Resolving the question of why the favourite-longshot bias exists in some betting markets but not in others

David C J McDonald
Johnnie E V Johnson
Ming-Chien Sung

Centre for Risk Research
School of Management
University of Southampton

7th November 2012
Asia Pacific Conference on Gambling & Commercial Gaming Research 2012
Horserace betting markets

• In the simplest kind of betting market for a horserace, the goal is to guess which horse will win the race.

• Each horse has a price for bets, called odds. The amount I bet on a horse is my stake.

• If my chosen horse wins, I get my stake back plus an amount equal to $odds \times stake$.

• Horses that are more likely to win have lower odds. Horses that are less likely to win have higher odds. This makes expected returns ‘fair’.
Bookmaker vs. exchange

• Together account for 94% of UK betting turnover.

• Bookmakers
  – odds set by the bookmaker
  – must manage risk, so higher operating costs

• Exchanges
  – odds set by the bettors
  – no risk management, so lower operating costs
# Competing markets

- **Home**: [Horse Racing](#) » 03 April 2011 » Doncaster » 16:25 »

---

### Best Odds vs All Odds

- **Form**:
  - 144221-: Times Up
  - 753276-: Prompter
  - 503554-: Nanton
  - 2861/12-: Merchant of Dubai
  - 0/7302D-: Moyenne Corniche
  - 697410-: Crackinglass

### Odds

- **Odds Format**: 7/4, 5/2, 11/2, 14/1

### Place Terms

- **(Highlight E/W)**
  - 2 2 2 2 2 2 2 2
  - 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1/1

---

**Win**: £9,390, **Going**: Good

---

**Source**: bookies.com (betgenius)
The favourite-longshot bias

• The *favourite* is the horse considered most likely to win the race. They have a high probability of winning and low odds.

• *Longshots* are horses considered least likely to win. They have a low probability of winning and high odds.

• However, often we find that there is the *favourite-longshot bias (FLB)*. Odds for favourites are higher than what we would expect. Odds for longshots are lower than what we would expect.
The favourite-longshot bias

- This makes betting on longshots relatively unfair.
- For example, on average for each £1 bet, you expect to receive £0.72 back.
- However, for favourites this number is £0.92 and for longshots this number is £0.38.
The favourite-longshot bias

• Why is the FLB important?
  – It violates *rational expectations*
  – It can violate the *efficient market hypothesis*
  – It tells us about the way people make decisions for real
  – In particular, it tells us about how people make *risky decisions*
FLB explanations – demand-side

• (1) Bettors love to take risks
  – bettors prefer to bet on longshots because potential returns are higher

• (2) Bettors are not good at estimating small probabilities
  – bettors think low probability events are more likely to occur than they actually are

FLB explanations – supply-side

• (1) *Transaction costs*
  – higher costs discourage informed betting (which eliminates the FLB)

• (2) *Bookmakers’ defensive pricing policy*
  – insider trading more associated with longshot betting so bookmakers reduce odds on longshots

Research questions

- Is there FLB in exchange markets?
- If not, is it because of low transaction costs?
- Is there FLB in bookmaker markets?
- If so, is it because of higher costs or pricing policy (or both)?
Data and method

• 6,058 horseraces in the UK and Ireland, August 2009 – August 2010.

• Bookmaker (mean of 9 bookmakers) and exchange (Betfair) odds at different times in the market.

• Measure quantitatively the level of FLB.
Trading volume

- Pseudo-$R^2$ (Exchange)
- Pseudo-$R^2$ (Bookmaker)
- Volume

![Graph showing Pseudo-$R^2$ for Exchange and Bookmaker, along with Volume over time before race start (mins)].
Results - FLB over time

FLB $\beta$

- Exchange
- Bookmaker
- FLB $\beta$ at race start

95% confidence intervals

Time before race start (mins)

240

120

0
# Transaction costs

<table>
<thead>
<tr>
<th>Time until race start</th>
<th>Exchange FLB $\beta$</th>
<th>Costs $B_\beta$</th>
<th>Bookmakers FLB $\beta$</th>
<th>Costs $B_h$</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>1.080</td>
<td>0.113</td>
<td>1.215</td>
<td>0.198</td>
</tr>
<tr>
<td>180</td>
<td>1.072</td>
<td>0.101</td>
<td>1.216</td>
<td>0.207</td>
</tr>
<tr>
<td>120</td>
<td>1.056</td>
<td>0.079</td>
<td>1.216</td>
<td>0.214</td>
</tr>
<tr>
<td>60</td>
<td>1.052</td>
<td>0.070</td>
<td>1.216</td>
<td>0.217</td>
</tr>
<tr>
<td>30</td>
<td>1.047</td>
<td>0.064</td>
<td>1.220</td>
<td>0.217</td>
</tr>
<tr>
<td>15</td>
<td>1.042</td>
<td>0.064</td>
<td>1.224</td>
<td>0.200</td>
</tr>
<tr>
<td>10</td>
<td>1.036</td>
<td>0.063</td>
<td>1.226</td>
<td>0.190</td>
</tr>
<tr>
<td>5</td>
<td>1.028</td>
<td>0.058</td>
<td>1.214</td>
<td>0.180</td>
</tr>
<tr>
<td>START</td>
<td>1.014</td>
<td>0.057</td>
<td>1.206</td>
<td>0.181</td>
</tr>
<tr>
<td>Corr($\beta,B$)</td>
<td>0.9181*</td>
<td></td>
<td>0.3935</td>
<td></td>
</tr>
</tbody>
</table>

*: significant at the 1% level (2-tailed test).
Discussion - exchanges

• Significant FLB in early stages – however, costs are higher also.

• FLB is eliminated over time - suggests that exchanges are dominated by informed bettors who bet in a manner which eliminates any FLB which does exist.

• This is possible because costs are low in the later stages of the market.
Discussion - bookmakers

- Higher costs result in less competitive prices, restricting informed betting.
- FLB present *at all times* throughout the market.
- However, level of FLB not correlated with transaction costs – suggests that transaction costs alone are not enough to explain bookmaker FLB.
- Bookmaker pricing policy is also an important factor (model is in the paper).
Conclusion

• FLB is now mainly a market (supply-side) phenomenon in the UK.

• Transaction costs are important, but only in the sense that prohibitive costs restrict informed traders.

• Bookmakers’ pricing policy is also important, but not necessarily because of insider traders.
Thank you

• Any questions?
• d.mcdonald@soton.ac.uk