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Do bookmakers possess superior skills to bettors in predicting outcomes?

Michael A. Smith[a,1], David Paton[b,*], Leighton Vaughan Williams[c,2]

[a] Leeds Business School, Leeds Metropolitan University, Headingley Campus, Leeds LS1 3HE, United Kingdom
[b] Nottingham University Business School, Jubilee Campus, Wollaton Road, Nottingham NG8 1BB, United Kingdom
[c] Nottingham Business School, Nottingham Trent University, Burton Street, Nottingham NG1 4BU, United Kingdom

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ABSTRACT

In this paper we test the hypothesis that bookmakers display superior skills to bettors in predicting the outcome of sporting events by using matched data from traditional bookmaking and person-to-person exchanges. Employing a conditional logistic regression model on horse racing data from the UK we find that, in high liquidity betting markets, betting exchange odds have more predictive value than the corresponding bookmaker odds. To control for potential spillovers between the two markets, we repeat the analysis for cases where prices diverge significantly. Once again, exchange odds yield more valuable information concerning race outcomes than the bookmaker equivalents.

1. Introduction

There have been many studies of the efficiency of horse race betting markets, based either on bettor determined prices (as in pari-mutuel markets) or bookmaker determined prices, the latter mainly based on UK data (see, for example, Smith et al., 2006). Most studies of bookmaker markets indirectly infer the superiority of bookmaker skills over bettor skills from the existence of persistent negative returns to bettors in aggregate. However, if bettors receive consumption utility from placing wagers in addition to utility from monetary returns, bettor superiority may be consistent with aggregate negative returns. Furthermore these studies tell us nothing about the abilities of bettors who choose to refrain from entering the market when they judge that bookmaker prices overstate the true chances of race entrants.

In this paper we use matched data from traditional bookmaking and person-to-person exchanges to test the hypothesis that bookmakers display skills superior to bettors in predicting the outcome of sporting events. One might expect on the basis of the already extensive literature in the economics of auctions (e.g. Klemperer, 1999, 2004) that the decentralised nature of the decision-making processes characteristic of betting exchanges would accomplish the aggregation of dispersed

* Corresponding author. Tel.: +44 115 846 6601; fax: +44 115 846 6667.
E-mail addresses: m.z.smith@leedsmet.ac.uk (M.A. Smith), David.Paton@Nottingham.ac.uk (D. Paton), Leighton.Vaughan-Williams@ntu.ac.uk (L.V. Williams).
[1] Tel.: +44 113 812 7537; fax: +44 113 812 8604.
[2] Tel.: +44 115 848 6150.

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information in a very efficient manner, whereas the bookmaker (however well informed) may fail to match as efficiently the information revealed through such decentralised bidding. The point here is that the decentralised market aggregates information in a way that no-one is able to do individually. Indeed, there is a growing body of literature which shows that decentralised exchange markets are very efficient in providing forecasts of the probability, the mean and median outcomes, and the correlations among a range of future events. Such markets have been used very successfully to predict uncertain outcomes ranging from the box office prospects of Hollywood movies, through vote shares in elections, to the sales of Hewlett-Packard printers (e.g. Wolfers and Zitzewitz, 2004; Snowberg et al., 2005; Gruca and Berg, 2007).

The structure of the paper is as follows. Section 2 gives relevant background information relating to the betting markets analysed in our study. Section 3 describes the data drawn from bookmaker and betting exchange markets. Section 4 outlines the methodology employed. Our results are presented in Section 5, with discussion. Section 6 concludes.

2. Bookmakers and betting exchanges

A study by Levitt (2004) evaluates the relative assessments of bookmakers and bettors with reference to data from a handicapping competition based on US National Football League matches. Levitt characterises the difference between conventional financial asset markets and betting markets as follows: in the former the complexity of information affecting the value of assets is such that market makers cannot gain an advantage through superior processing of information to the market as a whole. In contrast, Levitt claims, market makers in betting markets (bookmakers) possess skills in assessing the true chance of various outcomes superior to most bettors, and at least as good as the subset of most skilful bettors. He suggests that the structural consequences of this differential degree of sophistication are that spot markets equalising supply and demand prevail in conventional financial assets markets, with market makers earning the bid-ask spread, whereas profit maximising bookmakers set prices to exploit bettor biases, constrained only by the presence of the smaller number of unbiased bettors. Bookmakers therefore earn the equivalent of a bid-ask spread (known as over-round) and an additional return accruing from their exploitation of bettor biases. One consequence of this tendency of bookmakers to act as price makers is that individual books will expose them to positive risk, as bookmakers assume long and short positions exploiting bettor biases.

A disadvantage of the Levitt approach is that, for his data, bookmakers set the terms of the transaction, and bettors respond with a simple decision whether to bet or not. The most skilful players in this situation may be exercising their talents most effectively in cases where they leave specific games alone, but these decisions are not measured in the Levitt study. A more comprehensive test of the relative sophistication of bookmakers and bettors in assessing the true chances of a range of outcomes would permit bettors to express alternative prices to bookmakers so that we can observe the distribution of revealed preferences of both groups.

We are fortunate that this experiment can now be observed to occur spontaneously over many events in a set of parallel betting markets that has developed in the UK in recent years. The first of these markets is the competitive array of bookmaker fixed odds for specific races available to bettors on the internet. The second is to be found in the person-to-person markets, or betting exchanges, which have revolutionised the betting industry in the UK in recent years (Jones et al., 2006).

Betting exchanges exist to match people who want to bet on a future outcome at a given price with others who are willing to offer that price. The person who bets on the event happening at a given price is the backer. The person who offers the price to an identified sum of money is known as the layer of the bet. The advantage of this form of wagering to the bettor is that, by allowing anyone with access to a betting exchange to offer or lay odds, it serves to reduce margins in the odds compared to the best prices on offer with traditional bookmakers. Exchanges allow clients to act as backers or layers at will, and indeed to back and lay the same event at different times during the course of the market.

The major betting exchanges present clients with the three best odds and stakes for which other members of the exchange are asking or offering. For example, for a horse named Take The Stand to win the Grand National, the best odds on offer might be 14 to 1 to a maximum stake of £80, 13.5 to 1 to a further stake of £100 and 12 to 1 to a further stake of £500. These odds and staking levels may have been offered by one or more other clients who believe that the true odds are longer than they have offered.

An alternative option available to potential backers is to enter the odds at which they would be willing to place a bet together with the stake they are willing to wager at that odds level. This request (say £50 at 15 to 1) will then be shown on the request side of the exchange and may be accommodated by a layer at any time until the event begins. Every runner in the race will similarly have prices offered, prices requested, and explicit bet limits.

The margin between the best odds on offer and the best odds sought tends to narrow as the volume of bets increases so that in popular markets the real margin against the backer (or layer) tends towards the commission levied on winning bets by the exchange. This commission varies up to 5 per cent, depending on the amount of business the client does with the exchange. Clients can monitor price changes, which are frequent, on the Internet website pages of the betting exchange, and execute bets, lay bets, or request a price instantly and interactively.

Bookmakers have also innovated to take advantage of the Internet, and for many races they offer prices competitively, usually for all runners. Bettors can access the array of prices for runners in matrices displayed on sites such as the *Racing Post* or *Oddschecker*. As with the exchanges, bettors place bets instantly and interactively. Unlike the betting exchanges, however, bet limits are generally not stated, and clients cannot lay or request prices.