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Value Funds Verses Growth Funds: An examination of actual
differences in price-to-earnings and price-to-book ratios.

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Department of Finance

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ABSTRACT:

In recent years the Growth and Value fund investment objectives have received a great deal of attention. The growth style is typically associated with a high price-to-book ratio and a high price-to-earnings ratio while the value style describes funds with low price-to-book value ratios and low price-to-earnings ratios. For purposes of this study, a growth fund is defined as a fund with the term "growth" in its name, and a value fund is defined by the term "value" in its name. This study examines whether in aggregate or as individuals, the funds remain true to the said characteristics. It also examines the risk and return associated with each style.

The statistical analysis used was a paired difference test and a difference in means analysis. The results of this study found that in aggregate the funds do follow the typical associations. However, individual funds often do not. Therefore, for investors looking to purchase a fund with either of these two investment objectives, it is important to examine the fund's ratios as opposed to strictly relying on the fund's name.

INTRODUCTION

When choosing a mutual fund, the objective of the fund's managers is an important factor in the investment decision. Recently, there has been debate regarding which strategy is superior, particularly in the choice between a growth or value objective. The growth style is typically associated with funds that have a relatively high price-to-earnings ratio and price-to-book value ratio. According to Bauman and Miller, the growth strategy has been popular in the post-war period and especially during times of strong economic growth.(Bauman and Miller [1997])

In contrast, the value objective is associated with mutual funds that have a relatively low price-to-earnings ratio and low price-to-book value ratio. In recent years, this style has received greater attention after several anomalies were documented showing positive risk-adjusted returns associated with low price-to-earnings ratios, price-to-book value ratios and price-to-cash flow ratios.(Fama and French [1992] and Basu[1977])

Due to the increasing popularity of the value approach, there has been an increase in the number of funds claiming to be value funds. Because there is no regulations stating what characteristics a value or growth fund must possess, many funds may exist that do not follow the typical associations. This study will evaluate whether in aggregate and as individuals, value funds have relatively lower price-to-book value ratios and lower price-to-earnings than growth funds.

The performance of the two objectives has been examined by numerous researchers who found that value stocks demonstrate favorable investment performance when compared to growth stocks. Thus one would assume that mutual funds with a value

objective would perform better than those with a growth objective. This analysis will also examine the risk and return of value and growth funds to further evaluate their performance.

RELATED RESEARCH

A study by Bauman and Miller found that value stocks out-perform growth stocks due to the adaptive expectations hypothesis.(Bauman and Miller [1007]) The adaptive expectations hypothesis recognizes “psychological influences on human decision-making in which experts tend to focus on and overuse predictors of limited validity in making forecasts.”(Bauman and Miller [1997]) They concluded that because value stocks displayed poor past performance, investors undervalued them in the future. Thus, investors should be sensitive to the possibility that the future performance of a company will be either better or worse than the recent past performance. After publishing this article, one would assume that investors would recognize that value stocks are undervalued and the market would correct itself. This would eliminate the exceptional performance displayed by value stocks in the past.

Although there has been numerous studies examining the profitability of value and growth funds, no research could be found examining the ratios of value funds and growth funds. The typical associations are taught in many finance textbooks, however no research was found to confirm that growth funds have higher price-to-book value ratios and price-to-earnings ratios than value funds.

SAMPLE

The sample includes a selection of 22 growth funds and 22 value funds. The requirements were that it had less than \$330 million dollars in total assets and it must be listed on MorningStar, release date June 30, 1998.

The size of the funds used in the study was relatively small. Table 1 shows the average size as approximately \$90 million in net assets for both the growth and value funds.

Table 1	Growth	Value
Size:		
Mean	90.1818	90.5
Minimum	3.2	2.9
Maximum	300	7.8
Sample Size	22	22

The funds were chosen if they had the terms “growth” or “value” in their name rather than as an objective. This was to ensure that the objective was given by the fund’s management, not by MorningStar. In addition, a listing of “value” as an objective was nonexistent on MorningStar, rather they were called “growth and income”.

A second requirement was that a value and growth funds be paired within the same fund family. By selecting a growth and value fund within the same fund family, a paired difference test was possible.

VARIABLE CALCULATIONS

The variables used in this study were derived by the following procedures.

Price-to-book value ratios- The ratios were taken from MorningStar's Equity Portfolio Statistics. They were portfolio averages as of June 30, 1998.

Price-to-earnings ratios- The ratios were taken from MorningStar's Equity Portfolio Statistics, portfolio averages as of June 30, 1998.

Annual three-year returns- The annual three-year returns were taken from MorningStar's "Trailing Period Performance". The returns are total returns as of June 30, 1998.

Twelve-month returns- The twelve-month returns were from MorningStar's "Trailing Period Performance" and are also as of June 30, 1998.

Beta- The Betas of the funds were according to MorningStar's Standard and Poor's 500 measurement. They are current as of June 30, 1998.

Size- The size of the funds was determined by the total net assets of the fund according to MorningStar release date June 30, 1998.

METHODOLOGY

To determine whether there is a significant difference in the aggregate price-to-book value or price-to-earnings ratios both a difference-in-means test and a paired-difference test were used. The difference-in-means test is useful because it retains the entire sample size. Considering the relatively small size of this sample, this factor is important. However, the paired different test produces more robust information because of additional information used in the calculation. Therefore, both tests were done to

evaluate whether there is a significant difference in the price-to-book value ratio and price-to-earning ratio of growth and value funds.

To evaluate each individual fund's price-to-book value and price-to-earning ratio, the means and individual ratios were considered. Appendix 1 lists each individual fund and the mean of growth and value funds.

RESULTS

P/B and P/E Ratios

The difference-in-means test produced Z-statistics of 10.2 and 8.8, for the price-to-book value and price-to-earnings ratios, respectively. Both of these statistics are well above the 95% confidence level of 1.96. Similarly, the paired-difference test produced t-statistics of 12.80 and 9.80 for the price-to-book value ratio and price-to-earnings ratios, respectively. These are also statistically significant, showing that there is in fact a difference in the two ratios for growth and value funds. Tables 2 & 3 show these statistics in graphical form. Therefore, both the pair-difference test and the difference-in-means test support the proposition that in aggregate, growth funds have a higher price-to-book value and price-to-earnings ratio.

Because growth funds have a statistically significant higher price-to-book value ratio and price-to-earnings ratio than value funds, the mean for growth funds is higher than the mean of the value funds. Again this is consistent with the typical associations.(See Tables 2 & 3)

While in aggregate these associations may hold, several individual funds have been found that violates the typical associations. For example, tables 2 & 3 show the minimum and maximum price-to-book ratios for growth and value funds. The maximum price-to-book ratio for value funds is given as 7.8. One would assume that the minimum price-to-book ratio for growth funds would still be higher than the maximum value fund. However, the minimum price-to-book ratio for growth funds is actually lower than the maximum of value funds at 5.5. This violation only occurred in one of the value funds.

Table 2	Growth	Value	Z-Statistic	t-Statistic
Price-to-Book:				
Mean	8.2545	4.1955	10.12527	12.8037
Minimum	5.5	2.9		
Maximum	12.2	7.8		
Sample Size			44	44

Table 3	Growth	Value	Z-Statistic	t-Statistic
Price-to-Earnings:				
Mean	35.8545	24.0318	8.800235	9.797796
Minimum	26	18.8		
Maximum	46.5	31.8		
Sample Size			44	44

None of the growth funds in this sample violated the typical price-to-book associations. This may be due the fact that growth funds have existed longer than value funds. With growth funds, its characteristics are widely known by both the investors and the fund managers. In contrast, value funds have only recently become popular, so the characteristics of a value fund may be less widely known.

When examining the price-to-earnings ratio of growth and value funds this violation could be seen again. For example, the maximum price-to-earnings ratio of

value funds is 31.8. This is higher than the minimum price-to-earnings ratio for growth funds of 26. (See Table 2 and Appendix) This violation occurred more often with the price-to-earnings ratios than the price-to-book ratios. The violation occurred only once in the price-to-book ratios, but occurred seven times in the price-to-earnings evaluation. This is fairly important considering there were only 22 value funds in the sample.

Returns

As given in table 4 & 5, the difference in both the annual three-year and twelve-month returns is insignificant. This is inconsistent with the results of the study done by Bauman and Miller [1997] who found that value funds out-perform growth funds.

Table 4	Growth	Value	Z-Statistic	t-Statistic
Annual 3 yr. Return:				
Mean	24.1045	23.9191	.163947	.1191
Minimum	16.85	17.67		
Maximum	29.54	26.17		
Sample Size			30	22

Table 5	Growth	Value	Z-Statistic	t-Statistic
12 Month Return:				
Mean	24.5242	20.4547	1.0719	1.0788
Minimum	-30.15	6.65		
Maximum	41.03	25.94		
Sample Size			41	38

In fact the mean annual three-year return of 24.10 for growth funds is slightly higher than that of value funds at 23.92. Similarly, the mean annual twelve-month return for growth funds is 24.53, four points higher than that of value funds at 20.45. (See

Tables 4 & 5) This may be due to the relatively small sample in this research, compared to fourteen years of data collected in Bauman and Miller's research.

Beta

As demonstrated by the paired-difference test and the difference-in-means test, the beta of growth firms is higher than value firms. These results are statistically significant above the 95% confidence level as reported in table 6. This is also consistent with the typical association that growth funds are riskier than value funds. Similarly, the mean for growth funds was slightly higher at .9364, than growth funds at .7364.(See Table 6)

The individual violations that occurred in the typical associations of price-to-book value and price-to-earnings ratios were also present when evaluating the each fund's Beta. For example, the maximum beta for value funds at .90 is higher than the minimum of growth funds at .71. (See Table 6)

Table 6	Growth	Value	Z-Statistic	t-Statistic
Beta:				
Mean	.9364	.7364	3.2881	2.9207
Minimum	.71	.19		
Maximum	1.08	.9		
Sample Size			30	22

SUMMARY AND CONCLUSIONS

This study confirms that in aggregate, growth funds have lower price-to-book value and lower price-to-earnings ratios than value funds. However, individual value funds may have higher price-to-book value ratios and price-to-earnings values than individual growth funds. Therefore, investors should be cautious when selecting a fund

that it does in fact have a relatively low price-to-book value ratio and price-to-earnings ratio. This is particularly true for investors interested in value funds. As individuals they violated the typical characterizations in 32% of the funds.

The profitability analysis for growth and value funds was insignificant so no conclusions can be drawn regarding which style demonstrated superior performance. Further research should be done examining whether the superior performance of value funds persists despite information regarding them being undervalued.

The beta of the two funds was significant and supported the typical expectation that growth funds have a higher beta than value funds. Therefore, one can successfully conclude that on average growth funds are in fact riskier than value funds. However, individual funds were found that violate this association, so investor should examine the beta of the individual funds before investing.

REFERENCES

- Bauman, W. Scott and Robert E. Miller, "Investor Expectations and the Performance of Value Stocks Versus Growth Stocks." *The Journal of Portfolio Management*, Spring 1997, pp. 57-68.
- Basu, S. "Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis" *Journal of Finance*, Vol. XXXII, No. 3 (June 1977), pp. 6763-6784.
- Beaver, Barbara M., Robert J. Beaver and William Mendenhall, "Introduction to Probability and Statistics, Tenth Edition." New York: Brooks/Cole Publishing Company. 1999.
- Fama, Eugene F., and Kenneth R. French. "The Cross-Section of Expected Stock Returns." *Journal of Finance*, Vol. XLVII, No. 2 (June 1992), pp. 427-465.

Appendix 1

	P/E Ratio	P/B Ratio	annualized 3 year return	12 month return	Risk Beta	size in millions
ABN-Amro Growth Inv	36.3	8.8	25.34	28.03	0.93	3.2
ABN-Amro Value Inv	19.4	2.9	25.04	21.28	0.9	1.8
AIM Select Growth A	34.6	7.5	21	22.05	1.07	300
AIM Value C	26.6	4.8				114.8
Dreyfus Aggressive Growth	32.7	7.3		-30.15		53.2
Dreyfus Aggressive Value	22.2	4.1		9.27		134.6
Evergreen Aggressive Growth B	41.4	9.1		22.01		39.8
Evergreen Value Y	26.4	5.1	22.23	20.79	0.88	251.1
Fortis Growth B	41.3	8.3	17.12	22	1.14	14.9
Fortis Value B	28.3	4.7		19.94		5.3
GMO Growth III	34.2	8.3	29.54	31.1	1.03	194.6
GMO Value III	24.6	4.2	26.17	25.52	0.87	321.1
Harbor Growth	38.8	7.1	16.85	15.86	0.86	120.4
Harbor Value	22.9	3.2	24.79	20.9	0.75	196.7
Heritage Growth Equity A	43.1	12.2		40.92		37.1
Heritage Value Equity A	18.8	4.7	17.83	6.65	0.86	20
IAI Growth	33.1	7.4	19.73	25.38	0.99	16.7
IAI Value	23.3	3.4	26.11	44.8	0.19	29.8
Matrix Growth	32.5	7	26.24	32.28	0.95	14.2
Matrix/LMH Value	28.5	3.6	17.67	12.56	0.56	10.5
Munder Accelerating Growth K	33.8	7	13.12	13.16	1.16	64.7
Munder Value K	22.2	3		25.94		14.7
Nations Capital Growth Inv B	33.3	8.2	25.1	33.07	1.08	61.4
Nations Value Inv B	23.4	4.7	23.78	21.85	0.85	155.6
New England Growth Opportunities B	26.9	6.8	27.45	31.51	0.98	118.2
New England Value B	24	4.8	21.29	14.13	0.84	89.4
Oppenheimer Growth Y	26	5.5	21.85	15.05	0.71	155.2
Oppenheimer Quest Value C	21.7	3.7	25.06	22.83	0.71	135.2
Phoenix Growth B	33.8	8	22.16	25.85	0.87	77.6
Phoenix Value Equity A	22.6	4.4				15
Pillar Equity Growth I	39.7	10.3				189.9
Pillar Equity Value A	30.3	7.8	26.19	24.22	0.93	17.8
PIMCo Growth A	41.9	9.8	26.52	41.03	1.06	186.9
PIMCo Value A	19.1	3.5		18.86		21.9
Principal Growth B	35	7.2	24.11	31.52	0.9	60.6
Principal Capital Value B	24.3	4.2	25.92	24.79	0.83	40.5
Stagecoach Growth B	32.6	8.1	22.38	22.27	0.96	55.7
Stagecoach Equity Value A	22.3	3.4	25	19.24	0.9	54.3
STI Classic Captl Growth Flx	30.1	7	26.56	27	0.91	114
STI Classic Val Inc Stk Flex	24.4	3.6	22.28	17.22	0.7	182.2
Strong Growth 20	46.5	10.6		31.29		51.2
Strong Value	31.8	4.9		25.21		92.6
Style Select Aggressive Growth A	41.2	10.1		32.63		54.5
Style Select Value A	21.6	3.6		16.86		86.1
Mean for Growth Funds	35.8545	8.2545	24.1045	24.5242	0.9364	90.1818
Mean for Value Fund	24.0318	4.1955	23.9191	20.4547	0.7364	90.5000