On the Road With the National Basketball Association's Superstar Externality

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Hausman and Leonard offered evidence that Michael Jordan generated US$53 million in broadcast revenue for teams other than his employer, the Chicago Bulls. In essence, these authors argued for the existence of a superstar externality. The purpose of this article is to extend the work of Hausman and Leonard via an examination of road attendance in this sport. The evidence we report suggests that a superstar externality also exists on the road in the National Basketball Association. Policy suggestions to remedy this issue are offered in the text.

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Sports have increasingly been a topic of choice for many economists. Although much of this interest is motivated by the entertaining nature of the industry, the academic value lies primarily in the data the industry collects to measure the productivity of firms and workers. Such data have been employed in numerous studies designed to better our understanding of labor economics and industrial organization.

A weakness with respect to these studies, though, lies in the difficulty one has arguing that what is true in the world of sports is also true in less entertaining industries. Production in the world of sports, as noted by Neale (1964), is decidedly different from production in most other markets. In most industries, for example, a firm's welfare is improved when competition is eliminated. In sports, though, the elimination of competition effectively eliminates the industry. Furthermore, other firms must not only continue to exist but also actually do better when their competitors are of relatively equal strength.[1] In other words, the relationship between the quality of competition and firm revenue is nonlinear in professional team sports. As the opponent

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increases in strength, attendance and revenue should increase. Of course, if the opponent becomes too strong, attendance and revenue may again decline.

Despite the joint nature of sports production, the compensation of talent in the industry is organized as if the individual firms were largely independent. Although the National Basketball Association (NBA) has implemented payroll and salary caps, as well as luxury taxes and revenue sharing, such rules merely provide a framework within which salaries are determined. At the end of the day, teams negotiate with players, and these negotiations result in a salary that is paid by the individual team. Hence, if a player generates revenue for his opponent, such revenue generation is largely uncompensated. Therefore, to the extent that individual team-revenue streams are increased by the quality of players on other teams' rosters, an externality exists in the NBA.

Evidence of a so-called superstar externality was presented by Hausman and Leonard (1997). These authors found that Michael Jordan generated US$53 million in revenue for teams other than his specific employer, the Chicago Bulls. In addition to Michael Jordan, Hausman and Leonard considered the impact of only five additional players: Magic Johnson, Larry Bird, Charles Barkley, Isaiah Thomas, and Shaquille O'Neal. The purpose of this work is to extend the study of the superstar externality to a data set that examines more than five players. Consequently, we turn to a study of road attendance in the NBA.

The organization of this relatively short article is as follows: First, we present and estimate a simple road-attendance model. With model in hand, a review of 25 stars from the 1995-1996 season reveals the importance of on-court productivity and star power to a team's opponents. The final section offers concluding observations and policy suggestions.

ON THE ROAD WITH THE STARS

Data were collected on road attendance and a variety of explanatory factors. Such data, along with corresponding descriptive statistics, are reported in Table 1. The dependent variable, aggregate regular season road attendance,[2] was taken from various issues of *The Sporting News Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995). For this inquiry, we acquired data from four seasons, beginning with the 1992-1993 campaign and concluding with the 1995-1996 season.[2] As noted in Table 1, the minimum value for road attendance in the data set was 591,814, which was achieved by the Sacramento Kings during the 1992-1993 season. The high value in the data set was 816,705, achieved by the Chicago Bulls in 1995-96. One should note that the Bulls in 1995-1996 also posted the record for regular season wins, 72, and also employed two players voted to start the 1996 All-Star game, Michael Jordan and Scottie Pippen. In contrast, the Kings managed only 25 wins during the 1992-1993 campaign. In addition, the 1993 All-Star game was played without the participation of any player from Sacramento.

In other words, a cursory examination of the data set suggests that on-court performance and fan appeal affect a team's road attendance.

To more fully explore the behavior of road attendance, we need to specify a road attendance model via the variables listed in Table 1. As was suggested earlier, road attendance may be a function of team performance and star appeal. Following the literature, the most common measure of team performance is regular season wins. Team performance can also be captured via lagged values of playoff victories and past championships won.[3]

In addition to measures of team performance, we also consider the impact of a team's star attractions. The relationship between demand and stars has been considered by Scott, Long, and Sompii (1985), Brown, Spiro, and Keenan (1991), Burdekin and Idson (1991), and Berri, Schmidt, and Brook (2004).[4] The results of these studies was decidedly mixed, with Scott et al. (1985), as well Burdekin and Idson (1991), unable to find a statistically significant relationship between consumer demand and a team's star attractions.

Each of these studies employed a different definition of star attraction. Scott et al. (1985) defined a *superstar* as "a player who has made the All-Pro team five times or, if he has only played a few years, dominates his position" (p. 53). Brown et al. (1991) defined a superstar as "a player who has played in the NBA All-Star Game for at least 50% of his years in the league" (p. 38). Finally Burdekin and Idson (1991) considered a player a star if he was voted by the media to either the first or second All-NBA teams.

Given our focus on consumer demand, we sought a measure that would directly incorporate fan preference. Hence, we turned to the measure employed by Berri et al. (2004). In a study of gate revenue in the NBA, star power was measured via fan voting for the mid-season All-Star game, which is utilized to determine the starting line-ups from each conference. The specific data we employ are the number of votes received by the top 10 players at guard and forward, as well as the top five centers.[5] Following the lead of Berri et al. (2004), we summed the number of votes received by the players employed by each team.

The impact of wins and star appeal cannot be ascertained in isolation. In an effort to fully specify the model, we also considered a number of additional explanatory variables that may affect the level of attendance a team attracts on the road. This list of variables begins with the size of the market (POP) where the team plays its home games. Teams located in New York and Los Angeles are likely to receive substantially more national media exposure than teams in Sacramento and Portland. Such promotion may lead to an increase in demand from fans around the country. Hence the sign on (POP) is expected to be positive.[6]

The expansion status of a team might also affect its appeal on the road, hence we introduce a dummy variable, equal to one if the team is less than 5 years old.[7] The expected sign of this variable, though, is unclear. Given the lack of familiarity fans have with newer franchises, one might expect less road attendance for an expansion

Table 1: The Variables: Sample: 1992-1993 through 1995-1996

Variables	*Label*	*M*	*Maximum*	*Minimum*	SD
Dependent variable					
Road attendance	RDATT	680,092.58	816,705.00	591,814.00	40,182.60
Independent variables					
Regular season wins	WINS	41.43	72.00	11.00	13.28
Lagged playoff wins	WPLAY (–1)	2.77	15.00	0.00	4.22
Championships won, weighted	WCHM20	7.76	67.00	0.00	16.10
All-Star votes received	STARVOT	894,482.33	3,176,443.00	0.00	813,666.48
Population	POP	5,361,974.97	18,204,047.00	1,159,845.00	5,165,118.64
Competitive balance in conference	GINIC	0.183	0.207	0.145	0.019
Roster stability	RSTAB	0.71	0.97	0.40	0.13
Percentage of White minutes	WHITEMIN	0.16	0.47	0.00	0.11
Expansion team, dummy	DEXP5	0.06	1.00	0.00	0.23

team. However, the novelty of such teams might have a positive affect at the road gate.

In addition to market size and expansion status, we also consider a factor suggested by Blass (1992), Kahane and Shmanske (1997), and Berri et al. (2004). Each of these authors considered the impact roster stability, or conversely roster turnover, has on team attendance. Although Blass (1992) and Berri et al. (2004) failed to find a relationship between consumer demand and player tenure with the team, Kahane and Shmanske (1997) presented evidence that a negative relationship existed between these variables. In other words, the more stability a roster exhibits from year to year, the greater the level of consumer demand.[8]

As noted by Schmidt and Berri (2001), the level of competitive balance, as measured by the Gini coefficient, was found to significantly affect demand in Major League Baseball (MLB). To test whether the balance of league competition affects road attendance, we introduced GINIC, or the measure of competitive balance in each conference.[9] The larger the Gini coefficient, the greater the level of competitive imbalance. Hence, given the theoretical and empirical work previously cited, we would expect the corresponding coefficient to be negative.

The final factor we considered has been the subject of numerous works examining the economics of professional basketball. Specifically we sought to uncover the relationship between road attendance and the racial composition of the team (WHITEMIN). This is simply measured by the number of minutes played by White players. If people prefer White players, we would expect the corresponding coefficient to be positive.[10]

In addition to the variables listed in Table 1, we also employ dummy variables for each year the current study considers. In essence, this step is taken to capture any year-to-year changes in road attendance. The aforementioned list of dependent and independent variables was utilized to construct the following model.

$$Y_{1n} = \sum_{i=1}^{4} \alpha_i + \sum_{k=1}^{10} \alpha_k X_{kn} + \varepsilon_n \qquad n=1, 2,.....,108 \qquad (1)$$

The model was estimated with team-specific fixed effects[11] across four seasons of data.[12] The results of this estimation are reported in Table 2.

The estimation of this model reveals that only four variables can be considered statistically significant. At the 1% level, we see the importance of team wins and lagged playoff wins. Beyond team performance, road attendance is driven by star power and the racial composition of the team, two variables that were found to be significant at the 5% level. With respect to the latter, our results suggest that playing additional White players leads to declines in road attendance. Such a result echoes the work of Hanssen and Anderson (1999) who found that in the 1990s Black players in MLB received more All-Star votes from fans for equivalent performances.

Although the racial discrimination story is of interest, we are primarily concerned with the impact of a team's on-court productivity and fan appeal. Which of these factors dominates a team's road attractiveness?[13]

One can note from Table 2 that each team win leads to an estimated 1,011 increase in a team's aggregate road attendance. An additional All-Star vote increases aggregate road attendance by 0.005 fans. By themselves, such results do not indicate which factor has the greatest impact on demand. To measure the relative impact of each variable we need to ascertain each factor's economic significance.

STYLE VS. SUBSTANCE: THE CASE OF THE 1996 STARS

To ascertain the economic significance of these two variables, we examined the top 25 stars, ranked by All-Star votes received, for the 1995-1996 season. These players are listed in Table 3.

The number of votes received is used to estimate the value of each player's star appeal. For example, Grant Hill led the All-Star voting in 1996. Given the value of a win in terms of road attendance, Hill generated an estimate 7,175 additional fans to the aggregate road attendance of the Detroit Pistons. Given that the average ticket price[14] in the NBA for 1995-1996 was $30.63, the value of Hill's star appeal on the road was an estimated $219,766.

How does the value of a player's star appeal compare to the impact of his on-court performance? The answer to this question requires an estimate of each player's productivity on the court. As noted in the classic work of Scully (1974), the

Table 2: Estimated Coefficients for Equation (1)

Variable	*Coefficient*	SE	t *Statistic*	p *value*
WINS**	1,010.59	221.69	4.56	.00
WPLAY (–1)**	1,859.34	611.68	3.04	.00
WCHM20	(87.91)	397.31	(.22)	.83
STARVOT*	.0053	.00	1.93	.06
DEXP5	11,556.88	6,949.60	1.66	.10
RSTAB	(17,840.94)	12,989.34	(1.37)	.17
Dallas	419,053.381			
POP	.0497	.04	1.22	.22
GINIC	(13,474.68)	142,758.58	(.09)	.93
WHITEMIN*	(35,222.26)	18,016.77	(1.95)	.05
Observations	108			
R^2	090	*F* statistic	16.74	
Adjusted R^2	.85	*p* value:	.000	

NOTES: WINS = Regular season wins; WPLAY = Lagged playoff wins; WCHM20 = Championships won, weighted; STARVOT = All-Star votes received; DEXP5 = Expansion team, dummy; RSTAB = Roster stability; POP = Population; GINIC = Competitive balance in conference; WHITEMIN = Percentage of White minutes.
The dependent variable is RDATT (ROAD ATTENDANCE) with a sample size of 108. The standard errors are White heteroskedasticity consistent.
$*p < .05$. $**p < .01$.

player's statistics tabulated by a professional sports league can be utilized to estimate the number of wins each player produces. Although the majority of studies requiring an estimate of wins production have examined professional baseball, the productivity of an NBA player was estimated in the work of Berri (2004). Specifically, this study ascertained the value of each statistic tabulated by the NBA in terms of wins and then utilized these values to estimate the number of wins produced by each individual player.

With this information in hand, the value of each player's on-court productivity may be estimated. For example, the wins model employed suggests Michael Jordan was the most productive player in the NBA for the 1995-1996 season. His 23.05 wins were worth an additional 23,294 fans to Chicago's road attendance. Given the average ticket price noted earlier, such productivity was worth an additional \$713,510. If we add the value of Jordan's star appeal to his wins production, we find that Jordan was worth an estimated \$930,593 to the Bulls' opponents.[15] Such a total eclipses all other players in the league for the 1995-1996 campaign.

In general, star appeal and on-court productivity play a role in measuring the observed superstar externality in the NBA. On-court productivity, though, relative to star appeal, is of greater value to a team's opponent. Of the 25 players examined in Table 3, the average number of fans attracted from the player's star appeal was 4,353. The player's wins production, on average, was worth an additional 9,846

Table 3: Top 25 Stars of the 1995-1996 Season Ranked by All-Star votes received

Star Player	*Team*	*Votes*	*Wins*	*Value of Votes*	*Value of Wins*	*Value of Votes + Wins*
Grant Hill	Detroit	1,358,004	13.82	$219,766	$427,849	$647,615
Michael Jordan	Chicago	1,341,422	23.05	$217,083	$713,510	$930,593
Shaquille O'Neal	Orlando	1,290,591	9.58	$208,857	$296,557	$505,414
Scottie Pippen	Chicago	1,289,649	10.29	$208,704	$318,440	$527,144
Charles Barkley	Phoenix	1,268,195	16.73	$205,232	$517,847	$723,079
Hakeem Olajuwon	Houston	1,240,329	10.41	$200,723	$322,386	$523,108
Clyde Drexler	Houston	1,070,040	9.67	$173,165	$299,314	$472,478
Anfernee Hardaway	Orlando	1,050,461	16.51	$169,996	$511,011	$681,007
Jason Kidd	Dallas	1,049,946	5.58	$169,913	$172,690	$342,603
David Robinson	San Antonio	1,037,245	22.64	$167,857	$700,692	$868,550
Shawn Kemp	Seattle	1,021,384	18.69	$165,291	$578,457	$743,748
Karl Malone	Utah	986,028	16.42	$159,569	$508,375	$667,944
John Stockton	Utah	823,826	10.22	$133,320	$316,219	$449,539
Alonzo Mourning	Miami	647,899	9.90	$104,850	$306,470	$411,319
Jamal Mashburn	Dallas	551,204	(1.43)	$89,201	($44,414)	$44,788
Joe Dumars	Detroit	501,159	4.44	$81,103	$137,423	$218,526
Dennis Rodman	Chicago	496,293	17.67	$80,315	$546,932	$627,247
Larry Johnson	Charlotte	494,013	5.41	$79,946	$167,354	$247,300
Robert Horry	Houston	492,748	3.85	$79,741	$119,201	$198,943
Reggie Miller	Indiana	471,162	8.29	$76,248	$256,675	$332,923
Jerry Stackhouse	Philadelphia	441,048	(3.18)	$71,375	($98,468)	($27,094)
Tim Hardaway	Golden State	440,291	4.18	$71,252	$129,257	$200,509
Patrick Ewing	New York	437,003	7.06	$70,720	$218,590	$289,310
Chris Webber	Washington	417,095	1.33	$67,499	$41,253	$108,752
Nick Van Exel	LA Lakers	382,373	2.46	$61,879	$76,020	$137,899

fans. Such results suggest that showmanship cannot replace actual productivity. Consider the case of Jerry Stackhouse. Stackhouse garnered 441,048 All-Star votes in 1996. His estimated wins production, though, was negative. Consequently, Stackhouse actually lowered the revenue of his team's opponents.

Such results are consistent with the work of Berri et al. (2004). These authors found a team's gate revenue to primarily respond to the probability of a team winning, not the existence or nonexistence of superstars. The model utilized in the work of Berri et al. (2004) was multiplicative, hence the value of wins and an All-Star vote varied from team to team. For example, a regular season win for the Chicago Bulls was worth $89,460.97 while an additional All-Star vote received increased revenue for Chicago by $0.12. Given Michael Jordan's estimated production of wins and votes received, Jordan's productivity was worth approximately $2.2 million while his star appeal only generated $156,123. In other word, Jordan's value to the Chicago Bulls lay in is his ability to generate wins, not in his attractiveness to the team's fans. It is interesting to note, Jordan's star appeal has a greater value for the teams the Bulls play than such appeal generates for the Chicago franchise.

CONCLUDING OBSERVATIONS

To summarize the work reported herein, as well as the earlier work of Hausman and Leonard (1997), a superstar externality does exist in the NBA. Evidence of this externality has been found in an examination of television ratings and a team's road attendance. The ability of star appeal to generate revenue, though, is found to be quite limited for the team employing the star. In essence, star power matters more to a team's opponent.

Such a result suggests that the NBA should embrace the work of Neale (1964). Currently the NBA owners appear to view each other as 29 competing firms. The existence of a superstar externality, though, confirms the suppositions of Neale. Specifically, the revenue streams of each team are interdependent. Hence, one might suspect a move toward greater revenue sharing may prove beneficial to the individual NBA teams and the health of the league. In fact, such an argument is offered in the work of Hausman and Leonard (1997).

Perhaps one could take this argument a step further. The Women's National Basketball Association (WNBA) has adopted a labor practice consistent with the work of Neale (1964). Rather than have each player employed and paid by her team, all players are employed and paid by the league and allocated to the individual teams. If the player was able to negotiate a wage equal to the player's contribution to league revenue, then the issue of the superstar externality would no longer exist. Of course, a new problem might arise from such a solution, namely exploitation by the league monopsony. Such monopsonistic powers, though, could be offset by a strong union, that via negotiations, could allow for the creation of a compensation scheme that rewarded players for the revenues generated at home and on the road.

NOTES

1. A similar argument can be found in the work of El-Hodiri and Quirk (1971). Empirical evidence for this contention can be found in the work of Knowles, Sherony, and Haupert (1992). In their study of the 1988 Major League Baseball (MLB) season, they found that balance is achieved (i.e., attendance is maximized) when the probability of the home team winning was 0.6. Rascher (1999) offered an examination of the 1996 MLB season that examined a larger sample of games and a greater number of independent variables. Rascher's study demonstrated that fans prefer to see the home team win, and consistent with the work of Knowles et al. (1992), fan attendance is maximized when the home team's probability of winning equals .66. Each of these studies suggested that a home team with a high probability of winning the contest will see a decline in fan attendance, indicating that uncertainty of outcome is a significant determinant of demand.

2. This paper builds upon the work of Berri, Schmidt, and Brook (2004), who examined the relationship between gate revenue and star power. One might also examine the relationship between home attendance and star power, although the nature of NBA attendance makes such a study difficult. As noted in

Berri, Schmidt, and Brook (2004), a substantial number of NBA teams sell out every single game. Such a data set complicates the analysis of attendance and star power, leading these authors to a study of gate revenue.

3. The choice of years was primarily motivated by our desire to show the amount of revenue a player generated on the road. Revenue data, which we use to estimate average ticket price, were reported by the *Financial World* magazine. Unfortunately, much to the chagrin of economists, this magazine succumbed to the pressure of competition in the publishing world. The work of this publication with respect to reporting team revenues was continued by *Forbes* magazine. Unfortunately, *Forbes* does not break down revenue between gate, media, and stadium. Hence the *Forbes* data cannot be used to determine average ticket price.

4. Following Berri and Brook (1999), the impact of past championships is estimated via the calculation of (WCHM20). The variable was calculated by assigning a value to a team for each championship won in the past 20 years. This value was 20 if the team captured a championship during the prior season, 19 if the championship was won two seasons past, and so on. One should note that the data on regular season wins, playoff wins, and championships won were obtained from various issues of *The Sporting News: Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995).

5. None of these studies measured demand via road attendance. Scott et al. (1985) and Berri et al. (2004) examined team revenue, while Brown et al. (1991), and Burdekin and Idson (1991) examined home attendance. Finally, the work of Hausman and Leonard (1997) examined television ratings.

6. These data were obtained from various daily newspapers. The top players at each position are chosen as starters for the mid-season classic. In addition, the guard and forward receiving the second most votes at these positions are also named as starters. Because only one center is chosen, the above analysis only considered the top five recipients of votes at this position. One should note that this measure is not without its flaws. As noted by an anonymous referee, All-Star votes are dominated by the preferences of the home team. Although fans in New York may regard a player on the Knicks as a star, this assessment may not be shared by fans in other cities. Consequently, star votes may not measure the star appeal of the player on the road. The anonymous referee also noted that it is also possible that higher attendance on the road leads to more star votes, hence the direction of the relation is unclear. We would argue, though, that All-Star votes, which come directly from the consumer, are an improvement over the employment of All-NBA teams. Such teams are chosen by the media and may not reflect accurately the preferences of fans.

7. Data on MSA population were taken from Missouri State Census Data Center (2001).

8. Data on the expansion status of the team were obtained from various issues of *The Sporting News Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995).

9. Following the lead of Berri et al. (2004), roster stability was measured by examining the minutes played by returning players during the current and prior seasons. We then averaged the percentage of minutes played by these players for both of these campaigns. An example may help illustrate the method employed to measure roster stability. During the 1994-1995 season, George McCloud's NBA career was resurrected by the Dallas Mavericks, who employed him for 802 minutes. The following year, McCloud's minutes increased more than threefold to 2,846. If we consider only McCloud's minutes during the 1995-1996 season, we would be overstating the level of roster stability because McCloud was not an integral part of the Mavericks in 1994-1995. Consequently, in measuring roster stability, we consider not only just how many minutes a player played during the current season but also the number of minutes the team allocated to the player during the prior campaign.

10. Schmidt and Berri (2001) measured competitive balance at the level of the league. Given that dummy variables for each year are employed, a league measure would not be identified. Hence, we turn to the level of competitive balance at the conference level.

11. For the racial mix of the team we consulted *The Sporting News: Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995) and the pictures of the players offered in *The Sporting News: Official NBA Register* (see Bonavita, Broussard, & Stewart, 1996; Puro, Sachare, & Veltrop, 1994, 1995; Sachare & Shimabukuro, 1993).

12. An anonymous referee expressed concern about whether one should employ fixed or random effects. The Hausman chi-square test statistic for fixed versus random is 18.559, which has a *p* value of (.000). This result suggests that the fixed-effect model is more appropriate. One could also estimate Equation (1) as a semilogged model. The results, with respect to the economic and statistical significance of wins and All-Star votes, were quantitatively similar. These are available from the authors on request.

13. For the first 3 years of the study, 27 teams played in the NBA. For the final year, franchises were added in Toronto and Vancouver. The model utilized, though, includes lagged values for regular season wins. Hence observations for these two franchises were eliminated giving us 108 observations.

14. A concern one might have is that a player's star power is a direct function of his on-court productivity. Hence, multicollinearity would be a significant concern. To ascertain the relation between these two variables, we calculated the variance inflation factor (VIF; Studenmund, 2001). For WINS and STARVOT, the VIF was 2.58 and 1.65, respectively. Although there is no statistical test for significance of the VIF, a general rule of thumb is if the VIF exceeds 10, multicollinearity is at such a level that the interpretation of results may prove difficult. Consequently, we do not believe multicollinearity is an issue with respect to WINS or STARVOT. An anonymous referee also suggested that a relevant independent variable would be the interaction between WINS and STARVOT. Such a variable, though, was found to be statistically insignificant. These results are available from the authors on request.

15. Average ticket price is simply determined by dividing gate revenue by the number of tickets sold. *The Sporting News Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995) only reports aggregate regular season attendance, which proved problematic, because revenue data from *Financial World* includes revenue generated in the playoffs. Consequently we needed a measure of home attendance for each team in the playoffs. As noted by Berri et al. (2004), 40% of NBA teams sell out each and every regular season game. Given this record, we believe it is not a stretch to assume that NBA teams sell out each playoff game. Home playoff attendance would simply be stadium capacity multiplied by the number of playoff games played at home. This estimate for playoff attendance was then added to the regular season attendance reported in *The Sporting News Official NBA Guide* (see Broussard & Carter, 1996; Carter & Sachare, 1993, 1994, 1995). With this data in hand, average ticket price was simple to calculate.

16. An anonymous referee suggested that All-Star votes alone may not capture the appeal of players such as Jordan. Consequently we reestimated Equation (1) with dummy variables for a number of players who had garnered significant All-Star votes over the time period considered. The specific list included Michael Jordan, Shaquille O'Neal, Grant Hill, Charles Barkley, Clyde Drexler, Hakeem Olajuwon, Scottie Pippen, and David Robinson. Of these, only O'Neal, Jordan, and Hill were found to statistically affect road attendance. O'Neal had an estimated impact of 70,355 fans, Jordan was worth 32,217 additional tickets, and Hill had a statistically significant negative impact of 20,980 fans. Because several of these players did not change teams during this time period, we were not able to estimate the team-specific fixed-effects model and include dummies for these stars. These results are available from the authors on request.

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