

WHITEPAPER

MIXING ACTIVE & PASSIVE INVESTMENTS

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ABSTRACT

While the debate concerning the value of actively versus passively managed funds continues, this paper shows there are times when investors would be better-served by moving from one type to the other. Specifically, our focus is on S&P 500 Index-Objective (SPSP) funds and funds included in Lipper's Large-Cap Core (LCCE) classification. Using a popular technical indicator to trigger movement of assets between SPSP and LCCE portfolios has provided returns above those of the passively managed portfolio alone. The indicator is based on a simple ratio of the number of actively managed portfolios outperforming the average passively managed portfolio on a risk-adjusted basis. Buy-and-sell signals are generated by crossovers of moving-average convergence/divergence (MACD) of the active-versus-passive ratio (AVPR). Over the 20-year period of this study SPSP funds created an average annual return of 11.36%, and the corresponding average annual return of LCCE funds was 10.84%. Using the buy-and-sell signals of the MACD crossover to move monies between an SPSP fund and a small selection of LCCE funds produced an average annual return of 11.92%. This 56-basis-point advantage may not seem significant; however, over this 20-year period the SPSP funds accumulated an average 760% gain, while the portfolio based on the buy-sell signals accumulated an average 852% and LCCE funds alone produced an average 684% gain.

SOURCE DATA

The SPSP classification was chosen because of its popularity with the press and the investing public. Over the last 20 years the classification has grown from one fund to 68 funds with \$262 billion in assets. The funds in Lipper's LCCE classification invest in many of the same large-cap stocks represented in the S&P 500 Index, so LCCE is a comparable

classification to the SPSP funds. There were 300 LCCE funds with \$384 billion in assets under management as of December 31, 2005. Each fund in the study was represented by the largest share class in each portfolio.

We computed, on a monthly basis, risk-adjusted returns using weighted effective return with constant relative risk aversion over 1-, 2-, 3-, 4-, 6-, 9-, 12-, 18-, and 36-month periods. Effective return was chosen as a comparative measure because it tends to reflect investors' attitudes toward risk, applying a greater penalty to losses. It also takes into consideration the effects of the clustering of losses by including multiple overlapping periods of various lengths, which ensures significant losses in each 36-month performance period are accounted for, regardless of their duration. Effective return is also included as a component in the Lipper Leader Consistent Return measure.

We also calculated effective returns for each SPSP and LCCE fund that had at least 36 months of performance during the 20-year period of the study. We included both active and inactive funds to reduce the effects of any survivorship bias created by funds that may have closed during the period (December 1985 to December 2005).

Using effective returns, we created a simple ratio of the number of LCCE funds beating the SPSP funds' effective return average to compare how actively managed funds were doing against their passively managed competitors. For simplicity we called this active-versus-passive ratio the AVPR.

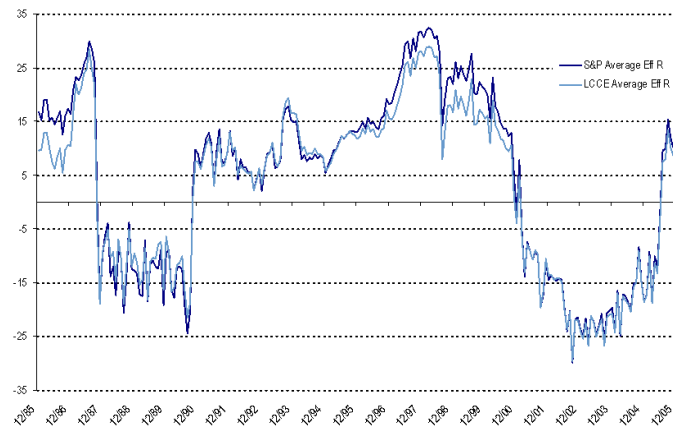
EFFECTIVE RETURN – ACTIVE VERSUS PASSIVE

The chart below covers 20 years (December 1985-December 2005) of monthly risk-adjusted returns for both actively and passively managed funds. Several things to notice about the chart are the relatively close correlation of movements between the two groups, the several large jumps in effective return (1987, 1990, 1998, 2000, and mid-2005), and the extended periods when the passive funds' risk-



adjusted returns significantly diverged from the active funds' risk-adjusted returns.

Figure 1 Effective Returns(%) of Actively Versus Passively Managed Funds, December 1985-December 2005

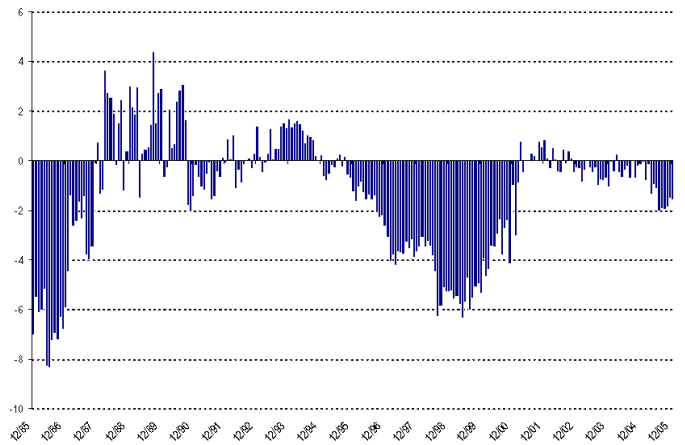


Source: Thomson Reuters Indices

The marked drop in effective returns in late 1987 reflected the increased impact of negative returns on the calculation of effective return. October 1987 posted an average return of minus 22% for the month and drastically influenced the risk-adjusted effective returns for the next 36 months.

The differences between active fund returns and passive fund returns over this 20-year period show that during sharp upswings and downturns in the market, passive returns exceeded active returns. From the beginning of this study to the end of 1987, passive beat active during the run-up and initial drop of October 1987 and again in the run-up and successive drop in the market from January 1995 to March 2001. During periods the general market was flat or gently moving up or down, actively managed funds surpassed passively managed funds on a risk-adjusted basis. After the large drop from 1987 to October 1990 and from May 1991 to December 1994, active funds generally outperformed the average SPSP fund. The same pattern developed to a lesser extent when active portfolios reached parity with SPSP funds after the latest decline in the market—February 2001. Since February 2005 passive portfolios have moved decidedly ahead of actively managed portfolios.

Figure 2 Difference in Returns (%) of Actively Managed Versus Passively Managed Funds, December 1985-December 2005

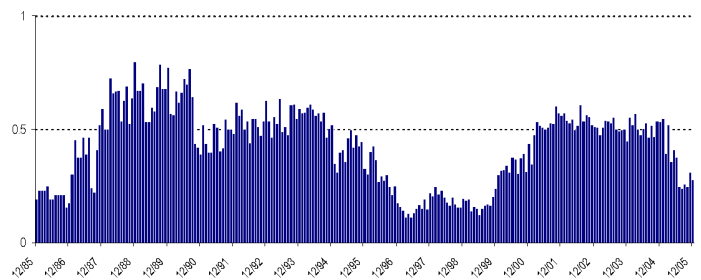


Source: Thomson Reuters Indices

ACTIVE-VERSUS-PASSIVE RATIO

Another way to look at the performance differences between active and passive funds is to measure the proportion of active funds beating the average passive fund. The AVPR is a ratio of the number of active funds outperforming the average passive SPSP fund relative to the total number of funds in the comparison group. The AVPR chart clearly shows a parallel relationship between market movements and risk-adjusted returns of the active and passive funds.

Figure 3 AVPR, December 1985-December 2005



Source: Thomson Reuters Indices

MOVING-AVERAGE CONVERGENCE/DIVERGENCE (MACD)

MACD is a popular technical indicator that indicates direction and changes in direction of a trend. As its name implies MACD is based on the difference between two moving averages—a short-term moving average and a longer-term moving average. In this case the short-term component is a 12-month moving average exponential moving average, and the longer-term component is a 26-month exponential moving average of the AVPR. When both

averages are at the same level the MACD is zero. As the short- and longer-term moving averages diverge MACD increases in absolute terms, and *vice versa* when the moving averages converge. Traditionally, MACD is plotted with a nine-month exponential moving average of itself. This line is called the signal line and is used to indicate changes in trend direction.

To make use of the rather-academic AVPR indicator, we charted the MACD of the AVPR to see if there were any trends and/or directional changes in trends that could be used as signals to move a portfolio between active and passive funds—indicated by the differences in risk-adjusted returns. Changes in trend are indicated by the crossover of the MACD line and its nine-month exponential moving average.

Figure 4 MACD of AVPR, December 1985-December 2005



Source: Thomson Reuters Indices

The crossover points of MACD triggered movements between active and passive investments. When MACD moved above its nine-month moving average the number of active portfolios beating the passive portfolio was increasing, and this observation was used as a signal to move into actively managed funds. When MACD moved below its nine-month moving average the number of active portfolios losing ground to the passive approach was increasing, conversely signaling a move into the passive portfolio.

Contrary to the discussion of effective returns above, the MACD indicator signaled a move into actively managed funds when the effective return for passively managed funds was beating that of

actively managed funds. This was shown in the 1986-1988 period, and again in the 1997-2001 period. Thus, the MACD as developed using the AVPR is a contrarian indicator.

RESULTS

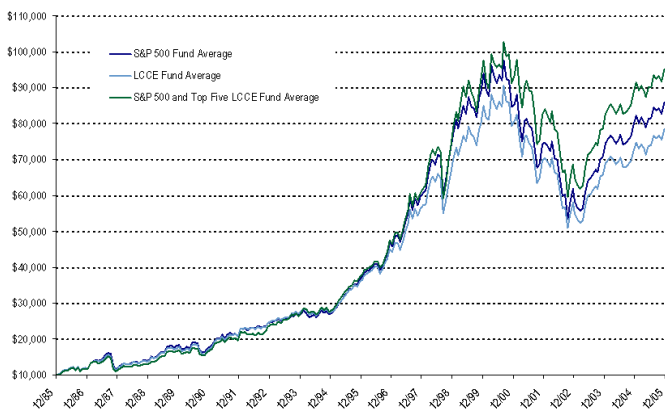
Examining the performance of three portfolios—(1) SPSP funds, (2) LCCE funds, and (3) a portfolio that switches between an average SPSP fund and five of the highest ranked LCCE funds based on effective return—we saw cumulatively significant differences in returns over the last 20 years.

The SPSP portfolio represented a buy-and-hold strategy in the average SPSP fund. Since SPSP funds all track the S&P 500 Index, they moved together very closely. The only difference was introduced by differences in expenses. The LCCE classification was entirely different. Monthly fund returns and even risk-adjusted returns within the group varied greatly throughout the period, even though each fund in the group invested in the same relative-size equity holdings. Since active managers have different approaches to the allocations among equities and different buy-and-sell criteria, along with very-diverse approaches to the management of their portfolios, we chose to not use the LCCE monthly average return in the mixed SPSP-LCCE portfolio. Only five funds were selected for use in the actively managed portfolio. The criterion used involved choosing the top-five LCCE funds, based on effective return from the previous period when the crossover occurred. Once these funds were chosen, the five funds remained in the portfolio until a new signal was triggered and the portfolio was moved into the average SPSP fund.

The chart below illustrates the returns on \$10,000 invested in each of the three portfolios. The LCCE funds on average returned \$78,374 after 20 years—a gain of 684%. The average SPSP fund ended the 20-year period with \$85,985—a gain of 760%. Finally, the portfolio using the MACD indicator based on the AVPR produced an average of \$95,198 dollars—a gain of 852%.



Figure 5 Value of \$10,000 Invested in SPSP, LCCE, and MACD Portfolios, December 1985-December 2005



Source: Thomson Reuters Indices

Investors reaping the additional 92% of return over the SPSP portfolio by using the MACD portfolio methodology faced a maximum drawdown of \$12,892 versus the SPSP portfolio's maximum drawdown of \$10,194. To their credit the LCCE funds experienced the smallest drawdown—\$9,671—during the period of this study. Additional considerations would have to include the effects of sales loads, redemption charges, and tax considerations in the actively managed MACD portfolio. Over the 20 years of this study there were 21 switches between the passive fund and the portfolio containing the top-five active funds. While a significant number of trades did not occur, trading costs were not included in this study, nor were taxes.

CONCLUSION

The debate will continue between actively managed and passively managed fund proponents. Depending on the periods and performance measures used, actively managed funds can be shown to outperform passively managed funds, and the reverse can also be shown. Our conclusion is that there were definite periods in the past 20 years when the returns of actively managed funds surpassed those of the passively managed funds and *vice versa*. Since there are periods when one type of fund outperforms the other, allocating a portfolio between actively managed and passively managed funds has been shown to provide additional returns to investors willing to accept additional transaction fees and a possible larger drawdown. This strategy

was accomplished using the popular technical indicator MACD, based on the proportion of actively managed funds beating passively managed funds.



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For more information

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