5 November 2018   Australia

QUANTITATIVE

Top Ranking Horses ✓

Number	Horse Name	Odds @ 5pm Mon
1	Best Solution	$14.70
10	Avilius	$12.50
9	Marmelo	$12.10
22	Youngstar	$12.00
3	Magic Circle	$ 8.10
17	A Prince Of Arran	$20.40

Bottom Ranking Donkeys ✗

Number	Horse Name	Odds @ 5pm Mon
20	Zacada	$70.90
18	Nakeeta	$62.30
15	Vengeur Masque	$67.90
12	Auvray	$57.30
4	Chestnut Coat	$40.00
7	Who Shot Thebarman	$22.30

Source: Macquarie Research, Race TAB, November 2018

This publication has been prepared by Macquarie's Quantitative Strategy team and is not a product of the Macquarie Research Department.

Melbourne Cup Quant Style
Stable-ity the Best Solution

- It's time again for the Macquarie Quant team to shift our attention from the ASX to the race track. We transform racing stats into traditional quant signals to build a model that ranks the runners in the 2018 Melbourne Cup.

- Horses at the top of the model are **Best Solution, Avilius, Marmelo, Youngstar, Magic Circle and A Prince Of Arran.**

Saddle up & Strap in: Defensive but wary of Tail Risk

- Each year we look to the market to guide us, making slight tweaks to our model to boost (hopefully) our chance of success. October was a volatile month for investors with large caps and defensives the best performing segments of the market. With US midterm elections also overlapping this year's Melbourne Cup there is little chance volatility will subside.

- With this in mind we favour the **lower risk, shorter priced runners** in 2018. Just like investors look for management who have navigated difficult markets before, we also thought it prudent to favour horses that have performed in conditions similar to those on race day. We look for horses that have competed over the distance and had a recent win in Australia. Weather looks like it may also play a role and we appropriately include a metric here.

- **Watch out for tail risk:** With markets still near record highs, tail risk hedging is front of mind. In 2015 when we saw a similar spike in market volatility, Prince of Penzance shocked the field winning the Cup at long odds. A small bet on some outsiders may be prudent! The weaker horses in the model are **Zacada, Nakeeta, Vengeur Masque, Auvray and Chestnut Coat.**

- **Best Solution** comes out on top despite its heavy weight penalty. For momentum traders this horse looks the goods after its win in the Caufield Cup.

Strategy: A few bites at the cherry

- **Our preferred strategy is one that places a bet on the top horses in our model. We also aim for the trifecta using the top quartile of horses**. This best mirrors the way Quantitative strategies are applied to equity investing and can be implemented using a 'box trifecta' (see your local bookie for a description of this bet).

Factors used in the model

Quant Signal	Factor	Quant Signal	Quant Signal
Sentiment	*Odds*	Quality	*Odds Dispersion*
Momentum	*Odds movement*		*Win %*
	Form	Innovative Data / Other	*Age, Barrier*
Value	*Avg prize money per race*		*Australian Form*
			Won Over Distance

Source: Macquarie Research, November 2018

- The team have been running the model since 2007. The early days saw some healthy profits however more recently it's been a lean run, leading to great introspection (well at least a few hours) from the team. It does however provide a timely reminder that this is still gambling and the model is not intended to be taken seriously. The Quant team has limited knowledge of horse racing and the purpose of this article is primarily fun.

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Analysis: A brief introduction to Quant

- Quant factors are the building blocks of quant 'styles', and styles are combined into models. For example, our Macquarie Alpha Model has over 120 factors that are grouped into 10 styles which are then weighted to form a single model rank (see report here).

- For the Melbourne Cup we take a similar approach, using the 5 most important quant styles:

    1. **Value** – cheapness, what you get for the price

    2. **Momentum** – what is working, what is getting better?

    3. **Sentiment** – what everyone is looking for right now, what people like

    4. **Quality** – what is the best, the most reliable?

    5. **Innovative Data** – what other data sources gives us an information edge

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

Fig 1 Detailed rankings of horses in the race

Rank	#	Horse Name	OS	Age	Barrier	Odds	VALUE Prize Money	SENTIMENT Odds	MOMENTUM Odds Movement	Form	QUALITY Odds Dispersion	Win %	OTHER Barrier	Distance	Conditions	Aus Form	Final Score
		MAX SCORE					*5*	*22.5*	*10*	*22.5*	*10*	*10*	*5*	*5*	*5*	*5*	*100*
1	1	Best Solution	IRE	5	6	$ 14.70	5.0	22.5	10.0	22.5	7.5	7.5	5	0.0	5.0	5.0	90.0
2	10	Avilius	GB	5	11	$ 12.50	3.8	22.5	10.0	22.5	2.5	10.0	5	0.0	5.0	5.0	86.3
3	9	Marmelo	GB	6	10	$ 12.10	3.8	22.5	7.5	22.5	10.0	10.0	5	0.0	3.8	0.0	85.0
4	22	Youngstar	AU	4	8	$ 12.00	3.8	11.3	10.0	22.5	10.0	10.0	5	0.0	5.0	2.5	80.0
5	3	Magic Circle	IRE	7	17	$ 8.10	1.3	16.9	10.0	22.5	10.0	10.0	0	0.0	5.0	0.0	75.6
6	17	A Prince Of Arran	GB	6	20	$ 20.40	1.3	22.5	2.5	16.9	10.0	5.0	0	5.0	2.5	5.0	70.6
7	11	Yucatan	IRE	5	23	$ 8.30	2.5	22.5	5.0	22.5	5.0	5.0	0	0.0	2.5	5.0	70.0
8	21	Runaway	AU	4	12	$ 24.00	2.5	16.9	5.0	16.9	7.5	7.5	5	0.0	2.5	5.0	68.8
9	2	The Cliffsofmoher	IRE	5	9	$ 17.70	5.0	16.9	2.5	16.9	2.5	10.0	5	0.0	3.8	2.5	65.0
10	6	Sound Check	GER	6	16	$ 29.00	1.3	16.9	10.0	11.3	5.0	7.5	0	5.0	5.0	1.3	63.1
11	13	Finche	GB	5	15	$ 26.20	2.5	16.9	10.0	11.3	10.0	5.0	0	0.0	3.8	2.5	61.9
12	16	Ventura Storm	IRE	6	7	$ 32.1	3.8	11.3	5.0	11.3	10.0	5.0	5	0.0	5.0	5.0	61.3
13	23	Cross Counter	GB	4	19	$ 15.30	3.8	22.5	10.0	16.9	2.5	2.5	0	0.0	2.5	0.0	60.6
13	24	Rostropovich	IRE	4	21	$ 34.70	5.0	16.9	7.5	11.3	5.0	10.0	0	0.0	3.8	1.3	60.6
15	5	Muntahaa	IRE	6	13	$ 17.40	3.8	16.9	7.5	16.9	5.0	2.5	5	0.0	2.5	0.0	60.0
16	14	Red Cardinal	IRE	7	5	$ 28.60	2.5	11.3	7.5	11.3	7.5	2.5	5	5.0	2.5	2.5	57.5
16	19	Sir Charles Road	AU	5	14	$ 62.40	2.5	16.9	7.5	5.6	7.5	7.5	5	0.0	2.5	2.5	57.5
18	8	Ace High	AU	4	22	$ 34.60	5.0	16.9	5.0	11.3	2.5	5.0	0	0.0	2.5	5.0	53.1
19	7	Who Shot Thebarman	NZ	10	18	$ 22.30	5.0	5.6	2.5	16.9	7.5	2.5	0	5.0	2.5	1.3	48.8
20	4	Chestnut Coat	JPN	5	4	$ 40.00	5.0	11.3	5.0	5.6	2.5	7.5	5	0.0	2.5	1.3	45.6
21	12	Auvray	FR	8	1	$ 57.30	1.3	11.3	5.0	5.6	5.0	5.0	5	0.0	2.5	2.5	43.1
22	15	Vengeur Masque	IRE	7	2	$ 67.90	2.5	5.6	2.5	5.6	5.0	7.5	5	0.0	3.8	1.3	38.8
23	18	Nakeeta	GB	8	3	$ 62.30	1.3	5.6	2.5	5.6	2.5	2.5	5	0.0	3.8	1.3	30.0
24	20	Zacada	NZ	6	24	$ 70.90	1.3	5.6	2.5	5.6	7.5	2.5	0	0.0	2.5	1.3	28.8

Source: Macquarie Research, Race TAB, November 2018

- **Value / Yield** is measured by average prize money per race as this represents the return of each horse.

- **Momentum** is measured by movement in the odds from opening prices until the latest available odds. The horse's form in its last 5 starts is also a good indicator of the momentum for the horse.

- **Sentiment** is measured by the last available odds before publication as this is representative of the mood of the market.

- **Quality** is measured by odds dispersion amongst bookmakers to indicate the variance of the perceived value of the horses. We also measure the horses winning percentage to get a hit rate of the horse.

- **Innovative / Other Data**

    o We use the Australian form to 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).

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

    o We also look to see if the horse has won over the longer distance of the Cup.

- 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.

A strategy for 2018: How we will be betting

- We bump up our Defensive and Low Risk factors in this year's model tilting towards horses with shorter odds. Macro volatility has been on the increase with trade wars and rising interest rates threatening the almost decade long bull market. US mid term elections are also overlapping with this year's Melbourne Cup so we don't see a reason for market volatility to subside anytime soon.

- Just like investors look for management who have navigated difficult markets before, we also thought it prudent to up weight horse that have performed in conditions similar to those on race day. We look for horses that have competed over the distance, had a win in Australia and performed in the wet.

- Horses at the top of the model are **Best Solution, Avilius, Marmelo, Youngstar, Magic Circle and A Prince Of Arran.** Best Solution comes out on top despite its heavy weight penalty. For momentum traders this horse looks the goods after its win in the Caufield Cup.

- Watch out for tail risk: With markets still near record highs, tail risk hedging is front of mind. In 2015 when we saw a similar spike in market volatility, Prince of Penzance shocked the field winning the Melbourne Cup at very long odds. A small bet on some outsiders may be prudent! The weaker horses on our model are **Zacada, Nakeeta, Vengeur Masque, Auvray and Chestnut Coat.**

- Our preferred strategy is one that places a bet on the top horses in our model. We also aim for the trifecta using the top quartile of horses. This strategy mirrors the way Quantitative strategies are applied to equity investing.

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

- 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!

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