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Introduction
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# Calculating Fortune's Favor

## 1. Introduction

What sets a stock price? In an efficient market, the answer is all public information. If the public thinks that a company is great, then its price should reflect that normative valuation. Yet, when Andersen and Smith (2006)[1] compared the returns on the S&P 500 and a portfolio comprised of Fortune magazine's list of America's "Most Admired Companies," they found that the latter yielded significant higher returns. A decade later, the question is: Can a great company still be a great investment?

This paper will attempt to answer this question by replicating the Andersen-Smith paper with the addition of new data. This will test both the robustness of the results in the original study and/or answer the question of whether this gap between great and normal companies still exists. The new data include returns from stocks during the Great Recession, which adds a new dynamic to the analysis. While the original data set does include several shorter recessions, the scope and intensity of the Great Recession separates it from its predecessors and provides answers to a new question: How do great companies perform compared to the market in a recession caused by a financial crisis?

## 2. Literature Review

### 2.1 Potential valuations

Andersen and Smith laid out the possible valuations for stocks in their 2006 paper, and I quickly reiterate them here.

According to the efficient market hypothesis (Fama 1970), buyers incorporate all public information into their stock valuations. Thus, great companies should have their "greatness" reflected in their stock price, which should prevent these companies from gaining more than the market. It is important to note here that the greatness of these companies is publicly available information, as any buyer can pick up a copy of Fortune's list at a newsstand or read it online for free.

It is also possible that buyers might act against their knowledge of the efficient market hypothesis. In their enthusiasm to own part of an awesome company, buyers might purchase too much of a great company's stock. This would usually lead to an overvaluation of the company and subsequent lesser returns. In an inverse situation, investors might undervalue a great company stock by believing that the efficient market has already set the stock's price at the proper level. It is even possible that the types of investors present in the market determine the stock's price, with an average of bullish investors raising the stock's price too high and an average of bearish investors holding it too low.

[1] Referred to from now on as A&S

## 2.2 Overvaluation in the Literature

In the original analysis A&S noted that a Wall Street Journal article [Dorfman and Stertz 1991] argued that purchasing Toyota and Honda stock "would be a classic mistake – confusing a great company with a great stock." This rhetoric continues today. A recent ETF Daily article [Trainer 2014] titled, "10 Great Companies That Are Overvalued," posits that today "Under Armour best exemplifies the great company/bad stock dichotomy." Clearly this type of thinking has continued in the mainstream financial outlets, but what does academic literature say on the matter?

To answer this question, we look back in time to the early 1970s, when a loosely defined group of 'high growth' stocks called the Nifty Fifty captured the hearts and wallets of the American people. Americans deemed these stocks so valuable that, in the words of Fesenmaier and Smith (2002), "companies [were] so appealing that their stocks should always be bought and never sold, regardless of price." Sadly, the success could not last. Many of the Nifty Fifty stocks lost their value during or just after the crash of 1973.[2] Jeremy Siegel [1994, 1995, 1998] spent the early 1990s debunking the Nifty Fifty crash narrative, with several of his simulations showing that portfolios of the Nifty Fifty performed similarly to the S&P 500 during the 20 years after the crash. However, Fesenmaier and Smith (2002) pick apart Siegel's data. First, they point out that Siegel chose a Nifty Fifty list that fit his theory rather than applying his theory to all of the Nifty Fifty lists present during the 1970s. Next, Fesenmaier and Smith partition the data to reveal that a few highly successful companies in Siegel's portfolio masked the failings in the rest of his simulated investment. These findings suggest that investors have overvalued great company stocks in the past.

## 2.3 Regression toward the Mean

When an athlete has an incredible season, it is likely that she will underperform the next year. When an average student aces an exam, it is likely that the next test will not go as well. And when a respected economist looked at the success of companies in the United States during the 1920s, he erroneously concluded that poorly run companies were dragging well-managed companies toward mediocrity. What is the force underlying these patterns? Regression toward the mean. While the cases of the athlete's flop (popularly known as the Sports Illustrated Curse) and the average student's good fortune (seen on many college campuses when students earn good grades without studying consistently) are intriguing, it is the example of American economist Horace Secrist that is most relevant to the work presented here.

As presented by Smith in his 2014 book Standard Deviations: Flawed Assumptions, Tortured Data, and other ways to Lie with Statistics, the story of Secrist is a case study in the dangers of ignoring the concept of regression toward the mean. Secrist, a professor at Northwestern, was a neoclassical economist who believed that supply generated demand. The logic for this thinking was rather straightforward. In the neoclassical view, as long as firms paid workers for every good produced, workers would have enough money to purchase all goods produced in an economy. The more goods that firms produced, the more the firms would pay their workers, and with more income the workers could purchase more goods. Secrist therefore set out to explain the late 1920s U.S economy's sluggishness from the supply side by tracking the success of companies in 73 industries over the period 1920-1930 using metrics including "profits to sales, profits to assets, expenses to sales, [and] expenses

[2] Fesenmaier and Smith 2002

to assets" (Smith 2014). His results disturbed him. Over the course of the decade, many of the companies who had begun in the top success quartile had fallen to the middle of the pack, and many of the companies from the lowest success quartile had moved up to the middle as well. Secrist interpreted the companies' shifts as a market failure rather than as a statistical truism. He argued in his detailed tome, The Triumph of Mediocrity in Business, that unsuccessful businesses were dragging down successful businesses towards mediocrity. What was his solution? In Smith's words, "Protect superior companies from competition from less-fit companies trying to enter the market." (Smith 2014)

It took a cogent response from mathematician Harold Hotelling (1933) to debunk Secrist's protectionist theories. Hotelling argued that the companies were not dragging each other across the success quartiles. Instead each of them was returning to its average level of success. In short, they were regressing toward the mean.

To understand what Hotelling meant by regression toward the mean, we can look at Lord and Novick's (1968) concepts of a "true score" and "error score." Their work in the educational literature is helpful to understanding regression toward the mean. As summarized by Smith (2008):

"The "true score" can be interpreted as the expected value of a person's test score, with the difference between a person's test score and true score called the "error score."

This definition reveals the mistake in Secrist's assumptions. He had not considered error scores in his analysis, and subsequently saw all decreases in success as inherently negative. However, with hindsight it is obvious that the companies at the beginning of the decade had high error scores, and that over the course of the 1920s all of the companies, on average, regressed towards their true score. They might have had a horrible year, or a great one, but on the whole they were only as good as their average. This is also why "the most extreme quartiles showed the greatest movement." (Smith 2014) The companies at their most and least successful probably had the highest error scores, and were more likely to score closer to their average success rate in successive years.

A companies' stock price today should, under ideal market conditions, reflect its success. This means we can apply these concepts to stock returns. If a stock has a particularly high return in a time period, a day for instance, there is a good chance that its error score for that day is high, making it likely that it will not grow at that rate consistently in future days.

Dorsey-Palmateer and Smith find a telling example in the success of NAVY test flights. A previous examination of Israeli test flights had shown that pilots who did well on one test flight usually did not fare as well on their subsequent flight. Overlooking the presence of regression to the mean, the Israeli flight instructors concluded that the praising the pilots was hindering the pilots ability. Dorsey-Palmateer and Smith show that the decreases were merely part of a larger picture that involved regression to the mean.

In a more financial setting, Freeman and Tse (1992) and Fama and French (2000), have shown that earnings regress to the mean, although not for purely probabilistic reasons. Smith, Keil, and Smith (2004) reveal the pernicious effects of an ignored regression to the mean, showing that "earnings forecasts are systematically too extreme – too optimistic for companies predicted to do well and too pessimistic for those predicted to do poorly."[3]

[3] Smith 2008

Ignorance to the concept of regression toward the mean could make investors more likely to overvalue a company, raising its price above a level analogous to its true score, if they see a large increase in price and do not realize that it is part of a larger tend toward a mean.

### 2.4 Undervaluation in the Literature

The strongest evidence for investors undervaluing great companies comes from A&S (2006). As detailed above, the examination of returns for America's great companies yielded a portfolio that consistently beat the market over the time period. A&S argue that it is possible that investors create this gap between the great companies and the S&P 500 because they believe too firmly in the efficient market hypothesis, that is to say they overestimate the market's efficiency. Investors could also be underestimating the companies' values for a host of other reasons

### 2.5 The effects of Recession on Stock Prices

It makes intuitive sense that stocks would suffer during a recession. As the economy suffers, so do the individual firms making up that economy. Abdullah and Hayworth (1993) show that several macroeconomic factors, including money supply, inflation, and interest rates Granger cause changes in stock prices. Returns are positively related with changes to the money supply and inflation, and negatively to changes in the interest rate. However, there has been little research on how the Most Admired Companies recovered after recessions in comparison to the rest of the U.S. economy. This paper will begin an exploration of this topic.

## 3. Data

Fortune magazine began publishing its list of "America's Most Admired Companies" in 1983. However, Fortune stopped releasing its "America's Most Admired" list in 2009, when it merged it with its "World's Most Admired Company." The resulting list is the "World's Most Admired Company" list, which is similar, but not identical to the American list. It is important to briefly explain the workings of each survey.

A&S explain the "America's Most Admired Company List" as follows: Fortune created the list by issuing a survey to thousands of American business people and financial analysts, asking them to rate companies in their area of expertise from 1 to 10 in 8 areas of business practice: innovation, financial soundness, use of corporate assets, long-term investment, people management, quality of management, social responsibility, and quality of product. After averaging these responses, Fortune asked the survey takers to name their 10 favorite companies from a list comprised of the top two companies from that year's survey as well as from a list comprised of the top 20% of most admired companies from the previous year.

The "World's Most Admired Companies" survey, first issued in 2009 follows a similar protocol. The WMAC covers 64 industries, 25 international and the 39 domestic from the AMAC. Fortune states that the biggest "impact of the changes is a reduction in number of smaller American companies in the international industries and a slight increase in the number of foreign competitors in the 39 U.S.-market industries."[4] Fortunately, these changes should not affect this study, seeing as it focuses on larger

[4] Fortune

American companies. The survey portion of the process is the same as the AMAC survey, except that Fortune added a global competitiveness category. The post-survey rankings from the survey takers added the option to choose the companies that ranked in the top overall quartile in the previous year's survey along with the top industry-specific quintile. The 2009 survey, the first of the WMAC, surveyed 4,047 businesspeople in 689 companies across 28 countries.[5]

Data for all publicly traded companies on the AMAC and WMAC come from the Center for Research in Security Prices (CRSP), a database with daily returns for every company between 1983 and 2014. The data begins on the publication date of the Fortune list. The 1983 data therefore begins on January 10th.

4. Method

The method for Fortune investment mimics that of A&S (2006) paper. I invest equal dollar amounts into each of the ten fortune stocks to create the portfolio. The paper uses different trading days to account for potential spikes in the Fortune stocks' prices associated with the release of the magazine. One of the calculations has its trading day on the publication date. This is a realistic simulation because the magazine is available for purchase in stores and online several days before the date listed on its cover. The other calculations have portfolio trading days 5, 10, 15, and 20 market days apart. The portfolio is created on the 1983 trading day and then liquidated and reinvested on the trading day in each of the following years. The S&P 500 portfolio is simply fully invested in the S&P index for the duration of the simulation. No companies changed their tickers due to mergers in the new data set, which made calculating their growth straightforward.

To test for significance, I will apply a matched-pair test to the daily difference between Fortune portfolio returns and S&P portfolio returns. The null hypothesis is that the expected value of the difference in returns is zero: H0: m=0. The t-statistic is

$$t = (\bar{X} - 0)/(s/(\sqrt{n})$$

where $\bar{X}$ is the mean of the daily differences, s is the standard deviation of the daily differences, and n is the number of daily differences. I report two-sided p-values since there is a possibility that the Fortune portfolio will underperform the S&P portfolio as well as a possibility that Fortune will beat the S&P.

The paper will also examine average returns to both portfolios, beginning on each year's publication date. For example, I will look at the daily returns for 5 years starting with the 1983 Fortune picks and the S&P 500. Then I will look at the returns starting on the 1984 publication date and so on. This will create 31 Fortune portfolios that I can then compare to the S&P 500 over the same time intervals. I will make this comparison by averaging the returns on each portfolio and the comparing to the S&P over its matching time period.

[5] Fortune

## 5. Results

To calculate daily return for a portfolio I averaged the returns on that day from each of the companies in the Fortune portfolio. I then built Fortune portfolios starting from 0, 5, and 10 days after the release of the Most Admired Companies list by calculating the average returns from the daily averages in the portfolio. The portfolios created began trading on the day of the release of the 2005 Most Admired List. I will compare and combine my new portfolios with the older portfolios later on.

Table 1 shows a list of the new Most Admired Companies with the dates of the issue's release in parentheses. Table 2 shows the results of the initial calculations. Table 2a contains the results of the original paper. We see that the results in the new data set are similar to those in the original study. The Fortune portfolio returns a daily average of .000432 (11.7% annually) compared to the .000282 (7.2% annually) of the S&P 500. While the gap between the growth in the two portfolios is smaller than the values in the initial study(17.7% and 13% respectively), we see that once again the Fortune portfolio outperforms the market at a significant level. The decrease in disparity between the two studies may be the shorter time period. The original study used 22 years of data, while this one only looks at the previous 9 years.

Table 3 shows the results for the stocks during the recession period. We see that both portfolios suffered during recession years, but that the Fortune portfolios in those years suffered less, only losing .000486 daily (12.9% annually) while the S&P lost .000573 daily (15.2% annually). It seems from these results that the Fortune stocks not only outperform the market in good years, but in bad years as well.

6. Tables

Table 1 and 1a: The New Most Admired Companies

| 2005 (3/17) | 2006 (3/6) | 2007 (3/19) | 2008 (3/17) | 2009 (3/16) |
|---|---|---|---|---|
| Dell | General Electric | General Electric | Apple | Apple |
| General Electric | FedEx | Starbucks | Berkshire Hathaway | Berkshire Hathway |
| Starbucks | Southwest Airlines | Berkshire Hathaway | General Electric | Google |
| Wal-Mart Stores | Procter & Gamble | Southwest Airlines | Google | Johnson & Johnson |
| Southwest Airlines | Starbucks | FedEx | Starbucks | Procter & Gamble |
| Fedex | Johnson & Johnson | Apple | FedEx | FedEx |
| Berkshire Hathaway | Berkshire Hathaway | Google | Procter & Gamble | Southwest Airlines |
| Microsoft | Dell | Johnson & Johnson | Johnson & Johnson | General Electric |
| Johnson & Johnson | Microsoft | Procter & Gamble | Goldman Sachs Group | Microsoft |
| Procter & Gamble | Apple | Goldman Sachs Group | Target | Wal-Mart Stores |

Table 1a

| 2010 (3/22) | 2011 (3/3) | 2012 (3/2) | 2013 (3/18) | 2014 (2/27) |
|---|---|---|---|---|
| Apple | Apple | Apple | Apple | Apple |
| Google | Google | Google | Google | Amazon |
| Berkshire Hathaway | Berkshire Hathaway | Amazon | Amazon | Google |
| Johnson & Johnson | Southwest Airlines | Coca-Cola | Coca-Cola | Berkshire Hathaway |
| Amazon | Procter & Gamble | IBM | Starbucks | Starbucks |
| Procter & Gambe | Coca-Cola | FedEx | IBM | Coca-Cola |
| Goldman Sachs Group | Amazon | Berkshire Hathaway | Southwest | Walt Disney |
| Wal-Mart Stores | FedEx | Starbucks | Berkshire Hathaway | FedEx |
| Coca-Cola | Microsoft | Protcer & Gamble | Walt Disney | Southwest Airlines |
| Microsoft | McDonald's | Southwest Airlines | FedEx | General Electric |

Table 2: Daily Return n days from Magazine publishing

| | Fortune Portfolio | | S&P 500 Portfolio | | | |
|---|---|---|---|---|---|---|
| n | Mean | Standard Deviation | Mean | Standard Deviation | Beta | P-value |
| 0 | 0.000432 | 0.008307 | 0.000282 | 0.006714 | 1.10 | 0.0083 |
| 5 | 0.000439 | 0.008311 | 0.000283 | 0.006711 | 1.10 | 0.0056 |
| 10 | 0.000442 | 0.008309 | 0.000279 | 0.006708 | 1.10 | 0.0053 |
| 15 | 0.000442 | 0.008304 | 0.000282 | 0.006710 | 1.10 | 0.0049 |
| 20 | 0.000443 | 0.008306 | 0.000281 | 0.006711 | 1.10 | 0.0049 |

Table 2a: Original Results for Daily Returns

| | Fortune Portfolio | | S&P 500 Portfolio | | | Diff-in-Means |
|---|---|---|---|---|---|---|
| n | Mean | Standard Deviation | Mean | Standard Deviation | Beta | P-value |
| 0 | 0.000651 | 0.012720 | 0.000439 | 0.010557 | 1.07 | 0.0067 |
| 5 | 0.000666 | 0.012707 | 0.000437 | 0.010558 | 1.07 | 0.0035 |
| 10 | 0.000667 | 0.012700 | 0.000441 | 0.010560 | 1.07 | 0.0040 |
| 15 | 0.000668 | 0.012690 | 0.000440 | 0.010554 | 1.07 | 0.0037 |
| 20 | 0.000666 | 0.012657 | 0.000439 | 0.010554 | 1.07 | 0.0036 |

Table 3: Daily Returns n days out during Recession years

| | Fortune Portfolio | | S&P 500 Portfolio | | | |
|---|---|---|---|---|---|---|
| n | Mean | Standard Deviation | Mean | Standard Deviation | Beta | P-value |
| 0 | -0.000486 | 0.008712 | -0.000573 | 0.010052 | 1.03 | 0.0064 |
| 5 | -0.000484 | 0.008709 | -0.00057 | 0.010048 | 1.03 | 0.0061 |
| 10 | -0.000486 | 0.008709 | -0.000575 | 0.010047 | 1.03 | 0.0057 |
| 15 | -0.000487 | 0.008711 | -0.000573 | 0.010049 | 1.03 | 0.0055 |
| 20 | -0.000485 | 0.008711 | -0.000572 | 0.010051 | 1.03 | 0.0054 |

## 7. Bibliography


Abdullah, Dewan, and Steven Hayworth. "Macroeconometrics of Stock Price Fluctuations." *Journal of Business and Economics* 32.1: 50-67. Print.

Anderson, Jeff and Smith, Gary, 2006, "A Great Company Can be a Great Investment", *Financial Analysts Journal*, 62 (4), 2006, 86-93.

Arora, Anita, Capp, Lauren, and Smith, Gary, 2008, "The Real Dogs of the Dow," *The Journal of Wealth Management*, 10 (4), 64-72

Dorfman, John R. and Stertz, Bradley A., "Toyota and Honda May be Broadly Admired But the Stocks Are Widely Viewed as Lemons," The Wall Street Journal, January 14, 1991.

Dorsey-Palmateer, Reid, and Smith, Gary, "Regression to the Mean in Flight Tests."

Fama E., 1970, "Efficient Capital Markets: a Review of Theory and Empirical Work" Journal of Finance, Vol.25, No.2.pp. 383-417.
Fama, E. F. and K. R. French, 2000, "Forecasting profitability and earnings", Journal of Business, 73, 161–175.

Fesenmaier, Jeff, and Smith, Gary, 2002, "The Nifty-Fifty Re-Revisited", *Journal of Investing*, 11, 86–90
Fortune. http://www.fortune.com/fortune/. Accessed 2.5.2015

Freeman, R. and S. Tse, 1992, “A Nonlinear Model of Security Price Responses to Unexpected Earnings.” Journal of Accounting Research 30(2): 185-209.

Lord, F. M., and M. R. Novick, 1968, “Statistical theory of mental test scores” (Addison-Wesley, Reading).

Secrist, Horace. *The Triumph of Mediocrity in Business,*. Evanston, Ill.: Bureau of Business Research, Northwestern U, 1933. Print.

Siegel, Jeremy J. "The Nifty-Fifty Revisited: Do Growth Stocks Ultimately Justify Their Price?," *The Journal of Portfolio Management*, (Summer 1995), 8-20.
Siegel, Jeremy J. *Stocks for the Long Run*, Burr Ridge, IL: Irwin Professional Publishing, 1994, Chapter 6; second edition, 1998, chapter 7.

Smith, Gary. "Regression." *Standard Deviation: Flawed Assumptions, Tortured Data, and Other Ways to Lie with Statistics*. New York: Overlook Duckworth, Peter Mayer, 2014. Print.

Trainer, D., January, 2014, “10 Great Companies That Are Overvalued.” Retrieved February 8, 2015, from http://etfdailynews.com/2014/06/17/10-great-companies-that-are-overvalued/