

# Las Vegas Point Spread Values and Quantifying the Value of an NBA Player

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## Abstract

This paper uses Las Vegas Sportsbooks individual point spread values (PSVs) to estimate the first marginal product estimates of NBA players. Starting with the individual PSVs, we predict PSVs from performance statistics and use the predicted values to estimate a player's marginal product. We then compare the NBA estimations with existing, better-established measures of player performance, including player efficiency rating, win shares, and value over replacement player. The results show that the estimates using statistical performance to predict PSVs are in-line with other estimates of player performance. We conclude that PSVs are a comparable measure of marginal product to existing NBA performance composites.

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## Introduction

Given the public availability of performance and revenue statistics, research calculating the marginal product (MRP) of athletes is ubiquitous.<sup>1</sup> Numerous techniques are popular for calculating MRP using individual and team performance statistics. The Scully method (Scully, 1974) regresses a team's win-loss percentage on team performance, estimates how a team's success impacts its revenue, and finally determines how an individual's performance affects the team's success. The Brown method (Brown, 1993) models team revenue as a function of the number of players drafted to find marginal product. The Pro method (Lane, Nagel, & Netz, 2014) finds MRP by combining the marginal product from the Scully method with the salary distribution of players. Most recently, Hoffer and Pincin (2019) combined National Football League (NFL) individual performance statistics with player point spread values (PSVs)—a PSV is the number of points the betting line would move if a player were unable to play—from Las Vegas sportsbooks to provide one of the first estimates for NFL player productivity that is not position specific.

This paper uses the method developed by Hoffer and Pincin (2019), which introduces a new avenue of determining player value, to employ PSVs as a metric to evaluate National Basketball Association (NBA) players. Hoffer and Pincin (2019) estimated how performance statistics change a player's PSV at the margin. For example, each passing touchdown per game increased PSV by 0.22 points, meaning that Drew Brees earned a PSV of roughly 5.2 in 2016. Because their study used NFL data and players, we have no benchmark against which we can compare these estimates. Additional research is needed to determine how broadly PSVs can be used as a measure of player value. In this vein, this paper conducts such analysis for the NBA.

In this study, we collect data on individual player PSVs for a single season from a Las Vegas sportsbook and use performance statistics to isolate the determinants of PSV. Next, we find predicted values to estimate a player's marginal product.

<sup>1</sup> Studies include professional hockey (Richardson, 2000), soccer (Lawson, Sheehan, & Stephenson, 2008), basketball (Yang & Husuan-Yu, 2012), baseball (Humphreys & Pyun, 2017), professional (Hoffer & Pincin, 2019) and collegiate (Brown, 1993) football, men's (Brown, 1994) and women's (Brown & Jewell, 2006) basketball, and men's hockey (Kahane, 2012).