Time on Camera: An Alternative Explanation of NASCAR Tournaments

by

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ABSTRACT: NASCAR's reward structure for rank order tournaments has been considered the exception to the rule in tournament theory due to the linear payout structure. We suggest that the rewards for drivers are nonlinear when you take into consideration the value of sponsorship time on camera and sponsor mentions during a race on TV. Given the importance of corporate sponsorship in NASCAR, we suggest that performance in a race provides additional benefits that are not captured in traditional tournament payments.

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Introduction

Often sporting contests are used as a labor market laboratory to empirically test the implications of labor economics such as tournament theory (Kahn 2000). In sports, nonlinear payment structures are found in rank order tournaments such as golf (Ehrenberg and Bognanno 1990, and Melton and Zorn 2000) and marathon running (Frick 2003). Auto racing provides an exception to the rule with a linear payment schedule paid to each race position. It is argued that the use of a nonlinear payment tournament structure in auto racing may provide incentives to induce risk taking and cause accidents to occur (von Allmen 2001).

The influence of a nonlinear compensation mechanism on the level of effort is also found in labor markets. Nonlinear payments in rank order tournaments have been used to explain everything from corporate CEO's salaries (Prendergast 1998) to increased effort in migrant labor (Bandiera, Barankay and Rasul 2006**)**. Rosen (1988, p 89) states that "Much could be gained by studying the details of real organizations…where many of the forces suggested by theory can be observed and new observations that will enrich the theory can be discovered." The National Association for Stock Car Auto Racing (NASCAR) tournaments has been used by researchers for this type of labor market laboratory due to the linear payment structure (von Allmen 2001). We disagree and suggest that tournaments in NASCAR do have a nonlinear tournament payout when aspects of corporate sponsorship are included. NASCAR drivers, in essence, participate in two tournaments during a race. The first is the traditional monetary payout offered at the track. The second is competition for corporate sponsor exposure time on camera during a race broadcast.

Section One: Tournaments

Lazear and Rosen (1981) were the first to examine the incentive properties of rewards based on relative performance, rather than absolute performance. Many benefits are found by using this reward structure, such as the mitigation of moral hazard and adverse selection (Malcolmson 1984). Others, however, have found negative effects associated with the use of tournament wage structures such as sabotage (Harbring and Irlenbusch 2008), collusion between agents (Harbring and Irlenbusch 2003), and increased variation in performance (Hvide 2002 and Hood 2008).

Harbring and Irenbusch (2008) propose that a tournament should induce agents to exert productive activities but refrain from destructive ones. By using experiments, they show that sabotage occurs in tournaments. Chen (2003) finds that when relative performance is important, sabotage occurs and abler members are subject to more attacks. Hvide (2002) suggests that when agents can influence both the mean and the variance of an output distribution, incentives are created that reduce effort and increase risk taking behavior. He posits that the incentives explain why the relative-performance principal is not supported in the literature pertaining to CEO salaries. Kale, Reis, and Venkateswaran (2009), however, find that tournament incentives are positively related to the performance of CEOs.

In golf, Ehrenberg and Bognanno (1990) find that as the reward increases, so does performance; a result further supported by Melton and Zorn (2000). Hood (2008) shows that the tournament payouts decrease the incentive to be consistent. He finds that golfers in the PGA can make more money if they are inconsistent throughout the season, as opposed to consistently placing in the middle of the field. J. Brown (2008) shows that

when a superstar is present, like Tiger Woods, than less effort is exerted by other participants.

Tournament theory is also used in foot racing. Both Maloney and McCormick (2000) and Lynch and Zak (2000) find that by offering more prize money and increasing prize spreads performance rises. Lynch and Zak (2000) find the higher the prize money the better the athlete that shows up to participated in the race suggesting that adverse selection can be addressed by tournament payouts. In marathon running, Frick (2003) finds that prize money and spread increase performance but it also lowers the probability of runners finishing the race when it is clear they will not win the race. He attributes the early exit to the amount of time it takes to physically recover from a marathon.

Becker and Hueslid (1992), drawing on two panels, one from NASCAR and one from the International Motor Sport Association (IMSA) show that tournament spread has a positive effect on performance and drivers engage in riskier behavior as the spread increases. As for the payout structure, von Allmen (2000) demonstrates that in NASCAR it is relatively flat when compared to other sports (for individual races, not the season as a whole). For instance comparing NASCAR to the PGA, he finds:

Payout, in thousands of dollars, by place

	1st	12th	42nd / 43rd [2]
NASCAR	327	132	76
PGA	1,035	132	20

Von Allmen (2000) develops three hypotheses as to why NASCAR has a linear payout per race and nonlinear payout for overall season results: the sabotage-risk of

[2] 42nd for the PGA and 43rd for the NASCAR race.

accident hypothesis, the cost of racing hypothesis, and the sponsorship hypothesis. NASCAR drivers have the ability to influence not only their position but other competitors' positions on the track. The sabotage-risk of accident hypothesis posits that nonlinear rewards might cause drivers to take risks and wreck their opponents to move up through the field. Ronfeldt (1999) suggests that drivers themselves coordinate safe driving equilibriums using a tit for tat strategy throughout the season. Any one driver does not want to have a reputation for reckless driving because the other drivers will react to that in the future races. The cost hypothesis proposes that fielding a racing team is very expensive. High rewards for lower placing teams are observed in NASCAR because it is important for entrants to continue to pay for their equipment. The sponsorship hypothesis supposes that a corporate sponsor's desire for exposure provides incentives for NASCAR to encourage consistence through a season.

Empirical tests on von Allmen's hypotheses have shown mixed results. Depken and Wilson (2004) find support of the sabotage hypothesis since there is less than a one to one relationship between concentration of performance and concentration of rewards. They also find "that performance-points concentration do not Granger-cause winnings concentration" which is inconsistent with the cost hypothesis. In addition, Schwartz, Isaacs, and Carilli (2007) show that less skilled drivers are more aggressive and have more accidents than skilled drivers. They argue that higher skilled drivers are more concerned with the season long tournament then less skilled drivers.

We further test von Allmens' hypotheses and suggest that sponsorship structures create a tournament for exposure time on camera and sponsorship mentions during a televised race. We hypothesize that NASCAR teams in competition for sponsorship want

to provide the maximum exposure time for the current sponsors so they can get more sponsorship dollars in future contracts. If tournament style payouts exist within corporate sponsorship then the drivers will have the same incentives to win as with the traditional nonlinear tournament payment structure in other sports.

Section Two: Corporate Sponsorship

Corporate Sponsorship is an important form of funding in automotive sports and is usually brokered through companies such as Just Marketing Incorporated. A company interested in sponsoring a race team would assign a marketing budget and Just Marketing Incorporated would help them choose a team and driver to get the best exposure for their product or company. The budgets usually assigned to sponsor a team would be from $56-60 million for F1, $20 million for a NASCAR Sprint Cup, and $7 million for the Indy Racing League (Z. Brown 2008).

The disparity between racing leagues is due to potential exposure. F1 has international exposure somewhat like a yearly Olympic contest. They race in 17 countries over 9 months, with a total of 17 races. NASCAR Sprint Cup and Indy Racing have a domestic US market. NASCAR has 36 races over 10 months, while Indy Racing is much smaller with only 17 races. In terms of television viewership, NASCAR is ranked second in the US behind the National Football League in sport broadcasts (Cazeneuve et al. 2004 and Chang 2007). Although baseball is commonly referred to as 'America's Pastime', a recent Nielson rating of the World Series, Super Bowl, and Daytona 500, over the past 34 years (1974-2007[3]) shows that viewership of baseball's World Series has declined since

[3] Except for the 1994 baseball strike year.

1980, while viewership for the Daytona 500 and Super Bowl have increased (Gorman 2009).

We define two measures of benefits to drivers from TV exposure. The first is monetary value of sponsor time on TV (VALUE SPONSOR TIME) per season and the number of sponsor mentions (SPONSOR MENTIONS) during racing broadcasts per season. Both were obtained from the Joyce Julius research firm.[4] The variable VALUE SPONSOR TIME is measured by the Joyce Julius research staff as:

> "All clear and in-focus exposure time a brand receives during the broadcast. In order for the brand's logo to be considered clear and in-focus, the image must not be blurred or obstructed in a way as to prevent the typical viewer from acknowledging the brand. Along with the visual exposure, Joyce Julius also monitors each verbal mention received by the brand throughout the telecast. Mentions are valued at ten seconds each, based on an average of 3 brand mentions per 30-second commercial. Once all of the visual and/or verbal exposure has been tabulated, a value for the brand's exposure is calculated by comparing the on-screen time and mentions to the non-discounted cost of a commercial, which ran during the specific program in question" (Joyce Julius and Associates).

This measure is calculated for each sponsor during a race then summed for the season and matched to the driver whose primary sponsor is the brand measured.

In table 1, we report the overall means of the variables in our panel of NASCAR drivers matched with their corporate sponsor for years 2000 through 2007. A primary sponsor is the sponsor that appears on the hood of the car and on the team uniforms. We include only those drivers who have one primary sponsor for the season[5].

The mean cash winning is $4 million per season, where the mean VALUE SPONSOR TIME is $39.6 million for the season. The SPONSOR MENTIONS per

[4] Joyce Julius & Associates, Inc founded in 1985 measures sponsorship impact in media. The website for this company is http://www.joycejulius.com/index.html .

[5] Some drivers either shared a sponsor or had multiple sponsors over the season. These drivers were excluded from our analysis to focus on teams that were primarily funded by one source. The majority of teams from 200-2007 had only one primary sponsor.

season is the number of each verbal mention received by the brand throughout the telecast then summed for the season and matched to the primary sponsor driver. The mean SPONSOR MENTIONS per season is 78.

In addition to the sponsor data, we include season-variant and performance data for each season. Our season-variant data includes age and tenure of the driver. Our performance data includes the number of wins, second through fifth places finishes, sixth through tenth places finishes, and final season rank. The average driver's per season wins is 0.97, second through fifth place finishes per season is 4.49, and sixth through tenth place finishes per season is 4.49. The average rank in the standings is 20.9. The average age of a driver is 37 years and has tenure in racing of 11 years.

Section Three: Empirical Results

To test if competition for TV time serves as a tournament for NASCAR drivers, we estimate a fixed effects model for both VALUE SPONSOR TIME per season and SPONSOR MENTIONS per season. The fixed effect model controls for driver specific characteristics that might influence time on camera such as celebrity or family status. For instance, many drivers have family connections in racing such as Petty or Earnhardt that might provide a brand name loyalty in fans influencing their time on camera that is unrelated to performance (Groothuis and Groothuis 2007). In table 2, we report the results of the fixed effects model[6] for season cash winnings, VALUE SPONSOR TIME, and SPONSOR MENTIONS. The cash payout for winning a race during the season is worth $328,000, whereas the results on VALUE SPONSOR TIME show that each win translates to $3.2 million of additional TV sponsorship exposure time per season, while

[6] The Hausman Test is included in table 2.

each second through fifth finish increases TV sponsor time by $2.5 million per season. The sponsorship value is roughly ten times as large for winning the race and thirty times as large for placing second through fifth finish then the monetary payment. The value of placing sixth through tenth is statistically insignificant, showing that the tournament for VALUE SPONSOR TIME takes place for the top five finishers in the race. In addition, rank is negative and statistically significant in the cash payout regression but statistically insignificant in the VALUE SPONSOR TIME model further suggesting that the tournament for TV time exist only for the top finishers of a race. These results support that time on camera serves as a nonlinear payout for the five top finishers in a NASCAR race.

In table two, we report the results of a fixed effect model on SPONSOR MENTION per season. We find that a win leads to sixteen more sponsorship mentions per season. The coefficient on second through fifths and sixth through tenths, however, both are statistically insignificant. The result of the SPONSOR MENTIONS specification supports the hypothesis that drivers compete for corporate sponsorship mentions as part of the tournament reward structure to racing and when it comes to the number of mentions winning is most important.

As brought up in Lazear and Rosen (1981) tournaments can increase effort but negative outcomes can also occur. Two of these adverse effects are an increased variation in outcomes (Hood 2008) and decreased effort when a super-star is present (J. Brown 2008). These issues may also become a problem in NASCAR. For example, when looking at inconsistent drivers in NASCAR you get similar results as Hood (2008) found in golf. For instance an increase in standard deviation of 1.51, when the average

finishing place is 5th for the season, results in an extra $6.9 million a year of value of sponsor time or a twelve percent increase in the value of TV exposure times.

Driver	Average Finish	Std. Dev	Total Payout (In terms of VST)
A	5th	1.39	$57 million
B	5th	2.9	$63.9 million

This creates the incentive for drivers to increase variation that might lead to more risky driving that is inconsistent with von Allmen's risk hypothesis. Overall, our analysis suggests that when including corporate sponsorships into the tournament reward structure, similar incentives exist as found in the more traditional tournament reward structure.

Section Four: Conclusion

We show that NASCAR's reward system for rank order tournaments is nonlinear when the value of TV sponsorship time and sponsorship mentions is included. We find that NASCAR drivers participate in two tournaments. The first is the traditional monetary payout offered at the track where each win pays of $328,000. The second is time on camera during a race broadcast that provides 3.2 million dollars of TV exposure for each win. This is nearly ten times the value of the monetary payment. We also find that winning a race translates into 16 more sponsor mentions per season. Our empirical results show that the tournament for TV time only takes place for the top five finishers in a race.

Our analysis suggests that it is not necessary for NASCAR to provide a nonlinear payment mechanism because the external tournament for TV exposure provides the benefits for the winners of a race. Given the importance of corporate sponsorship in

NASCAR, we suggest that winning a race provides additional benefits that are not captured in the race payout, creating a more traditional nonlinear tournament payment schedule. Our analysis of NASCAR tournaments suggests that the incentives to win may be the same as in other nonlinear tournaments when TV exposure time is included.

Table 1: Means
(standard deviation in parentheses)

Variables	Season Sample[1]
Total Value of Cash Winnings per Season	$4,012,930.25 (2,488,161.90)
VALUE SPONSOR TIME Per Season	$39,598,832 (38,813,571)
SPONSOR MENTION per Season	78.2 (104.5)
Age of driver	36.9 (7.70)
Tenure	11.0 (8.12)
Rank	20.9 (12.8)
Wins	.97 (1.65)
Seconds through and Fifths	3.64 (4.00)
Sixths through Tenths	4.49 (3.38)
Sample Size	234 observations 76 drivers

[1]Season Sample includes all drivers who had one primary sponsor for the full season.

Table 2: Tournaments
(t-statistics in parentheses)

Variables	Season Cash Winnings[1]	VALUE SPONSOR TIME[1]	SPONSOR MENTIONS
Constant	7,405,190 (7.89)	25,849.50 (1.41)	72.76 (1.25)
Age	-127.94 (4.52)	-299.66 (0.53)	1.49 (0.86)
Tenure	179.14 (6.28)	1087.99 (1.91)	-1.75 (0.90)
Rank	-62,853 (4.76)	-254.20 (1.11)	-2.17 (2.65)
Wins	328.01 (5.13)	3,183.0 (2.66)	15.60 (3.91)
Seconds through and Fifths	76.14 (2.23)	2,575.33 (4.04)	-2.31 (1.08)
Sixths through Tenths	3.10 (0.09)	673.14 (1.07)	-.12 (0.05)
Group Effects Only R squared	.69	.78	.74
Regressors Only R squared	.65	.42	.24
Overall R squared	.91	.87	.79
Hausman Test	48.8	232.9	12.8
Sample Size	234	234	234

-fixed effects model
[1]value in thousands of dollars

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