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Regression to the Mean in the Stock Market

Introduction

In 2008 Warren Buffet famously said to, "Be fearful when others are greedy, and be greedy when others are fearful." This paper will look to explore different investment strategies that exploit regression to the mean, and overreactions in the stock market. It is nearly impossible to predict what will happen tomorrow, the next day, a week from now, a month from now, or even five years from now, but in the long run, investing in the market is a very profitable decision. Moreover, daily fluctuations in the stock market are nearly impossible to predict, but using some interesting statistical techniques, we propose a strategy of buying a stock after an abnormally bad day, and selling a stock, after an abnormally good one. Regression to the mean is present in all aspects of life, and can be defined as, "(use Gary's textbook definition)." Regression to the mean can be seen in sports, test taking, medical tests, annual earnings, and much more. Consider what many sports analysts call the "Madden Football Curse." People believe that when a player is on the cover of the video game, Madden NFL, the next year they will perform badly because, "they are cursed." In actuality, in order to make it on the cover, a player needs to have an exceptional season, and therefore their next season will probably not be as good, because they had to get lucky in order to play so well. The next year, they will most likely not have this same luck and regress to their mean. The curse is not real, really the players just had an unbelievable season, and the next year they will be less fortunate. Using this idea of regression to the mean, combined with overreactions, we propose a strategy that says if a stock does abnormally good or bad in a day relative to the other stocks in the same index, it was most likely a overaction, and in the coming days, the stocks are likely to regress to their means. Going back to Warren Buffets quote, investors are irrational, and lots of times overact to good and bad news. We look to exploit this irrationality, and become greedy when others are fearful, and fearful when others are greedy. This study examines Dow Jones Industrial Average daily stock returns from October 1st 1928, when the Dow was switched from 20 to 30 stocks until the end of the 2019. We pulled the data from CRSP, one of the best databases for stock return data.

Literature Review

Our work will extend upon the growing body of literature pertaining to mean reversion in the stock market. There is an extensive amount of literature regarding long term mean reversion, but this paper will extend upon Smith's 2016 paper, "Overreaction of Dow Stocks" which analyzes price reversals over a shorter horizon (10 days). Kahneman and Tversky (1982) showed that people tend to overweight new information relative to the rational reaction defined by Bayes' Rule (Smith 2016). This overweighting of information can cause the short-term price spikes and dips that lead to price reversion.