

Growth and Value Stocks: Risks Associated With Value's Outperformance of Growth

David Michael Larson*

[June 2005]

* David Michael Larson is an undergraduate student in the College of Business Administration Honors Program at California State University, Long Beach, CA 90840. This manuscript serves to fulfill his Honors Thesis requirement. Address correspondence to David Larson via e-mail at david_larson2000@msn.com.

ACKNOWLEDGEMENTS

I would like to thank Dr. Peter Ammerman and Dr. Pamela Miles Homer of California State University, Long Beach for all of their help and time. This study would not have been possible without their technological and academic expertise.

Growth and Value Stocks: Risks Associated With Value's Outperformance of Growth

ABSTRACT

The majority of academics and financial experts generally believe that, based on previous studies, value stocks will generate superior returns when compared to growth stocks. However, there is less of a consensus when looking at which factors of risk are accountable for these greater returns. Some argue that it is investor and manager behaviors that cause the return differences, while others argue that value stocks are riskier than growth stocks. It is the goal of this study to determine which risk factor(s) is cause for the increased returns of value stocks.

INTRODUCTION

Academic work on value and growth has long had an impact on how professional managers handle their portfolios. This fact makes it all the more important to determine which risk factors are generating higher average returns for value investments when compared to growth investment strategies.

Basu (1977) determined that stocks with low P/E (price-to-earnings) ratios tend to have higher average returns than stocks with high P/E ratios. These stocks with low P/E ratios are considered today as value stocks, thus the data showed value as having greater returns than growth. However, at the time of publication, there was no talk about value or growth: that didn't become popular until the early 1990's.

Fama and French (1992) used the efficient market hypothesis (EMH) to explain the higher returns of value strategies. This hypothesis states that increased return should reflect increased risk. However, Lakonishok, Shleifer, and Vishny (1994) argued against the efficient market hypothesis and attributed the increased returns of value to both agency costs and some underlying investor behaviors. There have been multiple spin-offs of these first two trailblazing studies, but there is still no consensus on the underlying risk factor or factors that attribute to the increased returns of value investment strategies.

BACKGROUND AND LITERATURE REVIEW

The variable most often used to determine if a stock is either value or growth has been the book-to-market ratio. There are, however, a number of different ratios that can be used to determine value or growth. These ratios include BV/MV, E/P, P/E, CF/P, D/P, P/S, and P/B¹.

¹ BV/MV refers to book value-to-market value, E/P refers to earnings-to-price ratio, P/E refers to price-to-earnings ratio, CF/P refers to cash flow-to-price ratio, D/P refers to dividend-to-price ratio, P/S refers to price-to-sales ratio, and P/B refers to price-to-book ratio.

Chan, Hamao, and Lakonishok (1991) sorted portfolios according to their book-to-market, earnings-to-price, and cash-flow-to-price ratios. All three assortments showed that value stocks had greater monthly returns. Lakonishok et al. (1994) sorted portfolios by book-to-market, earnings-to-price, cash flow-to-price ratios. All three ratios indicated that value stocks had greater annual returns, however, this time value stocks' average annual return over the 5 years studied was greater as well.

Beta, alpha, and standard deviation are often used to determine risk, but beta has lost some of its supremacy in recent years (e.g., Fama and French 1992). Fama and French (1992) give some insight into the so-called "death of beta." They examined stocks from mid-1963 through 1992, sorted according to their BV/MV. The lowest ranked stocks, those being growth stocks, were placed into portfolio 1 and the highest ranked stocks, those being value stocks, were placed into portfolio 10. The rest of the stocks were evenly dispersed among the other portfolios. Portfolios 1 and 10 were then each evenly split into subgroups. Portfolio 10B, which was the value portfolio, had an average monthly return of 1.83 percent. The growth portfolio, Portfolio 1A, had an average monthly return of 0.30 percent. The market betas of these portfolios were very similar to one another, thus motivating the "death of beta." After the average monthly returns were determined, Fama and French plotted each portfolio's average BV/MV ratio against each portfolio's beta. It was determined that the expensive growth stocks had high risk and low returns, and that the cheap value stocks had low risk and high returns. This would suggest that the riskiest stocks should produce the lowest returns and vice versa. This goes to show that perhaps beta is only a partial way to measure risk in growth and value stocks. Consistent with Fama and French's (1992) approach, Chan, Hamao, and Lakonishok (1991) sorted Japanese stocks according to BV/MV and determined the difference in return between the highest and lowest ranked portfolio was 1.1 percent per month.

Lakonishok et al. (1994) attributed the rewards to value investing to agency costs of professional investment managers based on the fact that growth stocks tend to be in more exciting and marketable industries. These stocks also tend to receive more media coverage, which often makes them more marketable to potential or current investors. Furthermore, studies in psychology have shown that investors may use past performance to judge future performance (Kahneman and Riepe, 1998). This would imply that investors are less likely to want to have a portfolio of value stocks due to the fact that they often have a past of poor performance. Thus, growth stocks are more likely to be held by investors than value stocks, which in turn results in value stocks being under-priced.

Hence, Chan, Karceski, and Lakonishok (2000) argued that large-cap growth stocks had been outperforming large-cap value stocks between 1996 and 1998 due to the investors' expectations of future growth and companies' ability to continue the growth for an extended time. Much of the empirical data that has been compiled to compare growth and value stocks has come from the 1990's. The 90's, however, were a strange time for the stock market due to the great success of many new Internet companies. Many of these Internet companies had little or no book value, but had high market value. Also, with the market as a whole doing so well in the 90's, many investors felt that the stock market was a "sure thing". This increased confidence in the market and the boom in un-established Internet companies may play some role in explaining why no risk factor has been linked to value stocks' increased returns.

Fama and French (1998) used multiple indicators to determine value and growth for the markets of numerous countries. They used BV/MV, E/P, D/P, and CF/P. The results heavily favor value in almost every country. Also, the return volatilities were not markedly different between the value and growth portfolios, which would mean that the returns of value could not be directly explained by standard deviation. Chan and Lakonishok (2004) argued that, "evidence

from a variety of indicators, including beta and return volatility, suggests that value stocks are not riskier than growth stocks” (p. 85).

Hypotheses

The study reported here uses portfolios formed from December 1, 1994 through February 1, 2005 to determine what risks take part in value stocks’ greater return. It is expected that:

H1: Stocks classified as “value” will have a higher average return, according to the geometric mean measure of return, than those that are classified as “growth”.

H2: “Growth” stocks are fundamentally riskier than “value” stocks.

METHODOLOGY

Construction of “Value” and “Growth” Portfolios

Returns for the Standard & Poors (S&P) 500 companies were first compiled into one portfolio along with their monthly-adjusted prices from December 1, 1994 through February 1, 2005. The data were retrieved from *Yahoo! Finance*. This portfolio was used to determine each stock’s simple return by use of the following formula:

$$R_t = \frac{P_t}{P_{t-1}} - 1$$

Where: R_t = Company returns
 P_t = The most recent closing price

A mirror image portfolio was created with the same stocks except this time with the non-adjusted monthly prices that were also retrieved from *Yahoo! Finance*. This portfolio is needed to properly calculate each company’s E/P ratio. It was determined that the E/P ratio be used instead of the P/E ratio because it is more continuous: although earnings may sometimes be zero, price is rarely zero, which makes E/P a much more accurate measuring tool. Next, a portfolio of all of the company earnings per share (EPS) per quarter was formed. EPS data was retrieved from Bloomberg (December 1, 2000 through December 1, 2004) in the form of Basic EPS. In

order to properly calculate each company's E/P ratio, the EPS must be in a yearly format and projected 4 months into the future. This way, the EPS data is properly adjusted to coincide with when investors would actually hear about the previous quarter's earnings. So, yet another portfolio was formed where each company's quarterly EPS was added together with the previous three quarters' ESPs and then projected 4 months into the future. The E/P ratio could then be properly calculated by taking this adjusted earnings data and dividing it by the coinciding non-adjusted price data. This resulted in 4 years of annual E/P data, from January 2002 through January 2005. The companies were then separated into 5 groups according to their E/P ratios. Group 1 had the lowest E/Ps and was classified as the "growth" group and Group 5 had the highest E/Ps and was classified as the "value" group. The rest of the stocks were then evenly distributed into the other groups. Each group consisted of roughly 97 companies per year, because, due to lack of EPS or price data, certain companies were withdrawn from the study. This results in roughly 390 total securities per group.

After each company was separated into an aforementioned group, they were combined with their simple returns. This made it possible to determine each group's average returns, as well as the standard deviation, skewness, and kurtosis of those returns.

Standard Deviation

Risk may be measured by an asset's or portfolio's standard deviation. Standard deviation is simply the measure of dispersion around the sample's average value, which is generally referred to as its volatility. The greater the dispersion of the returns, the greater the risk that is associated with the asset or portfolio.

Skewness and Kurtosis

Skewness is a measure used to determine if a data set is symmetrical or not. Skewness for a normal distribution is zero, indicating that the left side of the distribution is the exact same as the right side. Negative values indicate that the data is skewed left and positive values indicate that the data is skewed right. Whichever way the value is skewed simply means that that side is “heavier” than the other side.

Kurtosis, relative to a normal distribution, is a measure used to determine if the sample data has heavy tails or not. Heavy tails indicates that a large amount of the data lies farther away from the mean than the normal distribution would suggest. The kurtosis for a normal distribution is equal to 3.

Calculating Beta

$$\beta = \frac{Cov_{i,M}}{\sigma_M^2}$$

Beta is a measure of risk that determines the responsiveness of an asset’s return relative to the market as a whole. Thus, beta is a measure of a stock’s volatility to the market. The greater the beta, the greater the risk involved with the security. This is because the returns of the security have risen (or fallen) more rapidly than the return on the market. For instance, a stock determined to have a beta of 2 is going to exhibit returns twice that of the market. Thus, this security would be considered an aggressive or volatile security.

RESULTS

Data Analysis

After assembling all four years of data, including returns, beta, and dummy variable, an OLS regression analysis was performed. This analysis was performed to determine if the relationship between growth and beta had a significant effect on yearly returns. A regression model specified

beta and the dummy variable (where value coded as “0” and growth coded as “1”), along with their interaction as independent predictors of average stock return. The overall model was significant ($F(3, 771)=15.29, p=.000$) with an R^2 of .056, indicating that only 5.6% of the variance in the dependent variable (average stock return) was explained by this set of independent variables (i.e., beta, dummy variable, beta x dummy). Examination of the individual beta coefficients for this regression model suggest that on average, larger returns are associated with larger betas ($b=0.39, t=4.93, p=.000$).

Hypothesis 1

Returns were found to be significantly greater for growth stocks ($M = .18$) in direct comparison to value stocks ($M = .03; t(773) = 1.80, p < .10$). However, the significant interaction between beta and the stock dummy variable ($b = -.21; t = -2.27$) indicates that the relationship between beta and returns is greater for value stocks ($b = .27; t = 5.43$) versus growth stocks ($b = .20; t = 3.93$).

Hypothesis 2

As measured by beta, skewness, kurtosis, and standard deviation, growth stocks are riskier than value stocks. Specifically, the beta for growth stocks ($=1.32$) is greater than values' beta ($=.57; t(773) = 11.23$). Similarly, the skewness for growth stocks ($=2.22$) is greater than value's skewness ($=1.84; t(773) = 3.12$). The kurtosis for growth stocks ($=10.20$) is also significantly greater than the kurtosis of the value stocks ($=9.63; t(773) = 16.80$). Finally, the standard deviation for growth stocks ($=.90$) was greater than value's standard deviation ($=.78; t(773) = 3.02$).

[Insert Table 1 about here.]

DISCUSSION

It has been previously shown that when looking at brief periods of data (1-5 years) that growth stocks can, and sometimes will, outperform value stocks. Thus, the fact that the data reported here did not support H1 that value stocks will outperform growth stocks is not that surprising.

The data is supportive of Fama and French (1992) in that increased risk does in fact reflect increased returns. In the study at hand, beta was determined to be a significant factor in predicting greater growth stock returns, however, it only explained 5.6% of the variance. Thus, other measures of risk, like standard deviation, skewness, and kurtosis are likely to explain additional variation in the returns. As was shown above, all of these measures of risk were shown to be greater for growth, but if value had outperformed growth in this study, those results may have differed.

It is also important to understand what factors may have influenced the findings previously discussed. Hypothesis 1 examined if value outperformed growth during the given time period. This result has a number of plausible explanations. One of the reasons may be because the time period researched was during a recession, unlike the bull markets previously researched. Perhaps the recession market caused less investor confidence in the cheaply priced value stocks. It may have been viewed that these companies would not recover from their stagnant performances and thus would make a poor investment, which in turn caused their returns to fall. This is why investors may have shifted their strategies to a more growth-oriented approach during this time period. It was foreseen that these well-known and high quality growth companies would make a much wiser investment simply because they have a strong history of good performance. Also, Chan and Lakonishok (2004) mention that there was a shift from value strategies in the late

1990s to growth strategies in the late 1990s. Perhaps this trend has simply carried over from the late 1990s and is still the strategy of choice today.

Hypothesis 2 stating that growth stocks will be fundamentally riskier than the value stocks was initially expected to be rejected. This was essentially the primary research objective: to determine which risk factor caused value to outperform growth. However, since growth actually outperformed value, this point becomes rather insignificant. If value stocks had performed as expected, this hypothesis would have been more important. It would have then demonstrated which, if any, risk factors involved in this study were accountable for the outperformance of value stocks relative to growth stocks. It would have, essentially, helped support the efficient market hypothesis.

CONCLUSION AND FUTURE RESEARCH

Many previous studies have shown that value stocks tend to outperform growth stocks. However, the growth-oriented trend of the late 1990s seems to have blown a strong head of steam into the early 21st century, i.e., growth stocks continue to outperform value. Perhaps the best explanation for these happenings lies within the rise and fall of the Internet bubble, where investor over-optimism ran rampant. With many of the most recent studies of this topic stopping just short of the bubble period, it is important to continue analyzing securities data until it is determined what is the cause of values' typical outperformance of growth.

Risk factors such as skewness and kurtosis are often overlooked as measures to determine risk. A study utilizing these risk measures across a greater timeframe could better evaluate the higher value returns and greater risk according to skewness or kurtosis for that value portfolio. The desired timeframe would likely be 10 years or greater, thereby better accounting for minor market fluctuations that would cause growth to have greater returns than value.

Furthermore, it is important to keep in mind that perhaps other factors outside of risk are having an effect on the returns of value and growth stocks. It is possible that stockbrokers recommend certain types of securities in order to increase their own personal profit rather than investor profit. This could be the cause of growths' recent outperformance when compared to value.

In this study, each individual portfolio was rather large, with nearly 400 securities for each group of E/P. Because all 4 years of data were combined to run the regression analyses, it is possible that the great number of securities per portfolio actually thinned out the overall returns for the extremities of growth and value. Had the growth (Portfolio 1) and value (Portfolio 5) portfolios been split in half or into fourths to create a more definite group of growth and value, the results may have been different.

With the overall stock market environment always changing, it is difficult to determine why stocks react a certain way and how they are likely to react. It is for this reason that identifying the primary risk factor(s) causing values' superior performance is critical. It would simply give investors one more tool to use while attempting to reap greater returns with less overall uncertainty.

REFERENCES

- Basu, Sanjoy (1977), "Investment Performance of Common Stocks in Relation to Their Price-Earning Ratios: A Test of the Efficient Market Hypothesis, *Journal of Finance*, 32 (3, June), 663-682.
- Chan, Louis K.C., Yasushi Hamano, and Josef Lakonishok (1991), "Fundamentals and Stock Returns in Japan," *Journal of Finance*, 47 (5, December), 1739-1764.
- Chan, Louis K.C., Jason Karceski, and Josef Lakonishok (2000), "New Paradigm or Same Old Hype in Equity Investing?" *Financial Analysts Journal*, 56 (4, July/August), 23-36.
- Chan, Louis K.C., and Josef Lakonishok (2004), "Value and Growth Investing: Review and Update," *Financial Analysts Journal*, (January/February), 71-85.
- Fama, Eugene F., and Kenneth R. French (1992), "The Cross-Section of Expected Returns," *Journal of Finance*, 47 (2, June), 427-465.
- Fama, Eugene F., and Kenneth R. French (1998), "Value Versus Growth: The International Evidence," *Journal of Finance*, 53 (6, December), 1975-1999.
- Haugen, Robert A. (1999), *The New Finance: The Case Against Efficient Markets*, 2nd Edition, Upper Saddle River, New Jersey: Prentice Hall.
- Lakonishok, Josef, Andrei Shleifer, and Robert W. Vishny (1994), "Contrarian Investment, Extrapolation, and Risk," *Journal of Finance*, 49 (5, December), 1541-1578.

TABLE 1
Portfolio Returns and Risk Statistics

	1 (Growth)	2	3	4	5 (Value)
January 02					
Returns (%)	.4923	.0068	-.0164	.0586	.3484
Standard Deviation	1.2248	.3751	.4463	.4867	1.6391
Skewness	3.1710	1.3973	1.6498	3.3851	4.8877
Kurtosis	13.0042	2.1679	5.9767	15.3838	29.1067
Beta	1.3860	1.0692	.6605	.7276	.6464
January 03					
Returns (%)	1.0230	.1882	.2142	.2840	.4928
Standard Deviation	1.5757	.3882	.3071	.3213	.8507
Skewness	4.0846	.6651	.9180	1.0869	2.3185
Kurtosis	24.5102	1.1306	1.6548	1.6580	6.6281
Beta	1.3223	.9634	.6568	.5196	.5478
January 04					
Returns (%)	-.4033	-.3318	-.2898	-.2807	-.2850
Standard Deviation	.2004	.1482	.1365	.1240	.1275
Skewness	1.0283	-.2632	-.3537	-.4320	-.5648
Kurtosis	3.5664	1.2459	.0966	.8305	.3627
Beta	1.3790	.8366	.5122	.4667	.4154
January 05					
Returns (%)	-.3986	-.5668	-.3661	-.4064	-.4174
Standard Deviation	.5870	.4981	.4640	.5080	.5044
Skewness	.6062	.3614	.7290	1.4853	.6987
Kurtosis	-.2950	-.3354	.6257	4.4496	2.4244
Beta	1.1977	.7509	.6473	.4699	.6702
Averages					
Returns (%)	.1783	-.1759	-.1145	-.1019	.0347
Standard Deviation	.8970	.3524	.3385	.3600	.7804
Skewness	2.2225	.6693	.7358	1.3813	1.8350
Kurtosis	10.1964	1.0522	2.0884	5.5805	9.6305
Beta	1.3213	.9050	.6192	.5459	.5700