Basketball Market Efficiency and the *Big Dog Bias*

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Abstract

A betting rule is devised to profit from an alleged unwillingness of strong favorites in the National Basketball Association to cover large point spreads. Imaginary wagers placed on NBA underdogs awarded 10+ points by Las Vegas oddsmakers produced a significantly nonrandom wins-to-bets ratio of 53.4 percent during the five consecutive seasons ending in 2007. The failure to generate a W/B ratio of at least 55.4 percent over the 758 games meeting our point spread constraint precludes any claim of profitability.

Introduction

Regarded by many researchers (e.g., Gandar et al., 1988) as a useful and handy laboratory for testing the average economic judgments of people, the sports betting market has generally supported the idea that regular profits in a competitive environment are elusive. Where they have surfaced (e.g., Vergin and Sosik, 1999), replications (e.g., Gandar et al., 2001) quickly exposed their short-lived nature. Even steady losses are unusual since the responsible betting rule could be reversed for consistent gains.

One exception to breakeven results may be the success of underdogs against the point spread. Where talent and game site make one team more likely to win, oddsmakers award points to the weaker opponent in order to divide the betting public in half. Kochman and Goodwin (2007) found that underdogs in the National Football League (NFL) generated a significantly nonrandom wins-to-bets ratio (51.9 percent) over the 1991-2004 seasons. Kochman and Goodwin (2004) reported a significantly profitable W/B ratio (58.1 percent) for NFL underdogs in preseason games between 1998 and 2002. Other studies touting the pointwise success of NFL underdogs include Golec and Tamarkin (1991) and Amoako-Adu et al. (1984).

Why betting outcomes seem to favor underdogs in the NFL went largely unaddressed until Kochman and Gilliam (2010). They reasoned that the significantly nonrandom W/B ratios (57.1 percent) produced by decided underdogs in the NFL during the 2002-2009 years benefited from the reluctance of favorites to win by wide margins. The writers argued that since NFL clubs often meet annually and even twice in the same season, a lopsided score might become a revenge factor for the humbled loser. Too, unlike outcomes in college football, winning margins in professional football have no bowl or ranking implications.

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Methodology

The alleged unwillingness of favorites to roll up big margins in professional contests would seem to extend to basketball. In addition to the avoidance of a revenge factor and the absence of bowl and ranking significance, slimmer margins could result from the conservation of energy necessitated by multiple games in the space of a week. When Paul and Weinbach (2005) found that wagers on heavy underdogs in the National Basketball Association were nonrandomly profitable during the seven seasons ending in 2002, they attributed the success to the inclination of coaches to pull starters for fear of injury as well as a lessening of effort by players when the outcome is no longer in doubt.

To test (and update) that proposition, we hypothesized that wagers on underdogs in the NBA who are rated 10 or more points weaker their respective opponents would serve as a profitable betting rule. Specifically, wins-to-bets ratios generated by double-digit ‘dogs in the NBA during the five consecutive seasons ending in 2007 were compiled and screened for nonrandomness and profitability with Equations (1) and (2), respectively. The source of point spreads and final scores was www.Goldsheet.com.

(1) $$Z_R = \frac{(W/B - 0.500)}{\{[(0.500)(1 - 0.500)]/B\}^{.5}}$$

(2) $$Z_\pi = \frac{(W/B - 0.524)}{\{[0.524)(1 - 0.524)]/B\}^{.5}}$$

where: Z_R = statistic for testing the null hypothesis of randomness
Z_π = statistic for testing the breakeven null hypothesis
W = number of winning bets
B = number of total bets

Results

What emerges from Table 1 is a competitive market which bends but doesn’t break in response to efforts by participants to earn regular profits. While our results were not profitable in the statistical sense, the nonrandom wins-to-bets ratio of 53.4 percent produced a dollar profit when betting $110 to win $100[1]. Only by winning 420 or more of our 758 bets could we have legitimately laid claim to an inefficient market. However, recent offers by offshore gambling operators to bet $105 to win $100 are cause for re-evaluation. The resulting reduction in the bettor’s breakeven mark from 52.4 percent to 51.2 percent[2] would improve our dollar profits from $1670 to $3435 and our nonrandom 53.4-percent

W/B ratio from $p < 0.10$ to $p < 0.05$ per Equation (1). Nonrandom profitability again proved elusive as significance gained only to $p < 0.20$ when 51.2 percent substituted for 52.4 percent in Equation (2).

Table 1
Wins-to-bets ratios for NBA underdogs
(2002-03 through 2006-07)

Season	*Wins*	*Bets*	*W/B%*
2006-07	86	144	59.7
2005-06	81	146	55.5
2004-05	95	177	53.7
2003-04	71	144	49.3
2002-03	72	147	49.0
All	***405***	***758***	***53.4****

*significantly nonrandom at $p < 0.10$

Not unlike Paul and Weinbach, we separately tracked the pointwise performance of big underdogs playing at home. Where these writers reported a nonrandomly profitable wins-to-bets ratio of 60.2 percent for underdogs getting 10 or more points, we found similar success—62.5 percent. However, while they identified 166 double-digit ‘dogs and were able to generate a nonrandomly profitable W/B ratio at $p < 0.05$, we located only 40 such opportunities and could claim neither significant profitability nor nonrandomness

Table 2
Wins-to-bets ratios for double-digit NBA home underdogs
(2002-03 through 2006-07)

Season	*Wins*	*Bets*	*W/B%*
2006-07	5	7	71.4
2005-06	4	8	50.0
2004-05	6	10	60.0
2003-04	4	6	66.7
2002-03	6	9	66.7
All	***25***	***40***	***62.5***

Conclusions

It is tempting to conclude that if Paul and Weinbach's success with double-digit home NBA underdogs for the seven seasons immediately preceding our five-year period were combined with our results, the competitive market for NBA wagers would be judged to be less than efficient. Winning 125 of 206 bets placed on heavy NBA underdogs playing at home over the 12 seasons ending in 2007 represents a wins-to-bets ratio (60.7 percent) that is nonrandomly profitable at $p < 0.02$ regardless of the breakeven rate. Another implication of the merged data is that the betting advantage connected to big home NBA underdogs has shrunk over time. While Paul and Weinbach found an average of nearly 24 games in which the home underdog was given 10+ points per season, our yearly mean was only eight. Although greater parity among NBA teams is one possible explanation, a more likely scenario is that oddsmakers have recognized and corrected the pattern.

ENDNOTES

1. The typical sports-betting wager requires bettors to risk \$110 to win \$100. It is referred to as the "10-cent line" or "dime line".
2. When wagering \$110 to win \$100, bettors must win 11 of 21 bets (or 52.4 percent) in order to break even. When betting \$105 to win \$100, bettors need to win only 21 of 41 wagers (or 51.2 percent) to break even.

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