

# The Compleat Horseplayer

Expert Play in Pari-Mutuel Markets  
David Edelman

# Racing – the thinking (wo)man's sport

- Often (misleadingly) grouped with Roulette, slots, etc

- Reason and Information Processing are Key



# How to start?

Work backwards:

If I think chances of Belle Dame winning are 25% and the expected dividend is €5.00 (for a €1.00 bet), should I bet? If so, how much?

Should I bet on other horses also? Suppose Bette Noir is paying €10.00 and is assessed as a 10% chance?

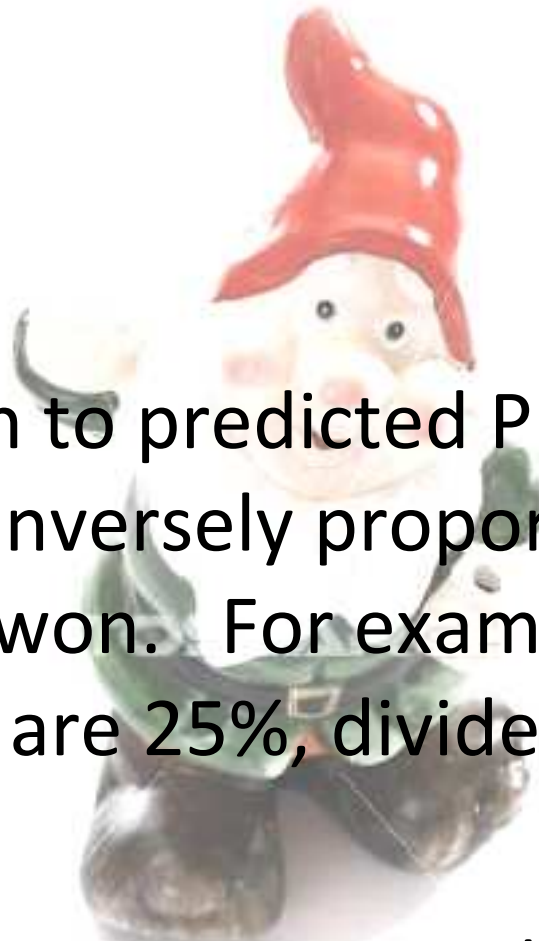


# Small Bettor: Kelly

Single Bet:

Bet in proportion to predicted Profit Margin and current Bank, inversely proportional to amount to be won. For example, if Bank is €100, chances are 25%, dividend is 5.00, bet

$$€100 \times (0.25(5.00) - 1) / 4.00 = €6.25$$



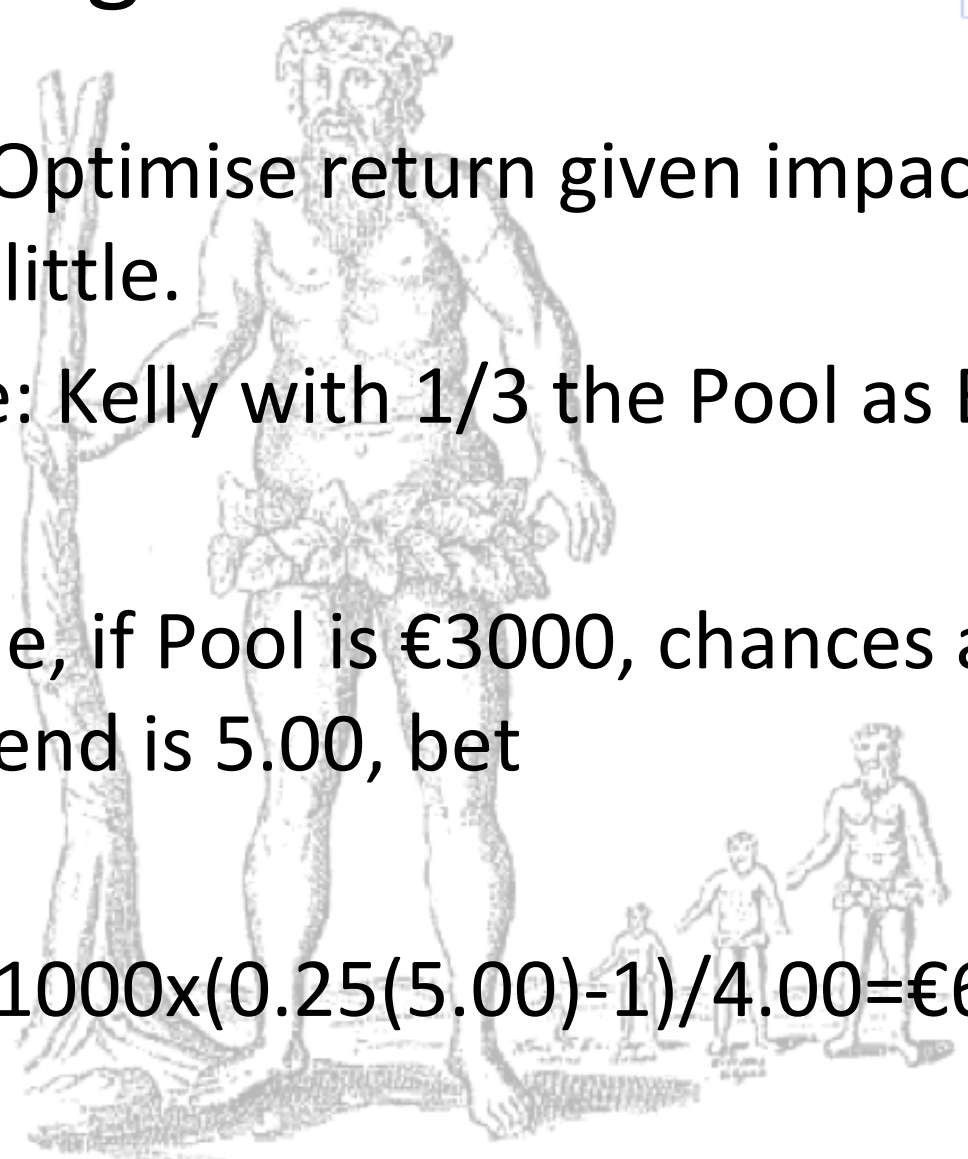
# Large Bettor: Isaacs

Single Bet: Optimise return given impact, then cut back a little.

Approximate: Kelly with 1/3 the Pool as Bank

For example, if Pool is €3000, chances are 25%, dividend is 5.00, bet

$$€1000 \times (0.25(5.00) - 1) / 4.00 = €62.50$$



# How to assess chances?

- Technical Trading (Odds movement, etc.)
- Fundamental Trading (Horse, Jockey history...)
- Combined Technical and Fundamental



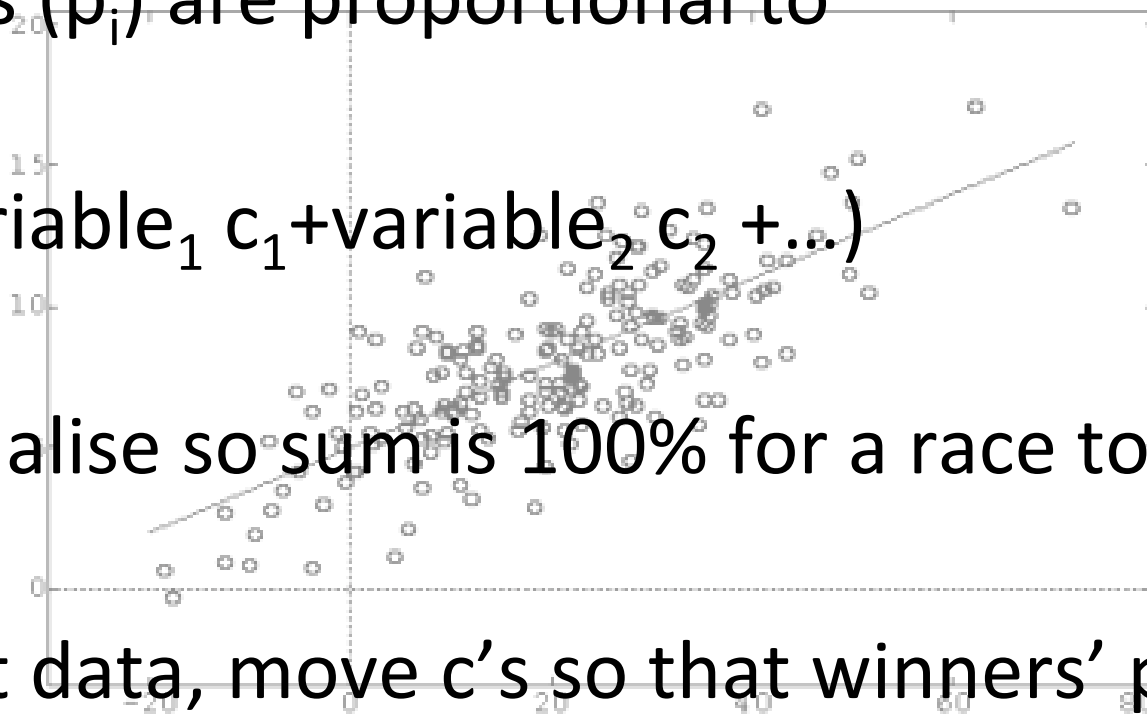
# Multinomial Logit Regression Model

Chances ( $p_i$ ) are proportional to

$\exp(\text{variable}_1 c_1 + \text{variable}_2 c_2 + \dots)$

Renormalise so sum is 100% for a race to get  $p$ 's

For past data, move  $c$ 's so that winners' probs come out as large as possible (in a multiplicative sense) – *Maximum Likelihood*



# Exotics

Combinations of horses finishing is harder to visualise and predict, hence the casual bettor has more trouble, and hence the expert has better chances.

For example

Exacta/Straight Forecast/Jumelégnant

A 10% edge on each of 2 horses can mean an edge of nearly 20% on such a bet



# Hidden Issues

- Data collection, organisation, and flow
- Systems design
- Efficiently combining bets on a ticket
- Placing the Bets
- Risk Management

# Experts in the Market

- Diversity of opinion increases turnover generally
- If Experts win 12% and are 10% of the pool, effective 'takeout' is only increased by about 1% - has negligible effect on demand among casual players

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