Value Betting For Football

This is a short mini course provided to members of www.Football-Bets.co.uk which teaches one method of soccer match odds compilation. The course was written by Tammboy. Tammboy has many years experience working as a professional odds compiler for major bookmakers but now acts as one of a panel of advisors providing soccer betting tips to private clients on the football bets website.

Part One: Value in Betting

The most common phrase associated with “knowledgeable” betting is whether the bet is “value”. It has been banded around so much it seems to have taken on a new meaning – a meaning far removed from its original. In the following pages, I am going to discuss what value means and how to know whether a bet is value.

In every event, whether sport or something else like dice rolling or coin flipping, there is always the true probability of the outcome occurring. In dice rolling – rolling a two would be 1 out of 6 or 16.67% chance of occurring. In coin flipping – a head would be 1 out of 2 or 50% chance of occurring.

In sporting events, however, there is no way of knowing the true probability of, for example, in tennis, Federer beating Nadal or in Football, Chelsea beating QPR. The probability can be estimated but there is likely to be some error or difference between the true probability and our estimated probability.

In betting, odds reflect the probability of an event occurring. 6/4 represents a 40% chance of that event occurring: In 10 repetitions of this event, 4 would win, 6 would lose. 4 out of 10 is 40%. Value is when the odds pay more than the true probability. Value is when the odds available reflect a lower chance of success than the true chance of success.

If the odds available were 6/4, then this would be value only if the chance of success were greater than 40%. In practice, it’s wise to build in a margin for error, so the 6/4 would only be bet if we were confident that the chance of success was 50% or more.

Odds are generally a fairly accurate reflection of the true probability – it is rare to find too many out of line or representing value. However, there are many bookmakers about and competition is strong. This can lead to many pushing prices out and making their odds bigger in an effort to attract more business and this is usually where value can be found.

In the next section I will discuss how to create goal ratings, the first step in creating your own odds line for football matches.
Part Two: Creating Goal Ratings In Order To Compute Odds In Football Matches

There are many methods for creating an odds-line for football matches but the method that will discussed here is the Poisson process, sometimes also referred to as the Poisson Regression model.

Before I begin, ask yourself what are the odds in a football game for two competing teams that are exactly the same strength with no home advantage?

Most older odds-compilers would say 6/4, 6/4, 5/2. This represents 40% chance of a win for either team and 28.6% chance of the draw.

40% + 40% + 28.6% = 108.6%

The extra 8.6% (greater than 100%) represents the bookmaker’s margin and in very simple terms is the profit he can expect to make from the game as a percentage of the total amount bet on the game.

Firstly, increased competition has changed this old example so a fair game might be more like 13/8, 13/8, 13/5 these days. When worked out this represents just under 4% margin for the bookmaker and less potential profit.

The other point to think about is why a draw is less likely than a win? This is because there are less ways it can happen. A draw can only occur at 0-0, 1-1, 2-2, 3-3. But a win could occur at 1-0, 2-0, 2-1, 3-0, 3-1. There are more ways in which a win can occur so a win is always more likely than a draw.

The Poisson method relies on having an accurate goal rating for each team. This is the bug-bear of all odds compilers because this is the hard bit. A goal rating represents the number of goals team A is expected to score against team B. Once you have established a goal rating for each team then Win/Draw/Lose, Asian Handicap, First Goal Scorer odds can be computed. In fact, most odds on a football game will originate from this goal rating.

Different odds compilers and companies will have different methods of computing their goal ratings. It can the make a big difference to the P&L sheet at the end of the year and will be a closely guarded secret. I use a combination of different methods that I picked up working for different bookmakers over the years and this part of the process can get quite complicated. However, I am going to show a very simple method of achieving fairly robust results.

On 5 February 2011, lets look at two premiership teams competing:
West Ham vs. Birmingham

This season West Ham have scored 27 goals in 25 games. That is 27 ÷ 25 = 1.08 goals per game.

This season Birmingham have scored 23 goals in 23 games. That is 23 ÷ 23 = 1 goal per game.

At home West Ham have scored 14 goals, away 13 goals. At home they are 14 ÷ 13 = 1.07 (as a multiplication factor) better at home.

At home Birmingham have scored 12 goals, away 11 goals. Away from home they 11/12 = 0.91 (as a multiplication factor) worse away from home.

Goal rating = Goals per game x multiplication factor.

West Ham: 1.08 x 1.07 = 1.16 goals.
Birmingham: 1 x 0.91 = 0.91 goals.

This is a simple but robust method for deciding goal ratings of two opposing teams. Already you can see that West Ham should be slight favorites. It should also be a low scoring affair. The total goals we expect is 2.05 – below the season’s premiership average currently at ~ 2.7.

In the next part, I will show you how to turn goal rating into odds.
Part Three: Creating Odds From Goal Ratings For Football Matches

As previously mentioned I am using the Poisson method for computing odds of a football game from goal ratings.

In our last example, we looked at West Ham and Birmingham City and computed goal ratings:

West Ham: 1.16 goals.
Birmingham: 0.91 goals.

In Microsoft Excel, you will need to familiarize yourself with the Poisson function. The help file looks like this:

**POISSON(x,mean,cumulative)**

X – amount of goals being scored
Mean – our goal rating
Cumulative – set to false

To find the probability of a 0-0 match outcome, you would enter:

**POISSON(0, 1.16, False)**\* **POISSON(0, 0.91, False) = 0.126 (12.6%)**

To find the probability of a draw you would need to add all the possibilities up to 5 goals:

**POISSON(0, 1.16, False)**\* **POISSON(0, 0.91, False) = 0.126 (12.6%)**
**POISSON(1, 1.16, False)**\* **POISSON(1, 0.91, False) = 0.133 (13.3%)**
**POISSON(2, 1.16, False)**\* **POISSON(2, 0.91, False) = 0.035 (3.5%)**
**POISSON(3, 1.16, False)**\* **POISSON(3, 0.91, False) = 0.004 (0.4%)**
**POISSON(4, 1.16, False)**\* **POISSON(4, 0.91, False) = 0.000 (very small)**
**POISSON(5, 1.16, False)**\* **POISSON(5, 0.91, False) = 0.000 (very small)**

0.126 + 0.133 + 0.035 + 0.004 + 0.000 + 0.000 = 0.299 (29.9%)

29.9% represents 9/4 against in odds.
To find the probability of a West Ham win, you would need to add all the possibilities up to 5 goals:

- POISSON(1, 1.16, False)* POISSON(0, 0.91, False) = 0.146 (12.6%)
- POISSON(2, 1.16, False)* POISSON(0, 0.91, False) = 0.085 (12.6%)
- POISSON(2, 1.16, False)* POISSON(1, 0.91, False) = 0.077 (12.6%)
- POISSON(3, 1.16, False)* POISSON(0, 0.91, False) = 0.033 (12.6%)
- POISSON(3, 1.16, False)* POISSON(1, 0.91, False) = 0.030 (12.6%)
- POISSON(3, 1.16, False)* POISSON(2, 0.91, False) = 0.014 (12.6%)
- POISSON(4, 1.16, False)* POISSON(0, 0.91, False) = 0.010 (12.6%)
- POISSON(4, 1.16, False)* POISSON(1, 0.91, False) = 0.009 (12.6%)
- POISSON(4, 1.16, False)* POISSON(2, 0.91, False) = 0.004 (12.6%)
- POISSON(4, 1.16, False)* POISSON(3, 0.91, False) = 0.001 (12.6%)
- POISSON(5, 1.16, False)* POISSON(0, 0.91, False) = 0.002 (12.6%)
- POISSON(5, 1.16, False)* POISSON(1, 0.91, False) = 0.001 (12.6%)
- POISSON(5, 1.16, False)* POISSON(2, 0.91, False) = 0.000 (very small)
- POISSON(5, 1.16, False)* POISSON(3, 0.91, False) = 0.000 (very small)
- POISSON(5, 1.16, False)* POISSON(4, 0.91, False) = 0.000 (very small)

Adding these up equals 0.414 (41.4%).

41.4% represents 7/5 against in odds.

To find the probability of a Birmingham win, you would need to add all the possibilities up to 5 goals:

- POISSON(0, 1.16, False)* POISSON(1, 0.91, False) = 0.115 (11.5%)
- POISSON(0, 1.16, False)* POISSON(2, 0.91, False) = 0.052 (5.2%)
- POISSON(1, 1.16, False)* POISSON(2, 0.91, False) = 0.061 (6.1%)
- POISSON(0, 1.16, False)* POISSON(3, 0.91, False) = 0.016 (1.6%)
- POISSON(1, 1.16, False)* POISSON(3, 0.91, False) = 0.018 (1.8%)
- POISSON(2, 1.16, False)* POISSON(3, 0.91, False) = 0.011 (1.1%)
- POISSON(0, 1.16, False)* POISSON(4, 0.91, False) = 0.004 (0.4%)
- POISSON(1, 1.16, False)* POISSON(4, 0.91, False) = 0.004 (0.4%)
- POISSON(2, 1.16, False)* POISSON(4, 0.91, False) = 0.002 (0.2%)
- POISSON(3, 1.16, False)* POISSON(4, 0.91, False) = 0.001 (0.1%)
- POISSON(0, 1.16, False)* POISSON(5, 0.91, False) = 0.001 (0.1%)
- POISSON(1, 1.16, False)* POISSON(5, 0.91, False) = 0.001 (0.1%)
- POISSON(2, 1.16, False)* POISSON(5, 0.91, False) = 0.000 (very small)
- POISSON(3, 1.16, False)* POISSON(5, 0.91, False) = 0.000 (very small)
- POISSON(4, 1.16, False)* POISSON(5, 0.91, False) = 0.000 (very small)

Adding these up equals 0.286 (28.6%).

Copyright 2011 www.Football-Bets.co.uk
28.6% represents 5/2 against in odds.

Comparing our odds to the odds available:

<table>
<thead>
<tr>
<th>Selection</th>
<th>Chance</th>
<th>Our Odds</th>
<th>Available Odds</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Ham</td>
<td>41.4%</td>
<td>7/5</td>
<td>11/10</td>
<td>No bet</td>
</tr>
<tr>
<td>Birmingham</td>
<td>28.6%</td>
<td>5/2</td>
<td>3/1</td>
<td>Bet</td>
</tr>
<tr>
<td>Draw</td>
<td>29.9%</td>
<td>9/4</td>
<td>5/2</td>
<td>Bet</td>
</tr>
</tbody>
</table>

In this scenario, it seems that the price on a West Ham win is too short and that Birmingham or the Draw represents better value. However, to allow for a margin of error we could factor in a 5% error margin by multiplying the chance by 0.95. This would produce the following scenario:

<table>
<thead>
<tr>
<th>Selection</th>
<th>Chance</th>
<th>Our Odds</th>
<th>Available Odds</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Ham</td>
<td>39.3%</td>
<td>6/4</td>
<td>11/10</td>
<td>No bet</td>
</tr>
<tr>
<td>Birmingham</td>
<td>27.2%</td>
<td>13/5</td>
<td>3/1</td>
<td>Bet</td>
</tr>
<tr>
<td>Draw</td>
<td>28.4%</td>
<td>5/2</td>
<td>5/2</td>
<td>No bet</td>
</tr>
</tbody>
</table>

In this scenario, Birmingham represents a value bet at 3/1.
Odds Compiling Questions

After initial release of this mini course to clients at www.football-bets.co.uk there was a bit of a Q & A session. Below is a summary of questions and responses.

It it possible to backwards engineer the model to work out betfairs and a bookies goal expectations?

Yes it is possible although very complex and not something I’m going to try to explain!

Either the correct scores or the match odds are slightly out of line. Does it mean that poisson distribution isn't a perfect fit or does there mean there is error or scope for an edge in their mistake?

Yes they will be slightly out of line because in the simple model I introduced, it was assumed that the maximum goals a team can score in a game was 5 but obviously this it not the case.

I did read about motivational factors such as the side being behind becomes slightly more likely to score and that poisson doesn't take this into account?

I remember Kevin Pullein doing some research on this for the Racing Post I think. If I remember right, he didn’t think there was any claim in this argument. Things like teams being more motivated when they’re losing/winning in a relegation dog-fight etc. weren’t born out by results over the seasons.

You’ve shared a very basic for calculating goal expectation do you have any better more complicated methods to share?

Tons! But I think that’s the art to making it successful. Unfortunately, I’m obsessed by it and keep fine tuning everything.

Through my research I notice shots/shots on target are a good indicator of performance, however with corners I've found sometimes teams at the top surprisingly have less than teams at the bottom, how do you rate the amount of corners as important and do bookies factor in corners into their goal expectations?

If you have a data file with shots/shots on target and corners then I would simply run a regression analysis on it and see where it leads. I think corners do have a bearing but obviously not as much as shots on target. A weighting between the factors is probably the way to go…

Do bookies have access to stats us meer punters don't?

No not any more – historic soccer stats are widely available on the net . It is possible that some might have found a way to use prometrics or the optic data but I doubt it and that certainly wasn’t available a few years back.
Are bookmaker's ratings fully computerised or do they manually tweak them slightly to reflect team news?

Most odds- compilers tweak their ratings based on team news and what other bookmakers are doing. For example there’s no point going 15/8 when you can be standout at 7/4! Most are very wary of going over the betfair price but quite like sitting in the zone: under the Betfair price but over the Betfair minus 5% (commission) price.

How can stats reflect the personality of a team. For example, Sam Allardyce's sides are very physical and always used to give a team like Arsenal a difficult time?

It’s a tricky subject this. I think there’s a danger when thinking like this to start looking for winners rather than probabilities. What we’re trying to do is create a probability model that is superior to the bookmakers. It doesn’t need to be perfect and and doesn’t need to right all the time just better than the model the bookmakers use. Then we make money long term. You have to be confident that a team’s ability to score goals reflects all these characteristics that you imply. If you believe there should be an adjustment then this can be made to the team goal rating before crunching through the poisson process.

The clearest indicator of team strength is goal difference which is a combination of goals scored and conceded. How would you factor in a teams defence into those goal expectation ratings?

There was some research conducted on this in the 90s by a statistician called Mark Dixon in a paper Modelling Association Football. He basically believed that if you’re created goal ratings for each team in a league then by it’s nature it already incorporated a defensive assessment as well. In simple terms, if there was no defence, then more goals would’ve been scored and ratings would be higher.

When odds are set how much does the teams name effect the price?

Yes this does happen a lot but it’s more to do with expected demand. If you are an odds-compiler and you know a team will be backed – for example: Man Utd, Chelsea, Arsenal in a treble on the coupon; or in Scotland, Celtic and Rangers – then you’ll make your company more money in the long term by shaving a few rolls off the price.

I read a betting book which said a horserace price was derived by listing the factors that affect the race for each horse and then dividing that by the total number of factors. Is football betting done the same way?

This is a logistic regression approach where a multitude of different factors get assigned a value of either 1 or 0 and are given different weightings depending on their influence in the outcome, in this case, winning the race or the football game. Neural networking approaches are similar too. An old racing system called RSB or Racing Systems Builder used to use this method for computing probabilities of horses winning races and was quite successful. However, I have always preferred to go for a ratings approach. In football this is based on the amount of goals you expect team A to score against team B and vice versa. In horseracing, something similar to Timeform or Raceform ratings which reflect the true ability of the horse.
Spreadsheet

Who likes spending all day working out calculations by hand?

To enable everyday ease of use of the method above a microsoft excel spreadsheet was created to do the calculations.

Just punch in the most basic of goal data and the spreadsheet does the rest.

This spreadsheet is a minor extra perk of full membership of Football-Bets.co.uk

After you become a full member email admin@football-bets.co.uk if you want a copy emailed to you.