Athlete Misconduct and Team Sponsor Stock Prices: The Role of Incident Type and Media Coverage

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June 15, 2020

Abstract

Firms engaging celebrity athlete endorsers or sponsoring sports teams experience negative stock price impacts if athletes engage in inappropriate behavior. Most previous research assumed homogeneity in the impact of misconduct on stock prices. We investigate the possibility that different types of misconduct generate different impacts on stock prices. Results from a number of event study models using 863 incidents off-field misconduct by NFL players reveal substantial heterogeneity in the impact of these incidents. Crimes that harmed others, and incidents receiving media attention generated larger negative returns. Evidence also shows long-run negative returns lasting 60 trading days after an incident.

Keywords: athlete misconduct; reputational risk; big data
JEL Codes: G14, L83, M31

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1 Introduction

Sports sponsorship represents a common element of the branding and advertising efforts of firms. Many firms place their names and logos in sports facilities and position themselves as the "official" firm of a sports team. These firms intend to leverage successful on-field performance by sports teams to raise the company's profile, attract the attention of consumers, and gain market share in their industry. A large literature assesses the impact of sports sponsorship on firm-specific outcomes like stock share prices and revenues (Chen et al., 2019).

Although popular with firms, sports team sponsorship also comes with potentially negative consequences if the team performs poorly (Eisdorfer and Kohl, 2017) or team members behave inappropriately (Ge and Humphreys, 2020). Firms using celebrities, including individual athletes, to endorse their products face similar risks (Knittel and Stango, 2014; Hock and Raithel, 2019). Ge and Humphreys (2020) show that a wide variety of off-field misbehavior, in the form of various types of criminal activity, reduces the stock price of firms that sponsor the team that employs these misbehaving players.

Other recent research shows that the adverse impact of negative publicity generated by inappropriate athlete and celebrity behavior on firm's stock prices can be mitigated by firm actions like suspending the offending person as well as by public contrition by the offending person (Hock and Raithel, 2019). This suggests important heterogeneity in the impact of negative publicity generated by athletes' misbehavior on sponsoring firms' stock prices.

Our paper extends this recent research by Hock and Raithel (2019) and Ge and Humphreys (2020) by analyzing the role played by heterogeneity in the type of athletes' off-field misconduct on the stock prices of firms sponsoring the team that employs the misbehaving player. We use the same data as Ge and Humphreys (2020) that contain detailed data on 863 off-field criminal incidents involving NFL players over the period 2000-2017 matched with the stock price of firms endorsing the team that employed each player at the time of the off-field criminal incident.

We analyze heterogeneity in the impact of different types of off-field misconduct along five different dimensions: self harming crimes like drunk and disorderly behavior or drug possession versus other harming crimes like assault, domestic violence, and drunk driving; misconduct by star players versus less prominent players; criminal acts by first-time offenders versus acts by repeat

offenders; off-field misconduct receiving media attention versus misconduct that received no media attention; and criminal behavior occurring during the NFL season versus events in the off-season. We also investigate the duration of the negative impact on stock prices and analyze variation in the size of the negative impact in light of observable firm and incident characteristics.

The paper also contributes to the growing literature on the use of big data in sport management. We extend the data used in Ge and Humphreys (2020) by linking the player off-field incident, team sponsorship, and stock price data used in that paper to results of extensive searches of the Factiva Global News Database for media coverage of the off-field incidents and to player performance data from *Pro-Football-Reference* in order to distinguish between star and non-star players. This linking to additional data sources permits us to better understand the underlying mechanism through which player misconduct affects sponsor stock returns. While many "big" data applications lengthen "standard" data sets by adding many additional observations of the same variables, or measuring variables at increased temporal frequency, for example daily data instead of annual data, this application highlights the importance of broadening "standard" data sets by linking them to other data sources, expanding the number of variables available to researchers and the research questions that can be answered.

Results from event study models estimated separately for each type of misconduct show substantial heterogeneity in the impact of type of misconduct on team sponsors' stock prices. Off-field misconduct garnering substantial media coverage generates large, statistically significantly negative cumulative abnormal average returns in team sponsor share prices while events with no media coverage do not generate negative returns. This intuitive finding, that media coverage magnifies the negative impact of athlete off-field misconduct, represents a novel contribution to the literature. While both in-season and off-season misconduct generate negative returns, events occurring in the off-season generate a larger negative impact than events occurring during the season, suggesting that on-field play mitigates the negative effects of these incidents perhaps by diverting the attention of customers or investors in the firms.

The star status of the misbehaving player has no impact on the effect of misconduct on stock prices; a differential impact of actions by repeat offenders versus first-time offenders exists only at the end of the sample period, when a very strong league personal conduct policy was in place. The results also show a long-run impact of NFL player off-field misconduct on the stock price of

team sponsors; the negative cumulative average abnormal returns following an off-field incident persist for 60 trading days after the event, suggesting that the underlying firm fundamentals may be impacted.

This evidence of heterogeneity in impact represents a contribution to the literature. Most previous research assumed homogeneity in the impact of misconduct on sponsor stock prices, or analyzed a single instance of misconduct (Knittel and Stango, 2014). Heterogeneity in the impact of misbehavior means that this phenomenon is more nuanced and complex that previously thought. The importance of media coverage identifies an important mechanism underlying this negative impact. The permanent nature of the negative impact means that firms should be even more concerned about the reputational risk posed by sponsoring sports teams.

2 Context

A large literature analyzes the relationship between celebrity endorsement deals and the performance of the endorsing firm. Much of this literature focuses on how new endorsement deals affect the share prices of the endorsing firm. Chen et al. (2019) contains a thorough, recent review of this literature. Current share prices reflect the expected value of future firm profits or losses. If an endorsement deal increases future firm profits, by increasing the visibility of the firm, increasing future demand for the firm's products or services, or generating other positive economic outcomes, then the firm's share price should reflect this at the point in time when the endorsement deal becomes public information.

Celebrity endorsement deals also come with the potential for negative consequences. Endorsement deals create a link between the celebrity endorser and the firm in the mind of both customers and investors in the firm's shares. Negative behavior on the part of celebrity endorsers could lead to reduced demand for the firm's products or services if consumers disapprove of the negative behavior and purchase less of the firms output or boycott the firm. Negative actions on the part of celebrity endorsers also generate a "reputational risk" for the endorsing firm (Knittel and Stango, 2014). This could lead investors in the firm's shares to see their stock following an incident of endorser misconduct. Firms engaging athletes or sports teams face larger risks of negative consequences from endorsements because the endorsers can engage in negative behavior as part of

athletic competition, for example taking illegal performance enhancing drugs (Danylchuk et al., 2016) or performing poorly in competition (Eisdorfer and Kohl, 2017), or engaging in negative behavior outside an athletic competition, for example marital problems (Knittel and Stango, 2014) or criminal behavior (Ge and Humphreys, 2020).

A growing literature analyzes the impact of negative endorser behavior on firm's stock prices. Leeds (2010) analyzed the impact of positive (winning) and negative (doping) actions by professional cyclist Floyd Landis on the share prices of Phonak, the firm that sponsored his cycling team, and found positive excess returns from both. Knittel and Stango (2014) analyzed the impact of Tiger Woods' marital problems on the stock prices of three firms that Woods directly endorsed and found evidence of negative excess returns for all three. Drivdal et al. (2018) analyzed the impact of doping scandals in cycling on the stock prices of 53 companies that sponsored cycling teams and found evidence of negative excess returns following these scandals.

Two recent papers analyze the impact of a variety of types of endorser misconduct on the stock prices of endorsing firms. Hock and Raithel (2019) analyzed the impact of a wide variety of misconduct, ranging from getting divorced to murder, by a diverse group of endorsers including celebrities, actors, and athletes on the stock prices of endorsing firms. Hock and Raithel (2019) found evidence of negative excess returns following incidents of misconduct and that corporate responses to the incidents mitigated the negative impact. Ge and Humphreys (2020) analyzed the impact of a wide variety of off-field criminal behavior, ranging from traffic violations to murder, by the National Football League (NFL) players on the stock prices of firms endorsing the teams that employed these players. Ge and Humphreys (2020) found evidence of negative excess returns following these incidents. Both papers assume that different types of endorser misconduct have similar impacts on endorsing firm stock prices, estimated an average effect across these different types of misconduct. The heterogenous nature of the incidents of misconduct in these papers raises questions about the extent to which the specific type of misconduct plays a role in generating negative excess returns in the stock price of endorsing firms.

This paper investigates the impact of heterogeneity in type of endorser misconduct on negative excess returns experienced by endorsing firms. We exploit variation in the nature and severity of off-field criminal activity by NFL players analyzed by Ge and Humphreys (2020) to develop evidence about the types of endorser misconduct that generate the largest negative excess returns.

This paper also investigates the role played by media coverage in generating negative excess returns for sponsoring firms, a topic not addressed by previous research.

NFL players possess a well-deserved reputation for engaging in inappropriate off-field behavior. The game involves substantial physical contact and aggression that not only play an important role in shaping individual player and team success but may also make players more likely to behave inappropriately outside competitions (Ge, 2019). Given this reputation, and the impact of this reputation on the league's image and revenue generating potential, the NFL implemented various policies designed to deter players from engaging in inappropriate off-field behavior over the years.

The initial NFL policy designed to deter off-field misconduct, the Violent Crime Policy, was adopted in 1997 when Paul Tagliabue was NFL Commissioner. This policy was put in place following a series of high-profile player off-field criminal incidents. The Violent Crime Policy was revised and renamed the Personal Conduct Policy (PCP) in 2000. These early policies reflect the league's disciplinary attitude about players' off-field criminal behavior, any league-level punishment could not be imposed until after a player received a conviction or its equivalent for the crime under these policies. Due to this limitation, these policies were largely deemed ineffective as deterrents to players' off-field misconduct (Mahone Jr., 2008).

Goodell took over from Tagliabue as Commissioner of the NFL in 2006. Goodell prioritized restoring the league's tarnished public image, which deteriorated because of frequent player off-field misconduct incidents. One key initiative was the implementation, and strict enforcement, of a substantially revised PCP granting sole discretion to punish players before any legal proceedings occurred to the league (Marks, 2008). Compared to earlier conduct policies, Goodell's discretion-based PCP likely increased the cost of misconduct for NFL players and generated stronger deterrents to future off-field incidents. This policy went into effect on April 10, 2007. However, controversy surrounded this strengthening of the NFL PCP because it was unilaterally made by Commissioner Goodell without the support or consent of the NFL Players Association or NFL team owners (Marks, 2008). This may have reduced the deterrent value of the policy.

The NFL announced a further revised and strengthened Personal Conduct Policy on December 10, 2014. This version of the NFL PCP received the unanimous endorsement from all NFL team owners and was also agreed to by the NFL Players Association through collective bargaining.[1]

[1]Source:"NFL owners endorse new personal conduct policy," by The National Football League, *NFL.com*,

The impact of NFL player misconduct on team endorsing firm stock prices depends on the nature of the off-field incident and the perception of the misconduct by both firm customers and investors. The presence of league personal conduct policies likely impacts perceptions of the severity of the misconduct. The changes in the league conduct policy over time provide natural experiments to better understand study the role of expectations and surprises in explaining changes in endorsing firm stock prices. Again, the 2000-2017 sample period contains three different league conduct policy regimes: Regime 1 (1 January 2000-9 April 2007), Regime 2 (10 April 2007-9 December 2014) and Regime 3 (10 December 2014-2017).

We posit that changes in league personal conduct policies affect customer and investor perceptions of player off-field misconduct. Since the league strengthened the policy over time, off-field violations in Regime 3 should be more surprising events than those in Regime 1 or Regime 2. Player off-field misconduct during Regime 3 should generate larger negative abnormal returns for implicated firms endorsing teams.

3 Data and Empirical Approach

3.1 Data

We initially assembled an analysis data set, analyzed in Ge and Humphreys (2020), from multiple sources. The core data come from the USA Today NFL arrest database, which contains a rich amount of information about off-field misconduct by NFL players and represents the primary source of data on these incidents. In addition, the annual Forbes NFL Team Valuation List and each team's official annual media guides contain information on the official sponsors of each NFL team that can be linked to the player incident data sing team affiliation at the time incidents occur. Third, daily stock price data come from the standard stock price source, the Center for Research in Security Prices (CRSP) and can be matched to the sponsoring firms by their stock ticker symbols.

We argue that this analysis represents an example of the use of big data in sport management research because of the way we augment the data used in Ge and Humphreys (2020). Despite its widespread use, no formal definition of big data exists. One way to think about distinction

December 10, 2014, accessed [February 28, 2018], `http://www.nfl.com/news/story/0ap3000000441758/article/nfl-owners-endorse-new-personal-conduct-policy`.

between big data and "standard" data is through the concepts of vertical and horizontal expansion of a "standard" data set.

Think of data in terms of a spreadsheet. Vertical expansion means adding rows to the spreadsheet - more observations of the same variables. Examples include moving from season-level data to game level data, from annual data to daily data, or from game level data to minute-by-minute level data. Vertical data expansion could also include construction of a big data set through geographical expansion, expanding data from a single league or country to many leagues or countries.

Horizontal expansion means adding more columns to the data set. Horizontal expansion entails some form of matching. The "standard" data set must contain some variable that allows it to be matched with data from some other source. In this case, the data analyzed in Ge and Humphreys (2020) contain the player's name and the date and description of each incident. This information allows us to conduct extensive searches in the Factiva Global News Database to quantify the amount of media attention each incident received. It also allows us to match incidents to player performance measures developed by *Pro-Football-Reference.com*, in particular Career Approximate Value (CAV) to identify star players. This horizontal expansion allows for a richer analysis than Ge and Humphreys (2020) that addresses the role played by media coverage and player ability in magnifying the impact of off-field misconduct on team sponsors.

Horizontal and vertical expansion of "standard" data to big data generate somewhat different impacts on the analysis. Vertical expansion increases sample sizes, improving the precision of statistical estimates. It can also provide a richer description of decision making, and the context for decision making in sport. For example game level data cannot reveal much about how risk averse NFL head coaches are, but data from individual plays can (Romer, 2006). Horizontal expansion increases the range of research questions that can be reasonably addressed, including increased understanding of underlying mechanisms like the ones addressed in this paper.

3.1.1 Player Off-Field Misconduct

USA Today maintains an extensive record of NFL players' off-field misconduct over time. Incidents of off-field misconduct analyzed occurred between January 2000 and May 2017, covering a total of 863 individual off-field incidents. An incident refers to a player being arrested, charged, or cited for some type of off-field misconduct, typically a crime. In a few cases, an incident refers to a player

turning himself in for an incident for which he was accused, or the issuance of a summons for the arrest of a player. The underlying crimes exhibit substantial heterogeneity, running the gamut from traffic violations to murder charges. For each incident, the USAToday database contains detailed information regarding the exact date when news of each incident became public, the player's name, his team, his position, a brief description of the incident, and the eventual legal disposition of the incident. Following standard practice in the literature, we assume that each incident represents a possible negative shock to team sponsors because of their association with the team that employed the player at the time of his off-field misconduct. We cross-checked the incident data against an alternative NFL off-field incident database maintained by ESPN to verify its accuracy. We also conducted a comprehensive search for off-field incidents involving NFL players using the Factiva Global News Database and found no additional incidents.

Other prior research, including Soebbing and Washington (2013) and Cole et al. (2014) utilize a similar dataset on NFL players' criminal behavior collected and maintained by the San Diego *Union Tribune* newspaper. These two data sources were merged when USA Today purchased the San Diego *Union Tribune* database. Ge and Humphreys (2020) also use the same dataset as this paper.

3.1.2 Team Sponsorship

We identify corporate sponsors for each NFL team over 18 NFL seasons using the Forbes NFL Team Valuation List. This annual list contains comprehensive information about team financial operations, including a list of official team sponsors. The list does not provide contract details for sponsorship agreements. We match specific off-field incidents with the implicated teams and sponsors by NFL seasons, so team sponsors from the 2005 Valuation List are matched with incidents occurring during the 2004 NFL season. The list was not published prior to 2001, so the 2000 NFL season represents the first season in the sample.

The data contain 154 unique team sponsors over these 18 NFL seasons. Every team used multiple sponsors and many sponsors only affiliate with teams for part of the sample, providing variation in sponsors. Most team sponsors are large publicly traded companies but a few are privately held and do not appear in the sample. Team sponsors typically utilize in-stadium signage or place sponsor logos on team-related products as part of their sponsorship. Some sponsors advertise

themselves as the "official product" of the team. Several companies, for example Budweiser, Pepsi, and Coke, simultaneously sponsor multiple teams. Other sponsors tend to exclusively sponsor a specific team. For example, AMC Theatres only sponsored the Jacksonville Jaguars throughout the sample period.

3.1.3 Stock Returns Data

Daily stock price data come from the Center for Research in Security Prices (CRSP), the standard source in the literature. We only include publicly traded companies on US stock exchanges. We exclude privately held team sponsors, team sponsors whose shares are traded on stock exchanges located in foreign countries, and team sponsors whose shares are traded in the over-the-counter (OTC) market. We identify a total of 154 unique publicly traded team sponsors and match these team sponsors with the off-field player misconduct and CRSP daily stock returns using reported incident dates and company stock ticker symbols. If the off-field incident announcement occurred on a non-trading day, we code the next trading day as the relevant event date.

Some sponsors experienced changes in status during the sample period because of mergers, bankruptcy, or market exit. For these sponsors, we replace the stock ticker symbol to reflect observed changes. For example, Procter & Gamble acquired Gillette in 2005 through a stock swap. We use the Procter & Gamble stock ticker symbol to estimate sponsorship effects after the acquisition even though the sponsorship deal remained under Gillette's brand name.

3.2 Descriptive Statistics

Table 1 contains summary statistics for the type of off-field incident and legal dispositions for these incidents. Alcohol related and driving-related crimes constitute most common type of off-field incidents of misconduct. Crimes that result in direct physical harm to victims, such as murder or assault, represent about 18% of the incidents. About 29% of the incidents involve other criminal behavior not classifiable into one of the other specific categories. These incidents include theft, animal abuse, and other miscellaneous types of misbehavior; Michael Vick's 2007 arrest for dog fighting represents one high-profile example of an incident in this *Other* category.

The percentages on the table add up to more than 1.0 because incidents often involve multiple crimes or charges. For example, a DUI charge could possibly be coded as both an alcohol-related

and driving. Substantial evidence of recidivism exists in the data. The 863 incidents involve only 643 players so approximately 25% of the incidents involve repeat offenders.

The vast majority (over 85%) of the incidents represent a player arrest. In terms of case resolutions, about 23% of the cases involved dropped charges and about 40% of the offenders were found guilty of the crime they were accused of committing, a majority of whom plead guilty. About 20% of all cases ended with a fine and another 25% ended in some other form of punishment like as community service.

Table 1: Summary Statistics - Misconduct Events and Outcomes

Type of Misconduct	Mean	Std. Dev.
Alcohol Related	0.312	0.463
Drug Related	0.161	0.368
Driving Related	0.419	0.494
Physical Harm	0.175	0.380
Domestic Violence	0.122	0.327
Weapon Related	0.076	0.266
Other Crime	0.289	0.453
Repeat Offender	0.256	0.438
Disposition		
Arrested	0.860	0.347
Charge Dropped	0.232	0.422
Found Guilty	0.402	0.491
Plead Guilty	0.299	0.458
Acquitted	0.038	0.192
Probation	0.140	0.347
Jail	0.061	0.240
Suspended Sentence	0.043	0.203
Fine	0.219	0.414
Diversion Program	0.082	0.275
Other Punishment	0.244	0.430
# of Incidents	863	
# of Involved Players	643	

Out of the 863 incidents in the sample, 351 occurred in Regime 1, 426 in Regime 2, and 86 in Regime 3. Figure 1 plots the frequency of off-field incidents by month along with a fitted kernel density curve to show the time path of incidents. The first red line on Figure 1 represents the break point between Regimes 1 and 2; the second red line represents the break point between

Regimes 2 and 3. There appears to be some correlation between league personal conduct policy regime changes and the subsequent frequency of player off-field incidents. The frequency of player off-field incidents of misconduct increased steadily throughout Regime 1, during the period when Paul Tagliabue was commissioner. Again, as discussed above, the general perception of the NFL during this period was that players were out of control. The frequency of occurrence of off-field player misconduct peaked at about the start of Regime 2, instituted by new Commissioner Roger Goodell.

The frequency of off-field player misconduct incidents declined during Regime 2 relative to Regime 1, suggesting that the strengthened personal conduct policy deterred some player misconduct. The frequency of player off-field misconduct continued to decline during Regime 3, suggesting that the further policy strengthening generated additional deterrence. Again, we posit that when policy changes deter player misconduct, each actual incident of misconduct will be viewed as more surprising by customers of firms that endorse NFL teams and by investors in these firm's shares. This should lead to a stronger impact on the firm's share prices, as customers and investors view these incidents as more shocking or more inappropriate.

Some NFL teams, for example the Oakland Raiders, have a reputation of being relatively lawless because of their style of play and the behavior of their owners. Longtime Oakland Raider owner Al Davis had an image as a renegade that was reinforced by his defiance of the league when he moved his team from Oakland to Los Angeles against league wishes, and later moved the team back to Oakland. Figure 2 shows the distribution of off-field misconduct incidents by team and by conduct policy regime. From Figure 2 the Minnesota Vikings, Denver Broncos and Cincinnati Bengals lead the league in terms of total number of off-field incidents, but they also appear to have among the lowest number of incidents during the post-2014 period. The Los Angles Chargers and Los Angeles Rams have significantly fewer incidents than any other team in the NFL, although interestingly, all of the incidents involving players on these teams happened during the post-2014 enhanced enforcement period.

3.3 Event Study Methodology

This paper analyzes the impact of off-field player misconduct on team sponsors' stock prices. We employ a standard event study methodology (MacKinlay, 1997). The observed off-field misconduct

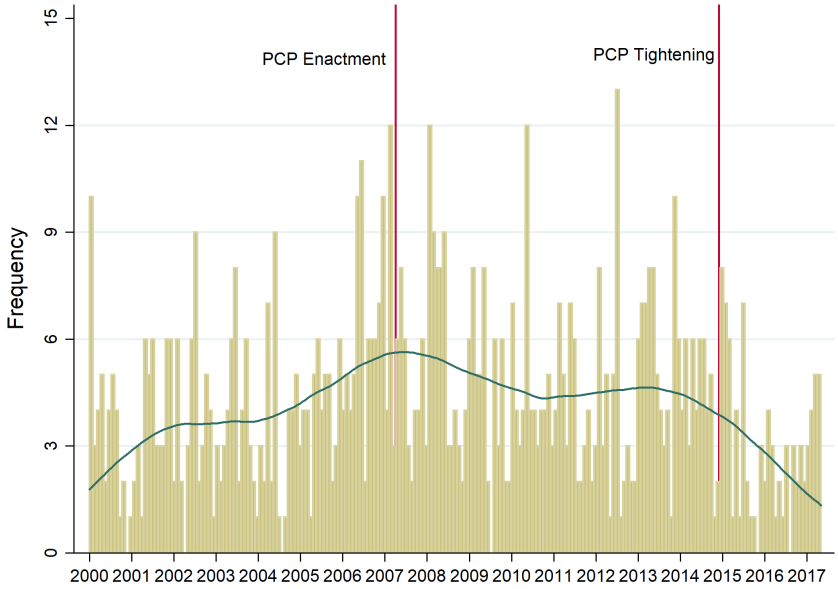


Figure 1: Frequency Distribution of Off-Field Incidents

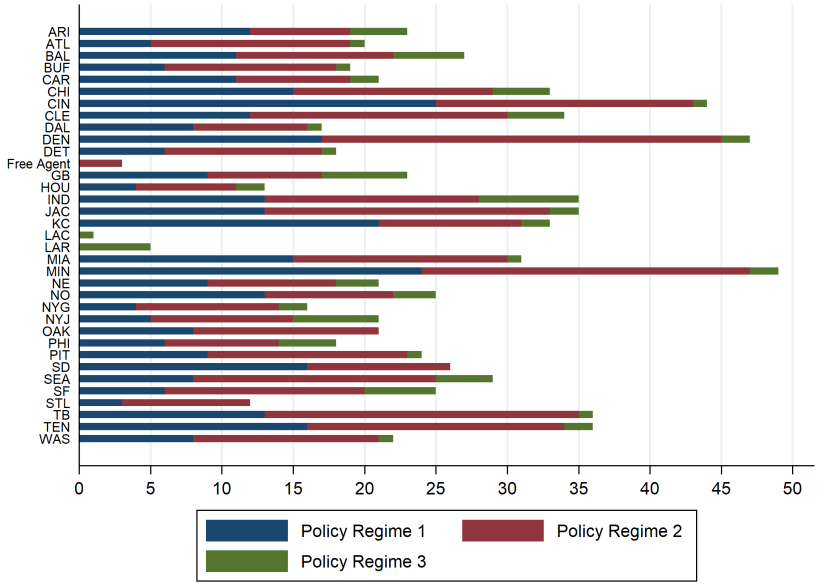


Figure 2: Distribution of Off-Field Incidents by Teams

by NFL players' represent unexpected events with clearly defined event dates, making an event study approach appropriate. Note that if the misconduct was announced on a non-trading day, we use the next trading day as the event date. Like the Tiger Woods scandal (Knittel and Stango,

2014), these incidents likely caught the public and investors by surprise, mitigating the anticipation problem that affects research on celebrity endorsements.

The event window contains [-10, 10] days before and after each incident; in other words a symmetric 21-day window around the arrest/citation event of interest (Kothari and Warner, 2007) and a 180 trading day estimation window before the event window begins (MacKinlay, 1997). As a robustness check, we use an alternative event window of [-15, 15] days and estimation windows of 100 and 250 days.

Like the previous literature, we compute abnormal returns for team sponsors following an incident as the difference between the stock's actual return and the expected return given market conditions. The abnormal return AR_{it}, for sponsor i on day t relative to the event is

$$AR_{it} = R_{it} - E(R_{it}|X_t) \tag{1}$$

where R_{it} represents the actual daily return and $E(R_{it}|X_t)$ the expected daily return.

We compute expected returns, $E(R_{it}|X_t)$, using a Fama and French (1993) momentum-augmented three-factor model (Carhart, 1997) that regresses actual return on overall market return, RM_t less RF_t, a small-minus-big market capitalization, SMB_t, a high-minus-low book-to-market ratio, HML_t, and a momentum factor, MOM_t. Data on RF_t, RM_t, SMB_t, HLM_t, and MOM_t come from Kenneth French's website.

$$R_{it} = \beta_0 + \beta_1(RM_t - RF_t) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \epsilon_{it}. \tag{2}$$

Since team sponsor stock returns may vary systemically before incidents, and the market may not react to incidents immediately, we compute Cumulative Abnormal Returns (CARs) over the entire period T_1 to T_2 using

$$CAR(T_1, T_2)_i = \sum_{t=T_1}^{T_2} AR_{it} \tag{3}$$

If the estimated CAR is statistically significant and positive (negative) the off-field incident increased (decreased) the sponsor's stock price. The other two outcome statistics of interest, the Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR), reflect the

average AR and CAR across all firms in the event window. Formally, we have

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{4}$$

and

$$CAAR(T_1, T_2)_i = \frac{1}{N}\sum_{i=1}^{N} CAR(T_1, T_2)_i. \tag{5}$$

We also explore determinants of team sponsors' abnormal returns using cross-section regression models. Specifically, we estimate the following empirical model

$$CAR_{i,j,[-10,t]} = \delta_0 + \delta_1 INCIDENT_j + \delta_2 SPONSOR_{iq} + \delta_3 X_{ijq} + \epsilon_{ijq} \tag{6}$$

where $CAR_{i,j,[-10,t]}$ is the cumulative abnormal return t days after the event day for sponsor i and off-field incident j, obtained through Equation 3. $INCIDENT_j$ is a set of incident characteristics including the cumulative counts of off-field incidents for both the player and his team; the number of players involved in the incident; dummy variables for whether the player was arrested, whether the player was found guilty, whether his team and the league reacted to the incident, whether the player was a repeat offender, whether the player intended to harm others in the incident, whether the incident occurred during the off-season; counts financial press coverage of the incident; and a player on-field performance measure.

$SPONSOR_{iq}$ is a set of sponsor characteristics for sponsor i in quarter q, including natural log of the sponsor's market value, return on assets (ROA), sales volume, and firm size, all measured at the quarterly level using Compustat data. In addition, even though our sponsorship data do not provide the contractual details of the sponsorship deals, we include in our regressions a dummy variable that equals 1 if firm i sponsors the team for the first time. Finally, X_{ijq} is a set of control variables including player position dummies,[2] team dummies and quarter-year time dummies. For each category of sponsor, we estimate Equation 6 separately for both short term (10 trading days) and long term (60 trading days) abnormal returns.

[2]Players' positions roughly reflect their physical characteristics such as height, weight and race.

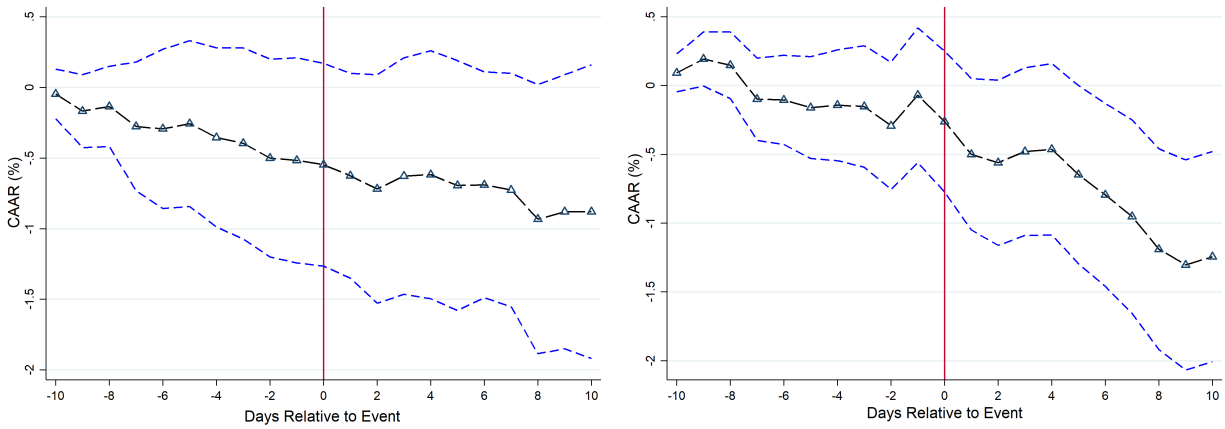
4 Results and Discussion

4.1 The Impact of Misconduct Type

We first explore whether type of misconduct plays a role in explaining abnormal returns experienced by team sponsors. Our data contain detailed information on the nature of each incident of player misconduct and the incidents vary substantially in nature and severity. We categorize incidents into two groups depending on whether the misconduct was directly or indirectly intended to harm others or only harmed or involved the player. The *harm other* group contains murder, assault, domestic violence, animal abuse, DUI, and other outwardly directed crimes and actions. The *harm self* group contains incidents involving alcohol, drugs, theft, obstruction of justice, and other inwardly directed events and crimes.[3] We hypothesize that the general public, including customers and investors, may experience more shock or repugnance over incidents that harmed others due to the often violent and abhorrent nature of these crimes as well as potential public safety concerns relative to self-destructive misbehavior like alcohol or drug abuse. Incidents viewed as more shocking or repugnant may generate a larger backlash among customers or investors and generate larger negative abnormal returns.

We perform separate event studies for each group of incidents. The CAAR estimates for each appear in Figures 3a and 3b. On these figures, the dashed lines represent the 95% confidence intervals around the CAAR estimates. Figure 3a shows that the impact of self-harming types of misconduct generates CAAR effects not statistically different from zero on stock prices. On the other hand, Figure 3b suggests that, upon learning of misconduct that harmed others, firms endorsing the NFL team employing the misbehaving player experience declines in abnormal returns on the event day and the day after the event (significant at the 1% level) with an average cumulative abnormal return of approximately -1.3% at the end of the event window (p-value < 0.01). This asymmetric result confirms the idea that incident type affects perceptions, and that more violent, outwardly directed crimes harm the reputation of firms endorsing teams more than incidents involving self-harm.

[3]Note this categorization of incidents is much broader than the "Physical Harm" category reported in the descriptive statistics, which only includes cases such as murder and assault that involved direct physical harm to the victims.



(a) Self-Harming Incidents

(b) Incidents Harming Others

Figure 3: Team Sponsor Abnormal Returns (Post-PCP) and Type of Incidents

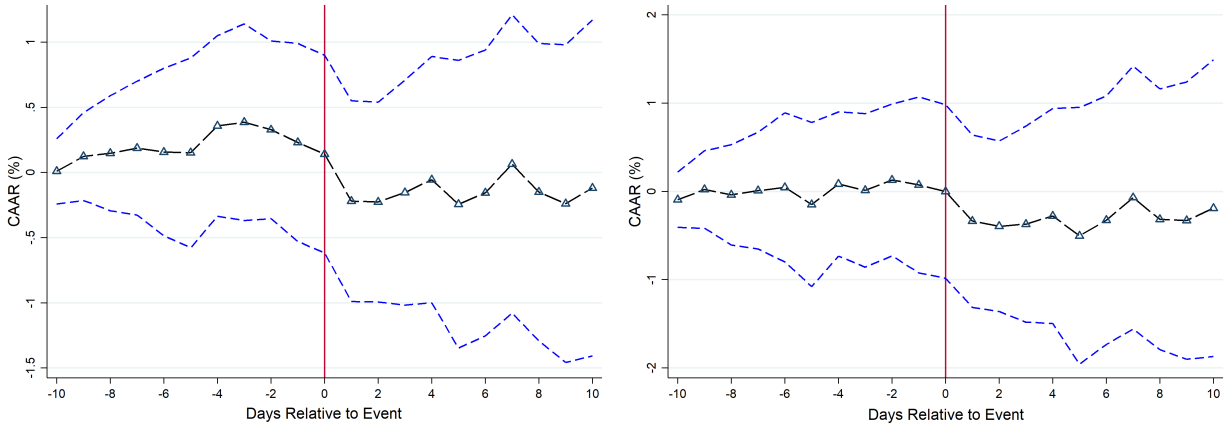
4.2 The Impact of Player Visibility

An off-field incident involving star players may appear more salient and visible than one involving a less famous player. To assess the impact of star status on team sponsor stock prices, we utilize the career approximate value (CAV) performance metric published by *Pro-Football-Reference* as a proxy for a player's star status to test the hypothesis that incidents involving star players may lead to more negative stock market reactions than those involving less famous players. The CAV metric is widely employed in sports analytics. It estimates a single numerical value to reflect a player's overall career performance based on his contribution to the team's offense and defense, taking into account the number of seasons played as well award recognitions such as being named All-Pro or making the Pro Bowl. In our sample, player's CAV values ranges from 0 to 177 with mean and median at 16.90 and 7.23, respectively. We focus on players whose CAVs are at least 40 and at least 65, representing the 75th and 90th percentile of the CAV distribution, respectively. We perform separate event study analyses on these two subsamples.

The CAAR estimates for team sponsors during Regime 3 are shown on Figures 4a and 4b. On these figures, the dashed lines represent the 95% confidence intervals around the CAAR estimates.[4] Interestingly, neither figure indicates a statistically significant impact of off-field misconduct on team sponsors' CAAR, suggesting that incidents involving star players do not necessarily lead to larger stock market impact. This is consistent with our findings regarding the role of media

[4]Results for team sponsors across the other two PCP regimes are similar and are available upon request.

coverage, discussed later in the paper, since the correlation between an implicated player's CAV metric and the corresponding news coverage of the incident is only 0.0962. A further implication of this result is that ultimately all players, regardless of star status, represent their teams, and any misconduct revealed to the public could be potentially detrimental to team sponsors.



(a) Players w/ 75th Percentile CAV

(b) Players w/ 90th Percentile CAV

Figure 4: Regime 3 Team Sponsor Abnormal Returns and Player Performance

4.3 The Impact of Recidivism

The impact of player off-field misconduct on team sponsor stock prices rests on the assumption that the player off-field misconduct could not be anticipated by stock market participants or customers of firms sponsoring teams. As discussed above, substantial recidivism exists in our data. From Table 1, the 863 incidents involve only 643 players.

The results could be clouded by the presence of repeat offenders in the sample, because misconduct by repeat offenders may not shock the public due to their past track records, and investors in sponsoring firms may have already priced in the reputation risks of these players. We leverage our rich player arrest/citation data and re-estimate event study specifications for first-time offenders only. First time offenders represent approximately 75% of the incidents as suggested in Table 1.

Figure 5 plots the abnormal returns for team sponsors with detailed estimates presented in Table 2. Team sponsors experienced the largest negative abnormal returns in Regime 3. This result confirms results reported by Ge and Humphreys (2020) for a pooled sample of all incidents. The CAAR for incidents involving first-time offenders is slightly smaller than the overall effect

reported in Ge and Humphreys (2020).

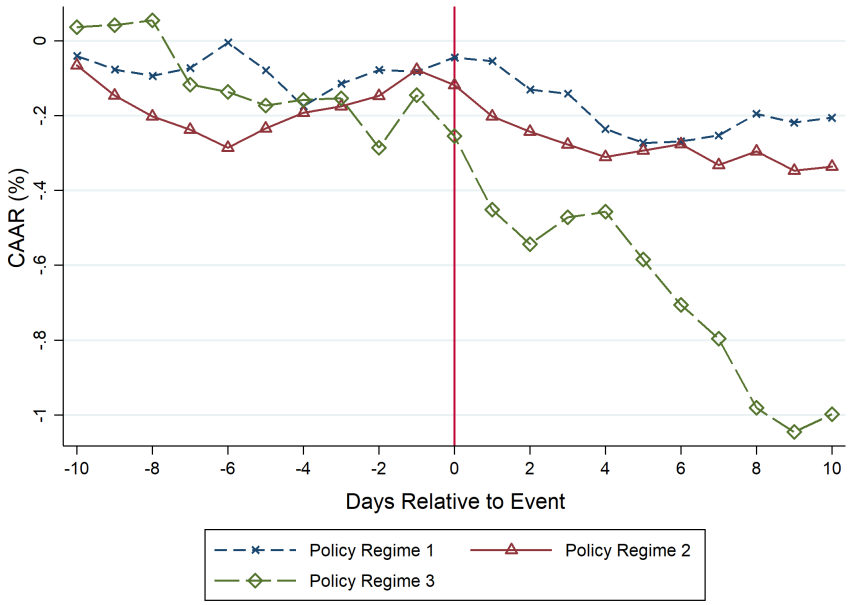


Figure 5: Team Sponsor Abnormal Returns - First-Time Offenders

We further analyze a sub-set of repeat offenders, dividing recidivists into a sub-sample of players who committed a second offense and a second sub-sample of players who committed three or more offenses. We conduct a similar set of event studies with a focus on team sponsors' stock prices. We find that: 1) for second time offenders, team sponsors' abnormal returns are not affected during all three policy Regimes, in contrast to the pooled results reported in Ge and Humphreys (2020) as well as results first time offenders' results; 2) for offenders with three or more off-field incidents, team sponsors' returns are not affected until Regime 3, when sponsors experience a cumulative abnormal return of over -5% ten days after an incident (significant at 1% level). Misconduct by repeat offenders during Regime 3 had a very large, negative impact on the stock price of team sponsors.

Figure 6 plots the coefficients and the corresponding 95% confidence intervals for the impact of repeat offenders during policy Regime 3. Despite the small sample (only 21 incidents), it seems that the market may have been inured to repeat offenders in Policy Regime 1 and 2, but during Regime 3, investors and/or customers appear to have become very concerned about reputational risks as a result of their association with teams employing players with repeated (3 or more times)

Table 2: Team Sponsor Abnormal Returns: First Time Offenders

Event day	Policy Regime 1		Policy Regime 2		Policy Regime 3	
	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)
-10	-0.041	-0.041	-0.066	-0.066	0.036	0.036
	(-0.687)		(-1.376)		(0.595)	
-9	-0.036	-0.077	-0.080	-0.146	0.005	0.042
	(-0.643)		(-1.432)		(0.091)	
-8	-0.017	-0.094	-0.056	-0.202	0.012	0.054
	(-0.299)		(-1.090)		(0.188)	
-7	0.021	-0.073	-0.036	-0.237	-0.171*	-0.117
	(0.336)		(-0.789)		(-1.787)	
-6	0.068	-0.005	-0.048	-0.285	-0.020	-0.137
	(1.223)		(-0.911)		(-0.276)	
-5	-0.074	-0.079	0.051	-0.234	-0.036	-0.173
	(-1.390)		(0.923)		(-0.623)	
-4	-0.096*	-0.175	0.041	-0.193	0.015	-0.158
	(-1.677)		(0.787)		(0.226)	
-3	0.060	-0.115	0.018	-0.176	0.004	-0.154
	(1.016)		(0.323)		(0.064)	
-2	0.037	-0.078	0.028	-0.148	-0.132*	-0.286
	(0.575)		(0.591)		(-1.898)	
-1	-0.004	-0.083	0.070	-0.078	0.141**	-0.146
	(-0.075)		(1.484)		(2.265)	
0	0.038	-0.045	-0.041	-0.118	-0.109*	-0.255
	(0.690)		(-0.874)		(-1.901)	
1	-0.010	-0.055	-0.084*	-0.203	-0.197***	-0.452
	(-0.171)		(-1.710)		(-2.577)	
2	-0.076	-0.131	-0.041	-0.243	-0.092	-0.544
	(-1.174)		(-0.752)		(-1.339)	
3	-0.011	-0.141	-0.021	-0.278	0.071	-0.472
	(-0.174)		(-0.413)		(1.067)	
4	-0.094*	-0.236	-0.033	-0.311	0.015	-0.457
	(-1.630)		(-0.731)		(0.246)	
5	-0.037	-0.273	0.017	-0.294	-0.128*	-0.585
	(-0.600)		(0.322)		(-1.905)	
6	0.004	-0.269	0.018	-0.276	-0.121	-0.706
	(0.075)		(0.296)		(-1.501)	
7	0.016	-0.253	-0.043	-0.332	-0.091	-0.797
	(0.275)		(-0.912)		(-1.304)	
8	0.058	-0.196	0.036	-0.296	-0.184**	-0.981
	(0.904)		(0.704)		(-2.469)	
9	-0.023	-0.219	-0.052	-0.348	-0.065	-1.046
	(-0.375)		(-0.987)		(-1.018)	
10	0.013	-0.206	0.011	-0.337	0.047	-0.999
	(0.209)		(0.188)		(0.743)	
CAAR t-statistic		-0.736		-1.448		-2.984
Events	820		1,212		414	
Unique Sponsors	106		79		69	

The model is fitted using Fama-French three-factor model with momentum in Equation (2). The event window is 10 trading days before and after the event date with an estimation window of 180 days before the start of the event window. Cross section t-test results are reported in parentheses. Reported CAAR t-statistic is at the end of the event window. *** p<0.01, ** p<0.05, * p<0.1.

run-ins with law enforcement. These results provide further support for the role that expectations and surprises play in explaining sponsors' abnormal stock returns.

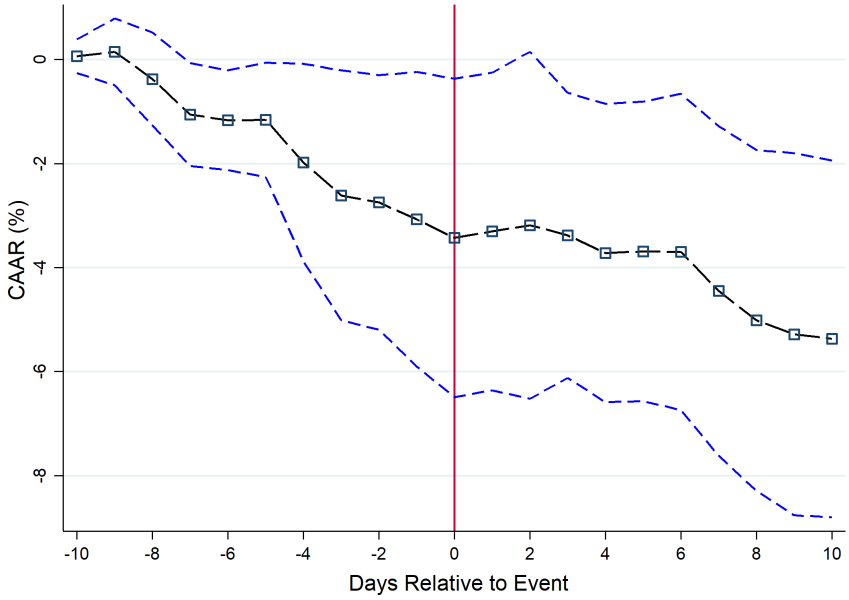


Figure 6: Regime 3 Team Sponsor Abnormal Returns - 3-time+ Offenders

4.4 The Impact of Event Timing

We next investigate the role played by the timing of off-field incidents. The impact of player off-field misconduct that occurs during the NFL season could differ systematically from the impact of incidents occurring in the off-season. During the season, public attention and investor mood can be affected by game outcomes (Eisdorfer and Kohl, 2017) so that off-field incidents may not receive the same reaction and public attention. In addition, off-field incidents are relatively less likely to occur during the season as players have significant practice, travel, and game time commitments. It is thus important to determine if the results vary across time of incident occurrence.

We divide the incidents in the sample into two subsamples depending on whether the incident happened during the off-season or not. For playoff games, we count a team and its players as still in season if the team is not yet eliminated. Figure 7 focuses on team sponsors in policy Regime 3 and compares cumulative abnormal returns for incidents during the season and off-season. Detailed parameter estimates appear in Table 3. The results show that both off-season and in-season incidents generate negative and significant abnormal returns for team sponsors. The CAAR for in-season incidents (-1.2%) exceeds the CAAR for off-season events (-0.77%); from Table 3, the t-statistic on the null hypothesis of equal returns is 3.3, so this difference is statistically significant.

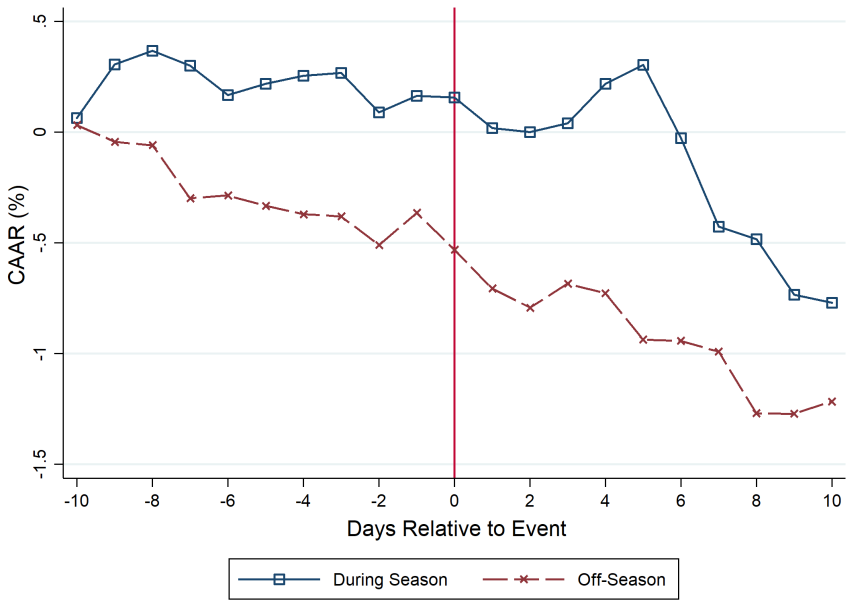


Figure 7: Regime 3 Team Sponsor Abnormal Returns - In-Season vs. Off-Season

These results help rule out a potential endogeneity concern regarding incidents that occur because of player frustration with his game performance, which might be viewed differently by sponsor customers or investors. Off-season incidents cannot stem from game performance. Additionally, these results further confirm that off-season incidents are unlikely to suffer from delayed reporting issues.

4.5 Effect Duration

In general, the results suggest substantial heterogeneity in the impact of different types of incidents. Also, recall that Ge and Humphreys (2020) reported negative and significant CAAR for team sponsors in a pooled sample of incidents. Players' off-field misconduct spills over to the stock price of firms sponsoring their teams. One important remaining question involves the duration of this negative impact of CAAR. Are the negative spillovers on sponsor stock prices permanent or only temporary and subject to later reversals? Investors and customers may initially overreact or underreact to players' off-field misbehavior. Previous research finds evidence of stock price reversals to new information. For example, Greene and Smart (1999) showed that analyst coverage of companies in Wall Street Journal columns only generates temporary changes in stock prices by

Table 3: Team Sponsor Abnormal Returns: During Season vs. Off-Season

Event day	During Season		Off-Season	
	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)
-10	0.064	0.064	0.032	0.032
	(0.436)		(0.541)	
-9	0.242**	0.306	-0.075	-0.043
	(2.377)		(-1.096)	
-8	0.061	0.367	-0.016	-0.059
	(0.398)		(-0.238)	
-7	-0.067	0.300	-0.240**	-0.299
	(-0.480)		(-2.222)	
-6	-0.132	0.167	0.013	-0.286
	(-1.086)		(0.170)	
-5	0.051	0.218	-0.047	-0.333
	(0.480)		(-0.729)	
-4	0.037	0.256	-0.038	-0.371
	(0.271)		(-0.506)	
-3	0.011	0.267	-0.010	-0.381
	(0.098)		(-0.140)	
-2	-0.178	0.089	-0.129	-0.509
	(-1.505)		(-1.647)	
-1	0.074	0.163	0.145**	-0.364
	(0.556)		(2.151)	
0	-0.007	0.156	-0.168**	-0.532
	(-0.066)		(-2.560)	
1	-0.138	0.019	-0.174**	-0.706
	(-1.158)		(-1.964)	
2	-0.017	0.001	-0.087	-0.793
	(-0.165)		(-1.030)	
3	0.038	0.040	0.109	-0.684
	(0.278)		(1.552)	
4	0.179	0.219	-0.044	-0.728
	(1.432)		(-0.627)	
5	0.085	0.303	-0.209***	-0.937
	(0.680)		(-2.715)	
6	-0.330**	-0.027	-0.006	-0.943
	(-2.025)		(-0.068)	
7	-0.401**	-0.428	-0.048	-0.991
	(-2.519)		(-0.709)	
8	-0.055	-0.483	-0.278***	-1.269
	(-0.420)		(-3.352)	
9	-0.251**	-0.734	-0.002	-1.271
	(-2.145)		(-0.025)	
10	-0.036	-0.770	0.055	-1.216
	(-0.270)		(0.826)	
CAAR t-statistic		-1.177		-3.307
Events	115		341	
Unique Sponsors	41		59	

The model is fitted using Fama-French three-factor model with momentum in Equation (2). The event window is 10 trading days before and after the event date with an estimation window of 180 days before the start of the event window. Cross section t-test results are reported in parentheses. Reported CAAR t-statistic is at the end of the event window. *** p<0.01, ** p<0.05, * p<0.1.

raising uninformed noise trading. Tetlock (2007) showed that the effect of media pessimism on the stock market reverses over the following trading week. In order to test for the presence of price

reversals here, we extend the event window to [-10, 60] days, i.e., 10 days before and 60 trading days after each event, and re-estimate our event study models for team sponsors during policy regime 3. This longer post-incident event window will capture any long-run impacts, including price reversals.

Figure 8 summarizes the results. Again, dashed lines on Figure 8 represent 95% confidence intervals. From this long-run analysis, we find that the negative impact on the stock price of team sponsors due to player off-field misbehavior persists even after 60 trading days with a -1.8% average cumulative abnormal return at the end of the event window (significant at 1% level). The results suggest that the spillover effect from player off-field misconduct can be permanent and potentially affect the endorsing firms' underlying fundamentals.

A competing explanation for this persistent effect is that the observed long term abnormal returns could be driven by delayed reporting of the incidents, particularly for off-season incidents that may not be reported until the start of NFL training camp in July. To this end, we conducted extensive searches using the Factiva Global News Database to rule out such possibilities. Second, the event study focusing on off-season versus in-season incidents discussed above help to rule this out. Results for off-season versus in-season incidents suggest that off-season incidents lead to significantly negative short term abnormal returns, which implies that off-season incidents are unlikely to suffer from delayed reporting.

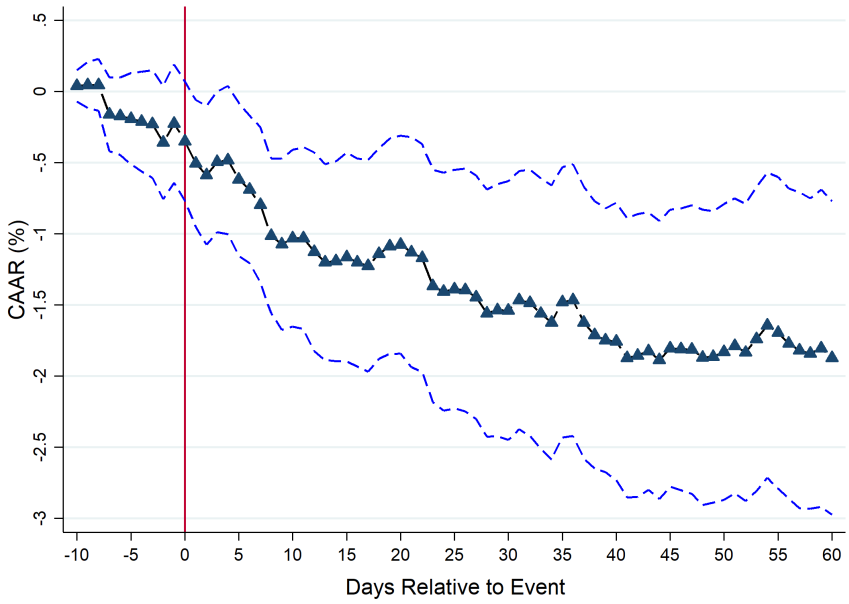


Figure 8: Post-PCP Long Term Team Sponsor Abnormal Returns

4.6 The Impact of Media Coverage

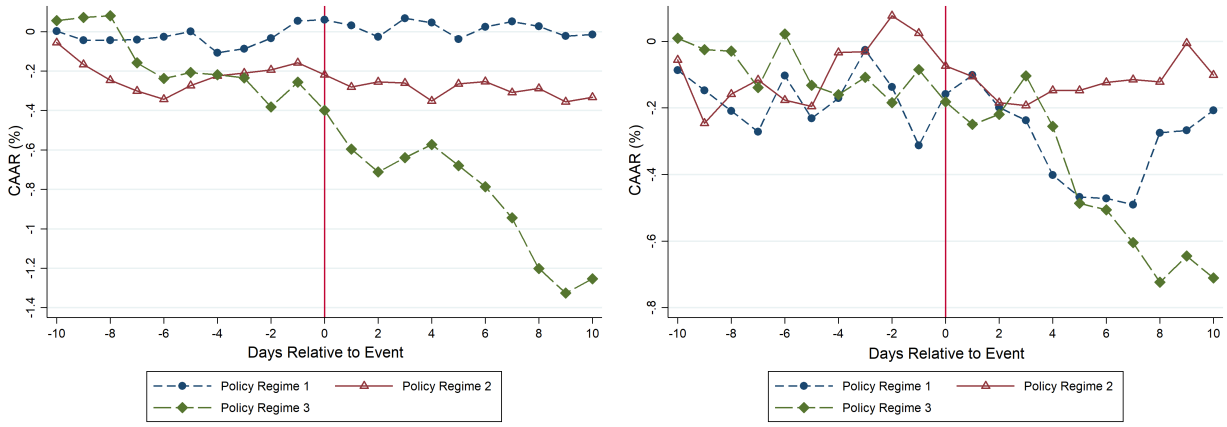
In general, media coverage of many types of events affects stock prices. Fang and Peress 2009, Engelberg and Parsons 2011, Dougal et al. 2012 all contain evidence of many different types of media coverage affecting stock prices. Extensive national media coverage of off-field NFL player misconduct likely affects the abnormal returns experienced by team sponsoring firms, particularly for player behavior with severe legal consequences, because more stock market participants would learn about events with national media coverage compared to incidents only covered by local media. We quantify the nature of media coverage of NFL player off-field misconduct incidents to address this issue.

We utilize the Factiva Global News Database and conduct a series of comprehensive news searches one trading day before and after the date of each off-field incident to assess the extent of media coverage of players' misconduct. We count both overall media coverage and the coverage by leading national financial publications like the *Wall Street Journal*, Dow Jones Newswires, etc. We divide each off-field incident into two groups based on whether there was any national media coverage of the incident or not.[5] We focus on team sponsors and perform separate event study analyses similar to those described in Ge and Humphreys (2020) for both media coverage groups.

Figures 9a and 9b plot the evolution of cumulative abnormal returns for incidents with and without national media coverage, respectively for each of the three policy Regimes. The results in Figure 9a are consistent with those reported in Ge and Humphreys (2020) in that, compared to the other two time periods, team sponsors in Regime 3 experienced a steady decline in cumulative abnormal returns upon the revelation of player misconduct. Tables 4 and 5 provide detailed estimates underlying Figures 9a and 9b, respectively, and suggest that incidents without media coverage do not result in significant decline in CAAR even during Regime 3. A further comparison reveals that during Regime 3, an incident of NFL player misconduct that received media coverage generated approximately 0.5% lower CAAR at the end of the event window than a an incident without any media coverage. These impacts are significantly different at the 5% significance level. Media coverage of off-field NFL player misconduct appears to increase the negative response in the stock price of firms endorsing the team that employs the player. This suggests that media coverage of these

[5] Approximately 28% of the incidents (238 out of 863 cases) had no national media coverage based on our Factiva news searches.

incidents represents an important mechanism for the transmission of negative news to stock prices.



(a) Incidents with Media Coverage

(b) Incidents without Media Coverage

Figure 9: Team Sponsor Abnormal Returns and Media Coverage by Policy Regime

4.7 CAR and Firm/Incident Characteristics

To further analyze heterogeneity in the response to different incidents, we estimate multivariate cross-sectional regression models to assess the relationship between the size of firm-level abnormal returns and observable firm and incident characteristics using Equation (6). The unit of observation for data used in these regression models is an individual off-field incident of player misconduct. The two dependent variables include the team sponsors' short term (10 trading days after the incident) and long term (60 trading days after the incident) cumulative abnormal return (CAR) for each incident. These regression models include explanatory variables reflecting firm characteristics like market capitalization and total sales, and explanatory variables for observable incident characteristics like the cumulative number of off-field incidents involving any player on the team and indicator variables for many of the incident characteristics analyzed above. These cross-sectional regression models focus on explaining observed variation in the size of CAR experienced by each firm.

Table 6 presents the estimated coefficients with point estimates expressed as percentage points of observed CAR. Column (1) uses a short run 10 day event window and Column (2) a long run 60 day event window. Results in Column (1) indicate that the cumulative number of off-field incidents by all players on a given team, but not the total number of incidents an individual player has been involved in (in other words player recidivism) increases CAR. The sponsor of a team with

Table 4: Team Sponsor Abnormal Returns: Incidents with Media Coverage

Event day	Policy Regime 1		Policy Regime 2		Policy Regime 3	
	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)
-10	0.002	0.002	-0.056	-0.056	0.056	0.056
	(0.029)		(-1.077)		(0.807)	
-9	-0.046	-0.044	-0.110*	-0.166	0.016	0.072
	(-0.781)		(-1.909)		(0.224)	
-8	-0.000	-0.044	-0.080	-0.246	0.009	0.080
	(-0.001)		(-1.571)		(0.115)	
-7	0.003	-0.040	-0.054	-0.301	-0.239**	-0.159
	(0.057)		(-1.083)		(-2.334)	
-6	0.015	-0.026	-0.042	-0.343	-0.079	-0.238
	(0.264)		(-0.786)		(-1.110)	
-5	0.026	0.000	0.069	-0.274	0.030	-0.208
	(0.482)		(1.244)		(0.482)	
-4	-0.108*	-0.108	0.050	-0.224	-0.012	-0.219
	(-1.670)		(0.949)		(-0.144)	
-3	0.021	-0.087	0.015	-0.209	-0.015	-0.234
	(0.357)		(0.260)		(-0.210)	
-2	0.053	-0.034	0.015	-0.194	-0.148*	-0.383
	(0.733)		(0.290)		(-1.832)	
-1	0.089	0.055	0.036	-0.158	0.126*	-0.256
	(1.447)		(0.781)		(1.719)	
0	0.006	0.060	-0.061	-0.219	-0.144**	-0.400
	(0.100)		(-1.249)		(-2.265)	
1	-0.029	0.031	-0.062	-0.281	-0.196**	-0.596
	(-0.531)		(-1.236)		(-2.222)	
2	-0.058	-0.027	0.025	-0.255	-0.116	-0.712
	(-0.998)		(0.462)		(-1.315)	
3	0.094*	0.067	0.008	-0.260	0.072	-0.639
	(1.610)		(0.138)		(0.912)	
4	-0.022	0.045	-0.092*	-0.352	0.067	-0.572
	(-0.364)		(-1.872)		(0.905)	
5	-0.083	-0.038	0.088	-0.264	-0.107	-0.679
	(-1.360)		(1.504)		(-1.341)	
6	0.062	0.023	0.010	-0.254	-0.107	-0.786
	(1.213)		(0.175)		(-1.158)	
7	0.028	0.051	-0.043	-0.309	-0.159**	-0.945
	(0.498)		(-0.784)		(-2.088)	
8	-0.024	0.027	0.021	-0.288	-0.257***	-1.202
	(-0.419)		(0.421)		(-3.017)	
9	-0.050	-0.023	-0.068	-0.356	-0.125	-1.326
	(-0.809)		(-1.387)		(-1.795)	
10	0.008	-0.014	0.023	-0.333	0.073	-1.253
	(0.128)		(0.491)		(1.031)	
CAAR t-statistic		-0.050		-1.477		-3.213
Events	774		1,257		337	
Unique Sponsors	104		78		62	

The model is fitted using Fama-French three-factor model with momentum in Equation (2). The event window is 10 trading days before and after the event date with an estimation window of 180 days before the start of the event window. Cross section t-test results are reported in parentheses. Reported CAAR t-statistic is at the end of the event window. *** p<0.01, ** p<0.05, * p<0.1.

many players involved in off-field misconduct in the past will experience larger negative CAR as additional events occur. This confirms the presence of important firm "reputational risk" in this

Table 5: Team Sponsor Abnormal Returns: Incidents without Media Coverage

Event day	Policy Regime 1		Policy Regime 2		Policy Regime 3	
	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)	AAR(%)	CAAR(%)
-10	-0.087	-0.087	-0.056	-0.056	0.009	0.009
	(-0.939)		(-0.792)		(0.094)	
-9	-0.060	-0.147	-0.190	-0.246	-0.034	-0.025
	(-0.762)		(-1.474)		(-0.367)	
-8	-0.062	-0.209	0.088	-0.158	-0.005	-0.029
	(-0.800)		(0.974)		(-0.042)	
-7	-0.063	-0.272	0.042	-0.116	-0.110	-0.139
	(-0.618)		(0.527)		(-0.671)	
-6	0.169	-0.103	-0.061	-0.177	0.162	0.022
	(2.079)		(-0.746)		(1.143)	
-5	-0.128*	-0.231	-0.019	-0.196	-0.154	-0.132
	(-1.645)		(-0.277)		(-1.402)	
-4	0.060	-0.171	0.162**	-0.034	-0.028	-0.160
	(0.792)		(2.164)		(-0.287)	
-3	0.145	-0.026	0.003	-0.031	0.053	-0.108
	(1.544)		(0.037)		(0.469)	
-2	-0.111	-0.137	0.108	0.077	-0.077	-0.184
	(-1.418)		(1.530)		(-0.767)	
-1	-0.175**	-0.312	-0.052	0.025	0.099	-0.085
	(-2.291)		(-0.639)		(1.015)	
0	0.154*	-0.159	-0.099	-0.074	-0.096	-0.182
	(1.879)		(-1.357)		(-0.895)	
1	0.057	-0.102	-0.031	-0.105	-0.068	-0.250
	(0.642)		(-0.452)		(-0.589)	
2	-0.097	-0.199	-0.079	-0.184	0.030	-0.219
	(-0.963)		(-1.052)		(0.378)	
3	-0.039	-0.237	-0.009	-0.193	0.115	-0.104
	(-0.374)		(-0.115)		(1.307)	
4	-0.164**	-0.401	0.046	-0.147	-0.152	-0.256
	(-1.977)		(0.672)		(-1.487)	
5	-0.066	-0.468	-0.001	-0.148	-0.231**	-0.487
	(-0.774)		(-0.008)		(-2.185)	
6	-0.004	-0.472	0.025	-0.123	-0.019	-0.506
	(-0.046)		(0.311)		(-0.170)	
7	-0.019	-0.490	0.008	-0.115	-0.099	-0.605
	(-0.216)		(0.117)		(-0.826)	
8	0.216	-0.275	-0.007	-0.122	-0.119	-0.724
	(2.009)		(-0.107)		(-1.034)	
9	0.007	-0.268	0.117	-0.005	0.079	-0.645
	(0.073)		(1.212)		(0.683)	
10	0.061	-0.207	-0.096	-0.101	-0.065	-0.710
	(0.764)		(-0.794)		(-0.604)	
CAAR t-statistic		-0.579		-0.252		-1.412
Events	353		434		127	
Unique Sponsors	77		67		42	

The model is fitted using Fama-French three-factor model with momentum in Equation (2). The event window is 10 trading days before and after the event date with an estimation window of 180 days before the start of the event window. Cross section t-test results are reported in parentheses. Reported CAAR t-statistic is at the end of the event window. *** p<0.01, ** p<0.05, * p<0.1.

setting (Knittel and Stango, 2014).

Like the results above, news coverage by financial publications, in this case the Dow Jones

Newswire, increases the size of team sponsor negative CAR. Team sanctions, such as suspensions and fines, for off-field incidents mitigate the size of the negative CAR experienced by team sponsors. This supports the results in Hock and Raithel (2019). League sanctions against offending players do not mitigate the negative CAR experienced by team sponsors following an off-field incident. Firm characteristics appear to be unrelated to CAR size.

The parameter estimate on the indicator variable for incidents involving repeat offenders is positive and significant. The reference category for this variable is first time offenders. This positive sign means that, compared to repeat offenders, first-time offenders' misbehavior increases negative CAR by as much as 1.12%. The lack of negative impact of repeat offender involvement likely reflects diminished shock value or disapproval by customers or shareholders in response to an incident involving a recidivist player.

Results in Column (2) also indicate that first-time offenders' off-field misbehavior generate larger negative long term returns. In addition, off-season offenses generate larger long run negative sponsor returns. Across both model specifications, types of incidents (e.g., being arrested or intending to harm others), player on-field performance, and sponsors' financial performance do not seem to play a role in explaining cross sectional variations in CARs due to off-field incidents.[6]

The cross-sectional regression results generally confirm the main findings and mechanisms discussed in the event study analyses above. While sponsors' financial fundamentals may not explain their abnormal returns attributable to players' off-field incidents, incident characteristics can help explain part of the short term and long term abnormal returns, further confirming the negative spillover effect of players' off-field misconduct on their team sponsors.

4.8 Additional Robustness Checks

We conduct a number of robustness checks on the results reported above. These robustness checks include re-estimating all model specifications using the market model and Fama and French (1993) three-factor model instead of the other control variables used above for broad market returns (overall market return RM_t less RF_t, a small-minus-big market capitalization, SMB_t, a high-minus-low book-to-market ratio, HML_t, and a momentum factor, MOM_t). This modification

[6]The coefficient on natural log of market value is statistically significant in Column (2) but its magnitude is very small and not economically meaningful.

Table 6: Cross-Sectional Determinants of Team Sponsor CAR

	(1) CAR Event Window [-10,10]	(2) CAR Event Window [-10,60]
Incident Characteristics		
Player Incident Count	-0.399	-0.764
	(0.296)	(0.502)
Team Incident Count	-0.130**	-0.121
	(0.052)	(0.106)
Player Arrested	-0.266	-0.275
	(0.596)	(1.106)
League Action Against Player	0.447	0.094
	(0.594)	(1.319)
Team Action Against Player	1.125**	1.122
	(0.566)	(1.156)
Repeat Offender	1.120*	2.393*
	(0.641)	(1.230)
Player Found/Pled Guilty	0.591	-0.357
	(0.406)	(0.854)
Player Harmed Others	-0.300	-0.668
	(0.368)	(0.785)
Number of Players Involved	0.735	0.305
	(0.775)	(1.659)
Dow Jones Media Coverage	-0.274*	-0.458
	(0.150)	(0.339)
Off-season Incident	-0.559	-2.665*
	(0.668)	(1.580)
Player's Career Average Value	0.319	-0.212
	(0.444)	(0.940)
Sponsoring Firm Characteristics		
Log Firm Market Value	0.000	-0.000***
	(0.000)	(0.000)
ROA	4.686	46.470
	(16.330)	(41.830)
Sales	-0.000	0.000
	(0.000)	(0.000)
Firm Size	0.069	0.800
	(0.916)	(2.159)
New Sponsor	-0.062	0.196
	(0.533)	(1.208)
Observations	2,483	2,483
R-squared	0.134	0.159
Position Dummies	Y	Y
Team Dummies	Y	Y
Time Dummies	Y	Y

The dependent variable is the cumulative abnormal returns up to t days following the incident: $CAR_{i,[-10,t]}$ for $i = 1, ..., 124$ and $t = 10$ and 60. Abnormal returns are computed using Fama-French three-factor model with momentum and are expressed in percentage points. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

had no effect on the results. We also re-estimate all model specifications omitting team sponsors with overlapping sponsorship contracts and experiment with event windows of [-15, 15] days and estimation windows of 100 and 250 days. These alternative specifications produced similar results.

We also conducted Factiva news searches to rule out confounding news announcements around event days in the sample. Confounding events would include earnings announcements, mergers and acquisitions, and other events that might affect stock prices. We re-estimate all model specifications dropping all firms that experienced any sort of confounding event at the same time as an off-field incident from the sample. The overall results from these robustness checks are very similar to the other findings reported here and are available on request.

5 Conclusion

Previous research established a clear connection between misbehavior of celebrity endorsers, including athletes, and the stock price of firms whose products or services were endorsed and also showed that the potential for negative impacts on stock prices extended to misbehavior of individual players on teams that were sponsored by the firm. This paper analyzes a large, rich collection of off-field criminal behavior by NFL players over a long sample period to further understand the dimensions of the reputational risk faced by firms engaged in sports team sponsorship. The results show that different types of off-field misconduct generate different impacts on sponsoring firms' stock prices. Some types of incidents, for example crimes involving only self-harm, have no impact. This suggests firms need not worry that every time a player on a sports team the firm sponsors misbehaves, their stock prices will suffer.

In addition to enhancing understanding of how player off-field misconduct affects sponsors' stock prices, this paper provides an example of how broadening an existing data set, an example of big data in sport management research, can generate and answer new research questions. While intuition might suggest that misconduct by star players would be more detrimental than misconduct by less talented players, the results do not support that idea. Player star status does not increase negative abnormal returns, suggesting that the action, and not the individual represents a crucial aspect. Absent the horizontally expanded big data set analyzed here, this type of research question could not be addressed.

The results also suggest that the type of events that generate negative stock returns also appear to generate long-run negative stock returns, lasting 60 trading days after the event. Firms considering a sponsorship deal with a sports team should keep this in mind when considering such

deals. investors considering purchasing shares of a firm that engages in sports team sponsorship deals should also keep this in mind.

The analysis period contained three different personal conduct policy regimes with different levels of effectiveness. While the negative impact of some types of off-field incidents persisted across all three regimes, others, in particular the impact of incidents involving first-time offenders versus incidents involving repeat offenders, showed up only in the third PCP, most stringent, policy regime. This suggests that sports leagues should carefully consider how strong a personal conduct policy to adopt.

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