

Are Bettors Smarter than Bookies?

Leighton Vaughan Williams

Nottingham Business School,

Nottingham Trent University

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Background

Why study betting markets?

- Analysis of information assimilated in markets:
Efficient Markets Hypothesis

Betting Exchanges

- Deregulation & technology have recently shaken up the way people bet, with important efficiency consequences.
- Big growth in **person-to-person** wagers. e.g. Betfair place **500,000** bets per day.
- Incumbent bookmakers claim **unfair competition** from exchanges.
- Alternative view is **innovation**, leading to lower barriers to entry and transactions costs.

Betting Exchanges



Clients are presented with three best odds and stakes that are available.

Example from Betfair:

Odds = 2.55/1 against
Nominal prob = 1/3.55

| BACK | | | | LAY | | |
|-----------------------|------|------|------|------|------|------|
| Air Wave | 3.4 | 3.45 | 3.55 | 3.6 | 3.65 | 3.7 |
| | £368 | £87 | £714 | £84 | £338 | £930 |
| Ratio | 6.6 | 6.8 | 7 | 7.2 | 7.4 | 7.6 |
| | £854 | £623 | £373 | £312 | £350 | £5 |
| Crystal Castle | 6 | 6.2 | 6.4 | 6.8 | 7 | |
| | £303 | £300 | £409 | £195 | £275 | |
| Fayr Jag | 9.2 | 9.4 | 9.6 | 10 | 10.5 | 11 |
| | £295 | £444 | £693 | £586 | £284 | £193 |
| Acclamation | 12 | 12.5 | 13 | 13.5 | 14 | 14.5 |
| | £34 | £115 | £531 | £811 | £315 | £196 |
| Rudis Pet | 16 | 17.5 | 18 | 19 | 19.5 | 20.5 |
| | £200 | £140 | £156 | £249 | £188 | £150 |

BETTING MARKET EFFICIENCY

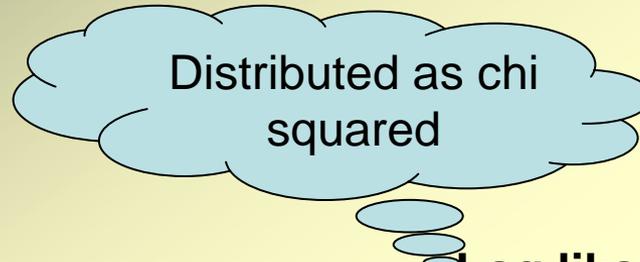
- Long history of exploring betting market inefficiencies, focusing on **FAVOURITE-LONGSHOT bias**:
- Bets placed at shorter odds yield higher expected return than bets at longer odds.
- Bias in exchanges has been demonstrated to be lower in exchanges than bookmaker markets (Smith, Paton & Vaughan Williams 2006)

How well do exchanges predict?

DATA

- Internet **bookmaker** prices for 400 UK horse races in 2002 - only high liquidity markets
- **Mean** bookmaker price selected.
- Equivalent **exchange prices** from Betfair.
- Both sets taken **simultaneously**, early in market

We are interested to see if one set of odds has additional predictive value to the other set



Models

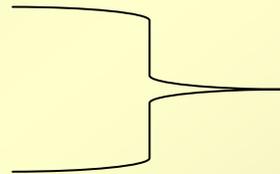
Log likelihood
(Measure of predictive value)

Restricted (no odds information) ←

Baseline:
All we know is the size of field

Bookmaker odds

Exchange odds



We can expect each odds set individually to hold more predictive power than the baseline. Evidence: significantly lower log likelihood value

Bookmaker odds then add exchange odds

Then reverse order of addition

Exchange odds then add bookmaker odds



THIS IS THE CRITICAL STAGE: IT TELLS US WHICH ODDS SET, IF ANY, HOLDS ADDITIONAL PREDICTIVE VALUE TO THE OTHER ODDS SET

RESULTS

NOMINAL ODDS

| Model | Log likelihood |
|--|---------------------------------------|
| Restricted (no odds information) | 1368.309 |
| Bookmaker odds | 1247.120*** (121.189) |
| Exchange odds | 1239.801*** (128.508) |
| Bookmaker odds then add exchange odds | 1235.272*** (11.848) |
| Exchange odds then add bookmaker odds | 1235.272** (4.529) |
| N | 3843 |

Test statistic:
Chi squared

**EXCHANGE ODDS
HAVE MORE
PREDICTIVE POWER**

Expected as favourite-longshot bias is greater in bookmaker data



RESULTS

SHIN ODDS ie nominal odds adjusted for bias
(Shin 1991, 1992, 1993)

| Model | Log likelihood |
|--|--------------------------|
| Restricted (no odds information) | 1368.309 |
| Bookmaker odds | 1246.456*** (121.852) |
| Exchange odds | 1239.962*** (128.347) |
| Bookmaker odds then add exchange odds | 1236.161*** (10.296) |
| Exchange odds then add bookmaker odds | 1236.161* (3.802) |
| N | 3843 |

**EXCHANGE ODDS
CONTINUE TO
HAVE MORE
PREDICTIVE POWER**

***After adjustment for
favourite-longshot
bias***

RESULTS

These results entitle us to conclude that bias adjusted exchange odds are more accurate than bias adjusted bookmaker odds...

...but our datasets may not be independent ...

Therefore difficult to conclude that exchange superiority is due to bettors

Test was repeated for horses with greatest price divergence between the two markets

Exchange superiority for this class of horses significant evidence of bettor evaluation of probabilities, since why would bookies' views be influential in exchange odds but not also be reflected in their own prices?

RESULTS

| Model | Low divergence | High divergence |
|--|------------------------|------------------------|
| Restricted (no odds information) | 737.398 | 302.964 |
| Bookmaker odds | 682.924*** (54.474) | 263.545*** (39.419) |
| Exchange odds | 681.985*** (55.503) | 260.663*** (42.301) |
| Bookmaker odds then add exchange odds | 681.485 (1.438) | 259.667** (3.878) |
| Exchange odds then add bookmaker odds | 681.485 (0.410) | 259.667 (0.996) |
| N | 2852 | 991 |

**EXCHANGE ODDS
HAVE MORE
PREDICTIVE POWER**

*Adopting different values for
Low/High price divergence
does not change the result
materially*

CONCLUSIONS

Exchange prices were found to be better predictors than bookmaker odds

The reason may be that the exchanges have lower transaction costs & more trading options e.g. laying & requesting odds

Lower costs & greater flexibility draw in more serious bettors, insiders & bettors wishing to hedge by laying - all serve to make odds more accurate

We took account of bookmaker influence by analysing horses with greatest odds divergence, with the same results