

# A Very Long-Term Buy-and-Hold Portfolio

*Surprising results.*

Sudhir Nanda and Donald J. Peters

In a market of frenetic activity when it is commonplace for managers to use strategies with turnover in excess of 100%, a buy-and-hold (very low turnover) manager could be accused of shirking. Is it necessary for holding periods to be very short to produce reasonable returns? This issue is of special interest for taxable investors because of the costs imposed by frequent trading.

We examine whether a strategy of maintaining a portfolio that was established a very long time ago would be a reasonable alternative for taxable investors. In other words, we consider an approach that is the antithesis of current practice.

Research indicates that few managers can produce an alpha high enough to offset the tax impact of today's short time horizon investment approaches (Jeffrey and Arnott [1993]). Garland [1997] and others have shown that taxable investors lose approximately 2% per year because of strategies active managers normally follow.

One of the most important findings of research on taxable investing is the power of compounding. That is, experiencing few taxable events in the early life of a portfolio allows the asset base to grow and dramatically outperform, on an after-tax basis, a portfolio with similar pre-tax returns but high gain recognition. Thus, those who focus on after-tax returns face constraints that tax-exempt investors do not.

The key to investing success is to allow wealth to compound over long time periods; consequently, many taxable investors follow buy-and-hold strategies. It is essential that a portfolio be designed to withstand the tests of time and unanticipated shocks. The benefit to taxable investors from low-turnover strategies is minimization of the negative cash flows from the portfolio for tax payments and transaction costs, a benefit that has to be balanced against the fact that the portfolio is not being refreshed.

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A portfolio that is not revised periodically will move away from a manager's current optimal portfolio. Further, a non-refreshed portfolio will become concentrated, which has important risk implications. These opportunity costs and risk factors that are inherent in a buy-and-hold strategy can make it extremely challenging to maintain.

We want to examine whether a long-term investor who wishes to realize minimal capital gains underperforms or assumes substantial additional risk. We examine a buy-and-hold strategy over a very long investment horizon—a time horizon of over 40 years—knowing that only a rare investor would choose such a long-term strategy.

## STUDY DESIGN

We examine the total return performance and characteristics of a buy-and-hold strategy over the period from January 1961 through December 2004. The length of the period was selected to analyze the portfolio's performance through a number of economic and investment cycles. The very long period was also chosen to bias the design against success.

Using the investable universe from over 40 years ago and precluding the addition of any new companies is an extreme version of a buy-and-hold strategy. The returns from this strategy are compared to returns of the full universe of U.S. stocks.

In January 1961, we invested in a market capitalization-weighted basket of all stocks in the Center for Research in Security Prices (CRSP) database. This is a strategy of buying an index of all NYSE-listed U.S. stocks. We considered only NYSE securities because CRSP did not include Nasdaq securities until later. The portfolio will own only these companies through the periods analyzed.\*

To simulate the returns of a buy-and-hold strategy, we reweight the portfolio each month to invest in stocks that are still listed. This approach is chosen because it is hard to compile a perfect record of corporate actions through many years. This rebalancing strategy is a reasonable approximation of what occurs in a portfolio where successful investments are allowed to become a higher and higher percentage. This is the prototypical case of allowing winners to run and the portfolio's assets to compound.

One issue is that we can present the data only on a pre-tax basis. Nevertheless, it is reasonable to assume very high tax-efficiency. Clearly, the strategy's tax-efficiency is expected to be substantially better than that of most active management approaches, but also that of indexing because

of the smaller amount of rebalancing. Thus, the most relevant question is whether the buy-and-hold strategy's return and risk compare favorably to these alternatives.

There were 1,116 stocks in this portfolio in 1961. Only 209 remain in 2004. The 907 companies that dropped out of the buy-and-hold portfolio are reflective of consolidation or creative destruction. The research design captures the performance of these companies until they are either acquired or delisted.

The benchmark is a market capitalization-weighted portfolio of all stocks in the CRSP database. There were 1,116 stocks in 1961 and 6,722 in 2004. Unlike the buy-and-hold portfolio, the benchmark is consistently refreshed. The benchmark includes all the new companies that have become public since 1961.

We considered using the S&P 500 index as the benchmark, but decided against it because we lack good historical data for the constituents of the index and their respective weights. Moreover, using the full universe of stocks is superior to choosing the S&P 500 index. The CRSP universe's return would reflect the experience of a passive index investor who indexes the complete U.S. equity market. A comparison based on the S&P 500 index would focus only on the larger-capitalization companies in the equity markets.

To summarize, the buy-and-hold portfolio starts with a very broad set of companies in 1961, and these are the only ones it will hold for the periods analyzed. The benchmark constantly evolves as new companies are added to equity capital markets. The benchmark will add new companies and industries through time, but the buy-and-hold portfolio will not.

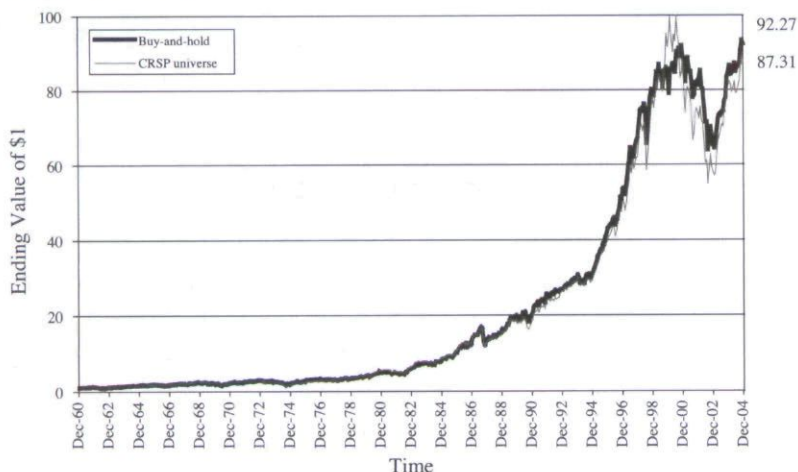
## PERFORMANCE OF A MARKET CAP-WEIGHTED STRATEGY

The market cap-weighted buy-and-hold portfolio outperforms the full universe by a small amount between 1961 and December 2004 (Exhibit 1). A \$1 investment in the buy-and-hold portfolio on December 31, 1960, would have become \$92.27 at the end of 2004, which is an annualized return of 10.83%. A similar investment in the CRSP universe would have grown to \$87.31, giving a 10.69% annualized return. While this result indicates that a buy-and-hold strategy is better than one that invests in the whole market, our interpretation is that the returns are essentially identical.

A possible reason for a buy-and-hold portfolio to perform as well as a broadly diversified index, even though

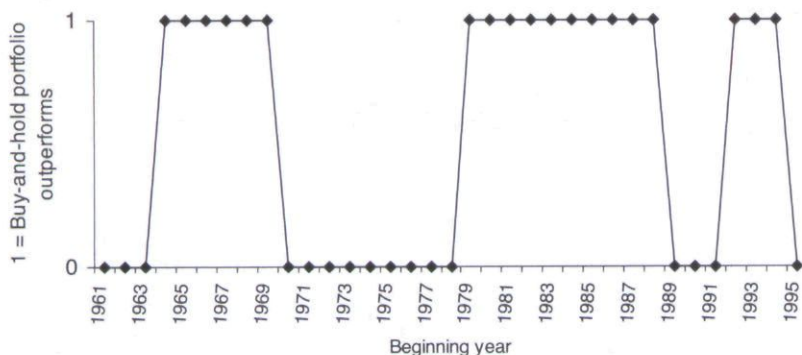
## EXHIBIT 1

Growth of \$1 from December 31, 1960, Through December 31, 2004



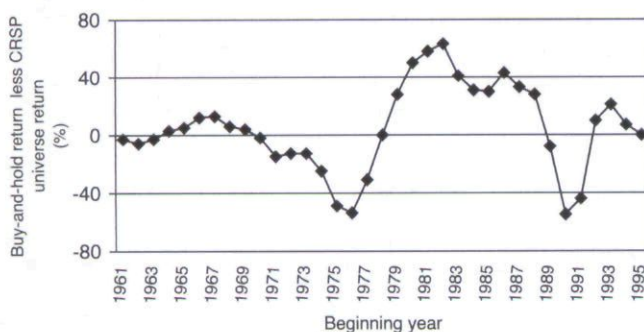
## EXHIBIT 2

Rolling Ten-Year Return Comparison of Buy-and-Hold Portfolio versus CRSP Universe



## EXHIBIT 3

Difference in Returns for Rolling Ten-Year Periods—Market Capitalization-Weighted Buy-and-Hold Portfolio and CRSP Universe



no new stocks are added for over 40 years, is that firms in the portfolio evolve. We infer that the DNA of surviving firms allows them to focus on areas of sustainable competitive advantage—the portfolio is dominated by longer-term winners that have been able to withstand the forces of creative destruction. The largest holding, GE, for example, has evolved from an industrial company to one with leadership positions in businesses with good longer-term growth prospects.

A fascinating aspect of buy-and-hold investing is that one is buying a call on the management team's ability to position a business favorably for the long term. That is, one is purchasing real options on products or services that do not exist today. Another reason we might expect similar performance by the two portfolios is that both are in the same risk class and thus provide similar returns.

Although Exhibit 1 suggests that the two portfolios track each other closely, we would have seen different patterns during intermediate periods. We also examined results for 35 rolling ten-year periods and 40 rolling five-year periods starting in 1961. Exhibit 2 shows the ten-year results.

The buy-and-hold strategy outperforms the full universe in 54% of the ten-year periods and in 50% of the five-year periods. There is significant variability in the performance of the buy-and-hold strategy, though, with multi-year streaks of out- or underperformance. The best year is 2000, when the excess returns were

11.29%, and the best ten-year span is 1982–1991, with 63% excess returns.

An important consideration for any potential strategy is whether one might have difficulty maintaining it. Few will have issues during periods of outperformance. During the runs of negative relative returns, there will be great pressure to abandon the strategy.

The worst single year of relative performance is 1999, when the buy-and-hold portfolio lagged by 15.8%. Exhibit 3 shows that in the ten-year periods beginning in 1976 and 1990 the strategy's relative performance was particularly weak. The returns for the period beginning in 1976 lagged by 54% as smaller companies dominated larger ones during most of this period. The period beginning in 1990 was about as enjoyable, with a 55% underperformance.

The buy-and-hold strategy did not own the hottest stocks during the bubble of the late 1990s, but the strategy's relative performance is very strong after the bubble burst.

The periodic underperformance presents a dilemma for a taxable investor. The portfolio is extremely low-cost, and the underlying fundamentals of the companies in the portfolio remain robust, but the performance is indisputably awful. Human nature can make it nearly impossible for anyone except for the most disciplined investor to persist with buy-and-hold strategies. Nor is this phenomenon unique to the extremely long-term design of our study. Many taxable investors readily acknowledge the costs of material changes to their investment strategies, but the anguish of underperforming, for even relatively brief periods often overwhelms these facts.

The dynamics of committee decision-making by boards of institutional investors are also germane. Keeping a group focused on longer-term goals during periods of adversity is challenging. It can be impossible to counter the argument that there must be something wrong because the portfolio's returns are lagging.

Clearly, some times weak relative returns will correctly signal that there is something that should be significantly changed. We do not really advocate that turnover should be zero, but if a sound investment policy is reasonably implemented, gain recognition should be very low. Careful analysis and good judgment are essential and—at points of stress—often in short supply.

It is notable that about 20 years ago Kirby [1984] discussed some of these issues. He drew a distinction between investing and trading. He also addressed some challenges of the money management industry such as short time horizons, fees, and moral hazard. He highlights in particular the fact that turnover costs are a major detriment to portfolio returns. These concerns have worsened over the last couple of decades, and a realist would argue that there are few signs of progress in this regard.

## SENSITIVITY ANALYSIS

The virtual tie between the returns from the buy-and-hold portfolio and the benchmark seems counter-intuitive. Are the returns too good to be true? Accordingly, we provide some sensitivity analysis. First we look at the effect of equally weighting the returns. We then consider 20-year holding periods. Next we examine a longer holding period

and then a shorter one that includes Nasdaq stocks from the time they were added to the CRSP database. Finally, we investigate whether the returns were driven by relatively few huge winners in the buy-and-hold portfolio. Although these last results are not shown for reasons of space, we found this was not true.

## Equally Weighted Portfolios

Although it would have been very costly for a taxable investor to maintain an equally weighted portfolio since 1961 because of the great amount of rebalancing, we were curious to investigate how such a portfolio would have performed. This strategy, like the original one, forecloses adding new companies over time, but is less dominated by large companies.

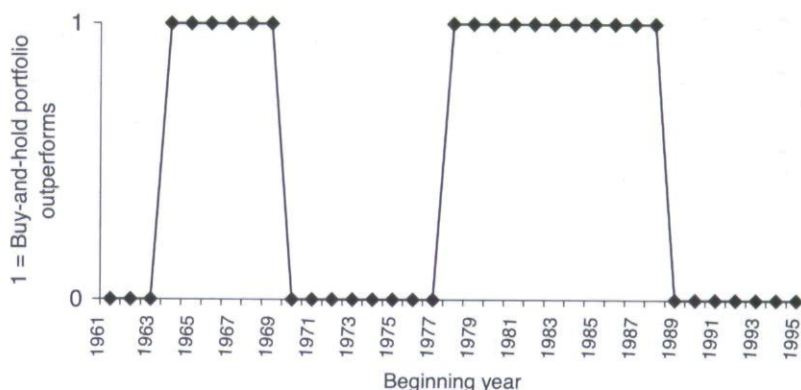
The results are extremely close. An equally weighted, non-refreshed, portfolio slightly underperforms the equally weighted CRSP universe, but dramatically outperforms the capitalization-weighted buy-and-hold strategy. A \$1 investment in the non-refreshed portfolio would have grown to \$239.90 (13.26% annualized) and in the CRSP universe to \$262.18 (13.49% annualized).

Exhibit 4 shows rolling ten-year periods when the non-refreshed portfolio would have underperformed or outperformed. Exhibit 5 displays the variation of the relative returns for rolling ten-year periods.

These findings are consistent with findings of Arnott, Hsu, and Moore [2005] on the size effect in frictionless portfolios. The enhanced performance that results from rebalancing to equal weights is also consistent with the findings of Plaxco and Arnott [2002] on asset class rebalancing.

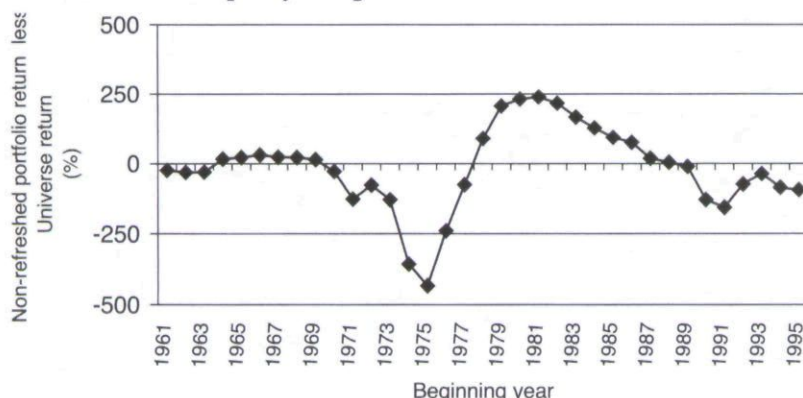
## EXHIBIT 4

### Rolling Ten-Year Return Comparison of Non-Refreshed Equally Weighted Portfolio versus CRSP Universe



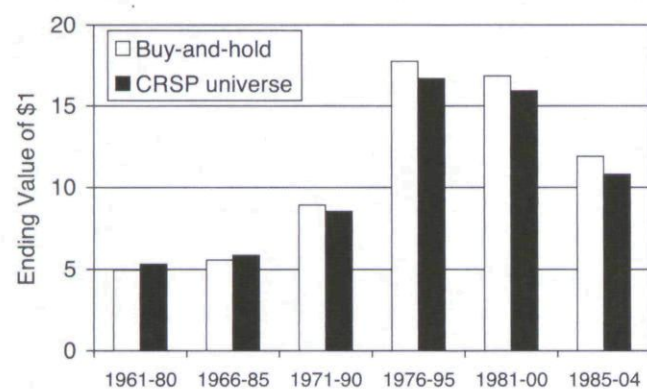
## EXHIBIT 5

### Difference in Returns for Rolling Ten-Year Periods— Non-Refreshed Equally Weighted Portfolio and CRSP Universe



## EXHIBIT 6

### 20-Year Performance of Buy-and-Hold Portfolios versus CRSP Universe



It is beyond the scope of our work to examine the difference between the capitalization- and equally weighted portfolios, but the performance of the non-refreshed, equally weighted, portfolio versus the equally weighted CRSP universe lends support to the capitalization-weighted findings and the notion that surviving companies are able to evolve successfully.

### Twenty-Year Returns for Buy-and-Hold Portfolio

Might there be something unique about the 1961 inception date, or the 2004 termination date? To answer these questions, we stagger the starting dates for portfolio inception in five-year increments and compare returns for the buy-and-hold portfolio with the benchmark over 20-year holding periods.

Exhibit 6 shows what would have happened during different 20-year periods for each buy-and-hold portfolio versus its corresponding CRSP benchmark. A buy-and-hold strategy would have underperformed in the initial years, but the strategy outperforms with the portfolios formed after 1971.

For each 20-year period, the results are reasonably close. The best relative performance for the buy-and-hold strategy is a 0.38% annualized return advantage for the portfolio formed in 1985; the worst annualized relative return is -0.46% for the portfolio that formed in 1961.

Thus, the experience of investors would be different, depending on the period during which they invested. This analysis supports the primary findings of our research. The buy-and-hold approach performs consistently with a refreshed broad market portfolio.

### Very Long-Term Return

We also examine two other periods. First, we examine an investment horizon from January 1926 through December 2004. This is a 79-year period for which we have CRSP monthly return data. There were 501 firms in the universe when the buy-and-hold portfolio was formed in January 1926. At the end of the period on December 31, 2004, 55 firms remained in the buy-and-hold portfolio, and the CRSP universe consisted of 6,722 firms.

The return patterns were similar to those for the shorter horizon of 44 years. Over this period, a \$1 investment in the capitalization-weighted buy-and-hold portfolio grew to \$2,076.15, which is a 10.15% annualized return. The universe dollar would have grown to \$1,969.83, which is a 10.07% return—again, a virtual tie.

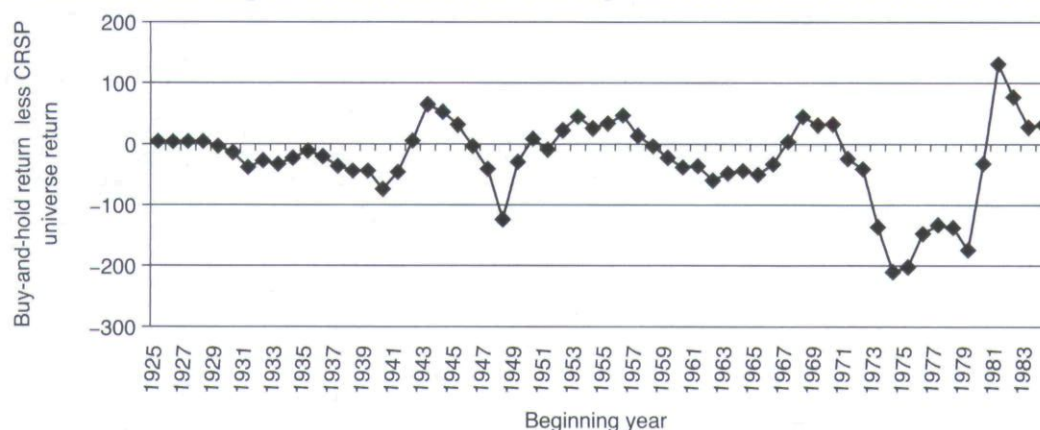
Exhibits 7 and 8 show the returns over rolling 20-year periods, which provides an idea of the volatility of difference in return between the two portfolios. The buy-and-hold portfolio outperforms in 38% of rolling 20-year periods and 48% of ten-year periods.

### 1973 Through 2004

CRSP added Nasdaq stocks to the database in December 1972. As this was a material change to the database that took place over 30 years ago, we examine the performance of the buy-and-hold strategy with \$1

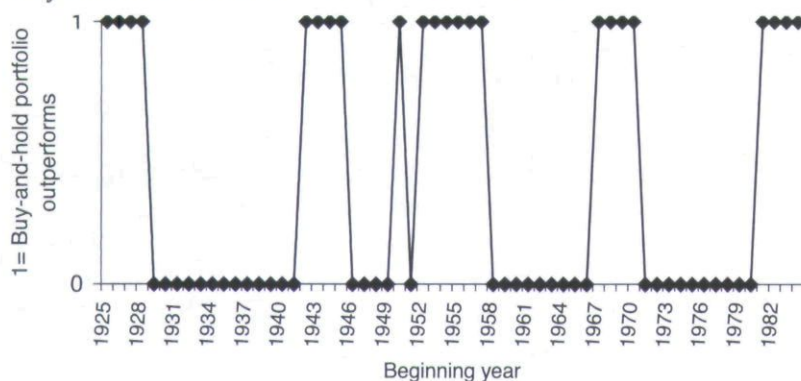
## EXHIBIT 7

Difference in Returns for Rolling 20-Year Periods between Buy-and-Hold Portfolio and CRSP Universe



## EXHIBIT 8

Rolling 20-Year Return Comparison—  
Buy-and-Hold Portfolio versus CRSP Universe



to display extreme or undesirable characteristics. The portfolio's profile could preclude reasonable people from actually owning it over time. Accordingly, we examine the ending characteristics of the buy-and-hold portfolio that was formed on December 31, 1960.

The portfolio has 209 stocks at the study's end, but is concentrated in comparison with the S&P 500 index, with 46.09% of the portfolio in the 10 largest stocks and 61.00% in the 20 largest. By comparison, the 10 largest stocks represent 21.42% of the S&P 500 index, and the 20 largest 31.97% of the index. In the Wilshire 5000 index, the 10 largest stocks constitute 16.21%, and the 20 largest 24.52% of the market capitalization.

This concentration is not surprising and is frequently observed in tax-efficient portfolios. As successful firms gain market share and create more value, and companies within industries consolidate to become more efficient, they become larger and thus constitute a greater proportion of one's portfolio.

Exhibit 9 shows the ten largest holdings for the buy-and-hold portfolio as of December 31, 2004. GE and Exxon are each over 9% of the portfolio, and Pfizer and Johnson & Johnson are each almost 5%. Thus four companies represent 28% of the portfolio.

This concentration has important risk implications beyond those conveyed by the portfolio's composite characteristics. Although these companies are well managed and shareholder-oriented, and have solid longer-term prospects, if we assume this portfolio were one's

invested on December 31, 1972. A \$1 investment in a capitalization-weighted buy-and-hold portfolio results in an ending value of \$33.85 (an annualized return of 11.63%). The CRSP universe of stocks had an ending value of \$29.06, which results from an annualized return of 11.10%. Consequently, the inclusion of Nasdaq securities does not alter our general conclusion.

The buy-and-hold portfolio had 5,444 stocks on December 31, 1972, and 852 securities on December 31, 2004. The CRSP universe had 6,722 stocks on December 31, 2004.

### CHARACTERISTICS OF THE ENDING BUY-AND-HOLD PORTFOLIO

Notwithstanding the reasonable, although volatile, returns of the buy-and-hold portfolio, it could have evolved

## EXHIBIT 9

### Largest Positions on December 31, 2004

| Buy-and-hold portfolio |        | Wilshire 5000 index |        |
|------------------------|--------|---------------------|--------|
| Company                | Weight | Company             | Weight |
| General Electric       | 9.24%  | General Electric    | 2.58%  |
| Exxon Mobil            | 9.06%  | Exxon Mobil         | 2.24%  |
| Pfizer                 | 5.07%  | Microsoft           | 1.94%  |
| Johnson & Johnson      | 4.94%  | Citigroup           | 1.67%  |
| Altria                 | 3.32%  | Wal Mart            | 1.51%  |
| IBM                    | 3.05%  | Pfizer              | 1.36%  |
| Chevron                | 2.73%  | Bank of America     | 1.28%  |
| Coca-Cola              | 2.61%  | Johnson & Johnson   | 1.26%  |
| Pepsico                | 2.30%  | AIG                 | 1.15%  |
| Abbott Laboratories    | 1.86%  | IBM                 | 1.14%  |

## EXHIBIT 10

### Sector Distribution on December 31, 2004 (percentages)

| Sector                            | Buy-and-hold portfolio | S&P 500 index | Wilshire 5000 index |
|-----------------------------------|------------------------|---------------|---------------------|
| Energy                            | 17.28                  | 8.49          | 6.88                |
| Materials                         | 5.86                   | 3.12          | 3.31                |
| Industrials and Business Services | 20.25                  | 11.49         | 10.56               |
| Consumer Discretionary            | 4.51                   | 11.26         | 14.09               |
| Consumer Staples                  | 19.29                  | 10.47         | 9.14                |
| Health Care                       | 17.48                  | 13.70         | 12.45               |
| Financials                        | 0.49                   | 20.15         | 21.78               |
| Information Technology            | 5.98                   | 14.93         | 15.98               |
| Telecom Services                  | 0.37                   | 3.09          | 2.86                |
| Utilities                         | 8.34                   | 3.30          | 2.96                |

entire equity portfolio, we believe it would be appropriate to recognize gains to improve the portfolio's diversification.

The portfolio has a yield of 2.31% on December 31, 2004, and a payout rate of 38%. As this will continue to produce good cash flow from dividends over the period analyzed, an investor could have used this cash flow to strengthen diversification.

Next we look at the sector distribution of the portfolio at the study's end (Exhibit 10). The buy-and-hold portfolio is underweighted in banks, securities and asset

management firms, and computer-related businesses. The S&P 500 and Wilshire 5000 indexes have about 20% of their weight in the financial sector versus 0.5% for the buy-and-hold portfolio.

The main reason for the underweighting in banks is that in 1961 most banks traded on the OTC market and are thus not in our portfolio. Banks are in the benchmark starting in 1972.

The portfolio is overweighted in industrial, consumer staples, energy, and health care companies. The information technology business as we know it today did not exist in 1961, so it is not surprising that the portfolio has less than half the exposure of the S&P 500 and Wilshire 5000 indexes.

Exhibit 11 compares the portfolio's fundamental characteristics with those of the S&P 500 and Wilshire 5000 indexes as of December 31, 2004. One concern would be whether it would be overly mature because no new companies have been added for several decades. It has desirable characteristics such as high return on equity, reasonable payout rate, a lower valuation, and solid growth prospects. The portfolio is larger and more mature than the S&P 500 index. It has a median capitalization of \$70 billion and anticipated growth rate in earnings per share of nearly 11%. The buy-and-hold portfolio is similar to the S&P 500 index in terms of valuation.

The portfolio has a predicted annual tracking error of 4.60% versus the S&P 500 index and 5.96% versus the Wilshire 5000 index as of December 31, 2004, which is similar to what many active managers target.

With the exception of the concentration issue, the ending portfolio's characteristics are not unreasonable. We conclude that one would not have been forced to abandon the buy-and-hold strategy because the portfolio's structure was becoming unattractive.

This is not to say that it would have been easy to stick with this portfolio through the period analyzed. Its relative performance is volatile.

An argument against the realism of this study is that one could have used the cash flow that the portfolio produced to diversify. It would have been easy to complement the buy-and-hold portfolio's characteristics and produce a composite portfolio that was suitable for the owner's intended purpose. Alternatively, one could have trimmed some of the largest holdings to lessen stock-specific risk and diversify.

## EXHIBIT 11

### Portfolio Fundamental Characteristics as of December 31, 2004

|                                                                      | Buy-and-hold portfolio | S&P 500 index  | Wilshire 5000 index |
|----------------------------------------------------------------------|------------------------|----------------|---------------------|
| Capitalization-weighted median market capitalization                 | \$71.2 billion         | \$55.6 billion | \$27.4 billion      |
| Forecasted long-term growth rate in EPS (IBES)                       | 10.67%                 | 11.45%         | 11.75%              |
| Dividend yield                                                       | 2.31%                  | 1.71%          | 1.56%               |
| Dividend payout rate (capitalization weighted median)                | 38%                    | 27%            | 21%                 |
| Capitalization-weighted beta with the S&P 500 index as the benchmark | 0.85                   | 1.00           | 1.00                |
| Trailing PE                                                          | 19.85                  | 20.71          | 21.52               |
| Return on Equity (trailing twelve months)                            | 21.23%                 | 17.90%         | 16.73%              |

### CONCLUSIONS AND IMPLICATIONS FOR ACTIVE MANAGERS

Performance of the buy-and-hold strategy turns out to have been quite similar to that of a broad market index. Given the constraints on the investment strategy, a reasonable ex ante assumption would have been that this portfolio would materially underperform over long time periods. Our results show that, although it is a volatile strategy, it essentially matched the returns of an index. The portfolio at the study's termination was concentrated, but otherwise had desirable characteristics. A primary conclusion is that one is not required to adopt a strategy with very high turnover to earn competitive returns.

Another implication of our study (as in other research) is that taxable investors with gain-embedded portfolios should not focus on short-term performance. If one does, portfolio changes are likely to be made at points of maximum pain, and longer-term after-tax performance will be compromised. It is notable that it would be challenging not to abandon the strategy during periods of underperformance and general euphoria about the "next big thing." A better alternative is to focus on longer-term performance and the underlying health of the portfolio and its individual companies in light of the portfolio's intended purpose (Jeffrey [1977, 1984]; Peters [2003]).

Low gain recognition strategies have been shown to have the highest probability of success. Few actually use these types of strategies, because they require that investors not only agree on long-term policy objectives, but also have the discipline to implement and adhere to the strategy. These factors alone are reasonable arguments as to why a buy-and-hold approach is likely to continue to be a successful strategy.

Our research design is admittedly extreme, but it serves to address issues taxable investors face if they use a buy-and-hold approach. Our intent is not to provide an endorsement for either active or passive investment styles. Nevertheless, one can infer that a portfolio manager who uses a less constrained version of a buy-and-hold strategy should have a reasonable chance of success.

There are two areas where active managers can add value. The first is at the design stage or portfolio formation period. The objective at this time is to pick from an investable universe a subset of companies that will produce an optimal buy-and-hold portfolio that meets the client's objectives. Since those who create indexes do not have this goal, it is a reasonable hypothesis that an active manager could be successful.

The second area concerns risk identification and management. One must analyze and understand the risks of a portfolio before one can take any reasonable actions. Portfolio managers can greatly assist clients in this regard.

This exercise can be invaluable for those who so detest paying taxes that they are reluctant to make any adjustments. Other activities to mitigate risk include selling companies whose fundamentals have permanently deteriorated or whose managers are behaving dysfunctionally. Simply put, it is not optimal to ride a stock down to zero or produce a loss.

Gain recognition needs to be very low to be successful, but fundamental analysis can be very helpful in avoiding catastrophic failures. Recognizing some gains to lessen risk often represents a favorable trade-off.

### ENDNOTES

The authors thank Robert H. Jeffrey and James P. Garland for helpful comments.

\*The Center for Research in Security Prices at the University of Chicago produces a database of all U.S. listed securities

and their returns. Nasdaq stocks were added in 1972. Later, we analyze the impact of adding Nasdaq securities on our findings.

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