## AUSTRALIA

### Top ranking horses ✓

| Number | Horse Name | Odds @ 6pm Mon |
|--------|-----------|---------------:|
| 4 | Sea Moon | $ 13.10 |
| 8 | Dandino | $ 12.00 |
| 10 | Fawkner | $ 16.10 |
| 22 | Dear Demi | $ 13.50 |
| 16 | Royal Empire | $ 22.50 |
| 6 | Fiorente | $ 7.20 |

Source: Macquarie Research, Race TAB, November 2013

### Bottom ranking donkeys ✗

| Number | Horse Name | Odds @ 6pm Mon |
|--------|-----------|---------------:|
| 3 | Red Cadeaux | $ 39.00 |
| 11 | Mourayan | $ 59.00 |
| 9 | Ethiopia | $ 50.10 |
| 14 | Masked Marvel | $ 38.00 |
| 20 | Ibicenco | $ 62.70 |
| 1 | Dunaden | $ 40.80 |

Source: Macquarie Research, Race TAB, November 2013

### The field is very evenly spread in 2013



Source: Macquarie Research, Race TAB, November 2013
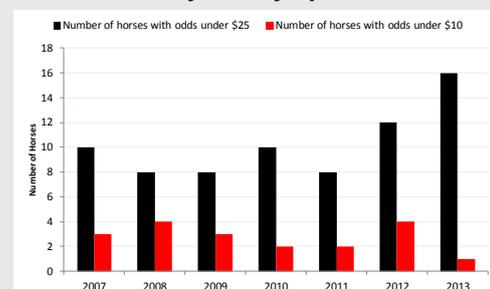
4 November 2013
Macquarie Securities (Australia) Limited

# Melbourne Cup Quant Style
## Once in a Sea Moon?

### Event

- It's that time of year again where we shift our attention from stocks to stallions to come up with our top picks for the Melbourne Cup. The Macquarie Quant team transform racing stats into traditional quant signals to form a model that ranks the runners in the race.

### Impact

- Horses at the top of the model include Sea Moon, Dandino, Fawkner, Dear Demi, Royal Empire and Fiorente.

- Last year we and many punters were taken by surprise as Green Moon thundered home to take the cup. We have spent the last 12 months grappling with what went wrong. Did the pressure get to us? Should we have factored in the extra weight Dunaden was carrying? Or was it simply time for a reality check? Despite heavy ridicule at social outings, we have committed to putting our reputation on the line again and attempt to pick a winner for the big race.

- Each year we look to the market to guide us and make slight adjustments to our model. Riskier stocks have had stronger returns of late as the global economy recovers. 2013 has also seen a flurry of IPOs as the market appetite for new equity improved. **We therefore introduce a tilt favouring the new equity; i.e. horses that have not raced in the Cup before**.

- At time of publishing there was only 1 horse paying under $10 (see chart on left). There were also 16 horses paying less than $25 which is significantly more than usual. The implication here is that the field is quite spread and there are good payoffs for skilful horse pickers.

- Our favoured approach to betting remains the same. Firstly a bet on the top horse and then going for the trifecta using the top quartile of horses. This best mirrors the way we (quants) approach equity investing. The payoff to our strategy since 2007 is shown inside.

- The best way to implement the trifecta strategy is via a 'box trifecta' on the top 6 horses in the model (see your local bookie for a description of this bet).

### Analysis

#### Quant factors used in the model

| Quant Signal | Factor | Quant Signal | Quant Signal |
|--------------|--------|--------------|--------------|
| Sentiment | *Odds* | Hit Rate | *Win %* |
| Momentum | *Odds movement* | Other | *Age* |
| | *Form* | | *Barrier* |
| Value | *Avg prize money per race* | | *Australian Form* |
| Quality | *Odds dispersion* | | *Previous Cups* |

Source: Macquarie Research, November 2013

- We must stress that this model is not intended to be taken seriously. Last year was a timely reminder that it is still gambling! The Quant team has limited knowledge of horse racing and the purpose of this article is primarily fun

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## Analysis

- The table below shows the breakdown for each horse on each of the different factors we use in the model.

### Fig 1    Detailed rankings

| Rank | # | Horse Name | OS | Age | Barrier | Odds | Prize Money | Form | Win % | Odds | Odds Movement | Odds Dispersion | Age | Barrier | 1st Cup? | Form | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *MAX SCORE* | | | | | *5* | *17.5* | *12.5* | *20* | *15* | *7.5* | *5* | *5* | *2.5* | *10* | *100* |
| 1 | 4 | Sea Moon | GB | 6 | 7 | $ 13.10 | 3.8 | 13.1 | 12.5 | 20 | 11.3 | 7.5 | 2.5 | 5 | 3 | 10 | **88.1** |
| 2 | 8 | Dandino | GB | 7 | 4 | $ 12.00 | 3.8 | 17.5 | 9.4 | 20 | 15.0 | 7.5 | 0.0 | 5 | 3 | 5 | **85.6** |
| 3 | 10 | Fawkner | | 6 | 8 | $ 16.10 | 5.0 | 13.1 | 12.5 | 15 | 11.3 | 7.5 | 2.5 | 5 | 3 | 10 | **84.4** |
| 4 | 22 | Dear Demi | | 4 | 16 | $ 13.50 | 3.8 | 13.1 | 6.3 | 20 | 15.0 | 5.6 | 5.0 | 0 | 3 | 5 | **76.3** |
| 5 | 16 | Royal Empire | IRE | 5 | 11 | $ 22.50 | 1.3 | 17.5 | 12.5 | 15 | 11.3 | 5.6 | 5.0 | 5 | 3 | 0 | **75.6** |
| 6 | 6 | Fiorente | IRE | 6 | 5 | $  7.20 | 5.0 | 13.1 | 6.3 | 20 | 3.8 | 7.5 | 2.5 | 5 | 0 | 10 | **73.1** |
| 7 | 5 | Brown Panther | GB | 6 | 6 | $ 16.80 | 1.3 | 13.1 | 12.5 | 15 | 15.0 | 3.8 | 2.5 | 5 | 3 | 0 | **70.6** |
| 8 | 17 | Voleuse De Coeurs | IRE | 5 | 21 | $ 19.90 | 1.3 | 17.5 | 12.5 | 15 | 7.5 | 7.5 | 5.0 | 0 | 3 | 0 | **68.8** |
| 9 | 12 | Seville | GER | 6 | 9 | $ 20.80 | 3.8 | 8.8 | 3.1 | 15 | 11.3 | 5.6 | 2.5 | 5 | 3 | 10 | **67.5** |
| 9 | 13 | Super Cool | | 4 | 13 | $ 24.50 | 5.0 | 8.8 | 9.4 | 10 | 15.0 | 1.9 | 5.0 | 5 | 3 | 5 | **67.5** |
| 11 | 24 | Ruscello | IRE | 5 | 24 | $ 58.40 | 1.3 | 17.5 | 6.3 | 5 | 15.0 | 3.8 | 5.0 | 0 | 3 | 10 | **66.3** |
| 12 | 18 | Hawkspur | | 4 | 18 | $ 14.30 | 2.5 | 8.8 | 9.4 | 20 | 3.8 | 5.6 | 5.0 | 0 | 3 | 3 | **60.0** |
| 13 | 21 | Verema | FR | 5 | 3 | $  23.7 | 2.5 | 17.5 | 9.4 | 10 | 3.8 | 3.8 | 5.0 | 5 | 3 | 0 | **59.4** |
| 14 | 23 | Tres Blue | IRE | 4 | 20 | $ 25.70 | 2.5 | 17.5 | 12.5 | 10 | 3.8 | 3.8 | 5.0 | 0 | 3 | 0 | **57.5** |
| 15 | 7 | Foreteller | GB | 7 | 15 | $ 23.30 | 2.5 | 13.1 | 6.3 | 10 | 11.3 | 5.6 | 0.0 | 0 | 3 | 5 | **56.3** |
| 16 | 19 | Simenon | IRE | 7 | 12 | $ 23.90 | 1.3 | 13.1 | 3.1 | 10 | 7.5 | 5.6 | 0.0 | 5 | 3 | 5 | **53.1** |
| 17 | 15 | Mount Athos | IRE | 7 | 22 | $ 15.00 | 1.3 | 13.1 | 9.4 | 20 | 3.8 | 3.8 | 0.0 | 0 | 0 | 0 | **51.3** |
| 18 | 2 | Green Moon | IRE | 7 | 10 | $ 22.40 | 5.0 | 4.4 | 9.4 | 15 | 7.5 | 1.9 | 0.0 | 5 | 0 | 3 | **50.6** |
| 19 | 1 | Dunaden | FR | 8 | 1 | $ 40.80 | 5.0 | 13.1 | 6.3 | 5 | 7.5 | 7.5 | 0.0 | 5 | 0 | 0 | **49.4** |
| 20 | 14 | Masked Marvel | GB | 6 | 2 | $ 38.00 | 2.5 | 8.8 | 6.3 | 10 | 3.8 | 1.9 | 2.5 | 5 | 3 | 5 | **48.1** |
| 20 | 20 | Ibicenco | GER | 6 | 17 | $ 62.70 | 2.5 | 13.1 | 3.1 | 5 | 7.5 | 1.9 | 2.5 | 0 | 3 | 10 | **48.1** |
| 22 | 9 | Ethiopia | | 5 | 14 | $ 50.10 | 3.8 | 4.4 | 3.1 | 5 | 15.0 | 3.8 | 5.0 | 5 | 0 | 3 | **47.5** |
| 23 | 11 | Mourayan | IRE | 8 | 19 | $ 59.00 | 3.8 | 8.8 | 3.1 | 5 | 7.5 | 1.9 | 0.0 | 0 | 0 | 3 | **32.5** |
| 24 | 3 | Red Cadeaux | GB | 8 | 23 | $ 39.00 | 5.0 | 4.4 | 3.1 | 5 | 11.3 | 1.9 | 0.0 | 0 | 0 | 0 | **30.6** |

Source: Macquarie Research, Race TAB, November 2013

- **Sentiment** was measured by the last available odds before publication as this is representative of the mood of the market. Horses with strong sentiment include Fiorente, Sea Moon, Dandino, Mount Athos, Hawkspur and Dear Demi.

- **Momentum** was measured by movement in the odds from one month prior until the latest available odds. Horses with strong momentum include Dear Demi, Brown Panther and Super Cool.

- **Yield** was measured by average prize money per race as this represents the return of each horse. Leaders in this category were Fawkner, Super Cool, Green Moon, Dunaden and Red Cadeuax.

- **Hit rate** was measured by the horses winning percentage and by the form over the last five races for the horse. Horses with a good hit rate include Sea Moon, Fawkner, Royal Empire, Brown Panther and Voleuse De Coeurs and Tres Blue.

- **Quality/Risk** was measured by odds dispersion amongst bookmakers to indicate the variance of the perceived value of the horses. Horses with low odds dispersion are Sea Moon, Dandino, Fawkner, Fiorente and Voleuse De Coeurs.

- **Australian form** takes account for the large number of foreign horses in the field. If the horse has successfully raced, won or placed in Australia it receives a higher weighting (depending on result).

- **1st Cup** Looks at whether or not the horse has run in the last few Melbourne Cups. Here we are hoping new entrants will perform favourably and thus get a boost.

- We also took into account factors that made up previous winners of the Melbourne Cup. Starting barrier can give the horse an obvious advantage.

- According to historical analysis, winning horses are almost twice as likely to have started in one of the first 14 barriers.

- The age of the horse can also make a difference. Almost half of winners since 1861 have been aged four or five.

**Historic Profitability of the model**

- The Macquarie Quant team first ran the Melbourne cup model in 2007. Taking a box trifecta on the Top 6 horses in the model in 2007 paid handsomely.

- In 2008, we warned to be wary of the 'Black Swan' and unfortunately our model yielded little success. At $41, Viewed came from nowhere to win the cup. Most of the race favourites were left behind.

- In 2009, Shocking was at the top of our model and took out the race.

- 2010 saw Americain bring home the bacon. Whilst the horse was not our top pick the box trifecta paid off again with odds of roughly $250-$300 depending on your location.

- 2011 left us on the edge of our seats with Dunaden winning only by the slightest of margins paying $9.10. Red Cadeaux came from nowhere and was actually ranked near the bottom of our model.

- We were taken by a "Once in a Green Moon" event in 2012 with Green Moon taking out the race and rank outsider Jakkalberry making up the top 3.

- Our strategy involves a bet on the top pick in the model and also betting on the top quartile of horses for the trifecta. This mirrors the way we (quants) approach equity investing.

- The best way to implement the trifecta bet is via a 'box trifecta' on the top 6 horses in the model (see your local bookie for a description of this bet). The top six horses are shown on the previous page.

- Below we shows the profitability of betting a combined $1000 on 2 bets in each of the years we've run the model:

  ⇒ The top-ranked horse for a win

  ⇒ A box-trifecta on the top six horses in the model.

**Fig 2   Cumulative Profit on an annual $1000 investment in Win/Box Trifecta Quant Strategy**
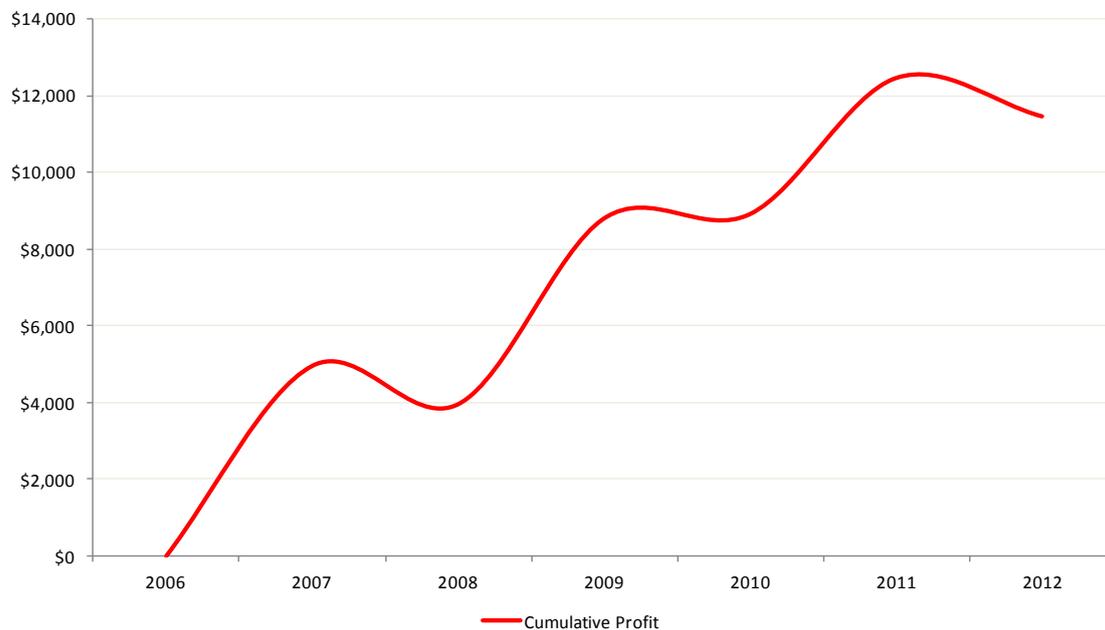


Source: Macquarie Research, Race TAB, November 2013

- We must stress again however that this model is not intended to be taken seriously.  The Quant team has very limited knowledge of horse racing and the purpose of this article is primarily fun.

- And… Past performance is no indication of future returns. Happy punting!

**Important disclosures:**

### Recommendation definitions

**Macquarie - Australia/New Zealand**
Outperform – return >3% in excess of benchmark return
Neutral – return within 3% of benchmark return
Underperform – return >3% below benchmark return

Benchmark return is determined by long term nominal GDP growth plus 12 month forward market dividend yield

**Macquarie – Asia/Europe**
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

**Macquarie First South - South Africa**
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

**Macquarie - Canada**
Outperform – return >5% in excess of benchmark return
Neutral – return within 5% of benchmark return
Underperform – return >5% below benchmark return

**Macquarie - USA**
Outperform (Buy) – return >5% in excess of Russell 3000 index return
Neutral (Hold) – return within 5% of Russell 3000 index return
Underperform (Sell)– return >5% below Russell 3000 index return

### Volatility index definition*

This is calculated from the volatility of historical price movements.

**Very high–highest risk** – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.

**High** – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.

**Medium** – stock should be expected to move up or down at least 30–40% in a year.

**Low–medium** – stock should be expected to move up or down at least 25–30% in a year.

**Low** – stock should be expected to move up or down at least 15–25% in a year.
* Applicable to Asia/Australian/NZ/Canada stocks only

**Recommendations** – 12 months
**Note:** Quant recommendations may differ from Fundamental Analyst recommendations

### Financial definitions

All "Adjusted" data items have had the following adjustments made:
Added back:  goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense
Excluded:  non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

**EPS** = adjusted net profit / efpowa*
**ROA** = adjusted ebit / average total assets
**ROA Banks/Insurance** = adjusted net profit /average total assets
**ROE** = adjusted net profit / average shareholders funds
**Gross cashflow** = adjusted net profit + depreciation
*equivalent fully paid ordinary weighted average number of shares

All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).

### Recommendation proportions – For quarter ending 30 September 2013

|  | AU/NZ | Asia | RSA | USA | CA | EUR |  |
|---|---|---|---|---|---|---|---|
| Outperform | 50.56% | 56.87% | 48.78% | 41.00% | 61.75% | 47.10% | (for US coverage by MCUSA, 5.85% of stocks followed are investment banking clients) |
| Neutral | 38.95% | 25.18% | 42.68% | 54.40% | 34.43% | 30.89% | (for US coverage by MCUSA, 3.90% of stocks followed are investment banking clients) |
| Underperform | 10.49% | 17.94% | 8.54% | 4.60% | 3.83% | 22.01% | (for US coverage by MCUSA, 0.00% of stocks followed are investment banking clients) |

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