

Behavioral Portfolios Performance Measurement¹

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Abstract

Behavioral finance theories and concepts are gradually being accepted by academicians and practitioners. There is a slow but sure recognition that financial markets are influenced, to at least some degree, by human emotions and not only by fundamental data and rational investors. However modern portfolio theory, CAPM, and fundamental analysis still carry the day. In pragmatic settings, while behavioral aspects have always been known they are becoming more formally recognized. In fact several portfolio managers/mutual funds even state they use metrics that quantify irrational investor behavior to manage their funds. The purpose of this research is to study the performance of 'behavioral mutual funds' and to compare their performance to indices of traditional mutual funds. We examine aspects such as alpha capture and the information ratio, along with risk adjusted performance measurements. Given the newness of behavioral considerations in the management of mutual fund portfolios there are very few funds that are classified as behavioral. Additionally, the funds are not based on theoretical behavioral portfolio construction. Our findings show, that while it is difficult to draw strong conclusions regarding behavioral techniques and management of portfolios, the information available tends to support a finding that recognizing behavioral inefficiencies can improve the performance of portfolios. Moreover, as more mutual funds recognize the benefits of behavioral finance and employ behavioral methods to capitalize on irrational behavior over a longer period of time, firmer conclusions can drawn.

1. Introduction

In recent years the field of behavioral finance has been used more and more in the pragmatic world, and is being formally recognized and studied in the academic world. Investment strategies of LSV Asset Management include an attempt to capitalize on behavioral mistakes made by investors. As they indicate in their literature mistakes embrace “the tendency to extrapolate the past too far into the future, to wrongly equate a good company with a good investment irrespective of price, to ignore statistical evidence and to develop a ‘mindset’ about a company.”

Though different funds employ different strategies, behavioral finance generally attempts to profit from investor error as a whole (i.e., “crowd theory” or when the market as a whole is wrong). The recent technology boom is a perfect example of this “crowd theory” at its worst. More mutual funds are beginning to market themselves as behavioral funds and are seeking to profit from behavioral ‘anomalies.’ Furthermore some portfolio managers (e.g., Bill Miller of Legg Mason) make statements about behavioral aspects. However, it is questionable whether these aspects are the driving force in managing the portfolio. It should also be recognized that

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many behavioral funds use quantitative data, i.e., the use of metrics such as the (P/E) ratio to derive behavioral characteristics to manage portfolios. Therefore; it is difficult to distinguish between a pure quantitative strategy and a behavioral strategy.

Questions that arise when evaluating behavioral mutual funds include: 1) Do behavioral funds perform as well as more traditional funds in terms of risk and return (or, for that matter, will they be profitable at all when events such as the technology boom have subsided)? 2) Does behavioral finance work best for a certain investment style or market capitalization? Does it follow that if large-cap companies receive greater analyst coverage, there will be less room for behavioral influence in the market (e.g., less alpha to be captured, thus making behavioral finance strategies less profitable for this investment category)? Or will large-cap companies still be susceptible to behavioral influence because less experienced investors are more likely to invest in large-caps leaving more room for behavioral fund managers to take advantage of the general public's lack of investment experience. Can this also imply that more alpha may be available as the size of the firms decrease? 3) Does behavioral analysis work as well for value companies as growth companies? As many inexperienced investors flock to pharmaceutical and technology companies (growth companies) pushing prices far above their true value in the hope of profiting off of the next big miracle drug or technology, behavioral managers may identify trends and profit from them. There is also the question of what type of risk (if any) behavioral finance addresses. Is behavioral finance more effective with total risk or systematic risk? These questions are evaluated in this study.

Behavioral finance has been around for several decades; however, there are only a very few mutual funds that identify and market themselves as "behavioral funds" and little is known about their performance as a whole. Numerous studies that have examined mutual funds, however, to date, no study has explicitly considered behavioral funds.

In the next section a brief review of behavioral portfolios, pragmatic methods of behavioral finance, and performance measurement is presented. The third section presents the data and methodology. Results are presented and discussed in the fourth section. The paper concludes with an overview and summary.

2. Background

Building on prior work, Shefrin and Statman (2000) develop a positive behavior portfolio theory and discuss its implications regarding portfolio construction and compare it to the mean-variance efficient frontier. They also explore their theory using mental accounting, the layered pyramid aspect of investor behavior. Their analysis indicates that behavioral portfolios should follow the pyramid structure by including risky securities at the upper levels and less risky assets at the lower levels. Curtis (2004) reviews the complexities between portfolio construction using the Markowitz model and behavioral finance. He indicates that merging the two approaches will provide an optimal portfolio, however he also recognizes that there are many challenges to overcome (e.g., taxes, transaction costs, market timing, et cetera).

Peters (2003) examines efficient market theory and the theory of behavioral finance. He argues that investors exhibit both rational and irrational behavior, and complexities of market

inefficiencies exist. Short-term/simple inefficiencies are quickly arbitrated, however long-term/complex inefficiencies, such as long-term behavioral biases, require longer time horizons to reach “equilibrium” (e.g., from tulip bulb to dot.com crazes). Complex inefficiencies are not easily arbitrated away and, if analyzed correctly, they present profitable opportunities for investors.

The mutual funds identified as behavioral for the current research do not construct their portfolios along the lines of Shefrin and Stateman or Curtis. Instead they implicitly recognized that (1) investors behave irrationally at times, (2) the behavior is reflected in the market price, and (3) excess profits are possible if the inefficiency is recognized and analyzed properly. Peters article is the most similar to that employed by practitioners, and in some ways adds “academic legitimacy” to the investment/portfolio strategies they have been using, in some cases, for many years.

Studies that examine fund performance that are relevant to addressing the questions noted above include Gupta, Prajogi and Stubbs (1999) who examined the averages of alpha and the information ratio over time and used averages to gauge performance for given asset classes (i.e. international fixed income, U.S. small-cap and international equity). The study by Eun, Koloday and Resnick (1991) is similar in that they also used averages, but for individual mutual funds. Additionally, they used the alpha, Treynor and Sharpe measurements to evaluate the relative performance.

3. Data Description and Method

The universe of funds that actively market themselves as “behavioral” and employ behavioral criteria in investment decisions is quite small – in fact, only nine investment funds state they use some form of behavioral finance. There is no clear definition of what percentage of analysis used for asset allocation or security selection was behavioral in nature. However it was obvious that some funds simply use a “behavioral layer” of analysis to screen their portfolio while others imply they mainly use behavioral considerations. Regardless of the depth of behavioral recognition they are classified as behavioral funds and are evaluated in this study.² The premium earned by funds, the alpha capture, the Sharpe ratio, the Treynor ratio and the information ratio were calculated for all nine funds. Additionally a Morningstar and a Lipper mutual fund index were identified and matched to each of the nine funds (e.g., the Morningstar Large-Cap Value index when comparing a large-cap value behavioral fund). For a market benchmark, an appropriate Russell index (e.g., the large-cap value index when comparing a large-cap value fund) was identified. Annual information was generated using weekly data points. The behavioral funds are compared to the mutual fund indices and also to the appropriate Russell market index. The mutual fund indices are also compared to the appropriate Russell index.

² Mutual funds or portfolio managers that only make statements about behavioral aspects but do not use them to any noteworthy degree are not included. For example, Bill Miller’s Value Trust Fund is not included even though Miller will mention investor behavior in interviews.

3a. Fund/Index Descriptions

The behavioral funds ages range from one year (as of the end of the first quarter of 2004, year-to-date [YTD]) to seven years or more (only seven years of data was used for the longer life funds). The funds are listed in Table 1 by fund description and include the fund's name, ticker symbol and the 'management' company name. The Russell, Morningstar and Lipper indices are also listed.³

Table 1: Fund, Market & Index Descriptions		
Large-Cap Value Funds & Indices		
Fund Name	Ticker	Fund Company
Scudder-Dreman High Return Equity Fund	KDHAX	Dreman Value Management
LSV Value Equity	LSVEX	LSV Asset Management
JP Morgan Intrepid Value	JPIVX	JP Morgan Fleming Asset Management
Russell Index	RSLV	Frank Russell Company
Morningstar Index	MSLV	Morningstar, Inc.
Lipper Index	LPLV	Reuters
Large-Cap Blend Funds & Indices		
JP Morgan Intrepid America	JPIAX	JP Morgan Fleming Asset Management
Russell Index	RSLB	Frank Russell Company
Morningstar Index	MSLB	Morningstar, Inc.
Lipper Index	LPLB	Reuters
Large-Cap Growth Funds & Indices		
JP Morgan Intrepid Growth	JPGSX	JP Morgan Fleming Asset Management
Russell Index	RSLG	Frank Russell Company
Morningstar Index	MSLG	Morningstar, Inc.
Lipper Index	LPLG	Reuters
Mid-Cap Value Funds & Indices		
JP Morgan Intrepid Investor Fund	JISX	JP Morgan Fleming Asset Management
Russell Index	RSMV	Frank Russell Company
Morningstar Index	MSMV	Morningstar, Inc.
Lipper Index	LPMV	Reuters
Mid-Cap Growth Funds & Indices		
Undiscovered Managers Behavioral Growth Fund	UBRLX	JP Morgan Fleming Asset Management
Russell Index	RSMG	Frank Russell Company
Morningstar Index	MSMG	Morningstar, Inc.
Lipper Index	LPMG	Reuters
Small-Cap Value Funds & Indices		
Scudder-Dreman Small-Cap Value Fund	KDSAX	Dreman Value Management
Russell Index	RSSV	Frank Russell Company
Morningstar Index	MSSV	Morningstar, Inc.
Lipper Index	LPSV	Reuters
Small-Cap Blend Funds & Indices		
Undiscovered Managers Behavioral Value Fund	UBVLX	JP Morgan Fleming Asset Management
Russell Index	RSSB	Frank Russell Company
Morningstar Index	MSSB	Morningstar, Inc.
Lipper Index	LPSB	Reuters

³ Note: the tickers for Russell, Morningstar and Lipper are not actual tickers but were created for ease of reference.

4. Analysis and Results

After identifying all the publicly traded funds that market themselves as behavioral and gathering the weekly data we first examine how each behavioral fund and mutual fund index performed relative to the appropriate Russell market index.⁴ Annualized returns were calculated, and then compared as follows:

$$\text{Premium} = R_j - R_m \quad (1)$$

where: R_j = annualized return of behavioral fund or mutual fund index
 R_m = annualized market return

Year	Large-Cap Value						Large-Cap Blend				Large-Cap Growth			
	KDHAX	LSVEX	JPIVX	RSLV	MSLV	LPLV	JPIAX	RSLB	MSLB	LPLB	JPGSX	RSLG	MSLG	LPLG
1997	-0.65%	N/A	N/A	0.00%	N/A	-3.34%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	-7.22%	N/A	N/A	0.00%	-1.33%	-0.94%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	-18.58%	N/A	N/A	0.00%	0.57%	5.43%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	33.97%	3.80%	N/A	0.00%	0.83%	-5.40%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2001	7.24%	11.24%	N/A	0.00%	3.22%	-2.57%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2002	-0.77%	6.61%	N/A	0.00%	2.29%	-1.93%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2003	8.40%	11.74%	N/A	0.00%	3.32%	7.06%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
YTD	-1.21%	10.37%	-1.14%	0.00%	1.65%	0.47%	0.93%	0.00%	2.22%	3.89%	2.45%	0.00%	-3.16%	0.27%

Year	Mid-Cap Value				Mid-Cap Growth			
	JHISX	RSMV	MSMV	LPMV	UBRLX	RSMG	MSMG	LPMG
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	N/A	N/A	N/A	N/A	16.02%	0.00%	-7.69%	-4.39%
1999	N/A	N/A	N/A	N/A	15.00%	0.00%	1.79%	23.05%
2000	N/A	N/A	N/A	N/A	-14.85%	0.00%	-2.66%	28.05%
2001	N/A	N/A	N/A	N/A	-2.06%	0.00%	-1.25%	-0.73%
2002	N/A	N/A	N/A	N/A	10.22%	0.00%	-5.26%	-0.80%
2003	N/A	N/A	N/A	N/A	15.41%	0.00%	-2.04%	-6.64%
YTD	-1.42%	0.00%	3.17%	5.12%	-15.30%	0.00%	30.24%	32.58%

Year	Small-Cap Value				Small-Cap Blend			
	KDSAX	RSSV	MSSV	LPSV	UBVLX	RSSB	MSSB	LPSB
1997	-8.83%	0.00%	N/A	-0.04%	N/A	N/A	N/A	N/A
1998	-4.32%	0.00%	4.83%	1.79%	N/A	N/A	N/A	N/A
1999	4.62%	0.00%	-1.22%	5.86%	13.52%	19.59%	-2.85%	0.58%
2000	-22.11%	0.00%	-0.99%	-3.54%	16.07%	-4.32%	27.53%	11.25%
2001	2.95%	0.00%	27.04%	5.83%	11.85%	1.02%	13.58%	6.11%
2002	-24.03%	0.00%	5.00%	2.04%	5.51%	21.58%	7.42%	2.35%
2003	-0.63%	0.00%	5.60%	4.27%	17.00%	45.37%	-2.78%	-4.47%
YTD	0.81%	0.00%	6.31%	4.31%	24.41%	61.93%	-1.82%	-4.29%

⁴ We are grateful for the assistance of Robert O. Weller, CFA of JPMorgan Asset Management in helping identify the mutual funds used in this study.

Table 2 shows the premium each behavioral fund and each Morningstar index and each Lipper index earned compared to an appropriate Russell index. Behavioral funds earned a positive premium over the market approximately 60.5% of the time while the Morningstar and Lipper indices exceeded the market only approximately 50% of the time.

Even though behavioral funds were, as expected, inconsistent in beating the market their record is rather good, especially when compared to the Morningstar and Lipper indices. For example, KDHAX provided a premium over the market in three of seven years, and actually beat LPLV in five of seven years and MSLV in three of seven years. LSVEX beat both LPLV and MSLV in all years. Only in the case of small-cap value, KDSAX, did a behavioral fund do worse on a comparative basis.

The next step was to examine how various behavioral funds performed over time. Chart 1 shows value funds historical premiums, while Chart 2 shows growth and blend funds. Funds with only one year [2004 YTD] of history are not included in this analysis. From Chart 1, large-cap value funds (KDHAX and LSVEX) generally did better than the small-cap value fund (KDSAX). However, from Chart 2, the small-cap blend fund (VBVLX) outperformed the mid-cap growth fund (UBRLX).

Chart 1: Value Fund Historical Premiums

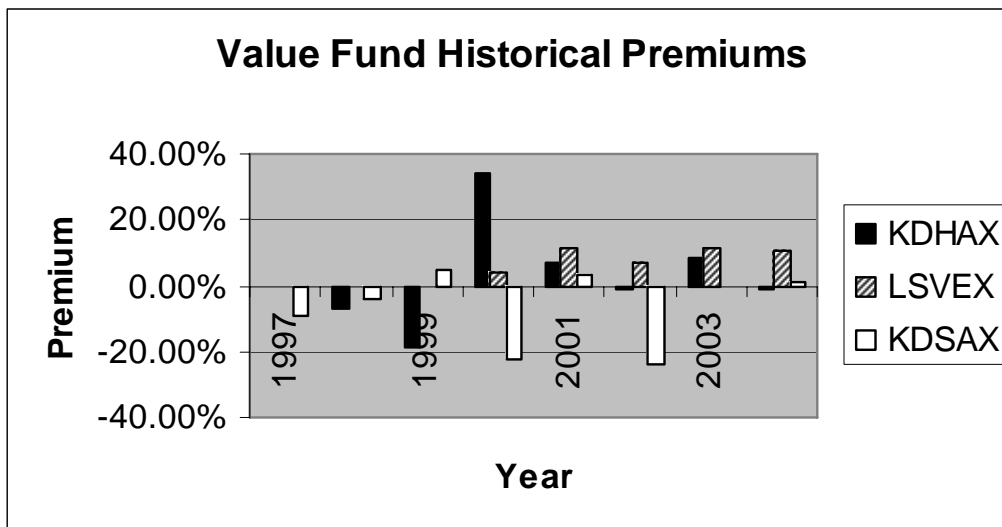


Chart 2: Growth/Blend Fund Historical Premiums

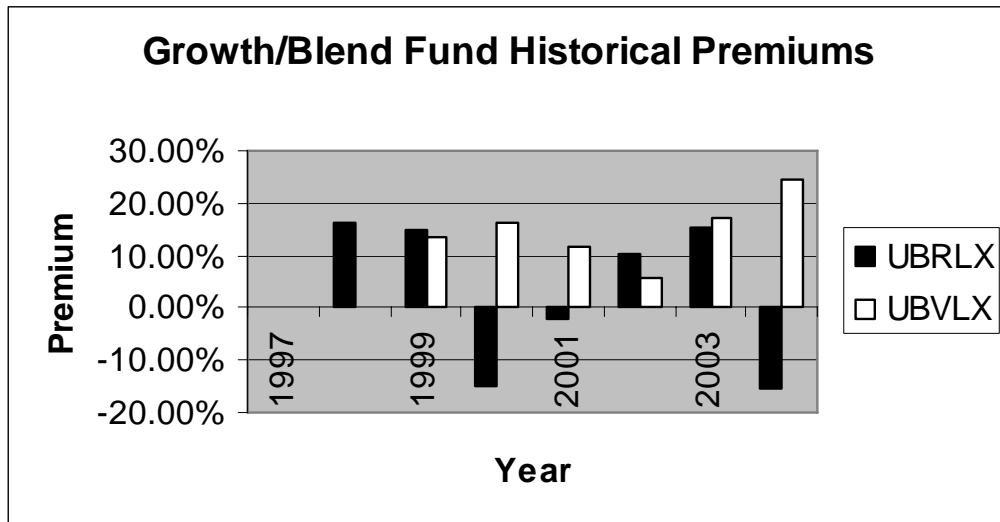
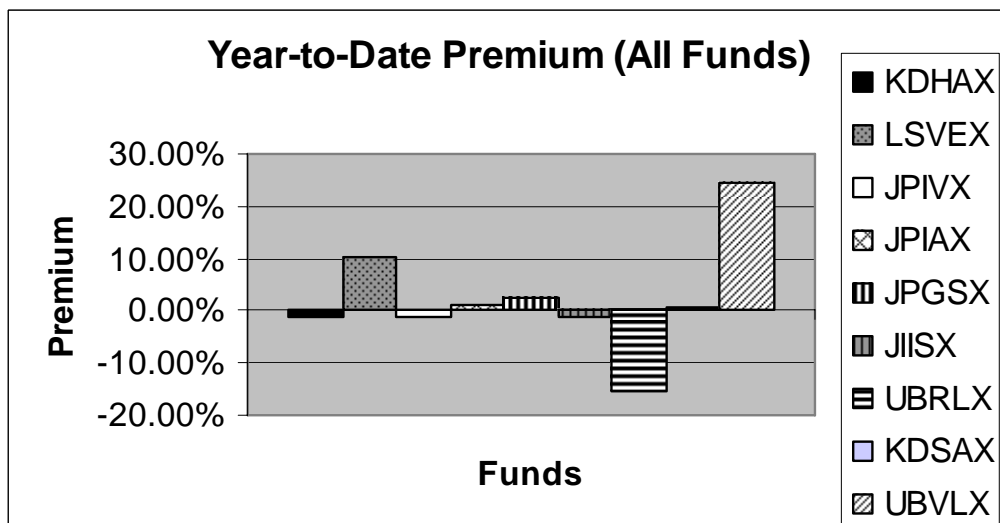


Chart 3 presents 2004 YTD premiums for all nine behavioral funds. This chart shows that five funds outperformed while four did not. LSVEX and UBVLX performed the best while UBRLX showed a large negative premium. The funds with only one period of history (JIISX, JPIVX, JPIAX and JPGSX) show a similar pattern—two outperformed and two did not.

Chart 3: 2004 Year-to-Date Premiums



While the data from Table 2 and Charts 1-3 provide mixed results regarding performance premiums, several themes emerge. First in general behavioral funds did better, on average, than either mutual fund index. Second, some funds perform consistently over time. For example, UBVLX and LSVEX exhibit positive premium most years while KDSAX and KDHAX do not fare as well. Thirdly, a comparison of small-cap to large-cap funds indicates mixed results. A large-cap value and a small-cap blend did well while another large-cap value and a small-cap value did not do as well.

The next analysis examines the portfolios from a risk-return perspective. Alpha capture and the information ratio are calculated to indicate how the performance is relative to the risk undertaken. Because some of the funds have histories going back five or more years the alpha capture is influenced by fluctuating interest rates. On the other hand, the information ratio avoids the problem of having the risk-free rate skewing the data. To achieve a general idea of how behavioral funds have compared in risk-adjusted terms, the average alpha and average information ratios were calculated for each fund and index. Respectively, Table 3 and Table 4 present the results of these calculations.

Table 3: Alpha Capture											
Year	Large-Cap Value					Large-Cap Blend			Large-Cap Growth		
	KDHAX	LSVEX	JPIVX	MSLV	LPLV	JPIAX	MSLB	LPLB	JPGSX	MSLG	LPLG
1997	12.85%	N/A	N/A	N/A	-2.26%	N/A	N/A	N/A	N/A	N/A	N/A
1998	-1.12%	N/A	N/A	-12.63%	10.30%	N/A	N/A	N/A	N/A	N/A	N/A
1999	-28.07%	N/A	N/A	-5.12%	5.79%	N/A	N/A	N/A	N/A	N/A	N/A
2000	33.39%	-1.67%	N/A	1.34%	-3.34%	N/A	N/A	N/A	N/A	N/A	N/A
2001	-2.13%	-1.96%	N/A	2.54%	-1.44%	N/A	N/A	N/A	N/A	N/A	N/A
2002	-16.21%	-9.43%	N/A	-15.47%	-3.19%	N/A	N/A	N/A	N/A	N/A	N/A
2003	14.36%	17.04%	N/A	-0.43%	3.07%	N/A	N/A	N/A	N/A	N/A	N/A
YTD	29.16%	36.17%	25.80%	3.57%	1.75%	27.38%	-0.14%	-1.48%	20.74%	-4.55%	-0.53%
Year	Mid-Cap Value			Mid-Cap Growth							
	JHISX	MSMV	LPMV	UBRLX	MSMG	LPMG					
1997	N/A	N/A	N/A	N/A	N/A	N/A					
1998	N/A	N/A	N/A	N/A	N/A	N/A					
1999	N/A	N/A	N/A	N/A	N/A	N/A					
2000	N/A	N/A	N/A	-41.72%	-0.76%	-2.90%					
2001	N/A	N/A	N/A	-19.92%	15.72%	16.30%					
2002	N/A	N/A	N/A	-13.84%	-2.69%	-3.77%					
2003	N/A	N/A	N/A	37.76%	-1.59%	-3.40%					
YTD	30.76%	6.84%	6.77%	44.62%	-4.94%	-6.34%					
Year	Small-Cap Value			Small-Cap Blend							
	KDSAX	MSSV	LPSV	UBVLX	MSSB	LPSB					
1997	-2.28%	N/A	1.64%	N/A	N/A	N/A					
1998	-13.95%	3.36%	1.15%	N/A	N/A	N/A					
1999	0.40%	-1.23%	5.98%	N/A	N/A	N/A					
2000	-9.21%	4.34%	-0.74%	N/A	N/A	N/A					
2001	12.86%	8.50%	6.98%	12.22%	14.96%	6.59%					
2002	-9.88%	3.22%	0.21%	-15.65%	6.27%	1.12%					
2003	33.13%	9.63%	9.59%	38.57%	4.28%	2.31%					
YTD	51.04%	14.54%	14.28%	70.01%	36.47%	35.38%					

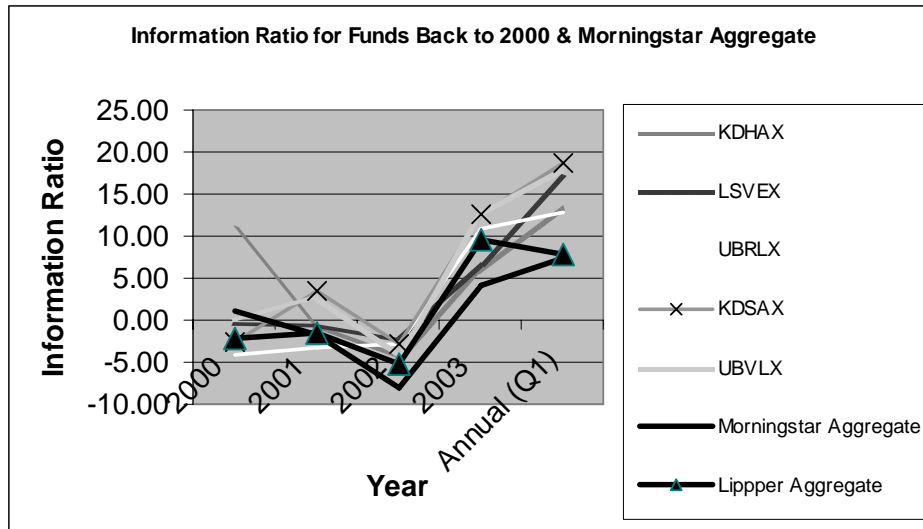
Of the nine funds, all nine have higher average alphas than either the Lipper or Morningstar indices. Of the nine funds, five have a higher average information ratio than Lipper indices while six have an average information ratio greater than Morningstar indices. The 2004 YTD

line shows a similar pattern: all nine funds had superior alphas and only seven of the funds have greater information ratios. Overall the results are indicative that behavioral funds performed better than the mutual fund indices when accounting for risk.

Table 4: Information Ratio											
Year	Large-Cap Value					Large-Cap Blend			Large-Cap Growth		
	KDHAX	LSVEX	JPIVX	MSLV	LPLV	JPIAX	MSLB	LPLB	JPGSX	MSLG	LPLG
1997	3.6	N/A	N/A	N/A	-5.01	N/A	N/A	N/A	N/A	N/A	N/A
1998	-0.31	N/A	N/A	-15.4	22.89	N/A	N/A	N/A	N/A	N/A	N/A
1999	-7.6	N/A	N/A	-1.36	15.06	N/A	N/A	N/A	N/A	N/A	N/A
2000	10.6	-0.52	N/A	1.83	-3.93	N/A	N/A	N/A	N/A	N/A	N/A
2001	-0.7	-0.57	N/A	5.52	-3.12	N/A	N/A	N/A	N/A	N/A	N/A
2002	-4.29	-2.4	N/A	-24.55	-9.98	N/A	N/A	N/A	N/A	N/A	N/A
2003	5.91	6.82	N/A	-0.98	17.05	N/A	N/A	N/A	N/A	N/A	N/A
YTD	13.37	16.67	12.23	8.94	10.96	11.75	-0.3	-9.27	8.83	-9.88	-1.89
Year	Mid-Cap Value			Mid-Cap Growth							
	JHISX	MSMV	LPMV	UBRLX	MSMG	LPMG					
1997	N/A	N/A	N/A	N/A	N/A	N/A					
1998	N/A	N/A	N/A	N/A	N/A	N/A					
1999	N/A	N/A	N/A	N/A	N/A	N/A					
2000	N/A	N/A	N/A	-4.19	-0.81	-1.71					
2001	N/A	N/A	N/A	-3.28	-27.11	-12.84					
2002	N/A	N/A	N/A	-2.93	-3.49	-6.28					
2003	N/A	N/A	N/A	10.82	-4.31	-10					
YTD	14.04	18.25	19.51	12.74	-13.36	-19.83					
Year	Small-Cap Value			Small-Cap Blend							
	KDSAX	MSSV	LPSV	UBVLX	MSSB	LPSB					
1997	-1.28	N/A	4.55	N/A	N/A	N/A					
1998	-3.81	7.81	2.95	N/A	N/A	N/A					
1999	0.2	-2.46	12.46	N/A	N/A	N/A					
2000	-2.5	2.51	-0.91	N/A	N/A	N/A					
2001	3.44	16.34	11.44	2.85	23.75	14.02					
2002	-2.92	3.74	0.38	-4.23	9.96	2.67					
2003	12.5	17.51	21.79	12.56	7.78	4.72					
YTD	18.77	26.43	32.45	18.04	11.36	11.2					

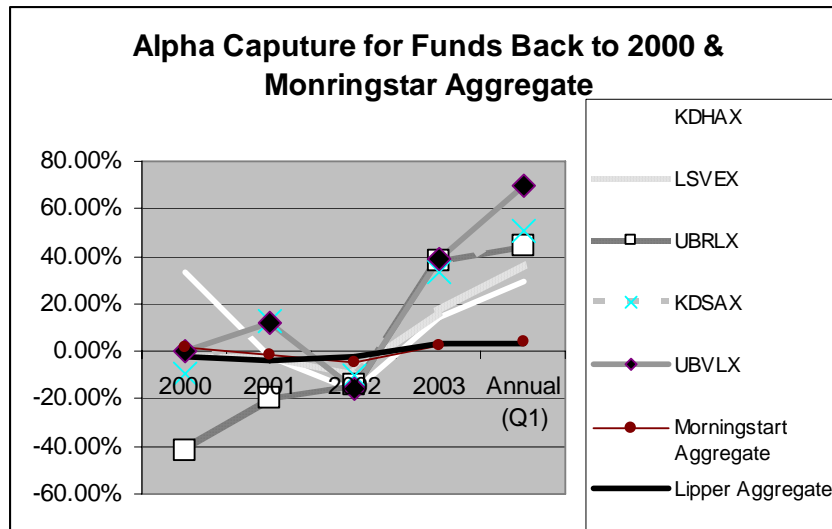
Chart 4 presents the annual information ratios for the five funds with data going back as far as the year 2000. The average of the Morningstar and Lipper indices for each of the five funds was used to derive an aggregate capture of Morningstar and Lipper indices. An examination of the chart reveals that the evidence supports the hypothesis that behavioral funds outperformed the average mutual fund in terms of risk.

Chart 4: Information Ratio 2000 Forward



The picture is somewhat mixed when doing the same analysis with the alpha capture (see Chart 5). As previously noted, alpha capture results can be influenced by the level of interest rates, therefore closer analysis is warranted. The final two years of the time period analyzed had very low interest rate levels making them less of a factor and, as shown in Chart 5, all five funds consistently performed better than the aggregate indices.

Chart 5: Alpha Capture 2000 Forward



The last analysis examined the Sharpe and Treynor ratios, respectively, Tables 5 and 6. While the Sharpe and Treynor ratios can be used to evaluate risk they can also be used to determine what type of risk behavioral finance addresses better – total risk or systematic risk. An examination of Table 5 shows that behavioral fund Sharpe ratios were superior to the market only 50% of the time while Morningstar Sharpe ratios were superior to the market’s 57.7% of the time and Lipper Sharpe ratios were superior to the market 51.7% of the time. When examining the Treynor ratio, Table 6, behavioral funds provided a greater measure than the market 58.8% of

the time, which was greater than both the Lipper (57.7%) and Morningstar (53.6%) indices. This comparison indicates that behavioral funds address systematic risk more effectively than the traditional mutual fund. This result is not surprising since behavioral funds are trying to identify longer term irrational behavioral that will lead to profitable investments, and fundamental considerations may not play as large a role in the decision process. While behavioral funds perform well addressing systematic risk, they possibly do this at the expense of taking on more total risk (i.e., greater variability of returns while the inefficiencies work their way to equilibrium) resulting in lower Sharpe ratios.

Year	Large-Cap Value						Large-Cap Blend				Large-Cap Growth			
	KDHAX	LSVEX	JPIVX	RSLV	MSLV	LPLV	JPIAX	RSLB	MSLB	LPLB	JPGSX	RSLG	MSLG	LPLG
1997	7.44	N/A	N/A	10.91	N/A	9.59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	-0.03	N/A	N/A	3.06	-2.14	6.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	-10.95	N/A	N/A	-0.43	-2.76	2.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	12.15	-0.71	N/A	-0.41	0.14	-2.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2001	-1.17	-0.72	N/A	-5.17	-3.59	-5.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2002	-7.63	-5.26	N/A	-5.08	-4.42	-5.82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2003	10.86	11.56	N/A	10.8	10.07	11.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual	20.89	25.64	19.9	17.51	18.78	18.13	17.68	15.63	14.72	14.41	13.79	13.5	10.73	12.82

Year	Mid-Cap Value				Mid-Cap Growth			
	JHISX	RSMV	MSMV	LPMV	UBRLX	RSMG	MSGM	LPMG
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	N/A	N/A	N/A	N/A	-6.07	-2.87	-2.91	-3.15
2001	N/A	N/A	N/A	N/A	-4.38	-1.81	-4.98	-5.97
2002	N/A	N/A	N/A	N/A	-5.99	-6.82	-7.18	-7.58
2003	N/A	N/A	N/A	N/A	16.37	15.94	14.89	14.14
Annual	23.42	24.29	27.28	27.08	18.14	20.17	17.54	16.92

Year	Small-Cap Value				Small-Cap Blend			
	KDSAX	RSSV	MSSV	LPSV	UBVLX	RSSB	MSSB	LPSB
1997	4.1	13.23	N/A	13.7	N/A	N/A	N/A	N/A
1998	-5.88	-5.03	-3.69	-4.51	N/A	N/A	N/A	N/A
1999	-1.88	-5.33	-5.7	-1.68	N/A	N/A	N/A	N/A
2000	-2.83	5.86	6.04	5	N/A	N/A	N/A	N/A
2001	4.43	4.51	8.07	7.24	3.48	0.15	5.45	2.51
2002	-5.67	-4.53	-3.29	-4.33	-7.48	-6.42	-4.48	-5.95
2003	22.38	18.23	21.55	22.06	20.01	16.97	18.15	17.47
Annual	33.69	23.38	29.34	29.55	30.58	15.56	22.98	23.43

Table 6: Treynor Ratios														
Year	Large-Cap Value						Large-Cap Blend				Large-Cap Growth			
	KDHAX	LSVEX	JPIVX	RSLV	MSLV	LPLV	JPIAX	RSLB	MSLB	LPLB	JPGSX	RSLG	MSLG	LPLG
1997	1.08	N/A	N/A	0.25	N/A	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	-0.01	N/A	N/A	0.09	-0.07	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	-1.49	N/A	N/A	-0.01	-0.06	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	1.28	-0.1	N/A	-0.01	0	-0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2001	-0.41	-5.53	N/A	-0.1	-0.07	-0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2002	-0.76	-0.72	N/A	-0.2	-0.18	-0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2003	0.54	0.57	N/A	0.26	0.25	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual	2.38	2.88	1.86	0.31	0.35	0.33	2.68	0.28	0.28	0.26	1.07	0.26	0.21	0.24
Year	Mid-Cap Value				Mid-Cap Growth									
	JHISX	RSMV	MSMV	LPMV	UBRLX	RSMG	MSMG	LPMG						
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
1998	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
1999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
2000	N/A	N/A	N/A	N/A	2.26	-0.19	-0.2	-0.22						
2001	N/A	N/A	N/A	N/A	-0.87	-0.09	-0.25	-0.3						
2002	N/A	N/A	N/A	N/A	-1.18	-0.3	-0.32	-0.34						
2003	N/A	N/A	N/A	N/A	1.46	0.42	0.4	0.38						
Annual	1.58	0.45	0.52	0.51	2.23	0.48	0.42	0.4						
Year	Small-Cap Value				Small-Cap Blend									
	KDSAX	RSSV	MSSV	LPSV	UBVLX	RSSB	MSSB	LPSB						
1997	0.16	0.22	N/A	0.24	N/A	N/A	N/A	N/A						
1998	-0.53	-0.16	-0.12	-0.14	N/A	N/A	N/A	N/A						
1999	-0.08	-0.1	-0.11	-0.03	N/A	N/A	N/A	N/A						
2000	-1.55	0.13	0.2	0.12	N/A	N/A	N/A	N/A						
2001	1.14	0.1	0.19	0.17	0.87	0	0.17	0.08						
2002	-0.58	-0.15	-0.12	-0.15	-0.63	-0.24	-0.17	-0.22						
2003	1.99	0.45	0.55	0.56	1.31	0.47	0.51	0.49						
Annual	5.18	0.58	0.74	0.73	4.05	0.58	1.69	1.68						

5. Overview and Summary

Behavioral finance currently used by practitioners does not attempt to follow theoretical behavioral portfolios. Instead they try to identify irrational behavior and capitalize on it. One example of a longer term complex inefficiency occurred in April 2004. The FED Chairman Alan Greenspan indicated interest rates were likely to increase. This announcement led to an overreaction in the market and especially in interest sensitive stocks. The market overreaction was quickly arbitrated. However interest sensitive stocks were “killed.” Getting out of these interest rate securities enhanced short-term performance measures. However, holding on and even purchasing more allowed the inefficiency to work its way through the market and third and fourth quarter results showed excellent performance as compared to funds which overreacted in April. A more current example is the “energy wave.” Over the past year many investors thought the energy game had played out (that there was not any more return left in the stocks) and sold, while others continue to ride the energy wave and earned excellent returns.

Any findings or conclusions from this study must recognize the small size of the universe and the time frame of the analysis. A review of the data and analysis thereof shows that large-cap funds earned positive premiums 62.5% of the time, small-cap funds earned a positive premium 64.3% of the time, value funds earned positive premiums 47.8% of the time, and growth funds earned a positive premium 62.5% of the time. This information makes it appear that market-cap is independent of any behavioral effects, and growth companies as compared to value companies are those that behavioral funds have more success with.

However, the picture is different when evaluating risk-adjusted returns. Large-cap funds had alphas greater than the large-cap Lipper and Morningstar indices 62.5% and 66.7% of the time. Small-cap funds had alpha greater than the large-cap Lipper and Morningstar indices 50% and 54.5% of the time. Value funds had alphas greater than the large-cap Lipper and Morningstar indices 52.2% and 57.2% of the time. Growth funds had alphas greater than the large-cap Lipper and Morningstar indices 50% of the time for both indices. Large-cap funds had an information ratio greater than the large-cap Lipper and Morningstar indices, respectively, 75% and 73.3% of the time, small-cap funds had an information ratio greater than the small-cap Lipper and Morningstar indices 16.7% and 27.3% of the time while value funds had an information ratio greater than the Lipper and Morningstar indices 43.5% and 47.6% of the time. Growth funds had an information ratio greater than the Lipper and Morningstar indices 83.3% of the time for both indices. The results are summarized in Table 7.

Fund Premium	LC		SC	
		62.5%		64.3%
Alpha Capture	Value		Growth	
		47.8%		62.5%
Information Ratio	LC (LP/MS)		SC (LP/MS)	
	62.5%	66.7%	50%	54.5%
	V (LP/MS)		G (LP/MS)	
	52.2%	57.2%	50.0%	50.0%
Information Ratio	LC (LP/MS)		SC (LP/MS)	
	75.0%	73.3%	16.7%	27.3%
	V (LP/MS)		G (LP/MS)	
	43.5%	47.6%	83.3%	83.3%

The results appear somewhat mixed. In terms of premiums, it simply appears as though value funds have the weakest track record and that using behavioral techniques for growth companies may be advantageous to investing in value companies. When using risk-adjusted measures the results are quite strong for large-cap behavioral funds. Large-cap behavioral funds performed considerably better than small-cap, value and growth funds for the both the Lipper and Morningstar indices. Large-cap behavioral funds also performed notably better than small-cap and value funds in terms of the information ratio, though behavioral growth funds were superior to large-cap behavioral funds when using the information ratio. Overall, the most supported conclusion is that large-caps are the best security type to take advantage of behavioral factors. Large-cap companies are highly liquid, well known by many investors, followed in the media and therefore are highly vulnerable to the influences of irrational behavior. Given the size of the sample we should add a caveat that the results could be, as in all research examining portfolio performance, based partly on the manager of the portfolio and past performance is no guarantee of future performance.

Robert O. Weller, CFA, of JPMorgan Asset Management, which has three large-cap mutual funds that use behavioral concepts and are ranked in the top 15th percentile relative to their Lipper peer group on the May 2005 YTD, 1 year, 2 year and Since Inception time periods, said “Investors are not only irrational, they are consistently irrational. It is this consistent irrationality that can be capitalized upon. In seeking to capitalize on this irrationality, the manager must be careful not to fall into the behavioral traps he/she is trying to capture.” A further example of how investors are irrational is recent legislation and Labor Department rules that now allow companies to automatically enroll employees in 401(k) plans since all too often employees failed to sign up for a plan.⁵

⁵ As Jonathan Clements wrote in the *Wall Street Journal* (September 27, 2006, page D1) “Congress has voted, and it’s official: Investors are irrational.”

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