A Thesis Presented to

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Investment Theories Applied to the Market

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Introduction:

What should I do with my money? How do I build a rock solid investment portfolio? The answers to these questions have been sought after for perhaps seven hundred years, starting with bond traders in Venice. From there we travel to the Belgian bond markets in the fifteen hundreds, and quickly spurred outside investing in the East India companies chartered from Britain, France and the Netherlands. The East India style of trading arguably played the most important role in creating the stock exchanges we know today because essentially people with disposable income, or investors, would research, inspect and ultimately bet their money on the success of a certain ship or a fleet of ships success. The more ships one chartered, the greater chance of returned wealth. The more research into the captain and the crew's experience, or multiple successful voyages gave an investor a better chance of return on their investment. The big change from former strictly bond based debt trading markets, to these East India markets was your first true equity based investing, the investor was buying a stake of the profits or earnings of a ship. This also allowed a company to build the size of their fleet, and therefore pay more investors higher returns, which interestingly were called dividends, the same term used for cash flows to investors today. The last huge step investing took during this era was written shares. When an investor would buy into a company he would receive a paper written share, which he could then keep, or sell to other investors at a premium. We had to wait only nineteen years after the formation of the London Stock Exchange in 1773, to open the New York Stock Exchange (NYSE). It should be noted however that the NYSE was not the first United States stock exchange, that

title belongs to the Philadelphia Stock Exchange, but the NYSE quickly overshadowed this smaller exchange.

Jumping ahead from Wall Street's inception in 1792, to the 1930's we see the birth of two of the most popular investing styles to date, Growth and Value investing. With the publication of Benjamin Graham's vastly successful book *Security Analysis*, in 1934 the concept of value investing hit the street. The concept is simple, buying solid proven companies, at a bargain price. This bargain price is proven by financial metrics such as price to earnings ratio, return on equity, sales and assets and earnings per share. Value investing focuses on investigating companies who seem to be undervalued according to the financial numbers they achieve, compared to competitors.

Growth investing is a concept that has existed since trading began, but a measurable strategy started with the man considered the father of growth investing, Thomas Rowe Price Jr. His style of investing in companies that exhibited growth signs such as strong management, and cash flows, while valuing their future revenue and earnings growth higher than its competitors. The Student Managed investment fund has never officially adopted either strategy, and has in fact held a multitude of both growth and value style equities. This is where my project begins. I will show through a thorough analysis of nineteen years' worth of our portfolio holdings, which style has earned us a better return on our investment. I will separate our holdings into growth, value or a blend called "Buffett Stocks", which will be their own category. The grouping will be according to specific assumptions and guidelines of both strategies laid out in my assumptions list. The calculations

will be followed by a written analysis of why the numbers showed what they did, as well as outside literature expanding on my analysis. I hope to show as definitively as possible, which investment style yielded the best returns. My goal is for the results to provide non-finance trained investors a much clearer insight into both the math and logic behind investing styles, and which style to follow. I am a dedicated stock investor, which means I believe an individual investor can achieve higher returns through equities than mutual or index funds, and this project is also aimed at solidifying that belief, and further educating people who are unsure.

Literature Review:

Previous research studies on investment style, and return on those styles are abundant and useful. When studying growth style versus value style investing Campbell, Polk and Vuolteenaho (2010), argue that returns to a stock are based primarily on risk, quantified in their paper with the stocks beta. This idea is not new to investors, where they diverge is that they separate betas into bad betas, and good betas. Bad betas are betas applied to stocks with permanent cash flow shocks, which investors are averse to, and good betas that are associated with discount rate shocks, because they affect investors relatively little. A critical assumption they take from the work of Fama and French (1993) is that value and growth stocks tend to move together, taking this as fact they pose the fundamental question of their study, what causes these movements? Their conclusion is that the movements are not merely circumstantial, but determined at their root, by traditional cash flow fundamentals of both value and growth stocks, thus providing a link that explains why value and growth stocks can co-move, and it also gives credibility, in the

authors minds, to growth stocks as more than "glamour" securities. For my research, taking from Campbell, Polk and Vuolteenaho (2010), I hope to answer whether the stocks in my data set support or oppose this idea of co-movement. This will be answered by the data fairly easily, however, the answer will pose the one of two questions, first if they do co-move, does this mean value or growth is not an important factor, but rather overall market movement is key? Or, if they do not co-move do they move inversely or randomly, and what does that suggest?

The question of whether classic stock fundamentals trumps market sentiment and vice versa, is another hotly debated topic, and for my purposes in this study is equally important. The consideration of this is vital because many of my assumptions, all of which I will discuss later, are based on fundamental analysis, and very little consideration has been made to market sentiment. A former study that exemplifies this debate is the work done by Sorensen and Thum (1992) in which they discuss this very point, although applied only to value investing. In their work, the authors discuss that over long time spans, fundamentally sound stocks as determined by things such as I used, like price to earnings ratio and dividend payments, outperform unsound securities. Their main point however, is that analysis that contains no adjustments for short-term market volatility, can drastically underperform, for either a certain time period, or indefinitely depending on the timing of the investment. They argue that selection based on a mix of fundamentals and macroeconomic risk factors, tends to yield better results. This is an important point for me to consider, because like I said I have built in only one real consideration of market elements in my study, being that I used the current

years market price to earnings ratio to benchmark the individual stocks price to earnings ratio for classification. I will have to take this into consideration and discuss if this added any biases to the study.

The last study I am discussing that is pertinent to mine, is the work of Gulen, Xing and Zhang (2011), in which they expand on the previous study I discussed concerning how market conditions affect fundamentally sound stocks. They separate market conditions into two states, high volatility and low volatility. One important thing to remember is that a high volatility state does not necessarily poorly affect stocks, in fact depending on the industry the stock is in it can greatly help, hurt or have no affect to an individual security. The main finding of their study was that in the high volatility state, value stocks expected returns varied significantly more than growth stocks, in the low volatility state there was no noticeable difference between the two. This is important for my study because not only should I consider how market conditions affect stock returns in general, but also I should consider how market conditions affect value and growth stocks differently, and see if my data perpetuates or conflicts with this study's findings of higher variance in growth stocks during times of high volatility. I will do this by taking chunks of time throughout the 20 years studied that were known, obvious times of market volatility and see the variances in my categories during that time. The next section will be my methods section, discussing how I calculated my data, and the reasoning behind the calculations as well as yearly nuances to the data.

Methods:

To compile the data for this project I took the Alfred University student managed investment funds yearly stock holding from 1994 to 2012 and ran a time series regression. I formed criteria for three separate categories to place each security into. The categories are Growth, Value and Buffett. Growth securities have the following guideline. First the company is not paying dividends; this is because traditionally dividend payments signal a company that is secure with its position, not a company attempting to significantly grow. Second is that the companies price to earnings ratio is higher than the S&P's current year average price to earnings ratio. This is because a high price to earnings ratio signifies that investors are willing to pay a premium with the expectation significantly higher future earnings. The value category applies the same criteria just backwards, so a company must be paying dividends, and their price to earnings ratio must be lower than the S&P's current year average price to earnings ratio. This signifies that the earnings the company is showing are selling for a discounted price compared to what they are worth. Buffett stocks are securities that are a mix of both, for instance they could be paying dividends, but have a high price to earnings. They have been called Buffett stocks because the famous investor Warren Buffett argues that you cannot put a security firmly in either category. It is important to note that all of the data was run separately for every year, so a security that was in one category in year 1, could be in another category in year 2, 3 etc. The rest of the columns in the data support what category the stock is in, as well as number of shares, and yearly performance based on last year's price and the current year price. The historical stock prices were

supplied by Yahoo finance, and the yearly earnings I got from the SEC EDGAR database. I then divided the current year price by the yearly earnings to get each security's individual yearly price to earnings ratio. The footnotes in the data contain nuances to the data; such as if earnings were negative for the year then the security was left out of that year's calculation. It is also important to note that not all holdings were included in the study, if the holdings 10-Ks or 10- Qs were not available for the timeframe they were not included, and further Yahoo does not keep historical prices for companies that went bankrupt, insolvent or for whatever reason no longer exist, except for mergers and acquisitions, of which our data contained several, and those companies are not included. The yearly percentage increase or decrease for each security was added to that category that the security was in that year to get the yearly category returns. It is important to note that the yearly return is just that, a yearly return, not the return since inception, this is because when added all together for the overall return it does represent the return since inception of every security. The overall return for each category is the summation of the yearly returns for each category.

Results:

Category Total Returns	Growth= -78.93%	Value= 74.26%	Buffett= 150.88%
Average Yearly Returns	Growth= -4.38	Value= 4.13	Buffett= 8.43

Standard Deviation	Growth= 25.45	Value= 17.37	Buffett= 18.85

The final calculation of overall returns for the separate categories over the nineteen years was quite conclusive. Growth stocks achieved the lowest return at -78.93% and an average of -4.38% a year, value stocks overall came in at 74.26% and an average of 4.13% and finally Buffett stocks were the best performer over the time span at a total of 150.88% and an average of 8.43%. The results clearly show that the Buffett category performed the best of the three, but there are a few points of biases I would like to discuss, as well as answer the questions I set forth in the literature review. First, to answer my question of movement, the data shows mixed results, for instance between '94 and '98 all categories moved in unison, either positively or negatively, but in '98 and '99 they moved inversely and never truly maintained a pattern of positive of negative co-movement. Certainly over the entire time frame there is not co-movement, but I will say that while the categories did not maintain a repeatable pattern, they did behave similarly in times of economic crisis such as 2000 and 2008. This answers not only my first question of the literature review, but also the last, and tells me that aside from extenuating market conditions, my data for the most part did not correlate. To fully answer both questions I would say yearly category returns were random; although securities behaved similarly in times of fiscal crisis, and therefore external factors cannot be the deciding factor on their success or failure, leaving fundamentals as the main component of returns.

The second question dealing with market volatility versus fundamentals ties perfectly into my first question. I ran a standard deviation for the data to see which category had the greatest volatility during the time frame. Growth stocks had the largest deviation at 25.45, second was Buffett at 18.85 and third was Value at 17.37. The study by Sorensen and Thum (1992), cited earlier argues that a mix of sound fundamentals with a consideration for short-term market risk yields the best results. My data supports that theory in that the Buffett category is a mix of both growth and value fundamentals, while maintain middle ground according to my standard deviation as far as risk, and it yielded the best results by far.

Last I would like to discuss the possible biases in this study. The first and most glaring bias with my study is that the data set contained only large cap, United States securities so it cannot in any way be taken as a representative of the whole market. Building off of this point it is well documented by comparing the S&P 500 and Russell 2000 that small cap stocks, over long time periods, out perform large cap stocks. Most small cap stocks that have performed tremendously over time would be categorized, not only by myself, but most investors as growth stocks so this study in my opinion is bias toward value stocks. This also explains in my opinion why Buffett stocks performed the best because they tended to be large cap companies paying dividends, but with growth characteristics. An opportunity for further study would be to obtain a fair mix of small, mid and large cap stocks and apply the same categorical criteria. Other sources of biases include the limited number of criteria for the categories, I did this intentionally so that the decisions of where to put a stock would not get convoluted, but the argument could certainly be

made that the criteria was overly simplistic. Also concerning data selection a noteworthy amount of stocks in some years were not included in the calculations. I have gone over the reasons in the methods section, but to further the point some were left out due to lack of data, and also for negative earnings because this conflicted with my selection criteria. If these were included they would have had a negative impact on the returns; however, since I did not see a fitting way to classify them it would have been an equally negative impact across the board. The point could be made however for a better way to include these subjectively and get different results.

Discussion:

  This project was had a very focused set of data, which is a good thing in that the results have real world implications for the specific type of stocks that were in the study. The limitations of this study also stem from the how specific the data set is. Again the stocks were only large cap, and largely blue chip so the results were a bit skewed towards a value type portfolio. I think the growth side of investing was largely limited because of this, and that the results should be read with this in mind. This opens up the opportunity for further studies, I think a study where the data from this one was paired with an equal portfolio in number of stocks, but all small cap, and another in all mid cap, the findings would be much more indicative of the market as a whole. I think this study is however a good representation of a large cap value strategy over a mid to long-term time frame and the results should be reasonably accurate.

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