.000	0.499	0.000	1.000

All variables are as defined in Appendix B with the exception of CEOAge and CEOTenure. In Appendix B, CEOAge and CEOTenure used the log of age and tenure. This set of descriptives uses actual age and tenure. N = 227.

Panel B: Correlations H1 and H2

		1	2	3	4	5	6	7	8	9	10
1	*NonGAAPExclusions*	1	.345**	-0.056	0.105	0.087	-.140*	0.039	-0.007	-0.075	-0.056
2	*Exceed*	.539**	1	-0.021	.189**	0.089	-.235**	-0.087	.201**	-0.091	-0.017
3	*SportsRisk*	-0.040	0.021	1	.147*	-.386**	-0.069	-.222**	-.239**	0.111	0.036
4	*BTM*	.191**	.137*	-0.042	1	-.214**	-.690**	.321**	.232**	-0.064	0.039
5	*SizeEquity*	.130*	0.115	-.140*	-.252**	1	0.013	-0.023	.227**	-0.102	0.055
6	*ROA*	-.204**	-.188**	0.038	-.729**	0.050	1	-.273**	-.233**	0.127	-0.077
7	*CEOAge*	0.032	-0.084	-.388**	.316**	-0.023	-.345**	1	.228**	-.148*	.153*
8	*CEOTenure*	0.115	.187**	-.262**	.286**	.229**	-.264**	.138*	1	-0.082	.350**
9	*CEOMale*	-0.114	-0.091	0.037	-0.057	-0.115	0.129	-.169*	-0.094	1	-.227**
10	*CEOIndependence*	-0.001	-0.017	-.145*	0.026	0.086	-0.042	0.104	.365**	-.227**	1

Table 2, Panel B presents Pearson (above the diagonal) and Spearman (below the diagonal). All variables are as defined in Appendix B.
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
N = 227

Table 3 contains the frequency of *SportsRisk*. There were 227 firm quarters analyzed. CEOs participated in various sports hobbies, classified into 11 different risk categories. Golf was the most popular sport for this sample of CEOs. Out of a total of 38 CEOs, 34% play only golf. Several CEOs played golf but played other sports too. Therefore, more CEOs may play golf, but because they play another sport with a higher risk, the sport with a higher risk is reported in this study.

Table 3

Frequency of SportsRisk

Name of Sport	*SportsRisk* (1)	Qtr Frequency (2)	Qtr% (3)	CEO Frequency (4)	CEO% (5)
Running	0.00	18	7.90	3	7.80
Bowling	0.01	3	1.3	1	2.60
Golf	0.04	73	32.20	13	34.00
Racquet games	0.07	24	10.60	4	10.50
Skiing	0.11	4	1.80	1	2.60
Martial Arts, Swimming	0.12	22	9.70	3	7.80
Hockey	0.19	3	1.30	1	2.60
Basketball, Soccer	0.29	13	5.70	2	6.00
Cycling (non-motor)	0.31	30	13.20	4	10.50
Football	0.52	30	13.20	5	13.00
Motorized Vehicles-including aircraft	1.19	7	3.10	1	2.60
Total		227	100.00	38	100.00

Table 3 lists the sports played in this sample of CEOs. Column 1 is the value of *SportsRisk* in ascending order Column 2 presents the frequency the sport appeared in firm quarters. Column 3 displays the percentage of the sport per total quarters. Column 4 presents the number of CEOs who played each sport. Column 5 lists the percentage of CEOs that play each sport.

Model One

Model 1 was analyzed using binary logistic regression in SPSS. The analysis reviewed the likelihood that firms with CEOs with a hobby with a high risk are more likely to have non-

GAAP earnings that exceed GAAP earnings. *Exceed,* the dependent, variable equals one when non-GAAP earnings per share exist and when non-GAAP earnings exceed GAAP earnings per share. If non-GAAP earnings per share do not exist or exist but are less than GAAP earnings per share, then 0 is the indicator. The independent variables were *SportsRisk, BTM, SizeEquity, ROA, CEOMale, CEOAge, CEOTenure, and CEOIndependence*. *SIC* and *QtrYr* were used as fixed effects.

The omnibus test of model coefficients for Model 1 contains a statistical test of the null hypothesis that all the coefficients are zero as seen in Table 4, Panel A. The result was significant at .000, indicating the null hypothesis should be rejected. The logistic regression indicated the model showed statistically significant prediction of non-GAAP earnings exceeding GAAP earnings of X^2 (10, N=227) = 38.615, p< .001. Based on the Nagelkerke pseudo R-square results, the variables in model one explain about 21.8% of the model variance (Meyers, 2017). Additional support for this model is the Hosmer and Lemeshow test shown in Table 4 Panel C. The result of a nonsignificant *p*-value provides more support for this model since there is not a significant difference between predicted and observed values (Meyers, 2017). In this case, the Hosmer Lemeshow test is p = 0.391.

Table 4

Evaluation of Model 1

Panel A: Omnibus Test of Model 1 Coefficients

		Chi-square	df	Sig.
Step 1	Step	38.615	10	0.000
	Block	38.615	10	0.000
	Model	38.615	10	0.000

N = 227
Significance less than .05 indicates the null hypothesis should be rejected.

Panel B: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	247.997[a]	0.156	0.218

Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Panel C: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.445	8	0.391

Non-significance of Hosmer and Lemeshow indicates a better-fit model.
Dependent variable: Exceed

The predictive ability of this model was moderately high, with an overall correct prediction rate of 73.6% shown in Table 5. The prediction rate for quarters where non-GAAP earnings were equal to or did not exceed GAAP earnings was 35.1%, and when non-GAAP earnings were higher than GAAP earnings, the prediction rate was 92.2%.

Table 5

Classification Table for Binary Regression

			Predicted Exceed		
	Observed		Not Exceed	Exceeds GAAP	Percentage Correct
Step 1	Exceeds GAAP	1 NotExceed	260	48.0	35.1
		1 Exceed	12.0	141.0	92.2
	Overall Percentage				73.6

a. The cut value is .500

An analysis of partial regression coefficients, the Wald test, and the odds ratio indicate *SportsRisk*, *ROA*, *CEOAge*, *CEOMale*, and *CEOIndepencence* had negative coefficients, indicating as these variables increase, the likelihood of non-GAAP earnings exceeding GAAP earnings decreases shown in Table 6. *CEOAge* was the only statistically significant variable. Although not statistically significant, both *BTM* and *SizeEquity* were positive coefficients indicating the probability of non-GAAP earnings exceeding GAAP earnings increases as firm value and size increase.

Table 6

Coefficients for Model 1

Variables	b	S.E.	Wald	df	Sig.	Exp(B)
SportsRisk	-0.189	0.706	0.072	1	0.789	0.828
BTM	1.770	0.947	3.498	1	0.061	5.874
SizeEquity	0.504	0.400	1.581	1	0.209	1.655
ROA	-24.216	15.076	2.580	1	0.108	0.000
CEOAge	-13.352	5.914	5.098	1	0.024	0.000
CEOTenure	1.143	0.894	1.634	1	0.201	3.135
CEOMale	-0.248	0.898	0.076	1	0.783	0.780
CEOIndependent	-0.037	0.408	0.008	1	0.927	0.963
Constant	20.844	10.988	3.599	1	0.058	1128314042.409

Variable(s) entered on step 1: SportsRisk, BTM, SizeEquity, ROA, CEOAge, CEOTenure, CEOMale, CEOIndependent, SIC, QtrYearCategory.
Dependent variable: Exceed.
All continuous variables are winsorized at the 1% and 99% levels. N = 227

Model Two

Model 2 predicted the magnitude of *NonGAAPExclusions* using regression analysis using variables *SportsRisk, BTM, SizeEquity, ROA, CEOAge, CEOTenure, CEOMale, CEOIndependence, SIC,* and *QtrYr*. The model accounted for slightly more than 10% of the variance of *NonGAAPExclusions* (R^2 = .050, adjusted R^2 = .117) but was not statistically significant, F(10, 216) = 1.126, p = .344. The results are displayed in Table 7.

Table 7

Model 2 Summary and ANOVA

Panel A: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.223[a]	0.050	0.006	0.782469

Dependent Variable: *NonGAAPExclusions*.
Predictors: *SportsRisk, BTM, SizeEquity, ROA, CEOAge, CEOTenure, CEOMale, CEOIndependent, SIC, QtrYear*
N = 227

Panel B: ANOVA

Model 2		Sum of Squares	df	Mean Square	F	Sig.
	Regression	6.893	10	0.689	1.126	0.344[b]
	Residual	132.248	216	0.612		
	Total	139.14	226			

All continuous variables were winsorized at the 1% and 99% levels.
Dependent Variable *NonGAAPExclusions*
Predictors: *SportsRisk, BTM, SizeEquity, ROA, CEOAge, CEOTenure CEOMale, CEOIndependence, SIC, QtrYear*
N = 227

An inspection of the correlations of variables in Model 2 reveal the relationship between *SportsRisk* and *NonGAAPExclusions* is negative and not statistically significant These results are displayed in Table 8. *NonGAAPExclusions* is negative and statistically significant for the relationship with *ROA*. Based on the relationship between *NonGAAPExclusions* and *ROA* it may

be surmised that as *ROA* increases, *NonGAAPExclusions* decrease. SportsRisk is statistically significant and positively related to *BTM* but is statistically significant and negatively related to *SizeEquity, ROA, CEOAge,* and *CEOTenure*. Based on these relationships, it can be inferred that as *SportsRisk* increases, so does *BTM*. Another inference may be as *SportsRisk* increases, *NonGAAPExclusions SizeEquity, ROA, CEOAge,* and *CEOTenure* decreases.

Table 8

Correlations for Model 2

Variables	1	2	3	4	5	6	7	8	9
1 *NonGaapExclusions*	1	-0.056	0.105	0.087	-.140*	0.039	-0.007	-0.075	-0.056
2 *SportsRisk*		1	0.147*	-0.386**	-0.069	-0.222**	--0.239**	0.111	0.036
3 *BTM*			1	-0.214**	-.690**	0.321**	0.232**	-0.064	0.039
4 *SizeEquity*				1	0.013	-0.023	0.227**	-0.102	0.055
5 *ROA*					1	-0.273**	-0.233**	0.127	-0.077
6 *CEOAge*						1	0.228**	-0.148*	0.153*
7 *CEOTenure*							1	-0.082	0.350**
8 *CEOMale*								1	-0.227**
9 *CEOIndependent*									1

*. Correlation is significant at the 0.05 level (1-tailed).
**. Correlation is significant at the 0.01 level (1-tailed).
N = 227
All variables are winsorized at the 1% and 99% levels.
Variables are defined in Appendix A.

The coefficients from Model 2 are shown in Table 9. The coefficient for *SportsRisk* is negative, suggesting as *SportsRisk* increases, *NonGAAPExclusions* decrease. The coefficient for *SizeEquity* is positive, suggesting as firm size increases, so do the items excluded from GAAP earnings. The coefficient for *SportsRisk* is negative in both Model 1 and Model 2.

Table 9

Coefficients Model 2

Variables	b	SE-b	Beta	t	Sig.
(Constant)	1.926	3.594		0.536	0.593
SportsRisk	-0.129	0.249	-0.041	-0.520	0.604
BTM	0.101	0.288	0.037	0.351	0.726
SizeEquity	0.143	0.131	0.084	1.093	0.275
ROA	-5.304	4.894	-0.103	-1.084	0.280
CEOAge	-0.898	1.915	-0.037	-0.469	0.640
CEOTenure	-0.001	0.307	0.000	-0.005	0.996
CEOMale	-0.344	0.257	-0.102	-1.339	0.182
CEOIndependent	-0.187	0.135	-0.119	-1.382	0.169

All continuous variables are winsorized at the 1% and 99% levels.
Dependent variable is *NonGAAPExclusions*
N = 227

To identify support for Model 1 and Model 2 the data was placed in two groups based on high and low *SportsRisk*. The median rate for *SportsRisk* of .070 determined the groups. Table 10 shows the variables from H1 and H2 with means from high and low *SportsRisk*, their t-statistic, and p-value. Because each firm-quarter is a unique combination, with some firms having multiple firm-quarter observations and others having one or two firm-quarter observations, there is a difference in the number of observations in each group. In the low-risk group, which includes golf, running, bowling, and other low-risk sports, the number of observations is 94. The high-risk group, including hockey, basketball, motorized vehicles, flying airplanes, and other high-risk sports, has 133 observations. Table 10 shows, on average firms are more likely to exclude income-decreasing items from non-GAAP earnings (*Exceed*) when the CEO has a high-risk sports hobby (p-value <-.05). Although it is not significant, the magnitude of *NonGAAPExclusions* are lower for firm quarters for CEOs with higher sports risk. The mean for

CEOIndependent is larger and significant ($p < .001$) in the low *SportsRisk* group. This relationship may indicate CEOs who are their firm's board chair take less risks with their choice of sports hobbies.

Table 10

Comparison of High and Low SportsRisk Observations

Variables	High *SportsRisk* Sample Mean n = 133	Low *SportsRisk* Sample Mean n = 94	Difference	t-statistic	p-value
NonGaapExclusions	0.248	0.358	-0.110	-1.007	0.315
Exceed	0.740	0.580	0.160	2.376	< .05
BTM	0.266	0.329	-0.063	-1.638	0.103
ROA	0.022	0.022	0.000	-0.186	0.852
SizeEquity	4.805	4.766	0.039	0.627	0.532
CEOAge	1.749	1.777	-0.028	-7.745	< .001
CEOTenure	0.751	0.877	-0.126	-4.398	< .001
CEOMale	0.940	0.950	-0.010	-0.223	0.825
CEOIndependent	0.440	0.690	-0.250	-3.961	< .001

Variables from model 1 and model 2 included.
All variables were winsorized at the 1% and 99% levels.
N = 227

Model Three A and Model Three B

The final model was tested using two dependent variables, *FutureGAAPEarnings* and *FutureOperatingIncome*. Descriptive statistics and correlations for Models 3a and 3b are in Table 11, Panel A, and Panel B. The descriptive statistics in Panel A show non-GAAP earnings and *NonGAAPExclusions* both have a positive mean and a negative minimum value. While it is useful to review the means and minimums of this data, a more in-depth evaluation of the data can provide more insight. A review of the formula for *NonGAAPExclusions* and this sample data helps illustrate the heterogeneity of non-GAAP earnings. *NonGAAPExclusions* is the difference between non-GAAP earnings and GAAP earnings. Some firms report positive non-GAAP

earnings per share. For instance, in their 2019 4th quarter earnings announcement, Ford reported a non-GAAP earnings per share of 0.12, a GAAP loss of -0.42 resulting in *NonGAAPExclusions* of 0.54. Another example firm is Boeing, who reported 4th quarter 2019 non-GAAP earnings per share loss of $2.33 and GAAP earnings per share loss of $1.79. The result for Boeing's *NonGAAPExclusions* for 4th quarter 2019 would be -0.54. These examples demonstrate the variation found in non-GAAP earnings and *NonGAAPExclusions*.

Panel B shows *SportsRisk* has a positive and significant relationship with both *FutureGAAPEarnings* and *FutureOperatingIncome*. These relationships show, in general, the CEO's sports hobby risk increases with future earnings and income. In addition, non-GAAP earnings is positively and significantly correlated to both *FutureGAAPEarnings* and *FutureOperatingIncome*. This relationship suggests as future earnings and income increase, so do non-GAAP earnings.

Table 11

Descriptive Statistics and Correlations for Model 3a and Model 3b

Panel A: Descriptive Statistics Model 3a and Model 3b

Variables	Mean	Median	Std. Deviation	Minimum	Maximum
FutureGAAPEarnings	5.848	4.680	5.037	-0.270	22.590
NewFTOpInc	6.679	5.320	5.181	0.920	23.050
NonGAAPEarnings	2.004	1.700	2.217	-5.820	20.950
NonGAAPExclusions	0.294	0.160	0.785	-1.910	3.520
SportsRisk	0.199	0.070	0.246	0.000	1.190
*NonGAAPEarnings*SportsRisk*	0.411	0.086	0.643	-1.804	3.130
*NonGAAPExclusions*SportsRisk*	0.048	0.013	0.207	-0.993	1.830

All variables were winsorized at the 1% and 99% levels.
N = 227.

Panel B: Correlations for Model 3a and Model 3b

Variables	1	2	3	4	5	6	7
1 *FutureGAAPEarnings*	1.000	0.932**	.741**	-0.033	0.155*	0.619**	0.004
2 FutureOperatingIncome	0.865**	1.000	.702**	0.011	0.187**	0.603**	0.034
3 *NonGAAPEarnings*	0.780**	0.818**	1.000	0.110	0.021	0.488**	0.084
4 *NonGAAPExclusions*	0.066	0.105	0.177**	1.000	-0.056	0.027	0.643**
5 *SportsRisk*	0.144*	0.213**	0.121	-0.040	1.000	0.658**	0.250**
6 *NonGAAPEarnings*SportsRisk*	0.488**	0.513**	0.584**	0.041	0.803**	1.000	0.244**
7 *NonGAAPExclusions*SportsRisk*	0.054	0.076	0.103	0.790**	0.407**	0.396**	1.000

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Model 3a was statistically significant, $F(7, 219) = 62.918$, $p < .001$, and accounted for approximately 66% ($R^2 = .668$, adjusted $R^2 = .657$). of the variance of *FutureGAAPEarnings* as exhibited in Table 12.

Table 12

Model Summary and ANOVA for Model 3a

Panel A: Model Summary for Model 3a

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3a	0.817[a]	0.668	0.657	2.949028

Predictors: (Constant), *NonGAAPEarnings, NonGaapExclusions, SportsRisk, NonGAAPExclusion*SportRisk, NonGAAPEarnings*SportRisk, QtrYear, SIC*

Dependent variable: FuturetGAAPEarnings N = 227

Panel B: ANOVA for Model 3b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3830.276	7	547.182	62.9180	<.001[b]
Residual	1904.591	219	8.697		
Total	5734.868	226			

Dependent Variable: FutureGAAPEarnings
Predictors: (Constant), *NonGAAPEarnings, NonGaapExclusions, SportsRisk, NonGAAPExclusion*SportRisk, NonGAAPEarnings*SportRisk, QtrYear, SIC*
N = 227

Model 3b for *FutureOperatingIncome* was also statistically significant. The results are exhibited in Table 13. Model 3b accounted for approximately 60% of the variance for *FutureOperatingIncome* (R^2 = .602, adjusted R^2 = .590).

Table 13

Model Summary and ANOVA for Model 3b

Panel A: Model Summary for Model 3b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3b	.776[a]	0.602	0.590	3.319209

Panel B: ANOVA for Model 3b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3654.763	7	522.109	47.391	<.001[b]
Residual	2412.755	219	11.017		
Total	6067.519	226			

Table 14 contains the comparison of coefficients for Model 3a and 3b. The focal variables are *NonGAAPExclusions* and *SportsRisk*. According to Abdel-Meguid et al. (2021), a negative significant coefficient for *NonGAAPExclusions* and a positive coefficient for Narcissism confirmed lower quality non-GAAP earnings with more persistent exclusions when the CEO is more narcissistic. In this research, the coefficients for *NonGAAPExclusions* and *SportsRisk* are negative, but not significant, when they interact with *FutureGAAPEarnings*. Based on these relationships, it may be inferred *NonGAAP exclusions* are less likely to reoccur from one quarter to the next when the CEO has a lower-risk sports hobby.

The coefficients for *FutureOperatingIncome* show *NonGAAPExclusions* and *SportsRisk* are negative but not significant. When considering *FutureOperatingIncome*, if CEOs have lower *SportsRisk*, then *NonGAAPExclusions* are not as likely to reoccur, and if CEOs have higher

SportsRisk, then *NonGAAPExclusions* are more likely to reoccur, or persist across future earnings.

Table 14

Comparison of Coefficients for Model 3a and 3b

Variables	*FutureGAAP Earnings Coefficient*	*t*	*Sig.*	*FutureOperating Income Coefficient*	*t*	*Sig.*
NonGAAPEarnings	*1.178*	*10.205*	*0.000*	*1.180*	*9.085*	*0.000*
NonGAAPExclusions	*-0.358*	*-1.041*	*0.299*	*-0.055*	*0.141*	*0.888*
SportsRisk	*-3.319*	*-2.717*	*0.007*	*-2.079*	*-1.512*	*0.132*
*NonGAAPEarnings*SportRisk*	*3.885*	*7.407*	*0.000*	*3.536*	*5.989*	*0.000*
*NonGAAPExclusion*SportRisk*	*-2.071*	*-1.539*	*0.125*	*-2.340*	*-1.545*	*0.124*

Dependent variable: *FutureGAAPEarnings*
N = 227

NonGAAPExclusions are the difference between non-GAAP earnings and GAAP earnings, and if the income decreasing items comprise *NonGAAPExclusions* occur only when necessary, the exclusions are considered to be high quality (Frankel et al., 2011) When the income-decreasing items comprising *NonGAAPExclusions* occur repeatedly, the exclusions are considered to be low quality. Frankel et al. (2011) inspected the coefficient for *NonGAAPExclusions * Independence* in their research on non-GAAP earnings and board independence. Frankel et al. (2011) expected the coefficient to be positive for firms with independent boards that had higher-quality non-GAAP exclusions. In this research, *NonGAAPExclusions*SportsRisk* is negative, indicating firms with CEOs with a higher SportsRisk tend to have lower quality *NonGAAPExclusions.*

As an additional step towards the analysis of non-GAAP earnings within Model 3a and 3b, this sample was split into groups of high *SportsRisk* and low *SportsRisk* in Table 15. Similar

to Table 10, the high-sports risk group had 133 CEO firm quarters and the low-risk group had 94 CEO firm quarters. In addition to the means for high and low sports risk, the t-statistic and p-value are provided in Table 15. The variances in the means for the two groups show there is evidence for behavioral variance between the groups. The means for non-GAAP earnings and *NonGAAPExclusions* are higher in the low-sports risk group, indicating CEOs who participate in low-risk sports like golf, running and bowling are more likely to have firms with non-GAAP profits. It is also likely their non-GAAP profits include larger amounts excluded from GAAP earnings. The high-risk group has a higher mean for both *FutureGAAPEarnings* and *FutureOperatingIncome*. It should also be noted that *NonGAAPEarnings*SportsRisk* and *NonGAAPExclusions*SportsRisk* are both higher and positive for the high SportsRisk group.

Table 15

High Low SportsRisk Comparison for Model 3a and 3b

Variables	HighSportsRisk n = 133	LowSportsRisk n = 94	Difference	t-statistic	p-value
FutureGAAPEarnings	6.467	4.972	1.495	2.371	0.019
FutureOperatingIncome	7.437	5.606	1.830	2.840	0.005
NonGAAPEarnings	1.975	2.046	-0.071	0.220	0.826
NonGAAPExclusions	0.248	0.358	-0.110	-1.007	0.315
*NonGAAPEarnings*SportsRisk*	0.654	0.068	0.586	8.919	0.000
*NonGAAPExclusions*SportsRisk*	0.074	0.011	0.063	2.714	0.007

Variables from model 3a and model 3b included.
All variables were winsorized at the 1% and 99% levels.
N = 227

Discussion

Although there was evidence to support the predictive ability of Model 1, the results of Model 2 and Model 3 did not support hypotheses 2 and 3. Model 1 accurately predicted group memberships for *Exceed* and notExceed with a moderately high rate of 73.6%. However, *SportsRisk* was negatively associated with *Exceed*, indicating as *SportsRisk* increases, the probability of non-GAAP earnings exceeding GAAP earnings decreases. Evidence suggests that CEOs with lower-risk sports hobbies have firms with non-GAAP earnings that are higher than GAAP earnings.

Hypothesis 2 posited that CEO involvement in risky sports would be positively associated with the magnitude of income-decreasing items excluded from their firm's non-GAAP earnings. However, the interaction between *SportsRisk* and *NonGAAPExclusions* was negative, indicating that CEO involvement in riskier sports would be negatively associated with the magnitude of income-decreasing items excluded from their firm's non-GAAP earnings. For example, a firm with a CEO with the high-risk hobby of driving race cars could have non-GAAP earnings of $200 and GAAP earnings of $150, producing *NonGAAPExclusions* of $50. However, a firm with a CEO who plays golf may have non-GAAP earnings of $200, GAAP earnings of $100, and *NonGAAPExclusions* of $100. CEOs with lower-risk sports hobbies seem more likely to have higher *NonGAAPExclusions*.

Although the descriptive statistics for H1 and H2 suggested that more than half of firm quarters had non-GAAP earnings exceeded GAAP earnings, CEOs with lower-risk sports hobbies have firms that are less likely to have non-GAAP earnings higher than GAAP earnings (*Exceed*). In addition, CEOs with lower-risk sports hobbies have firms with higher exclusions from GAAP earnings (*NonGAAPEarnings*). The size of the firm may have some influence on

this outcome. The relationship between *SizeEquity* and *SportsRisk* was negative, indicating as firm size increases, CEOs participation in risky sports hobbies or public disclosure of participation in risky sports hobbies decreases. Additional insight into the relationships requires a comparison to a prior study by Frankel et al. (2011). In their study, Frankel et al. (2011) examined the *NonGAAPExclusion* variable for the years before 1998-2001, before Sarbanes-Oxley, and afterward until 2005. The mean for *NonGAAPExclusions* variable in this study is closer to the mean for *NonGAAPExclusions* variable in the Frankel et al. (2011) study. This may indicate that current regulations do little to influence the magnitude of exclusions from GAAP earnings.

Further insight into the outcomes in Model 1 and Model 2 comes from examining firm quarters divided into high-risk and low-risk sports groups. The mean for *Exceed* was higher for the higher-risk sports group, which seems contrary to the outcome in Model 1. However, the mean for *NonGAAPExclusions* was higher for the lower-risk sports group, which agrees with the outcome for model 2. Perhaps firms with CEOs with a higher risk sports activity are more likely to have non-GAAP earnings that *Exceed* GAAP earnings. However, when firms with CEOs with a lower risk sports activity have non-GAAP earnings that exceed GAAP earnings, their exclusions are of greater magnitude. This may be equivalent to saying most firms have non-GAAP earnings but when the CEO has a lower-risk sports hobby, their firm's non-GAAP exclusions are lower than that of a firm with a CEO with a high-risk sports hobby.

. The third hypothesis, that firms led by CEOs with riskier sports hobbies have *NonGAAPExclusions* that are persistent was supported. Both *SportsRisk* and *NonGAAPExclusions* are negatively related with future earnings and income, meaning as the CEO sports risk activity and *NonGAAPExclusions* decrease, *FutureGAAPEarnings* and

FutureOperatingIncome increase. To find further support for this outcome, the variables for model 3a and 3b were placed into groupings of high-risk sports and low-risk sports and their means and significance were analyzed. Here again, *NonGAAPExclusions* was higher in the low-risk sports group. The inference is firms with CEOs who engage in low-risk sports like golf, bowling, and running have *NonGAAPExclusions* that are more likely to occur over time or are more persistent.

In summary, most firm quarters in this sample were likely to have non-GAAP earnings. When the CEO has a low-risk sports hobby their firm's non-GAAP earnings are likely to be higher than GAAP earnings. However, firms with a CEO with a low risk sports hobby may have exclusions from GAAP earnings that are lower than the exclusions made by firms with a CEOs with a high risk sports hobby. The firm's size may be a factor since there is a negative relationship between *SizeEquity* and *SportsRisk*. Large firms with a CEO with a low-risk sports hobby tend to have exclusions from GAAP earnings that occur regularly, or are persistent. This may indicate that CEOs with low sports-risk hobbies have confidence to continue their firm's exclusions to GAAP earnings. The source of their confidence, or self-efficacy and whether it is related to their sports hobby could be a source of future research.

Future Research

Although non-GAAP literature has gained popularity as a topic for research in the past few years, there are topics within this area left to explore (Arena et al., 2021). There has been research on CEOs' sports hobbies and tax aggressiveness (Luo et al., 2022), and research has been conducted on the CEO's personal characteristics of narcissism and non-GAAP earnings (Abdel-Meguid et al., 2021). However, the influence of the CEO's personality attributes, specifically their tolerance for risky hobbies and its association with non-GAAP earnings, has

not received as much attention. This research provides insight into the relationship between the CEO's personal risk tolerance through their sports hobby risk and firm non-GAAP earnings. This topic is relevant to protecting investor interests. Analysts and practitioners may find this research helpful when reviewing firms for risk assessment. Policymakers and regulators will also find this research relevant as they determine future policies.

The outcomes of this research may have connections to other accounting literature. There are also opportunities to use this study's outcomes for additional research. Regulations may influence non-GAAP reporting, but there is a debate on whether or not to increase regulations. Black et al. (2017) suggest SOX and Regulation G have achieved their goal of limiting deceptive non-GAAP disclosures. Their research concludes managers seem to exclude fewer recurring items from GAAP earnings, although managers who approve aggressive *NonGAAPExclusions* still exist. This study supports the work of Black et al. (2017) since it appears managers who engage in low-risk sports activities approve aggressive *NonGAAPExclusions*. Additional research with a larger group of CEOs over a longer period of time could corroborate that firms with CEOs with lower-risk sports hobbies are more likely to have aggressive *NonGAAPExclusions*. In addition, since the mean of nonGAAPExclusions in this study is closer to the Frankel et al. (2011) mean for *NonGAAPExclusions* pre-SEC scrutiny, the impact of regulations on non-GAAP disclosures should continue to be explored. Other avenues of research could explore a comparison firms non-GAAP earnings with CEOs sports activity to firms with CEOs who have no sports activity and an examination of non-GAAP earnings in relationship to the SEC's accounting and audit enforcement releases.

Perhaps CEO participation in sports like golf or bowling, where groups who play together may create a community as indicated by Shoham et al. (2000). While participating in these

sports, there may be time to discuss business. Further research could help in understanding how firms share information. Additional research may pursue the frequency of participation in risky sports activity, whether the frequency leads to continuation of the sports activity or a substitution with a different sports activity or something entirely different.

Limitations

As with most research, there are several limitations for this study. Other researchers who have examined CEO sports hobbies have used information from Execucomp and other databases not available for this research. The use of databases like Execucomp may have provided a larger sample for this study. In addition, a broader sample of CEOs with firms outside the Fortune 500 may produce different results. Another limitation was the use of the sports risk measure by Luo et al. (2021). Some sports were not included in the measure because the calculations of risk are tied to the NAIS data. Sports like riding horses were not included because it was not included in NAIS data.

Finally, the study of non-GAAP earnings and exclusions has limitations inherent to the nature of non-GAAP disclosures. Most non-GAAP disclosures occur in earnings announcements, but because these disclosures are created on an as needed basis, there may be several firm quarters where non-GAAP earnings are nonexistent, making comparability between quarters difficult. In addition, because non-GAAP earnings can be stated in different ways, their existence becomes more difficult to find, as evidenced by the errors in the algorithm developed by Bentley et al. (2018).

Conclusion

There are many factors influencing CEO behavior and non-GAAP earnings. This research provides additional insight to the "black box" of corporate decision-making. Investors and analysts may benefit from observing the sports activities of CEOs and be aware that low-risk sports may lead to higher *NonGAAPExclusions*.

References

Abdel-Meguid, A., Jennings, J. N., Olsen, K. J., Soliman, M. T. (2021). The impact of the CEO's personal narcissism on non-GAAP earnings. *The Accounting Review*, *96*(3), 1-25. https://doi.org/DOI: 10.2308/TAR-2017-0612

Arena, C., Catuogona, S., Moscariello, N. (2021). The unusual debate on non-GAAP reporting in the current standard practice. The lens of corporate governance. *Journal of Management and Governance*, *25*(3), 655-684. https://doi.org/https://doi.org/10.1007/s10997-020-09515-z

Bentley, J. W., Christensen, T. E., Gee, K. H., Whipple, B. C. (2018). Disentangling managers' and analysts' non-GAAP reporting. *Journal of Accounting Research*, *56*(4), 1039-1081. https://doi.org/https://doi.org/10.1111/1475-679X.12206

Biggerstaff, L., Cicero, D. C., Puckett, A. (2017). Fore! An analysis of CEO shirking. *Management Science*, *63*(7), 2302-2322. https://doi.org/https://doi.org/10.1287/mnsc.2016.2452

Black, D., Gao, B. (2022). Identifying opportunistic managers using non-GAAP disclosures and insider trading. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4207045

Black, D. E., Black, E. L., Christensen, T. E., Gee, K. H. (2021). CEO pay components and aggressive non-GAAP earnings disclosures. *Journal of Accounting, Auditing & Finance*, 1-28. https://doi.org/https://doi.org/10.1177/0148558X21989907

Black, D. E., Christensen, T. E., Ciesielski, J. T., Whipple, B. C. (2021). Non-GAAP earnings: A consistency and comparability crisis? *Contemporary Accounting Research*, *38*(4), 1712-1747. https://doi.org/https://doi-org.ezproxy.umsl.edu/10.1111/1911-3846.12671

Black, E., Christensen, T., Joo, T., Schmardebeck, R. . (2017). The relation between earnings management and non-GAAP disclosure. *Contemporary Accounting Research*, *34*(2), 750-782. https://doi.org/https://doi.org/10.1111/1911-3846.12284

Brown, L. D., Call, A. C., Clement, M. B., Sharp, N. Y. (2014). Inside the "black box" of sell-side financial analysts. *Journal of Accounting Research*, *53*, 1-47. https://doi.org/https://doi.org/10.1111/1475-679X.12067

Brown, R., Gao, N., Lee, E, Stathopoulos, K. (2012). What are friends for? CEO networks, pay and corporate governance. In S. Boubaker, Nguyen, B., Nguyen, D. (Ed.), *Corporate Governance*. Springer. https://doi.org/https://doi.org/10.1007/978-3-642-31579-4_12

Cain, M. D., McKeon, S. B. (2016). CEO personal risk-taking and corporate policies. *The Journal of Financial and Quantitative Analysis*, *51*(1), 139-164. https://doi.org/https://doi.org/10.1017/S0022109016000041

Chen, D., Zheng, Y. (2014). CEO tenure and risk-taking. *Global Business and Finance Review*, *19*(1), 1-20. https://doi.org/https://doi.org/10.17549/gbfr.2014.19.1.01

Chen, G., Crossland,C., Luo, S. (2015). Making the same mistake all over again: CEO overconfidence and corporate resistance to corrective feedback. *Strategic Management Journal*, *36*(10), 1513-1535. https://doi.org/10.1002/smj.2291

Ciesielski, J. T., Henry, E. (2017). Accounting's tower of babel: Key considerations in assessing non-GAAP earnings. *Financial Analysts Journal*, *72*(2), 34-50. https://doi.org/https://doi.org/10.2469/faj.v73.n2.5

Doyle, J. T., Jennings, J. N., Soliman, M. T. (2013). Do managers define non-GAAP earnings to meet or beat analyst forecasts? *Journal of Accounting and Economics*, *56*, 40-56. https://doi.org/https://doi.org/10.1016/j.jacceco.2013.03.002

Frankel, R., McVay, S., Soliman, M. (2011). Non-GAAP earnings and board independence. *Review of Accounting Studies*, *16*(4), 719-744. https://doi.org/DOI:10.1007/s11142-011-9166-3

Govindarajan, V., Srivastava, A., Zhao, R. (2021). Mind the GAAP. *Harvard Business Review*. https://hbr.org/2021/05/mind-the-gaap#:~:text=GAAP%20is%20a%20fancy%20term,earnings%2C%20showing%20its%20wide%20prevalence.

Hallas, N. (2019). *Academic literature review: Accounting reporting complexity and non-GAAP earnings disclosures*. Audit Analytics. Retrieved October 1, 2022 from https://blog.auditanalytics.com/academic-literature-review-accounting-reporting-complexity-and-non-gaap-earnings-disclosure/

Hambrick, D. C., Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*(2), 193-206.

Hambrick, D. C., Quigley, T. J. (2014). Toward more accurate contextualization of the CEO effect on firm performance. *Strategic Management Journal*, *35*(4), 473-491. https://www.jstor.org/stable/24037172

Henry, T. F., Weitz, R. R., Rosenthal, D. A. (2020). The gap between GAAP and non-GAAP. *The CPA Journal*. https://www.cpajournal.com/2020/03/18/the-gap-between-gaap-and-non-gaap/

Hinchcliffe, E. (2021, June 2). *The female CEOs on this year's Fortune 500 just broke three all-time records*. Fortune. Retrieved October 31 from https://fortune.com/2021/06/02/female-ceos-fortune-500-2021-women-ceo-list-roz-brewer-walgreens-karen-lynch-cvs-thasunda-brown-duckett-tiaa/

Koch-Bayram, I. F., Wernicke, G. (2018). Drilled to obey? Ex-military CEOs and financial misconduct. *Strategic Management Journal*, *39*(11), 2943-2964. https://doi.org/ https://doi.org/10.1002/smj.2946

Leone, M. (2010, September 29). *What's on the SECs radar?* CFO. Retrieved November 20 from https://www.cfo.com/accounting-tax/2010/09/whats-on-the-secs-radar/

Lim, L., Lee, S. C. (2019). Relationship between the characteristic of CEOs and excess cash holdings of firms. *Emerging Markets Finance and Trade*, *55*(5), 1069-1090. https://doi.org/https://doi.org/10.1080/1540496X.2018.1518778

Linnane, C. (2022, June 17). *U. S. companies are still making billions of dollars in adjustments so that their earnings look better, study finds*. MarketWatch. Retrieved October 1, 2022 from https://www.marketwatch.com/story/u-s-companies-are-still-making-billions-of-dollars-of-adjustments-to-make-earnings-look-better-study-finds-11654878303

Luo, S., Shevlin, T., Shi, L., Shih, A. (2022). CEO Sports Hobby and Firms' Tax Aggressiveness. *Journal of the American Taxation Association*, *44*(1), 123-153. https://doi.org/10.2308/jata-19-038

Meyers, L. S., Gamst, G., Guarine, A. J. . (2017). *Applied multivariate research* (3rd ed.). Sage Publications.

Nagar, V., Nanda, D., Wysocki, P. (2003). Discretionary disclosure and stock-based incentives. *Journal of Accounting and Economics*, *34*, 283-309. https://doi.org/https://doi.org/10.1016/S0165-4101(02)00075-7

Oreg, S., Berson, Y. (2018). The impact of top leaders' personalities: The processes through which organizations become reflections of their leaders. *Current Directions in*

Psychological Science, *27*(4), 241-248. https://doi.org/https://doi.org/10.1177/0963721417748397

Ouyang, B., Tang, Y., Wang, C., Zhou, J. (2022). No-fly zone in the loan office: How chief executive officers' risky hobbies affect credit stakeholders' evaluation of firms. *Organization Science*, *33*(1), 414-430. https://doi.org/https://doi-org.ezproxy.umsl.edu/10.1287/orsc.2021.1443

Pompliano, P. (2021, December 1). *The profice dossier: Tope Awotona, the immigrant founder who built a $3 billion software behemoth*. Retrieved November 18 from https://theprofile.substack.com/p/tope-awotona

Quigley, T. J., Hambrick, D. C. (2012). When the former CEO stays on as board chair: Effects on successor discretion, strategic change, and performance. *Strategic Management Journal*, *33*(7), 834-859. https://doi.org/https://doi.org/10.1002/smj.1945

Shea, C. (2011, September 9). Golf changes the brain. *The Wall Street Journal*. https://www.wsj.com/articles/BL-IMB-2615

Shoham, A., Rose, G. M., Kahle, L. R. . (2000). Practitioners of risky sports: A quantitative examination. *Journal of Business Research*, *47*(3), 237-251. https://doi.org/https://doi.org/10.1016/S0148-2963(98)00093-9

Sunder, J., Sunder, S., Zhang, J. (2017). Pilot CEOs and corporate innovation. *Journal of Financial Economics*, *123*(1), 209-224. https://doi.org/https://doi.org/10.1016/j.jfineco.2016.11.002

Trentmann, N. (2021, May 4). Clorox's move to provide adjusted EPS raises concerns. *WSJ*. https://www.wsj.com/articles/cloroxs-move-to-provide-adjusted-eps-raises-concerns-11620120617#:~:text=Clorox%20Co.,The%20Oakland%2C%20Calif.

U.S. Securities and Exchange Commission. (2018). *Our goals*. Retrieved May 10, 2022 from https://www.sec.gov/our-goals

Zalata, A. M., Ntim, C., Aboud, A., Gyapong, G. (2018). Female CEOs and core earnings quality: New evidence on the ethics versus risk-aversion puzzle. *Journal of Business Ethics*, *160*(2), 515-534. https://doi.org/https://doi.org/10.1007/s10551-018-3918-y

Zuckerman, M. (1971). Dimensions of sensation seeking. *Journal of consulting and clinical psychology*, *36*(1971), 45-52.

Appendix A

Sport Hobbies Sorted by SportsRisk Factor

Name of Sport	SportsRisk Factor
Motorized Vehicles	1.19
Windsurfing	0.53
Football	0.52
Non-motorized cycling	0.31
Basketball	0.29
Soccer	0.29
Hockey	0.19
Baseball	0.18
Hunting	0.16
Skating	0.15
Martial arts	0.12
Swimming	0.12
Skiing	0.11
Volleyball	0.08
Racquet games	0.07
Mountain/rock climbing	0.07
Wrestling	0.05
Golf	0.04
Waterskiing	0.03
Running/jogging	0.00
Boating motor/power	0.00

Note. Adapted from "CEO Sports Hobby and Firm's Tax Aggressiveness." by Luo, S., Shevlin, T., Shi, L., Shih, A. (2022), *Journal of American Taxation*, 44(1).

Appendix B

Variable Definitions

Variable	Definitions
NonGAAPExclusions	Hand-gathered Non-GAAP EPS - GAAP EPS.
BTM	BTM is calculated as the book value of equity, using items from Compustat. Item seqq over the product of items eshoq and prccq.
SizeEquity	Log of market value of equity at quarter-end (Compustat data item eshoq multiplied by data item prccq)
ROA	Calculated as items from Compustat opepsq, atq and eshoq. Item atq will be divided by item eshoq. Opepsq will be divided by the result of atq divided by eshoq.
FutureGAAPEarnings	Item epsfxq summed over quarters q + 1 through q + 4.
FutureOperatingIncome	Items from Compustat opepsq, cshpri and cshfd. The calculation will be opepsq summed over quarters 1 + 1 through q + 4. To calculate an implied dilution factor, cshpri over cshfd
Exceed	Specifies whether non-GAAP earnings exist. If it is equal to 1 non-GAAP earnings are reported in Gee data, otherwise it is 0
SIC	Two digit SIC – fixed effects
CEOTenure	Natural logarithm of the CEO's tenure (in years)
SportsRisk	Based on the CEO sports hobby risk as defined in Appendix A
CEOAge	Natural logarithm of the CEO's age during the data collection period starting in 2018
CEOMale	An indicator variable equal to 1 if male and 0 if female
BoardIndependence	If the CEO is also the chairperson of the board this variable will be equal to 1 and 0 if the CEO is not the chairperson of the board.