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Market evidence against widespread point shaving in college basketball

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ABSTRACT

This paper proposes using market-based information to investigate the likelihood of widespread point shaving in college basketball games with strong favorites. Information embodied in pre-game money lines facilitates the calculation of the market's expectation that the game will end with a strong favorite winning but not covering the point spread, a result deemed suspicious in previous studies. Additional market-based information embodied in second-half lines reveal how the market's expectation about second-half play differs from pre-game expectations. Applying our methodology to college basketball reduces previous estimates of the percentage of games thought to be consistent with potential point shaving to insignificant levels. Our approach can apply to other sports in which strong favorites are common.

1. Introduction

Betting markets generate predictions of event outcomes. In sporting events, betting markets provide information about the market's expectations of an event's outcome (win, lose, or draw), which team will win, by how much the winning team will win, how many points will be scored by both teams, which team will score first, and so on. A diagnostic of betting market accuracy is the forecast error between the predicted and actual end-of-event point differential. Smaller forecast errors are interpreted as reflecting more accurate predictions and vice-versa.

An implicit assumption in a betting market (hereafter "market") is that event outcomes are not corrupted through intentional shirking on the part of favorites, intentional tanking on the part of underdogs, or intentionally biased officiating. One form of corruption is point shaving, which entails one or both teams conspiring to prevent the favorite from covering the closing point spread. The challenge is that the point-shaving scheme needs to be kept secret in order to be profitable.

One proposed method to detect point shaving is to look at the distribution of forecast errors from the market. Wolfers (2006) was the first to show that the distribution of forecast errors in college basketball games with a strong favorite, defined as one favored to win by twelve or more points, is not symmetric around zero, a result he terms a 'probability

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discrepancy.' This result has been confirmed by subsequent studies (Borghesi, 2008; Weinbach and Paul, 2008; Bernhardt and Heston, 2010, and Gregory, 2018). Controversial is whether the probability discrepancy is evidence of point shaving; Wolfers suggests that as many as six percent of games involving strong favorites could be associated with point shaving.[1]

Some authors propose that the probability discrepancy occurs because the market consistently overrates favorites (e.g., Borghesi, 2008, and Weinbach and Paul, 2008). Others argue that strategic decisions by teams, whether ahead or behind late in the game, create patterns in scoring that lead to the observed asymmetric distribution (e.g., Bernhardt and Heston, 2010, and Gregory, 2018). Still others examine changes in betting lines (Bernhardt and Heston, 2010) and the percentages of bets placed on underdogs (Paul and Weinbach, 2011) to test for patterns consistent with the kind of point shaving claimed by Wolfers. Such patterns appear to be absent.[2]

At least two studies use the total line, which reflects the market's expectation of the total points scored in the game, to test for widespread point shaving. Borghesi et al., (2010) show that forecast errors in college basketball total lines are asymmetrically distributed. They attribute the skewed distribution to bettor preferences that create upwardly biased total lines. In a different application, Borghesi and Dare (2009) use point spreads and total lines to derive the market's expectation of the points scored by each team. They compare expectations to the actual points scored by each team and find that underdogs often underperform but find no evidence of strong favorites underperforming, making them unlikely of point shaving.

We propose using market-based information embodied in additional betting lines to investigate the likelihood of widespread point shaving in games with strong favorites. We use two sources of betting-market-based information not utilized in previous studies: pre-game money lines and second-half betting lines. Our methodology first focuses on the probability discrepancy associated with strong favorites: we seek evidence that some of this discrepancy comes as a surprise to the market. If the market expects much of the discrepancy, then *widespread* point shaving by strong favorites is not credible, because successful point shaving requires the market to be unaware of the practice. On the other hand, if a large portion of the discrepancy is unexpected then it is at least possible that widespread point shaving exists.[3] The methodology then incorporates second-half betting markets and seeks evidence that these markets are accurate predictors of second-half performance of strong favorites. If the market accurately predicts second-half performance then *widespread* point shaving would seem unlikely.

We apply our methodology to men's college basketball, a sport that has been the focus of many studies in the context of potential point shaving. To preview our results, using the pre-game money line in conjunction with the sides line, we calculate the market's expectation that a game will result in the favorite winning the game but not covering the point spread. We find that the observed proportion of games in which the favorite wins but does not cover is not statistically different from the market's expectations. Second, we find that, while second-half betting markets in college basketball are generally accurate predictors of second-half performance, there is an exception for strong favorites that have covered the pre-game point spread by the end of the first half.

We interpret the results as showing that widespread point shaving in NCAA basketball is unlikely and that many strong favorites that win but do not cover are likely engaged in strategic game management. In contrast to previous estimates that more than five percent of college basketball games with strong favorites might involve point shaving, our methodology suggests the proportion is less than two percent and, importantly, is no longer statistically significant. Our methodology is applicable to other sports in which strong favorites are common.

2. Betting market definitions

In this paper, we use two common bets on the outcome of a sporting event: the money line and the sides line, or point spread. A money line is a bet that a specific team will win the game. Money lines incorporate the payouts for betting on each team and are negative (positive) for favorites (underdogs). For example, a money line of −300 indicates a $300 bet on the favorite will win $100 if the favorite wins the game.[4] A money line of +250 indicates a $100 bet on the underdog will win $250 if the underdog wins the game. Money lines can adjust before the game starts to reflect increased expectations that the favorite or the underdog will win.

Sides line bets are on whether the favored team will win by a specific number of points, called the point spread, or, simply, the spread. Generally, a sides line bet on the favorite winning by more than the point spread returns $100 for every

[1] A favorite 'covers' when they win by more than the pre-game point spread. For the strong favorite category, Wolfers finds 46.2% of game outcomes in the 'win and not cover' interval and 40.7% of game outcomes in the 'win and cover' interval of the same width for a probability discrepancy of 5.5%. However, Wolfers's argument that approximately 6% of these strong favorites may have engaged in point shaving is more nuanced than simply rounding up the 5.5% difference in probabilities. He argues (pp. 281-282) that, in the absence of point shaving, the proportions of games ending in the two intervals would have been approximately equal so that point shaving led to approximately 3% of strong favorites who would have covered in the absence of point shaving not covering the spread (but still winning the game). We focus on the original probability discrepancy of 5.5%; can we explain some or most of this discrepancy without resorting to the argument that it reflects only or even mostly corrupt behavior?

[2] Both Diemer (2012) and Paul and Weinbach (2012) use betting percentages in their attempts to detect point shaving.

[3] Using money lines on game winners, we develop direct estimates of the expected proportion of games where the game outcome falls in the 'win and not cover' interval.

[4] For each of these bets, winnings does not include the initial bet, which is returned to a winning bettor. In addition, to avoid arbitrage, the amount required to bet on the favorite to win $100 is more than the amount won from a $100 bet on the underdog to win.