

Passive Investing: The Emperor Exposed?

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by Christopher Carosa, CTFA

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For some time, the academic world and the financial services industry appear to have been converging on the virtues of passive investing versus active management. John C. Bogle, a highly regarded spokesman of indexing, concisely summarizes the current standard belief when he states “that *the market portfolio is the most sensible decision*. It takes the need for judgment out of your decision-making; it reduces costs; it increases tax-efficiency; it avoids the need to pore over past market data to figure out why the data are what they are.”¹ Bogle’s comment calls to common sense. Indeed, his premise may well be used by various government regulators regarding the potential privatization of Social Security.

But what if Bogle’s presumption is false? After all, most investors don’t invest to avoid making decisions. Most investors don’t invest purely to reduce costs. Most investors don’t invest merely to maximize tax-efficiency. Taken alone, these factors can produce irrational results in one’s everyday life. For example, one can always reduce costs by buying the least expensive product. But what of reliability? Is it worth

Executive Summary

- Traditional studies of the passive versus active management debate appear to contain two flaws that can dramatically affect results.
- The snapshot-in-time anomaly creates period dependency, leading to inconsistent results.
- The equal-weighted anomaly produces results that, while statistically accurate, fail to accurately reflect the results experienced by actual investors.
- An analysis using rolling 12-month returns appears to reduce, if not eliminate, the snapshot-in-time phenomenon, leading to more consistent results.
- An analysis using asset-weighted performance data to more accurately reflect the actual behavioral patterns of investors appears to produce more significant results.
- An analysis of investment return data from January 1975 through June 2004 shows active investors in U.S. equity funds performed better than the S&P 500 two-thirds of the time and by an average of 2 percent annually.
- Using both modern portfolio theory and behavioral finance measurements, the investors in active funds appear to have taken less actual risk than the index.
- These results have broad implications, not only for financial planners, but for public policy issues such as ERISA and Social Security reform.

it to buy a TV for half price that needs to be replaced three times over the life of the alternative? More importantly, would you buy the cheapest parachute even though it successfully opens only nine out of ten times? The same could be said of tax-efficiency. The best way to avoid paying taxes is to not earn any money. Using this logic, one would never work. Great. You might never pay taxes, but you’d never be able to buy a TV—even the cheapest one!

So, choosing investments—just like making any other purchase decision—cannot focus on these “common sense” rules. What, then, represents the critical factor? Quite simply, it is the ability—or, more importantly, the likelihood—of one achieving one’s lifetime goals, or “goal-ori-

ented target” (GOT). In most cases, as it pertains to investments specifically, this means earning a sufficient rate of return to pay for one’s ideal lifestyle. In very straightforward terms, people invest to achieve certain positive financial results.

History

Along these lines, Bogle’s fundamental assumption embraces the idea that index investing provides returns that either equal or exceed active investing. Indeed, this assumption is well founded by both historical data and academic research. What started almost as a small (but very controversial) afterthought in 1975, when Charles



Ellis matter-of-factly concluded that the commonly held tenet that professional security analysts can manage portfolios that consistently outperform the market “appears to be false,” blossomed into an outright creed when, in 1983, William S. Gray III wrote “the median experience of actively managed equity portfolios has been well below (1 to 2 percent) the S&P 500 in most years during the 1970s and 1980s.”³ Most significantly, this latter reference appears in a book that is required reading for candidates for the Chartered Financial Analyst (CFA) designation—the very people who try to make a living by picking stocks!

Perhaps the defining work was published by Burton Malkiel in 1995. Malkiel summarizes the current generally accepted academic principle when he concludes, “Most investors would be considerably better off by purchasing a low expense index fund than by trying to select an active fund manager who appears to possess a ‘hot hand.’ Since active management generally fails to provide excess returns and tends to generate greater tax burdens for investors, the advantage of passive management holds.”⁴

But Bogle himself provided insight as to the basic flaw in these types of studies when he pointed out that “each and every comparison we see is period-dependent.”⁵ Aye, there’s the rub!

Basic Hypothesis and Source of Data

The idea, then, is to test whether the market index beats actively managed portfolios with enough consistency to justify index investing using a methodology that incorporates actual investment decisions as well as a practical financial planning technique into the traditional academic analysis. To accomplish this, we’ll use the S&P 500 performance (as provide by Barra) as our market proxy. While this does not rep-

resent the total market, since 1933 “the 12.2 percent annual return of the S&P 500 has been *exactly the same* as the return of the total stock market.”⁶ The S&P 500 holds the further advantage of being perhaps the most popular indexing choice for investors.

On the other hand, sophisticated academics can rightfully express concern about the potential for an apples-to-oranges comparison between the two data sets. To address this concern, discussions were held with other researchers who indicated there is no statistical difference between the Barra S&P 500 returns and the Center for Research in Security Prices (CRSP[®]) total stock database for the period in question (January 1975 through June 2004). Therefore, the results of this study are likely to be identical whether using S&P 500 returns or total market returns. (CRSP is a proprietary, subscription-only database generally available just to university researchers.)

Using monthly return data, we’ll measure the rolling 12-month return results for the index against similar performance data for actively managed U.S. equity mutual funds. We chose rolling 12-month periods rather than calendar years because, as all financial advisors know, real investors—especially those who regularly contribute to company retirement plans—do not limit their investment decision-making to December 31 of every year. By examining rolling 12-month periods, we can more accurately assess the near-term relative performance between the index and the average mutual fund. This addresses Bogle’s concern by reducing—if not outright eliminating—any period-dependent bias in the study.

Data regarding actively managed U.S. equity mutual funds was provided by Lipper Analytics, the nation’s oldest and largest provider of mutual fund performance data. Since Barra S&P 500 data were available only from January 1975, we chose that as our first month. Monthly returns were available through June 2004. To best

measure the actively managed data, Lipper provided asset-weighted return data in addition to the more commonly used equal-weighted return data. (The former avoids any skewing toward smaller funds and better represents the investment decisions of actual investors.) The Lipper data include funds that have been closed or merged, and therefore contain no survivor bias, meaning both active funds and inactive funds were included in this study. Neither the Lipper data nor the Barra data include loads, commissions, or investment management fees. The Lipper data reflect investment performance net of expenses and 12b-1 fees, while the Barra data, being index data, do not. Both funds include total return performance—that is, both capital appreciation and reinvested dividends. Finally, the Lipper data include index funds, so the Lipper results will skew to some degree (not measurable due to the manner in which the data was provided) toward Barra results. This means the actual variance between actively managed funds and the index is probably greater (albeit at some unknown significance), than the numbers reported here.

Note for those interested in duplicating this research: The Barra data are publicly available on their Web site (www.Barra.com). The Lipper data are available only by subscription, but Lipper has at times (this case is one example) offered researchers a grant to obtain a limited amount of data. For the purposes of this study, it was requested that Lipper provide monthly return data for its “US Diversified Equity Group” (USDE Group) of mutual funds from December 31, 1974 (this enables you to calculate the return for the month of January 1975) through June 30, 2004. The USDE Group represents data points aggregated from 15 Lipper fund classifications:

1. Large-Cap (LC) Growth
2. LC Core
3. LC Value
4. Mid-Cap (MC) Growth

5. MC Core
6. MC Value
7. Multi-Cap (MLC) Growth
8. MLC Core
9. MLC Value
10. Small-Cap (SC) Growth
11. SC Core
12. SC Value
13. Equity Income
14. S&P 500 Index Objective
15. Specialty Diversified Equity Funds

Because only aggregate data were made available, it was impossible to perform further analytics on the results (this might best be conducted in future research). Also, the Lipper terminology for the two formats is “Average” (Lipper’s term for “equal weighted”) and “Dollar Weighted Average” (Lipper’s term for “asset weighted”). Since Lipper’s databases are usually survivor-biased, it is critically important that the request specifically asks that all active *and inactive* funds be included.

The Results

The period from January 1975 through June 2004 represents 29 1/2 years. During this period, the equal-weighted average annual return of all U.S. equity mutual funds—the traditional measurement technique that gives smaller funds the same weight as larger funds—was 13.93 percent. Returns for the S&P 500, on the other hand, were slightly smaller: 13.73 percent. Immediately, the casual reader might hastily conclude that all previous studies purporting to show the dominance of passive investing to be in error. On the other hand, this result should not surprise those familiar with recent history in that, on average, actively managed equity funds have beaten the S&P 500 during the last five years. This phenomenon is just an example of Bogle’s period-dependency. For example, in the 25-year period from January 1975 through December 1999, the equal-weighted average return of all U.S.

equity mutual funds was 16.99 percent, lagging the index return of 17.26 percent. So, while a longitudinal study ending in 1999 favors passive investing, a similar study ending in June of 2004 favors active investing.

But, as the astute planner recognizes, reliance on equal-weighted data betrays the actual investment decisions made by and on behalf of clients. Think of it this way. Let’s say we did an analysis on ten mutual funds. If only one mutual fund made money, the equal-weighted average return would probably be negative. On the other hand, let’s say all investors invested in the one fund that made money, and not in any of the other nine funds. In this case, the asset-weighted average return would probably produce positive results. What does this lead us to conclude? In this very hypothetical case, the asset-weighted average return suggests investors (as measured by the amount of money they invest) tend to accurately recognize and reward the better-performing fund by investing in that fund. The equal-weighted average return suggests the mutual fund families were willing to create many different kinds of equity funds, some of which will ultimately perform poorly and fail to attract investors.

Equal-weighted returns, though measuring investment decisions of mutual fund portfolio managers, emphasize the business decisions of mutual fund corporate management. Asset-weighted returns, on the other hand, while also measuring the investment decisions of mutual fund portfolio managers, emphasize the investment decisions of shareholders and their professional advisors. Asset-weighted returns, therefore, tend to reflect the practical reality of the financial planning environment. As a result, an analysis of asset-weighted average returns, conducted in the same rigorous manner of past academic studies, may be more meaningful to practitioners in the financial services industry.

During the period from January 1975 through June 2004, the geometric asset-

weighted average annual return of all U.S. equity funds was 15.85 percent—nearly 2 percent greater than the geometric average annual return of the S&P 500 and the equal-weighted return of all U.S. equity mutual funds for the same period. Surprisingly, contrary to our expectations, this was not a period-dependent result. During the period from January 1975 through December 1999, the geometric asset-weighted annual return of all U.S. equity funds was 19.11 percent—again nearly 2 percent better than the equivalent S&P 500 return and greater still than the equal-weighted return of the same fund data for the same period.

This suggests the actual decisions made by investors and their advisors—as measured by the total dollars they invested—tended to produce better returns than either investing in the index or investing equal amounts in all U.S. equity mutual funds. This inference, as further analysis will soon reveal, contradicts the long-standing belief that active decision-making adds too little value compared with the amount of risk it introduces. As policy-makers decide how to privatize Social Security, this conclusion means any rules that remove or reduce active decision-making on the part of investors may actually impede—not protect—those investors.

Rolling 12-Month Returns

Of course, legislative concerns aside, the practical problem of the above return analysis is that it assumes clients invested all their funds in January 1975. Would that all financial planners had time machines!

Planners and their clients tend to invest periodically throughout the entire year. To better acknowledge reality, let’s take a look at the investment returns of every 12-month period from January 1975 through June 2004. There are 342 12-month periods during that 29½-year span yielding 342 different returns. For U.S. equity funds, the

TABLE 1

Percentage of 12-Month Periods Where the Asset-Weighted Return of U.S. Equity Mutual Funds Outperformed the S&P 500 in the Similar Period

Index	No Fee	64.33%
Expense	20 Basis Points	66.37%
Ratio	50 Basis Points	68.13%

arithmetic average of those 342 asset-weighted returns was 17.84 percent. (We must use the arithmetic average instead of the geometric average because these return periods overlap.) Likewise, the arithmetic average of the S&P 500 in those same 342 periods was 15.55 percent. Of interest, the standard deviation of these two samples was nearly identical—17.46 percent for the asset-weighted U.S. equity mutual fund returns and 17.54 percent for the S&P 500.

For advocates of modern portfolio theory, these three data points—both the arithmetic and the geometric average return as well as the standard deviation—imply that, while the universe of U.S. equity mutual funds exhibits the same risk (that is, standard deviation) as the S&P 500, the universe of U.S. equity mutual funds appears to possess a significant return premium. This further implies that the more efficient portfolio is not the S&P 500, but the asset-weighted collection of all U.S. equity mutual funds.

For those who prefer using the upside/downside analysis more common in behavioral economics, the same deduction can be drawn. The worst return for any given period is lower for the S&P 500 (−30.49 percent) versus the asset-weighted average of U.S. equity mutual funds (−27.33 percent). Similarly, the best return for any given period is higher for the U.S. equity funds (+71.30 percent) versus the S&P 500 (+61.65 percent). These facts suggest the equity funds, in aggregate, have a lower downside and a higher upside for

12-month periods. Again, in using asset-weighted returns, the conclusion applies to the real-life investment decisions people make, not in the hypothetical instance that every person invests the identical amount of money in every U.S. equity mutual fund.

But wait, there's more! We know the mutual fund return data automatically account for the expense ratio of those funds. The S&P 500 data, being actual index returns, fail to account for the actual expenses incurred by index funds. The inclusion of this expense ratio only further extends the outperformance of U.S. equity fund relative to index returns. We relate this in Table 1, where we indicate the percentage of periods where the U.S. equity funds beat the index returns in three different scenarios:

1. The raw index return, which includes no expenses
2. The scenario where index fund returns mimic the index returns but include a 20-basis-point expense ratio
3. The scenario where index fund returns mimic the index returns but include a 50-basis-point expense ratio⁷

Table 1 indicates, for any given 12-month holding period, the asset-weighted return of all U.S. equity mutual funds beats the S&P 500 roughly two-thirds of the time. The table also suggests that, in a manner consistent with the conclusions of Malkiel, investors should be mindful when buying shares of index funds and try to buy those with the lowest expense ratio. (The data provided by Lipper was not sufficiently detailed for us to make any conclusions regarding expense ratios of U.S. equity funds in general.)

Given the above data, we do not mean to suggest that U.S. equity fund returns are not correlated with S&P 500 returns. Indeed, a statistical analysis shows a positive correlation coefficient of 0.87. There appears to be, however, a tendency for the U.S. equity funds to either lead or lag in discrete time periods. For example, U.S.

equity funds tended to lead in the late 1970s and early 1980s; again in the late 1980s and early 1990s; and, finally, in the most recent five-year span. On the other hand, the S&P 500 tended to consistently lead for several short intervals in the mid-1980s and again in the mid-late 1990s. We attempted to correlate these periods with the general movement of the market, but the analysis showed only a slight correlation (0.28). A cursory visual review of the market during the nearly 30-year duration (see Figure 1) hints there is a tendency for the S&P 500 to lead in late-stage bull markets and a tendency for U.S. equity mutual funds to lead in bear markets.

The best we can conclude is that sometimes it's better to be in actively managed funds and sometimes it's better to be in passively managed S&P 500 index funds. Unlike previous research, we clearly cannot conclude—or even imply—that the evidence shows index investing offers consistently better investment returns compared with returns offered by the entire asset-weighted U.S. equity mutual fund universe.

Finally comes the question all financial planners need to know: What does this study uncover about an investor's ability to meet a specific goal-oriented target (GOT)? (The GOT represents that specific rate of return required for an investor to attain a particular financial goal.) How do these series of 12-month returns stack up against a variety of GOTs? Table 2 demonstrates how both the S&P 500 and the equity mutual funds compare with a variety of common GOTs.

As Table 2 clearly indicates, the asset-weighted average 12-month return for U.S. equity funds consistently better the S&P 500 returns for similar periods. This difference becomes more exaggerated as one's GOT increases. For example, when the GOT is merely to not lose any principal (that is, 0 percent), U.S. equity mutual funds are just 4 percent more likely to achieve that GOT compared with the S&P

FIGURE 1

Rolling 12-Month Returns for S&P 500

Areas Shaded in Blue Show Periods When S&P 500 Returns Lagged U.S. Equity Fund Returns

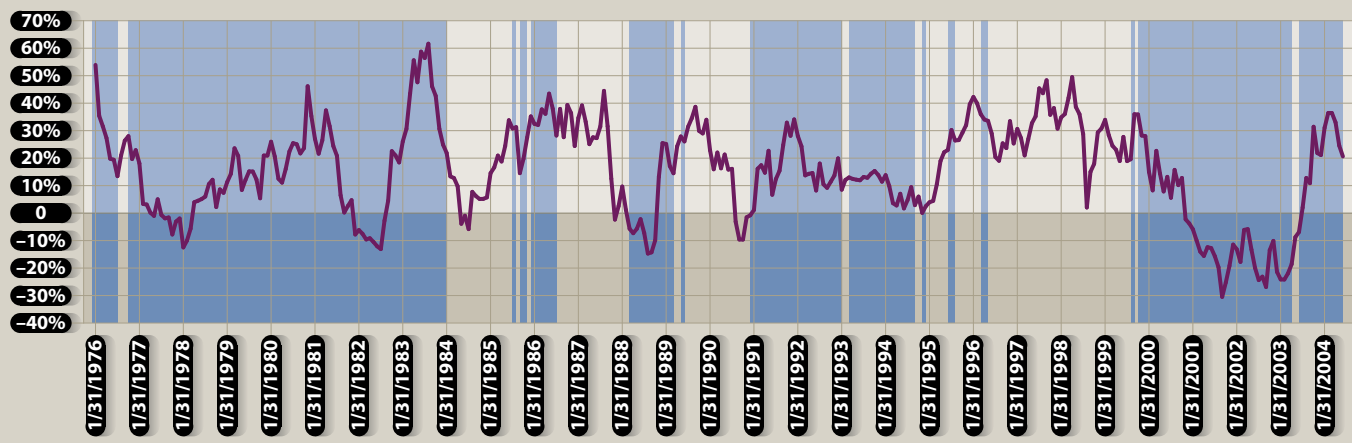


TABLE 2

Percentage of 12-Month Periods When Investment Returns Met or Exceeded the Indicated GOT

GOT	S&P 500	U.S. Equity Mutual Funds
0%	80.12%	83.63%
4%	74.56%	78.65%
6%	71.05%	76.02%
8%	68.42%	72.51%
10%	65.50%	69.88%
12%	62.57%	66.96%
14.875%	53.22%	62.28%
16.5%	49.42%	57.60%

500. On the other hand, if the GOT is to double the investment every five years (that is, 14.875 percent annually), U.S. equity mutual funds are 17 percent more likely to achieve that GOT compared with the S&P 500. In the end, it is more important for most investors to attain a certain goal-oriented target than to simply “beat the S&P 500.” This particular portion of the analysis reflects how people really invest, not an arbitrary target based on a market index. As a consequence, the results reveal that investors have been better served with equity funds across a broad

range of GOTs based on how they and their financial advisors implemented their actual investment decisions.

How statistically significant are all these results? A simple paired two-sample t-test for means yields a t-stat of -2.62 and a P-value of 0.91 percent. (The critical values at the 5 percent significance level are ± 1.966705 .) This shows we can reject the null hypothesis (that is, the hypothesis that claims there is no statistically significant difference between the two series of returns) at most standard significance levels (including as low as 1 percent). This certainty level is large enough to suggest the possibility of a statistically significant difference between the U.S. equity mutual fund returns and the S&P 500 returns.

Conclusion

It has long been believed that actively managed portfolios underperform the market. This study indicates the more accurate conclusion would be that there exist extended periods when the market outperforms actively managed U.S. equity funds and extended periods when the actively managed U.S. equity funds outperform the

market. As a result, our re-examination of the passive-versus-active investing debate appears to confirm what others have hypothesized—that previous studies purporting to show the dominance of passive investing may have reflected the snapshot-in-time anomaly commonly found in measuring investment performance. The study can reach no statistically significant conclusion regarding the potential correlation between these periods of overperformance and underperformance with bull and bear markets. We can anecdotally conclude there appears to be a tendency for the S&P 500 to beat U.S. equity funds at the top of bull markets and a tendency for U.S. equity funds to beat the S&P 500 during bear markets.

Furthermore, and more significantly, this study concludes, within most standard significance levels (including as low as 1 percent), that for investment returns in rolling 12-month periods from January 1975 through June 2004, when looking at actual investing patterns and not merely a hypothetical equal weighting of all mutual funds, U.S. equity funds have historically beat the S&P 500 roughly two-thirds of the time. In addition, U.S. equity funds, on average, are more likely to meet or exceed

Suggested Web Sites

- www.Barra.com
- www.LipperLeaders.com

an investor's return target across a broad range of GOTs, and hence are more likely to earn a sufficient rate of return to finance an investor's ideal lifestyle. These results directly contradict the prevailing view that investors and their financial advisors are better off merely investing in the market and not taking the time to research mutual fund investment options. There are both practical and public policy implications of this discovery.

First, the financial services industry and mutual fund shareholders appear to have exhibited a consistent track record of investing in U.S. equity funds that are more likely to outperform the S&P 500. Recognition of this broad effort—and the fact that it has added value to investors—has not received much coverage in academic studies. Now it looks as if we have empirical evidence that implies the results of active decision-making have reaped rewards for investors. The study does not intend to conclude that poor investment decisions are not made. Also, it is beyond the scope of this study to suggest which types of U.S. equity funds may or may not increase the likelihood of the investor beating the S&P 500. It is the hope of this author that other studies, using the behavioral analytics described here, might further break down performance within specific fund categories.

Second, and perhaps of more long-term consequence, are the public policy ramifications of this study. Here we refer to both the current regulatory compliance practices of ERISA plan trustees and fiduciaries, as well as the burgeoning debate on the privatization of Social Security.

Regarding the former, the conclusions

of this study, in contradicting previous studies, might cause regulatory bodies like the Department of Labor to reconsider how they define “generally accepted industry practices.” For example, in questioning—if not outright rejecting—the statistical dominance of passive investing, plan trustees and other fiduciaries might want to avoid relying solely on passive vehicles.

Regarding the latter, the privatization of Social Security, this study has profound repercussions. With the idea to give workers ownership of some portion of their Social Security savings, the government finds itself in the same position as that of a 401(k) plan trustee. This study reveals, both in terms of the standard-deviation risk analysis of modern portfolio theory and the upside/downside analysis of behavioral economics, U.S. equity funds, as a whole, offer better returns with either the same or less risk than investing in the market. Again, the study does not intend to say each and every U.S. equity fund has these characteristics. Rather, the study concludes the aggregate investment decision-making of investors and their financial advisors has resulted in better returns than passively investing in the S&P 500. This holds true both over time and in nearly two-thirds of the 342 12-month periods from January 1975 through June 2004. It would be difficult for lawmakers to justify taking any action that would, contrary to this study, place workers' retirement assets in harm's way by unnecessarily restricting investment choices based on a prevailing wisdom that could find itself turned on its head in the near future.

Passive investing may not yet be naked, but it certainly has fewer clothes than thought.



Endnotes

1. John C. Bogle, “The Telltale Chart,” keynote speech before the Morningstar Investment Forum, Chicago, IL, June 26, 2002; available online from the Bogle Financial Markets Research Center.
2. Charles D. Ellis, “The Loser's Game,” *Financial Analysts Journal*, July/August 1975: 19–26.
3. William S. Gray III, 1983, “Portfolio Construction: Equity,” *Managing Investment Portfolios*, John L. Maginn and Donald L. Tuttle, editors, 1983: 402.
4. Burton G. Malkiel, “Returns from Investing in Equity Mutual Funds, 1971 to 1991,” *Journal of Finance*, 50 (1995): 549–572.
5. Bogle, *ibid.*
6. Bogle, *ibid.*
7. These two expense ratios appear to best represent the range of actual expense ratios based on a review of publicly available index funds.