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Off to the Races: How the Markets Set Prices

Overview: Smarty Jones' run for a place in thoroughbred horse racing history — trying to win the Triple Crown (the Kentucky Derby, the Preakness and the Belmont Stakes) — was one of the great sport stories of 2004. The story captured the attention of America's horse racing enthusiasts (and gamblers), falling on the heels of the story of Seabiscuit, whose rise to victory in the late 1930s was brought to life by the popular book and film adaptation. It may have seemed that betting on Smarty Jones was a "sure thing" but he fell one race short of capturing the coveted title. There is much that investors can learn from the world of horse racing. This document recounts Smarty Jones' journey, explains how betting odds are set and discusses how markets set prices.

Recounting Smarty Jones' Run for the Triple Crown

Smarty Jones' run for the Triple Crown, thoroughbred horse racing's elite event, stands out as one of the great sport stories of 2004. Only 11 horses have completed the Triple Crown, and no horse has taken the title since Affirmed in 1978.

After winning each of his first six races, Smarty Jones was a 4–1 favorite to win the Kentucky Derby (which meant that the gambling public believed Smarty Jones had a one in five chance to win the prestigious race). It also meant that if Smarty Jones won each dollar bet would return $5, for a profit of $4. On May 1, 2004, Smarty Jones won the Kentucky Derby by an impressive 2¾ lengths. A $2 bet returned $10.20.

After the Derby, Smarty Jones was the overwhelming favorite to win the Preakness, the next phase of the Triple Crown. The odds of Smarty Jones winning went from 4–1 to 8–5. On May 15, 2004, Smarty stunned the racing world by winning the Preakness by 11½ lengths. A $2 bet returned just $3.40.

For the Belmont Stakes, the last race to achieve the Triple Crown, the odds on Smarty Jones moved all the way down to 2–5. This meant you had to bet $5 just to win $2. On June 1, 2004 Smarty Jones lost the Belmont Stakes to Birdstone Light, a 36–1 underdog.

Betting on Smarty Jones

Imagine that you were betting on those three races in 2004. Given Smarty Jones' brief career before running the Kentucky Derby, you decide not to place too much emphasis on the 6–0 record. Therefore, before betting on Smarty you decide to wait for the results of the Kentucky
Derby. After that victory, you are now convinced and bet $2 on him to win the Preakness. With that victory, you are now ahead $1.40. The Preakness victory gives you additional confidence in the horse's greatness, so you bet $2 that Smarty Jones will win the Belmont Stakes. This time, he loses (and so do you).

Despite betting on perhaps the greatest horse to race in almost 30 years, the result was a loss of 60 cents, or 30 percent of your $2 "investment." What does betting on a horse race have to do with investing? Actually, investors can learn a great deal from the world of horse racing. We begin with an explanation of how odds are set (or in investment terms, how markets set prices).

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How Markets Set Prices
Many people believe that bookies or racetracks set the odds, but this is not true. Instead, the public sets the odds (prices). How does the public affect prices? We know that many people attend races and bet on a horse simply because they like its name or because the jockey is wearing their favorite colors. Given that tendency, it would seem that more savvy gamblers could exploit such amateurs.

In financial economics terms, it would seem that the market is inefficient — that the odds (prices) are somehow wrong. If this were true, then it would be likely you would know people who persistently win significant amounts at the racetrack. Rather, it is more likely that you don't know anyone who has become rich betting on horse racing, or any other sport for that matter.

Based on such evidence, we might conclude that the market for betting on horse races is highly efficient. The reality is that in horse racing, the final odds reliably predict the outcome — the favorite wins the most often, the second favorite is the next most likely to win, and so on. One study found that a horse with 3–1 odds wins about one-fourth of the time.[1]

While some gamblers may be too optimistic about a horse's chances, and others too pessimistic, it seems that the collective wisdom of the crowd is a very tough competitor indeed. In other words, while one bettor might have more knowledge than all the other individual bettors, this is not a sufficient advantage to successfully exploit pricing mistakes. The reason is that the bettor's competition is not other individual bettors. Instead, it is the collective wisdom of the crowd (market) that matters. It turns out that the collective wisdom is tough to beat. This does not mean that it is impossible, but it is very difficult to do so. Therefore, trying to beat the market is not a prudent strategy (except perhaps if you place a high value on the entertainment aspect).

Winning at the Race Track is a Long Shot
Another reason for the failure of many who try to win at horse racing is that betting on horse races is not a zero sum game, in which for every winner there is a loser of the same amount. Racetracks charge for parking and admission, and typically pay out less than 85 percent of the total amount bet on races. Thus, besides being smarter than your fellow bettors, you must also be smart enough to overcome the significant costs of playing the game. Similarly, the combination of market efficiency and the costs of "playing" (trade costs, taxes) make it very difficult to beat the market.

Betting on Professional Sports Provides Similar Results as Betting on Horse Racing
Betting on other sports, such as basketball and football, provides results similar to betting on horse racing. Consider basketball where instead of odds, bettors typically either give or take points. For example, if the currently top-rated San Antonio Spurs were playing the current underdog Charlotte Bobcats, a person wishing to bet on the Spurs might have to "give" 12 points. This means that the Spurs would not only have to win the game, but they would have to win by more than 12 points. If you bet on the Bobcats, you would win the bet even if the Bobcats lose the game — as long as they lose by less than 12 points.

A study published in the *Journal of Economic Literature*, which covered six NBA seasons from 1982–1983 through 1987–1988, found that the average difference between point spreads before the game and the actual point differences was just 0.24.[2] When you consider that, on average, the market guessed the actual resulting point spread with an error of less than one-quarter of one point, including a 10 percent cost of playing (meaning you have to bet $11 with a bookmaker to win $10), it becomes clear why more of us don't know people who have become rich from betting on sports.

In the book, *The Wisdom of Crowds*, author James Surowiecki notes that point spreads are not reliable predictors of the final scores of NFL games. "In about half the games, favorites cover the spread, while in the other half underdogs beat the spread."[3]

Lessons for Investors
Remember, while it is often easy to identify the better team, horse or investment, that information alone is not enough. You also have to be able to exploit any winning bet after accounting for the cost of playing, or in investment terms, you must exploit any market mispricing after accounting for expenses.

Just as we might split up sports teams into two categories of great and not so great, we can split the stock market into two categories — great and not so great companies. We label stocks of great companies, "growth stocks" and those of the not so great companies, "value stocks." The market allows us to easily classify them by such metrics as price-to-earnings (P/E) ratios[4] or book-to-market (BtM) ratios.[5]

Great companies have high P/E and low BtM ratios; value companies have low P/E and high BtM ratios. For example, the P/E of the S&P Barra 500 Growth Index was 23, while it was just 18 for the S&P Barra 500 Value Index (using data from Barra.com, as of November 30, 2004). Similarly, the BtM of the Barra Growth Index was 5.0 (companies in this index were trading at five times their book value) while it was just 2.1 for the Barra Value Index. Just as you have to give 12 points to bet on the Spurs (or accept a very low payout if you bet on Smarty Jones after his winning streak), you would have to pay more for $1 of earnings or $1 of book value for a great company (such as WalMart) than you would for a not so great company (such as JC Penney). Just as the sports-betting market equalizes the risk-adjusted odds of winning via the mechanism of odds or points, the stock market adjusts prices to equalize the risk-adjusted expected return of different companies.

Therefore, in the same way that you do not benefit from identifying the best horse or the better team, you cannot benefit from identifying the better company. This is the case because the collective wisdom of the market has already reached the same conclusion about the stock of the company you have identified and priced it accordingly

Conclusion

By successfully identifying the better company, you have information, but you do not have the knowledge needed to consistently exploit the market. This common misconception — confusing information with knowledge — stems from a failure to understand how markets set prices. Generally, self-aware investors who make such mistakes stop repeating them once they have learned that the premise from which they were operating was incorrect.

Another lesson that investors can take from the tale of Smarty Jones would be to never treat the highly likely as certain (Smarty Jones winning the Belmont Stakes) nor the highly unlikely as impossible (Birdstone Light winning the Belmont Stakes). Making that type of error can lead to very costly mistakes. The bankruptcies of companies such as Enron, MCI and Polaroid, and the problems many other companies have experienced, such as Merck and March & McClennan, are great examples of the importance of this warning. The solution is to never place too high a bet on any "sure" winner, no matter how tempting or safe it appears to be. Diversification remains the prudent strategy — the safest port in a sea of uncertainty.[6]

1 James Surowiecki, **The Wisdom of Crowds**. Doubleday, 2004.

2 Note: The sample only included regular season NBA games. Raymond D. Sauer, **The Economics of Wagering Markets**. *Journal of Economic Literature*, December 1998.

3 Surowiecki.

4 Why can we expect that high P/E ratios signal future expected lower returns? For example, investors who bought stocks when their P/E ratios were higher than 22 have historically received returns of about 5 percent per annum during the 10 years after their purchases. Those investors were buying after a period of superior stock market performance. On the other hand, investors who had the courage to invest in those same stocks when the P/E ratio was less than 10 and nobody else seemed to want them earned about 17 percent per annum during the next 10 years. Buy high due to low perception of risk, expect to earn lower returns; buy low due to high perception of risk, expect to earn higher returns. Walter Updegrave, **Why 100% Stocks is 80% Wrong**. *Fortune*, August 16, 1999.

5 Book-to-market (BtM) is a ratio of a firm's accounting value and market value. The higher the BTM, the less investors are paying to own a company when they purchase stock.

6 Ron Ross, **The Unbeatable Market**. Bookmasters, Inc., 2002.