A Contrarian Approach to the Sports Betting Marketplace

Dan Fabrizio, James Cee
Sports Insights, Inc.
Beverly, MA 01915 USA
Email: dan@sportsinsights.com

Abstract

Actual sports betting data is collected from multiple online sports books for each of the major professional U.S. sports, going back to 2003. A hypothesis of applying a contrarian approach to the sports betting marketplace is tested. Our results show that "betting against the public," when betting percentages reach certain extremes, creates value. Excess returns can be achieved that overcome the friction of the vigorish collected by sportsbooks. The results are robust and the edge is shown to exist across several major professional U.S. sports tested. A "Sports Investing Index" is presented to study and monitor the performance of various "sports betting" methodologies, similar to financial benchmarks such as the S&P 500 and Dow Jones Industrial Average. Additional research can be performed to track the performance of various approaches, parameters, and sub-sectors.

1 Introduction

The sports betting industry is a billion dollar business with "liquid markets" created by sportsbooks in Nevada, USA, as well as offshore sportsbooks. Our hypothesis is that by approaching the sports gambling world as a financial marketplace – and applying a consistent, analytical, and contrarian approach – we can test the efficient market hypothesis on the sports betting marketplace.

Actual sports betting data is collected from multiple online sports books for each of the major professional U.S. sports, going back to 2003. This data includes sports betting lines such as point spreads and money lines, including opening and closing lines and line movement. Most importantly, we are able to obtain the percentage of bets on each side, to determine "public sentiment" on each sporting event. We can then test our hypothesis of applying a contrarian approach to the sports betting marketplace.

Our results show that "betting against the public," when betting percentages reach certain extremes, appears to create value. It is shown that this contrarian approach creates enough of a positive bias

that the friction of vigorish can be overcome. The results are robust and the edge is shown to exist across the major professional U.S. sports tested. Historical game results, sports betting data, and the betting percentage sentiment indicator is studied for the National Football League (NFL) and Major League Baseball (MLB). We also analyzed results for other major U.S. sports, including the NBA, NHL, and college sports. The historical sports data covers tens of thousands of games across all of these sports and includes both the regular season and playoffs.

The results can lead to the establishment of "Sports Investing Indices" to study and monitor the performance of various "sports betting" methodologies, similar to financial benchmarks such as the S&P 500 and Dow Jones Industrial Average.

2   Contrarian Value in Financial Markets

It is generally well-accepted that investors seek value when investing in the financial markets. Some of the better-known stock investors use these types of approaches to earn excess returns in the stock market. Benjamin Graham was an economist and professional investor – and is generally-accepted as the first proponent of value investing and the father of fundamental analysis. Today, Warren Buffett is one of the most famous examples of a successful and wealthy investor who applies similar approaches to value investing.

In addition to these classic examples of value stock investors, there are categories of hedge fund strategies that seek to earn excess returns by investing in Distressed Securities or Special Situations. Special Situation funds focus on turnarounds, restructurings, bankruptcies, employee buyouts, and other special situations. In all of these cases, investors seek out value and excess returns by taking a contrarian approach to investing in the financial markets.

These situations represent cases where there is fear or uncertainty surrounding a firm or security. That is, investors may shy away from companies that are undergoing bankruptcy, restructurings and other events that create uncertainty. When there is fear in the marketplace, value may be created by taking a contrarian stance.

3   Contrarian Value in the Sports Betting Marketplace

Our goal is to discover if similar contrarian value approaches can be applied to the sports marketplace to achieve positive expected value. In the case of sports, there are distinct sporting events where games are decided in a binary fashion. That is, team A plays team B, and a winner is decided on a given date. Similarly, sports bettors will either win or lose their betting proposition at the end of the sporting event. In many ways, this makes the sports betting arena an easier marketplace in which to measure performance results.

In addition to measurable results, we need a way of determine the position (team) we should select based on some sort of "contrarian" measure. How can we determine the level of optimism on a team, or conversely, pessimism on the opposing team? If we are able to collect the number of bets on each side, this may give us an indication of potential value on one side or another. This data can be used to show us the percentage of bets on each side of a bet.

Sports betting data, including betting percentages, can be collected on a daily basis. A database of historical sports betting information, including the betting percentage sentiment indicator, can be established. The data for this research is provided by Sports Insights, a sports information firm, which has collected this type of data since 2003.

4 Sports Betting Terminology

In this section, we will introduce some sports betting terminology. In most sports, betting is done on a point spread basis. For point spread sporting events, the sportsbook's oddsmaker determines a favorite, the team or athlete that is expected to win the sporting event. The other participant is the underdog, the team or athlete that is expected to lose. In order to equalize the betting between the favorite and the underdog, sportsbooks determine a point spread, or a number that will either be added to the underdog's final score or subtracted from the favorite's. If the participants are deemed evenly matched, there may not be a favorite or an underdog – and thus the point spread will be zero, which is sometimes called "pick 'em."

Point spreads are typically used for football and basketball – sports in which there is a lot of scoring and the margin of victory sometimes gets into the double-digits. However, a point spread does not work as well for sports such as baseball, soccer, and hockey, where games are often decided by only a point or two. In these sports, sportsbooks will typically use moneyline odds instead of a point spread to equalize the odds for a given game.

The basic concept of the moneyline is to make it more expensive to bet on the favorite and less expensive to bet on the underdog. For instance, if you want to bet on the favorite, you may have to lay $1.50 to win $1.00. The moneyline odds for this betting proposition would be listed as -150.

On the same game, someone interested in betting on the underdog might bet $1.00 and have the chance to win $1.30. The moneyline odds for this bet would be listed as +130. The reader may notice that the $1.50 and $1.30 are different amounts. That is, sportsbooks are collecting $1.50 for people betting on the favorite, but only paying out $1.30 to underdog backers. This brings us to the phrase "vigorish," or "vig," for short.

Sportsbooks are in the business of making money for the service they provide. Similar to how market makers and brokers make money in the financial markets, sportsbooks earn the "vig" in exchange for making a market in the sports betting arena. In moneyline sports such as baseball, sportsbooks will quote odds such as -150/+130 like in our example above. For sports that use point spreads, such as the NFL or NBA, bettors typically have to bet $1.10 to win $1.00, which is listed as -110.

In order to overcome the friction of the typical vigorish of -110, sports bettors need to achieve a 52.4% winning percentage just to break even. Sports books will generally attempt to balance the level of betting activity they have on either side of a game. However, the vig gives the sportsbooks a manageable risk management cushion in which to manage their book of business. In addition, the 52.4% winning percentage is a difficult barrier to hurdle for most casual bettors over the long-term.

5 Data Collection

Sports Insights provided us with actual sports betting data, which was collected from multiple online sportsbooks for each of the major U.S. sports, going back to 2003. This data includes sports betting information such as:

- Point spreads,
- Moneylines,
- Opening and closing lines,
- Line movement, and
- Percentage of bets on each side.

In particular, the interesting information provided by Sports Insights was the percentage of bets on each side, which is a measure of "public sentiment" on sporting events. We are now able to test our hypothesis of applying a contrarian approach to the sports betting marketplace.

6 NFL Results

We used sports marketplace data going back to 2003 until early December 2011, covering National Football League (NFL) regular season and playoff games. The results are based on a dataset of some 2,300 games over nine NFL seasons. In particular, we used betting percentages, the closing point spread, and actual game results to study the potential value of our sentiment indicator.

That is, if team A is gathering 70% of the bets, and team B is gathering 30% of the bets, this may indicate value on team B, which is "out of favor." In the table below, we show the results of betting on teams that are "out of favor" and have fewer than the listed percentage of bets.

Table 1

Select Team with Bet %	Resulting Winning %
< 50%	50.0%
< 40%	50.2%
< 30%	50.9%
< 25%	53.0%
< 20%	56.2%

Betting Against the Public (NFL 2003-2011)

The results indicate that as the betting percentages become increasingly extreme, the winning percentage of betting on the "team out of favor" increases. In the NFL, at the 20% and 25% contrarian level, the positive results are enough to overcome the friction of the vigorish collected by the sportsbooks.

7 Major League Baseball Results

Our result for the NFL shows that a bias may indeed exist within the sports gambling world. For the purposes of this paper, baseball sports betting data is particularly interesting for several reasons. Baseball has many more data points than professional football, with many more games played during the regular season. In addition, this is a sport based on moneylines, so we have the chance to study the results of a different type of sports bet.

Similar to our NFL analysis, we use the closing moneyline odds for each game, as well as the betting percentages, to study the results of betting against the public – or betting on the team "out of favor." Results are based on the 2003-2011 Major League Baseball seasons and include more than 21,000 regular season and playoff games. Because of the moneyline odds, we include the actual number of units won and also present the results as a function of return on investment. Return on Investment (ROI) is equal to the units won or lost, divided by the total amount risked. This is a good indicator of overall value and shows that ROI, and value, is greatest when betting becomes more extreme.

Table 2

| Select Team with Bet %	Units Won/(Lost)	Resulting ROI
< 50%	-42.4	-0.2%
< 40%	42.1	0.3%
< 30%	94.9	1.2%
< 25%	74.8	1.5%
< 20%	87.9	3.6%

Betting Against the Public (MLB 2003-2011)

8 Sports Investing Index

In the financial markets, there are many benchmarks to help investors measure and compare their performance. Some of the most familiar stock market benchmarks include the DJIA (Dow Jones Industrial Average) and the S&P 500 (Standard & Poor's 500) stock market indices. We believe that a similar index in the sports betting marketplace may be interesting to sports bettors.

Until future research and data compilation is complete, we present a Sports Investing Index based on work completed by Sports Insights. Since 2003, Sports Insights has published a list of "square plays" based on betting percentages for each of the major U.S. sports, including the NFL, MLB, NBA, NHL, college basketball, and college football. This index shows that there is, indeed, an upward bias for applying contrarian methods to the sports betting marketplace. It is notable that the index shows positive results across each of the sports.

Figure 1
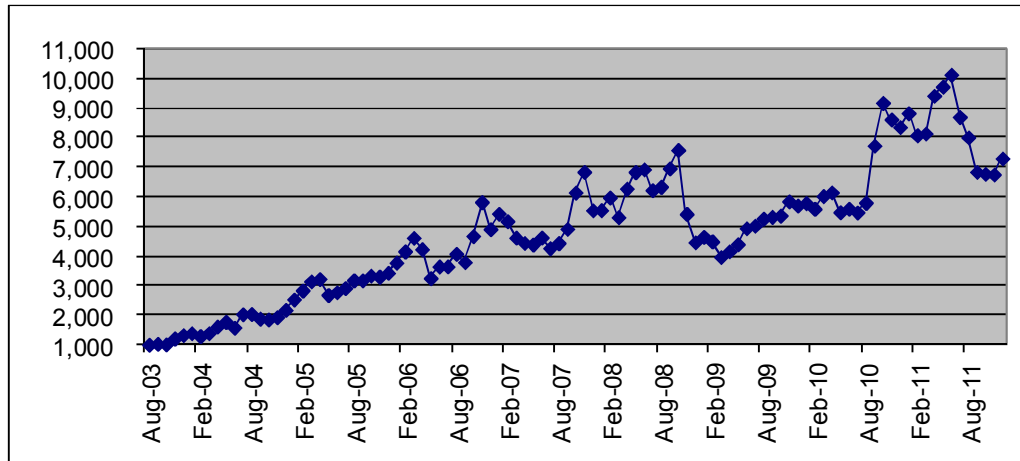
Sports Investing Index (August 2003 – December 2011)

Additional research can be performed to track the performance of various approaches and parameters, such as the results for home and visiting teams, as well as large and small underdogs or favorites. In addition, various sub-indices, such as an index for each sport, can be studied.

9 Conclusions and Future Work

Sports betting data since 2003 has been studied and results indicate that contrarian methods applied to the NFL and MLB produce a positive return. In particular, the results are robust and show that betting against the public – or on the team out of favor – can yield enough positive performance to overcome the friction that sportsbooks collect. Actual betting percentages, as well as published selections, based on betting percentages, have been used to analyze results.

Future work will include studying results in other major sports, such as the National Basketball Association (NBA), National Hockey League (NHL), and college sports. We are also interested in testing contrarian approaches on popular European and Asian sports, where sports betting is regulated. Finally, other parameters may be studied, such as the magnitude of the point spread or home and visitor biases.

ADDENDUM

This Addendum includes information about College Basketball and the National Basketball Association (NBA), to complement the paper's MLB and NFL results. In addition, we combine contrarian approaches with additional parameters such as the magnitude of the point spread and a home/away filter.

A   College Basketball Research

Based on Sports Insights' research on college basketball over the years, we reviewed several factors in addition to our key "betting percentages" contrarian indicator:

- In order to focus on "Public Games," we use Sports Insights' "Number of Bets." More specifically, we filtered only games that were "more heavily-bet" than average -- so we filtered out about half of the games.
- In addition, our research generally points to a bias on underdogs with a "material level" of point spread. For the purposes of this addendum, we used underdogs of 10 points or more (for both home teams and visitors).

The data is based on some 11,000 games, since 2008, when data on the number of bets was more readily available. The results indicate that contrarian value exists on large underdogs in college basketball.

Table 3

Select Team with Bet %	Resulting Winning %
< 40%	52.5%
< 35%	52.8%
< 30%	52.5%
< 25%	53.2%

Betting Against the Public on Underdogs of 10+ Points (College Basketball 2008-2011)

B   National Basketball Association Research

We studied National Basketball Association (NBA) sports betting data since 2003, which includes information on over 10,000 games. In addition to the contrarian bias, historical NBA data shows that visiting teams are undervalued as compared to home teams – when betting against the public – and using the point spread. The NBA results, combined with positive results in the NFL, MLB, and college basketball – indicate that contrarian methods can achieve positive results across a diverse set of sports marketplaces.

This addendum has shown that besides contrarian value approaches, additional research can be performed to include a variety of parameters and filters to better study the sports betting marketplace.

Table 4

Select Team with Bet %	Resulting Winning %
< 40%	52.0%
< 35%	52.6%
< 30%	54.4%
< 25%	54.8%

Betting Against the Public on Visiting Teams (NBA 2003-2011)