## AUSTRALIA

### Top ranking horses ✓

| Number | Horse Name | Odds @ 6pm Mon |
|--------|-----------|----------------|
| 1 | Dunaden | $7.50 |
| 24 | Kelinni | $21.00 |
| 15 | Maluckyday | $14.00 |
| 20 | Lights of Heaven | $18.00 |
| 2 | Americain | $6.00 |
| 12 | Galileo's Choice | $16.00 |

Source: Macquarie Research, Race TAB, November 2012

### Bottom ranking donkeys ✘

| Number | Horse Name | Odds @ 6pm Mon |
|--------|-----------|----------------|
| 22 | Unusual Suspect | $251.00 |
| 19 | Tac de Boistron | $51.00 |
| 5 | Winchester | $51.00 |
| 23 | Zabeelionaire | $51.00 |
| 21 | Precedence | $101.00 |
| 18 | Niwot | $51.00 |

Source: Macquarie Research, Race TAB, November 2012

### Cumulative Profit on $1000 investment in Win/Box Trifecta Quant Strategy
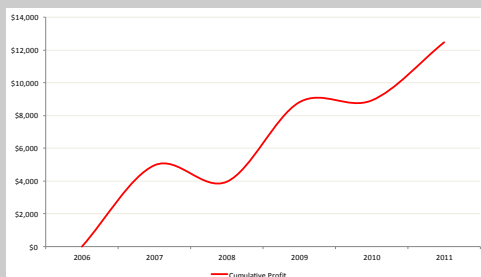


Source: Macquarie Research, Race TAB, November 2011

5 November 2012
Macquarie Securities (Australia) Limited

# Melbourne Cup Quant Style
## The yearling that yielded

### Event

- It's that time of year again where we move our attention from stock codes to saddlecloths and come up with our top picks for the race that stops the nation. We transform racing stats into traditional quant signals to form a model that ranks the Melbourne Cup field.

- Last year we made it three successful years in a row as Dunaden (our top-ranked horse) edged out Red Cadeaux by the closest of margins. Can we get four in a row? As always, we turn to the market for some guidance.

### Impact

- Horses at the top of the model include Dunaden, Kelinni, Maluckyday, Lights of Heaven, Americain, and Galileo's Choice.

- Our model is tweaked each year based on market dynamics. Last year it was the high A$ attracting a legion of foreign horses. The concentration of foreign horses remains high so we leave our Australian form factor in the model.

- This year the equity market has flocked to yield with investors seeking certainty of returns in an uncertain market. Looking at the yield calculated from the odds doesn't make sense as this would tilt towards the horses that the market perceives to have the least chance. Instead, as we suggest for equities, we look for a "quality yield" measure and calculate a yield for the horse's owner. Average prize money per race.

- Dunaden comes out on top with Kelinni, Maluckyday and Lights of Heaven close behind. Our favoured approach to betting is a two-pronged approach. 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 on the left.

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

- We must stress that this model is not intended to be taken seriously. Despite being branded as horse whisperers, the Quant team has very limited knowledge of horse racing and the purpose of this article is primarily fun.

### Analysis

#### Quant factors used in the model

| Quant Signal | Factor | Weight |
|--------------|--------|--------|
| Sentiment | Odds | 20% |
| Momentum | Odds movement | 17.5% |
| Value/Yield | Avg prize money per race | 10% |
| Hit Rate | Win % | 12.5% |
| | Form | 17.5% |
| Other | Age | 2.5% |
| | Barrier | 5% |
| | Australian Form | 10% |
| Quality | Odds dispersion | 5% |
| | **TOTAL** | **100%** |

Source: Macquarie Research, November 2012.

## 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 | YIELD Prize Money | HIT RATE Form | Win % | SENTIMENT Odds | MOMENTUM Odds Movement | RISK Odds Dispersion | OTHER Age | Barrier | Aus Form | Total Score |
|------|---|-----------|-----|-----|---------|------|------------|------|-------|-----------|----------------|----------------|-----|---------|----------|-------------|
| | | *MAX SCORE* | | | | | *10* | *17.5* | *12.5* | *20* | *17.5* | *5* | *2.5* | *5* | *10* | *100* |
| 1 | 1 | Dunaden | FR | 7 | 16 | $ 7.5 | 10.0 | 17.5 | 9.4 | 20 | 17.5 | 5.0 | 0.0 | 0 | 10 | **89.4** |
| 2 | 24 | Kelinni | IRE | 5 | 10 | $ 21.00 | 5.0 | 17.5 | 12.5 | 15 | 17.5 | 2.5 | 2.5 | 5 | 10 | **87.5** |
| 3 | 15 | Maluckyday | NZ | 6 | 9 | $ 14.00 | 10.0 | 4.4 | 9.4 | 20 | 17.5 | 3.8 | 1.3 | 5 | 5 | **76.3** |
| 4 | 20 | Lights of Heaven | NZ | 5 | 17 | $ 18.00 | 10.0 | 13.1 | 9.4 | 15 | 17.5 | 3.8 | 2.5 | 0 | 5 | **76.3** |
| 5 | 2 | Americain | USA | 8 | 12 | $ 6.00 | 10.0 | 8.8 | 9.4 | 20 | 17.5 | 2.5 | 0.0 | 5 | 3 | **75.6** |
| 6 | 12 | Galileo's Choice | IRE | 7 | 11 | $ 16.00 | 2.5 | 17.5 | 12.5 | 20 | 13.1 | 5.0 | 0.0 | 5 | 0 | **75.6** |
| 7 | 14 | Green Moon | IRE | 6 | 5 | $ 17.00 | 7.5 | 17.5 | 9.4 | 15 | 4.4 | 5.0 | 1.3 | 5 | 10 | **75.0** |
| 8 | 8 | Mount Athos | IRE | 6 | 8 | $ 8.00 | 2.5 | 17.5 | 9.4 | 20 | 13.1 | 5.0 | 1.3 | 5 | 0 | **73.8** |
| 9 | 4 | Red Cadeaux | GB | 7 | 18 | $ 8.50 | 7.5 | 17.5 | 6.3 | 20 | 17.5 | 3.8 | 0.0 | 0 | 0 | **72.5** |
| 10 | 13 | Glencadam Gold | IRE | 5 | 7 | $ 41.00 | 5.0 | 17.5 | 12.5 | 10 | 4.4 | 5.0 | 2.5 | 5 | 10 | **71.9** |
| 11 | 17 | My Quest for Peace | IRE | 5 | 1 | $ 19.00 | 5.0 | 13.1 | 12.5 | 15 | 13.1 | 2.5 | 2.5 | 5 | 3 | **71.3** |
| 12 | 16 | Mourayan | IRE | 7 | 3 | $ 23.00 | 7.5 | 13.1 | 3.1 | 15 | 13.1 | 3.8 | 0.0 | 5 | 10 | **70.6** |
| 13 | 7 | Cavalryman | GB | 7 | 6 | $ 31.00 | 10.0 | 17.5 | 6.3 | 10 | 13.1 | 3.8 | 0.0 | 5 | 0 | **65.6** |
| 14 | 10 | Ethiopia | | 4 | 14 | $ 23.00 | 10.0 | 8.8 | 3.1 | 15 | 8.8 | 3.8 | 2.5 | 5 | 3 | **59.4** |
| 15 | 9 | Sanagas | GER | 7 | 4 | $ 31.00 | 2.5 | 4.4 | 12.5 | 10 | 13.1 | 2.5 | 0.0 | 5 | 3 | **52.5** |
| 16 | 6 | Voila Ici | IRE | 8 | 13 | $151.00 | 7.5 | 8.8 | 12.5 | 5 | 4.4 | 1.3 | 0.0 | 5 | 5 | **49.4** |
| 17 | 11 | Fiorente | IRE | 5 | 2 | $ 35.00 | 2.5 | 8.8 | 6.3 | 10 | 8.8 | 2.5 | 2.5 | 5 | 0 | **46.3** |
| 18 | 3 | Jakkalberry | IRE | 7 | 19 | $ 61.00 | 7.5 | 13.1 | 9.4 | 5 | 4.4 | 2.5 | 0.0 | 0 | 3 | **44.4** |
| 19 | 18 | Niwot | | 8 | 15 | $ 51.00 | 5.0 | 8.8 | 6.3 | 10 | 8.8 | 1.3 | 0.0 | 0 | 3 | **42.5** |
| 20 | 21 | Precedence | NZ | 7 | 20 | $101.00 | 5.0 | 8.8 | 3.1 | 5 | 8.8 | 1.3 | 0.0 | 0 | 10 | **41.9** |
| 21 | 23 | Zabeelionaire | NZ | 4 | 24 | $ 51.00 | 5.0 | 4.4 | 3.1 | 10 | 8.8 | 5.0 | 2.5 | 0 | 3 | **41.3** |
| 22 | 5 | Winchester | USA | 8 | 22 | $ 51.00 | 7.5 | 4.4 | 6.3 | 10 | 8.8 | 1.3 | 0.0 | 0 | 3 | **40.6** |
| 23 | 19 | Tac de Boistron | FR | 6 | 21 | $ 51.00 | 2.5 | 13.1 | 3.1 | 10 | 4.4 | 1.3 | 1.3 | 0 | 3 | **38.1** |
| 24 | 22 | Unusual Suspect | USA | 9 | 23 | $251.00 | 2.5 | 4.4 | 3.1 | 5 | 4.4 | 1.3 | 0.0 | 0 | 3 | **23.1** |

Source: Macquarie Research, Race TAB, November 2012

▪ **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 Americain, Dunaden, and Mount Athos.

▪ **Momentum** was measured by movement in the odds from opening prices until the latest available odds. Horses with strong momentum include Americain, Kelinni, Dunaden, Red Cadeaux, Lights of Heaven and Maluckyday.

▪ **Yield** was measured by average prize money per race as this represents the return of each horse. Leaders in this category were Dunaden, Americain, Ethiopia, Cavalryman, Maluckyday and Lights of Heaven.

▪ **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 Americain, Dunaden, Jakkalberry, Lights of Heaven, and Voila Ici.

▪ **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 Galileo's Choice, Dunaden, Mount Athos, Ethiopia, Sanagas and Americain.

▪ **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).

▪ 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. This year the field is made up of much older horses.

▪ A horse's weight handicap showed no correlation and was therefore left out of the model.

**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.

- This year the model has thrown out some interesting names. Our favoured strategy still 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 show 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 anual $1000 investment in Win/Box Trifecta Quant Strategy**
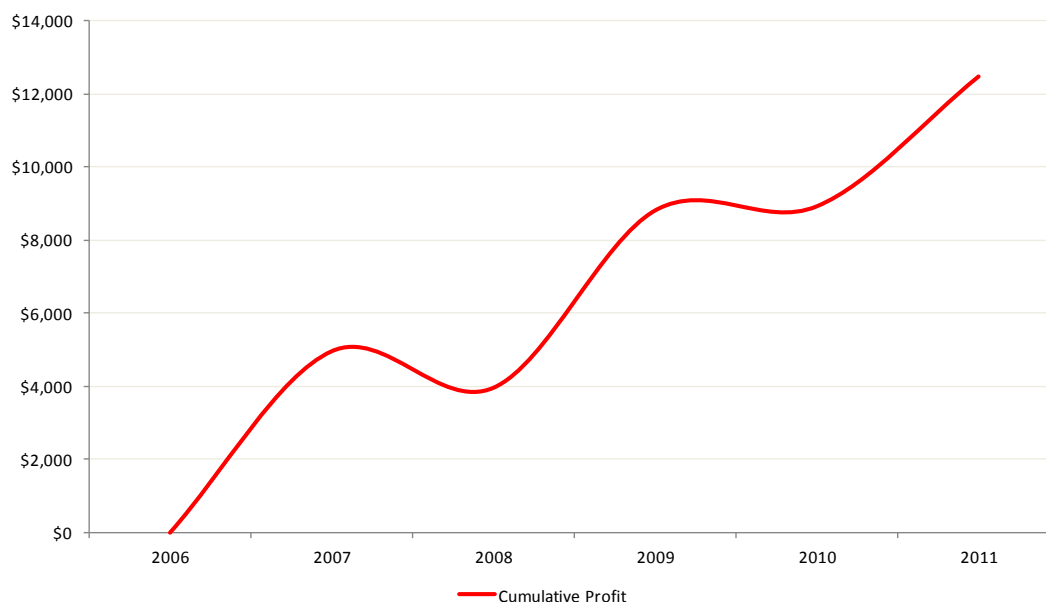


Source: Macquarie Research, Race TAB, November 2012

- 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 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 Sept 2012

|  | AU/NZ | Asia | RSA | USA | CA | EUR |  |
|---|---|---|---|---|---|---|---|
| Outperform | 50.00% | 56.85% | 61.54% | 41.38% | 63.19% | 44.15% | (for US coverage by MCUSA, 7.35% of stocks covered are investment banking clients) |
| Neutral | 36.62% | 25.14% | 27.69% | 52.13% | 30.77% | 30.57% | (for US coverage by MCUSA, 9.31% of stocks covered are investment banking clients) |
| Underperform | 13.38% | 18.02% | 10.77% | 6.49% | 6.04% | 25.28% | (for US coverage by MCUSA, 0.00% of stocks covered are investment banking clients) |

### Company Specific Disclosures: