Sports and The Stock Market

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The surprising correlation between the stock Market and the league winning the super bowl has stood the test of time. Less known is that American Thoroughbred Racing (ATR) derby winners are also correlated with the stock market. We do not detect any correlation between the stock market and the National Basketball Association (NBA) or Major League Baseball (MLB). This is a learning moment: one, spurious relationships are not an indictment against the Efficient Markets Hypothesis (EMH) and, two, such casual relationships are not causal; we caution that such anomalous investment strategies are detrimental to creating wealth.

INTRODUCTION

Most students of finance understand the notion of the Efficient Markets Hypothesis (EMH). They are aware that the market is relatively intelligent and that information is priced adequately. What this rubric does is that cautions one to beware of simplistic rules to outperform the market. People believe in the concept of U.S. markets being reasonably efficient (Doran 2007, 2010 and Ivo Welch 2000, 2001). There is a plethora of evidence that shows trading rules provide a slim chance of gaining superior returns. Understanding the difference between *causal* and *casual* relations (Black 1982) is very important to the health of one's wealth.

In a Journal of Finance article, Krueger and Kennedy (1990) look at the league that wins the Super Bowl [there are two leagues: the American Football League (AFL) and the National Football League (NFL)] and the performance of the stock market subsequent to the game and they report a strong

relationship. In a later study, Kester (2010) accounts for expansion teams and states the forecast accuracy decreases.

A Barron's article in 1999 shows that the market performs well when a horse wins the Kentucky Derby (race-1) and the Preakness (race-2) and there is no reaction when a horse wins the Belmont (race-3). The market does poorly when a horse wins the Triple Crown (TC), or all three races. No evidence has been found to support a relationship between The National Basketball Association (NBA) or Major League Baseball (MLB). Edmans et. al. (2007) show that markets in 39 countries react to soccer, cricket and basketball games.

In this paper we examine: 1) the Super Bowl from 1967; 2) The Derbys from 1919; 3) The NBA from 1950 and, 4) The MLB from 1950. We follow the Krueger and Kennedy method and calculate correlations between events and either a calendar year or a year just after the vent has occurred.

THE SUPER BOWL

The theory is that if the Super Bowl is won by a team from the old NFL, the stock market will go up and if an old AFL team wins, the market suffers a loss. Krueger and Kennedy (1990) examined performance in the Super Bowl and the direction of the stock market and computed an accuracy rate of 91% to this trading rule from 1967 to 1988. Surprisingly, the forecast accuracy is still high through 2010 – 75-77% depending on whether one looks at the calendar year or from one Super Bowl to the next.

The means and standard deviations for returns of the S&P 500 after a Super Bowl are shown in Table 1. Data are shown for the calendar year and from one super bowl to the next.

TABLE 1

		Calendar Year	Super Bowl to Super Bowl	Number of Wins
NFL	Mean	14.91%	15.08%	33
	Standard Deviation	16.63%	16.61%	
AFL	Mean	0.66%	0.46%	11
	Standard Deviation	16.64%	16.70%	
	Accuracy	75.00%	77.27%	

THE DERBYS

In a 1999 Barron's article James Morgan looked at the correlation between the market and the horse races. If a horse wins the first two of the three races (Kentucky, Preakness, and Belmont), the stock market is predicted to advance. If a horse wins the Triple Crown the stock market is predicted to decline. We examined data from 1919 until 2010. This predictor is accurate ranging from 65% to 71%, depending on whether one looks at the calendar year or from derby to derby.

The means and standard deviations for the respective categories of returns of the S&P 500 are shown in Table 2 for the calendar year and from derby to derby.

TABLE 2

		Calendar Year	Derby to Derby	Number of Occurrences
First 2	Mean	12.03%	6.92%	21, 20
	Standard Deviation	20.37%	16.13%	
Triple Crown	Mean	1.17%	-5.81%	11, 8
	Standard Deviation	25.16%	13.55%	
	Accuracy	65.63%	71.43%	

The means of the returns of the NFL and the AFL were tested for equality. The results are presented in Table 3. Table 4 shows the results of tests for equality of means for Derbys.

TABLE 3

	Calendar Year	Super Bowl to Super Bowl
NFL Mean	14.91%	15.08%
AFL Mean	0.66%	0.46%
t-Statistic	2.461*	2.525*

**Indicates significance level of .01*

TABLE 4

	Calendar Year	Derby to Derby
1st2 Mean	12.03%	6.92%
TC Mean	1.17%	-5.81%
t-Statistic	1.321	1.967*

**Indicates significance level of .025*

SIMULATED PORTFOLIOS

The Super Bowl Predictor

Krueger and Kennedy constructed two portfolios, each with a $1,000 portfolio. Funds for a buy-and-hold strategy portfolio were invested on January 1, 1967 in a fund tracking the S&P 500 Index including dividends. Funds for the super bowl (SB) strategy portfolio were invested if a NFL team won the Super Bowl, otherwise it was invested in a money market fund. Interest, dividends, and capital gains were taxed at forty percent. Transaction costs were assumed to be one percent.

We construct two portfolios for the SB strategy, one for the calendar year and one from super bowl to super bowl. Each portfolio has a $1,000 investment and begins in 1967 corresponding to the first year of the super bowl. The funds were invested to mirror the S&P 500 with dividends reinvested. Two portfolios were constructed for the buy-and-hold strategy: when a NFL team won the Super Bowl, the $1,000 was invested in the SB strategy. If an AFL team won, the $1000 was invested at the average 3-Month Treasury Bill rate. We ignore transaction costs and taxes in both.

Table 5 shows that the predictive capability has decreased from the Krueger and Kennedy study in 1991. It is worthy to note that since the merger, a NFL team has won three times as many Super Bowls. We also looked at the Pro Bowl. From 1970 the predictive accuracy was just a little above 50%.

TABLE 5

	Buy-and-Hold		SB strategy	
	Calendar Year	Super Bowl to Super Bowl	Calendar Year	Super Bowl to Super Bowl
Geometric Mean	9.83%	9.89%	11.59%	11.69%
Standard Deviation	17.58%	17.64%	14.98%	14.98%
Terminal Dollar Value	$62,000.04	$63,492.62	$124,383.58	$129,739.76

The American Thoroughbred Racing Predictor

Similar to the SB portfolio simulation, four portfolios were constructed to simulate an investment strategy based on the American Thoroughbred Racing (ATR) Predictor (Table 6). The calendar year data are from 1919 and while the derby to derby data was not available until 1936. As with the Super bowl predictor we ignore transaction costs.

With no Triple Crown winner or if a horse did not win the Kentucky and the Preakness, the funds were invested in the S&P 500 index. With 11 Triple Crowns, the Dow Jones Industrial Average has fallen 8 of the 11 times and the S&P 500 has dropped on 6 occasions.

TABLE 6

	Buy-and-Hold		Triple Crown Predictor	
	Calendar Year	Derby to Derby	Calendar Year	Derby to Derby
Geometric Mean	10.18%	10.29%	10.73%	11.42%
Standard Deviation	20.24%	17.27%	18.37%	16.02%
Terminal Dollar Value	$7.48 m	$1.55 m	$11.79 m	$3.32 m

The National Basketball Association and Major League Baseball

We examined the behavior of the stock market for the NBA and MLB from 1950. Tables 7 and 8 show the means, standard deviations and correlations for the NBA Championships and the MLB World Series for the calendar year and championship to championship to the market. Our results show that there is no correlation between the events and the market.

TABLE 7
NBA CHAMPIONSHIPS*

		Calendar Year	Championship to Championship	Number of Wins
West	Mean	16.82%	15.27%	27
	Standard Deviation	17.92%	17.74%	
East	Mean	9.19%	9.60%	34
	Standard Deviation	17.09%	14.74%	
	Accuracy**	50.82%	45.90%	
	Accuracy***	49.18%	54.10%	

**Means tested significantly different at .05 level*

***(West predicts +, East predicts -)*

****(West predicts -, East predicts +*

TABLE 8
MLB WORLD SERIES

		Calendar Year	Series to Series	Number of Wins
NL	Mean	15.13%	14.79%	27
	Standard Deviation	18.94%	15.08%	
AL	Mean	10.82%	9.63%	33
	Standard Deviation	16.90%	19.38%	
	Accuracy**	48.33%	49.15%	
	Accuracy***	51.67%	52.54%	

Means did not test significantly

***(NL predicts +, AL predicts -)*

****(NL predicts -, AL predicts +)*

Our results show correlations between sports events and the stock market. In the next section we provide a few insights into how the mind is tricked into what can easily be a trap. There is no economic rationale for anyone to believe that there is some connection between such events and the performance of the market. Seeking a spurious relationship to develop a heuristic for an investment strategy is fallacious.

DISCUSSION

Fisher Black (1982) cautions between causal and casual phenomena. He (1986) offers that noise causes markets to be somewhat inefficient but often prevents the investor from taking advantage of this inefficiency. This is not the case with the NFL winning the Super Bowl and a horse winning the Kentucky and the Preakness Derbys. Clearly, this is anomalous behavior with no rational basis. There is no rational reason for one to expect market movements to relate to sports events.

So, should one adopt a trading rule? A rational mind would undoubtedly suspect such a rubric, but there is a behavioral explanation. Visible firms grab the attention of investors and make them see spurious relationships. Tversky and Kahneman (1973) mention the availability heuristic – investors decide by the frequency and ease with which one can recall events. The Super Bowl predictor gets attention in the press during the football season. During the upper Bowl there are often articles drawing attention to the correlation between the team winning the Super Bowl and the trend in the stock market. Black (1986) notes that while noise trading provides the basis for trading this does not lead to profits. He offers that noise traders as a group lose money and information traders as a group make money (P.531).

Tversky and Kahneman (1974), show three heuristics that people use to make judgments when conditions portend uncertainty:

- Representativeness: judgments are made by people looking at how similar two events are to each other.
- Availability: people judge the frequency of an event occurring with how easily one can recall the occurrence of the event (DeBondt and Thaler 1985).
- Anchoring/Adjustment: People begin judging with an initial value and adjust towards a solution.

People are comfortable with items that are familiar. The home team is a favorite, their retirement funds are invested in the company stock, and so on. The brain sees this familiarity as a rubric to decision making. We look at this phenomenon in a *herding* framework. Notice a school of fish: they move in herds, for the most part they are mostly followers of the first fish that changes direction.

Investors like to brag, people like to listen and imitate (Hong et. al 2004); 'Living up to the Jones' is a natural process. Social processes permit the sharing of information, search costs vanish. Information is easily sought and decisions are made accordingly (Ivkovic and Weisbenner 2007 and Brown et. al. 2008). Herding and reacting come naturally in these environments.

The *peacock behavior* of those who win influences their peers. Winning is license to brag; people listen; while some may invest time and investigate, some choose to imitate. Either through search or sheer chance people gain. This leads to *overconfidence*. In the case of the Super Bowl and/or the Derbys, these people actually make unusual gains. The ease with which one wins permits repeat behavior that surprisingly continues. Fehle et. al., (2005) show that small investors are attracted to trading around the Super Bowl. They investigate the influence of the advertisers during the game. Mood and attention plays a part when the advertising is for visible firms. Lakonishok and Smidt (1988) document the *holiday effect,* anomalous trading around holidays. Hirshleifer and Shumway (2003) show how sunshine affects mood.

Thaler and Johnson (1990) and Lo et. al. (2005) show that people who win at a gamble tend to be more confident when gambling again. Moods affect decision making and the investment process. Nofsinger (2011) calls this the *misattribution bias*. Robert Stovall of Wood Asset Management states, "You don't want to invest your own money based on such a whimsical predictor." (Power 2012). This year the New York Giants won and in February those who followed this model will be beating their chests and crowing while those who sat on the sidelines with their wealth may just feel like the fox with

the grapes – just a wee bit sour, though they may be rationally correct in doing so. Incidentally, the market has risen!

CONCLUSION

Betting on market movements after the Super Bowl and the Derbys seem to hold a level of predictive capability; however, there is no *rational* reason to do so. Elsewhere in the world, soccer matches, cricket games seem to influence the market. We find the NBA and the MLB do not correlate with the U. S. stock market. Our minds are wired to take short-cuts and this is a reason for caution. This can hurt wealth accumulation.

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