

# The Greatest Return Stories Ever Told

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Soros, Steinhardt, Robertson. Berkshire Hathaway and its leader, Warren Buffett. Harvard University. The Magellan Fund. Sir John Templeton, John Neff, and Richard Driehaus. Heroic figures and distinguished institutions such as these not only evoke extraordinary investment performance over a long span of time, but also represent to investors the best hope that, contrary to the teaching of some academics, active management is a worthy and productive cause.

Some of the highest-returning managers and funds have a less public face than the heroes enumerated above. Barclays Global Investors' U.S. tactical asset allocation product (BGI TAA), for example, had an annual return 2.38% above its benchmark over the 22 years and 10 months since its inception (that is, from July 1977 through April 2000), and thus belongs in the exclusive society of all-time best performers.

Over the same long period, the Ford Foundation, an endowment with assets distributed among U.S. and international public equities, bonds, and private equity, achieved an annual return 1.04% above its benchmark with low risk, and thus earns membership in that group through a different route.

In this article, we present and analyze these and other asset management success stories. The main thrust of our study covers a somewhat shorter period from January 1980 through March 2000, because that period is the longest for which we have institutional man-

ager composite returns as well as a full set of mutual fund and other data. As shown in Exhibit 1, of the 495 funds for which we were able to obtain data over that shorter period, the top three as ranked by Sharpe ratio were BGI TAA, W.H. Reaves, and Harvard University. Fidelity's flagship Magellan Fund was an impressive sixth, and the Ford Foundation was 11th. A few other hidden gems emerge from an examination of historical manager returns data, and this article presents and analyzes those managers' results as well.

Our bias is to look skeptically at claims of exceptionally high investment return. We are guided by the view, arising from a half century of academic work, that markets are at least somewhat efficient; that it is consequently difficult for *any* manager to beat an appropriately selected and properly risk-adjusted benchmark, and that in any case active management is a zero-sum game.<sup>1</sup> (In a zero-sum game, while some managers may excel through luck or skill, the aggregation of all managers must sum to the market return, so that the high returns of the superior managers are earned at the expense of the others.)<sup>2</sup>

Sometimes a spectacular track record looks more modest, or even inferior to that offered by an index, when adjusted properly for the risks taken. Such risks include standard deviation, or volatility; beta, or exposure to the risk of the market as a whole; and style risks, such as those inherent in buying growth, value, or small-capitalization stocks rather than the

# EXHIBIT 1

## Top 40 Funds Ranked by Sharpe Ratio—January 1980–March 2000

Rank	Fund Name	Basic Statistics			Comparisons to Benchmark		
		Compound Annual Return	Annualized Standard Deviation	Sharpe Ratio	Compound Annual Excess Return	Annualized Tracking Error	Information Ratio
1	BGI TAA	17.30	11.20	0.906	2.39	6.36	0.346
2	W. H. Reaves	18.13	12.58	0.878	0.36	12.45	-0.004
3	Harvard University	15.77	10.08	0.863	1.04	5.52	0.149
4	Phoenix-Engemann Capital Growth A	19.17	14.19	0.857	1.41	6.03	0.174
5	Dresdner RCM Balanced	16.89	11.49	0.855	1.98	4.03	0.465
6	Magellan	23.57	20.07	0.844	5.80	8.45	0.690
7	Ashland Large-Cap Growth	21.72	17.74	0.841	3.95	8.54	0.447
8	Institutional Capital	18.27	13.44	0.839	0.50	6.00	0.030
9	Waddell & Reed Core Equity	19.68	15.50	0.826	1.91	7.02	0.243
10	Boston Company Core Value Equity	18.34	13.91	0.823	0.58	5.31	0.064
11	Ford Foundation	15.41	10.25	0.818	0.50	3.50	0.123
12	Dresdner RCM Large Cap	20.65	17.01	0.816	2.89	5.60	0.494
13	Columbia Core Growth	19.22	15.20	0.814	1.45	3.71	0.340
14	Lindner Asset Allocation	14.95	9.78	0.810	0.05	8.95	-0.004
15	Key Large Value Equity	17.10	12.59	0.807	-0.67	3.92	-0.239
16	Spears Benzak Large Cap	16.57	12.03	0.799	-1.20	6.93	-0.214
17	Columbus Circle Large Cap Growth	21.39	18.51	0.798	3.62	6.68	0.550
18	Dresdner RCM Tax Efficient	20.33	17.04	0.798	2.57	5.58	0.447
19	Cambiar Investors	19.24	15.63	0.797	1.47	5.10	0.267
20	Newell Relative Yield	16.85	12.58	0.791	-0.91	7.42	-0.155
21	Janus	20.93	18.15	0.789	3.16	8.80	0.365
22	Harbor Capital Balanced	14.91	10.06	0.787	0.00	3.29	-0.011
23	Berkshire Hathaway	28.99	30.39	0.786	11.22	22.57	0.566
24	Lincoln Capital	20.46	17.66	0.784	2.69	6.52	0.419
25	State Street Large Value	17.03	12.99	0.781	-0.74	6.08	-0.156
26	Alliance Large Cap Growth	22.11	20.11	0.780	4.34	7.12	0.645
27	Miller, Anderson & Sherrerd Core Equity	18.66	15.29	0.778	0.89	4.54	0.177
28	Investment Company of America	17.03	13.06	0.778	-0.74	3.81	-0.249
29	Sequoia	17.91	14.30	0.776	0.15	9.79	0.000
30	Westcap Large Growth	18.75	15.48	0.775	0.98	5.04	0.179
31	J. P. Morgan U.S. Diversified	14.77	10.05	0.775	-0.14	2.31	-0.072
32	Analytic/TSA Defensive Equity	14.43	9.61	0.775	-0.48	4.87	-0.104
33	Davis NY Venture A	19.84	17.04	0.774	2.07	6.96	0.300
34	Capital Guardian Value/Core Equity	18.25	14.86	0.773	0.49	3.29	0.118
35	New Perspective	17.55	13.88	0.772	1.82	7.47	0.181
36	Fidelity Puritan	15.25	10.78	0.771	0.35	4.44	0.080
37	Highmark Income Equity	16.93	13.11	0.770	-0.83	6.55	-0.155
38	Jundt Emerging Growth	24.42	23.88	0.768	6.65	15.21	0.476
39	Smith Barney Large Cap Value	16.84	13.01	0.768	-0.92	5.03	-0.222
40	W. R. Huff High Yield	13.92	9.03	0.766	3.89	7.35	0.498
45	60/40 Benchmark	14.91	10.45	0.761	na	na	na
67	S&P 500	17.77	15.13	0.734	0.00	0.00	0.000
95	Global Balanced Benchmark	14.73	11.23	0.701	na	na	na

broad market.

In what is probably the first effort that compares the performance of investment funds with widely different strategies, risk levels, and asset class mandates, this article adjusts for various dimensions of risk in an attempt to characterize the claim that a particular manager's track record is among the "greatest return stories ever told."

### DATA STUDY

We collect total returns on all managed pools of assets (other than funds with a cash or cash-like investment strategy) for which accurate, long-term data could reasonably be obtained. These include:

- Institutional composites.
- Institutional separate accounts.
- Mutual funds.

# EXHIBIT 1

## Top 40 Funds Ranked by Sharpe Ratio—January 1980–March 2000 (continued)

CAPM Statistics						
Rank	Fund Name	Annualized Alpha	Alpha T-Statistic	Beta	Adjusted R-Squared	Treynor Ratio
1	BGI TAA	4.02	2.25	0.55	0.56	18.38
2	W. H. Reaves	5.48	2.34	0.50	0.37	22.02
3	Harvard University	2.11	1.78	0.59	0.77	14.67
4	Phoenix-Engemann Capital Growth A	2.70	2.03	0.85	0.84	14.27
5	Dresdner RCM Balanced	1.87	2.00	0.72	0.89	13.71
6	Magellan	3.58	1.91	1.20	0.84	14.08
7	Ashland Large-Cap Growth	3.69	1.82	1.01	0.76	14.76
8	Institutional Capital	2.22	1.76	0.82	0.85	13.82
9	Waddell & Reed Core Equity	2.62	1.59	0.92	0.80	13.95
10	Boston Company Core Value Equity	1.90	1.64	0.86	0.88	13.31
11	Ford Foundation	1.42	1.45	0.63	0.84	13.37
12	Dresdner RCM Large Cap	2.06	1.57	1.06	0.90	13.04
13	Columbia Core Growth	1.52	1.73	0.98	0.94	12.66
14	Lindner Asset Allocation	3.98	2.11	0.35	0.31	22.32
15	Key Large Value Equity	1.14	1.79	0.81	0.96	12.51
16	Spears Benzak Large Cap	1.74	1.38	0.71	0.81	13.56
17	Columbus Circle Large Cap Growth	2.09	1.39	1.14	0.88	12.94
18	Dresdner RCM Tax Efficient	1.76	1.35	1.07	0.90	12.75
19	Cambiar Investors	1.67	1.38	0.97	0.89	12.83
20	Newell Relative Yield	1.94	1.34	0.72	0.77	13.79
21	Janus	2.75	1.32	1.04	0.77	13.74
22	Harbor Capital Balanced	1.15	1.20	0.61	0.84	12.98
23	Berkshire Hathaway	8.50	1.64	1.39	0.48	17.24
24	Lincoln Capital	1.86	1.22	1.08	0.87	12.83
25	State Street Large Value	1.41	1.16	0.79	0.85	12.90
26	Alliance Large Cap Growth	1.63	1.18	1.27	0.92	12.39
27	Miller, Anderson & Sherrerd Core Equity	1.24	1.16	0.96	0.91	12.39
28	Investment Company of America	0.82	1.18	0.84	0.95	12.08
29	Sequoia	2.95	1.39	0.73	0.61	15.13
30	Westcap Large Growth	1.28	1.07	0.97	0.90	12.42
31	J. P. Morgan U.S. Diversified	0.70	0.96	0.64	0.91	12.20
32	Analytic/TSA Defensive Equity	0.91	1.00	0.59	0.84	12.66
33	Davis NY Venture A	1.83	1.11	1.02	0.83	12.89
34	Capital Guardian Value/Core Equity	0.85	1.10	0.96	0.95	11.99
35	New Perspective	1.59	1.04	0.82	0.79	13.04
36	Fidelity Puritan	1.37	1.12	0.63	0.77	13.29
37	Highmark Income Equity	1.46	1.10	0.78	0.82	12.98
38	Jundt Emerging Growth	4.66	1.32	1.23	0.62	14.88
39	Smith Barney Large Cap Value	0.96	0.98	0.81	0.90	12.29
40	W. R. Huff High Yield	3.33	1.81	0.32	0.28	21.43
45	60/40 Benchmark	0.60	0.83	0.66	0.92	12.01
67	S&P 500	0.00	0.00	1.00	1.00	11.10
95	Global Balanced Benchmark	0.51	0.42	0.66	0.79	11.88

We also collect information on Berkshire Hathaway, two endowment funds (the Ford Foundation and Harvard University), and a small number of hedge funds. Funds with annualized standard deviations of less than 6% (indicating a cash-like strategy) are excluded. A fuller description of the data sample is in Kroner, Clifford, and Siegel [2001].

We then analyze the funds' return series by calculating, in addition to total return, standard deviation, and other familiar statistics, a suite of risk-adjusted return

measures including:

- Sharpe ratio.
- Information ratio.
- CAPM alpha.
- Treynor ratio.
- Style-adjusted alpha.

Each measure has its strengths and weaknesses. For example, the Sharpe ratio is benchmark-independent, while

# EXHIBIT 1

## Top 40 Funds Ranked by Sharpe Ratio—January 1980–March 2000 (continued)

Rank	Fund Name	Style Analysis					Other Information	
		Style Alpha	Alpha t-Statistic	Market Beta	Smallness Beta	Valuation Beta	Fund Structure	Benchmark
1	BGI TAA	3.44	2.25	0.85	0.00	-0.07	MF	60/40
2	W. H. Reaves	3.46	1.54	0.67	-0.13	0.31	IC	SP
3	Harvard University	3.16	3.01	0.70	0.22	-0.09	E	GB
4	Phoenix-Engemann Capital Growth A	4.18	3.49	0.73	0.08	-0.23	MF	SP
5	Dresdner RCM Balanced	3.03	5.30	0.88	0.03	-0.27	IC	60/40
6	Magellan	4.55	2.74	1.10	0.44	0.00	MF	SP
7	Ashland Large-Cap Growth	5.15	2.56	0.89	0.11	-0.22	IC	SP
8	Institutional Capital	1.76	1.37	0.85	0.03	0.09	ISA	SP
9	Waddell & Reed Core Equity	2.85	1.77	0.88	0.25	0.06	IC	SP
10	Boston Company Core Value Equity	1.30	1.37	0.89	0.22	0.20	IC	SP
11	Ford Foundation	1.92	2.88	0.82	0.08	-0.16	E	GB
12	Dresdner RCM Large Cap	4.28	5.24	0.89	0.03	-0.38	IC	SP
13	Columbia Core Growth	2.46	3.05	0.90	0.10	-0.13	IC	SP
14	Lindner Asset Allocation	3.06	2.40	0.56	0.51	0.28	MF	60/40
15	Key Large Value Equity	0.22	0.46	0.89	-0.02	0.16	IC	SP
16	Spears Benzak Large Cap	1.57	1.30	0.71	0.19	0.11	IC	SP
17	Columbus Circle Large Cap Growth	3.97	3.05	0.98	0.17	-0.27	IC	SP
18	Dresdner RCM Tax Efficient	3.67	4.04	0.92	-0.04	-0.36	IC	SP
19	Cambiar Investors	2.41	2.28	0.90	0.30	-0.01	IC	SP
20	Newell Relative Yield	-0.26	-0.26	0.89	0.03	0.40	IC	SP
21	Janus	5.31	2.96	0.82	0.33	-0.33	MF	SP
22	Harbor Capital Balanced	1.23	1.76	0.84	0.11	-0.07	IC	60/40
23	Berkshire Hathaway	6.06	1.16	1.57	0.12	0.48	MF	SP
24	Lincoln Capital	3.50	2.57	0.95	0.01	-0.29	ISA	SP
25	State Street Large Value	-0.58	-0.70	0.95	-0.06	0.33	IC	SP
26	Alliance Large Cap Growth	3.23	2.62	1.13	0.10	-0.25	IC	SP
27	Miller, Anderson & Sherrerd Core Equity	1.81	1.70	0.91	0.13	-0.05	IC	SP
28	Investment Company of America	0.64	0.93	0.85	0.06	0.06	MF	SP
29	Sequoia	1.86	0.88	0.82	0.07	0.22	MF	SP
30	Westcap Large Growth	2.22	1.91	0.88	0.13	-0.12	IC	SP
31	J. P. Morgan U.S. Diversified	0.68	1.51	0.89	0.12	-0.03	IC	60/40
32	Analytic/TSA Defensive Equity	1.02	0.97	0.80	0.15	0.04	IC	60/40
33	Davis NY Venture A	2.04	1.20	1.00	0.15	0.02	MF	SP
34	Capital Guardian Value/Core Equity	0.94	1.24	0.94	0.11	0.03	IC	SP
35	New Perspective	na	na	na	na	na	MF	MSCW
36	Fidelity Puritan	0.13	0.17	1.00	0.21	0.22	MF	60/40
37	Highmark Income Equity	-0.37	-0.40	0.91	0.09	0.36	IC	SP
38	Jundt Emerging Growth	10.32	4.06	0.76	0.51	-0.81	IC	SP
39	Smith Barney Large Cap Value	-0.11	-0.13	0.89	0.05	0.21	IC	SP
40	W. R. Huff High Yield	na	na	na	na	na	IC	LA
45	60/40 Benchmark	na	na	na	na	na		
67	S&P 500	0.00	0.00	1.00	0.00	0.00		
95	Global Balanced Benchmark	na	na	na	na	na		

Key to fund structure: MF - mutual fund. IC - Institutional composite. ISA - institutional separate account. E - endowment.

Key to benchmarks: SP - S&P 500. 60/40 - 60% S&P 500, 40% Lehman Aggregate. GB - global balanced

(45% S&P 500, 15% MSCI EAFE, 35% Lehman Aggregate, 5% cash).

the information ratio requires a customized benchmark for each fund. For details, including how we select fund-specific benchmarks when computing information ratios, see Kroner, Clifford, and Siegel [2001]. For all funds, we use the S&P 500 as the measure of the market return in the CAPM and Treynor ratio calculations, and as the (unstylized) market portfolio in calculating the style-adjusted alpha.

Although some U.S. equity managers pursued small-cap, growth, or value strategies, over most of the period studied the S&P 500 was the index to which most such funds were benchmarked by their managers and customers. For U.S. balanced and asset allocation funds, it is still acceptable to use the S&P 500 as the market portfolio because the beta roughly measures the relative equity

and fixed-income exposures. For the few international and fixed-income funds that rank highly enough for data to be presented, statistics based on an S&P 500 “market portfolio” should, naturally, be regarded with caution.

For the top 40 funds as ranked by their Sharpe ratios, the results of our data study are presented in Exhibit 1. Ranking by Sharpe ratio makes sense because this enables one to make a direct comparison of funds invested in different asset classes and of widely differing risk levels. In addition, the Sharpe ratio, unlike other risk-adjusted performance measures, does not require specification of a benchmark. Nor does it rely on the CAPM or another asset pricing model being “true.” The only assumption embedded in the Sharpe ratio is that standard deviation measures the risk to which investors are averse.

All returns over January 1980 through March 2000 are quarterly. The statistics and ranking (out of 495 funds) of several benchmarks are also shown at the bottom of Exhibit 1, so the reader can compare fund results with relevant benchmarks.

The data in Exhibit 1 show that there is more than one way to skin a cat. The W. H. Reaves fund, consisting mostly of boring old utilities, achieved a Sharpe ratio higher than that of any growth stock fund. Value equities (Boston Company), growth equities (Phoenix-Engemann and Ashland), traditional balanced funds (Dresdner), and multiasset class portfolios (Harvard) are all represented in the top ten funds as ranked by Sharpe ratio, as is tactical asset allocation (BGI TAA). Fixed-income (W. R. Huff) is not far behind, and lest we forget small-capitalization equity investing, the Driehaus Small Growth fund ranks a respectable 53rd.

The reader may be tempted to rerank the funds in Exhibit 1 using a return or risk-adjusted return measure other than the Sharpe ratio, but should bear in mind that one would have to have the full set of funds studied to do the reranking correctly. For example, Driehaus Small Growth, which is not shown in Exhibit 1 because its Sharpe ratio ranking is below 40th place, ranks *first* when funds are sorted by either total return or style-adjusted alpha. Kroner, Clifford, and Siegel [2001] is a longer version of this article that provides more extended discussion of our methods and findings.<sup>3</sup>

## INSIDE SOME GREAT RETURN STORIES

To understand more about the way that managers have earned winning returns, we take a more detailed look

at a few of them. We focus on:

- Berkshire Hathaway.
- Magellan.
- BGI TAA.
- The Ford Foundation.

Berkshire Hathaway and Magellan are two managers, with very different styles, that are widely believed to be superior—a view confirmed by this study. BGI TAA and the Ford Foundation are selected because they are the institutions where we work.

We first provide some historical and qualitative context and comment on graphs showing each fund’s cumulative return over time. Then, expanding on the style analysis, we use time series analysis to obtain clues about how a fund’s performance was generated.

### Berkshire Hathaway

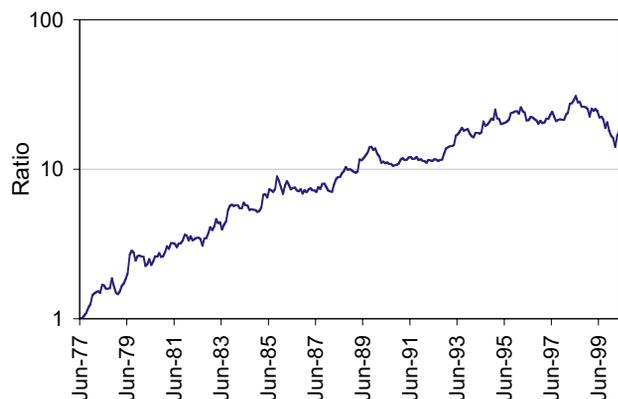
Unlike the other funds in this study, Berkshire Hathaway is an operating company that directly runs various businesses—including a thriving insurance business known for its catastrophe reinsurance and single-payment annuity lines—in addition to holding a portfolio of stocks. It started out as Berkshire Fine Spinning Associates of New Bedford, Massachusetts, thereby tracing its origins to Samuel Slater, who built the first U.S. cotton mill in 1790.

Berkshire Hathaway’s great investment track record was built using a classic value investment approach focusing on companies no one seems to want, often in dull-sounding industries. Unlike most fund managers, Warren Buffett, who has run Berkshire Hathaway since 1965, takes large positions in portfolio companies and often becomes actively involved in management—a strategy that culminated in Buffett’s becoming chairman of Salomon Inc. in 1991 at the height of that firm’s legal and financial troubles.

Warren Buffett is, of course, one of the few businessmen familiar to and respected by most Americans. Although he was at one time the richest U.S. citizen and is still one of the top dozen, Buffett is known for his plain-spoken manner and modest way of life; his home is in an upper middle class neighborhood in Omaha. His legendary social gaffes reveal his discomfort with high society. Now 70, Buffett says that he wants to become the world’s oldest investor and intends to pursue philanthropic interests that include world population control.<sup>4</sup>

## EXHIBIT 2

**Berkshire Hathaway Cumulative Return in Excess of S&P 500—July 1977–April 2000**



While Berkshire Hathaway had only the 23rd highest Sharpe ratio over the period covered in Exhibit 1, it had the highest CAPM alpha of any fund. Exhibit 2 shows the performance of Berkshire Hathaway compared to that of the S&P 500 over the period from July 1977 through April 2000.<sup>5</sup>

The level of tracking risk was extraordinarily high, reflecting the company's concentrated strategy. Tracking a benchmark is probably the last thing on Buffett's mind.

Berkshire's outperformance was distributed pretty evenly from 1977 to mid-1998, although, as with many managers, the run-up was a little steeper at the beginning when the fund was smaller. The only sharp falloff in that long period was between November 1989 and September 1990, with only a weak recovery in 1991–1992.

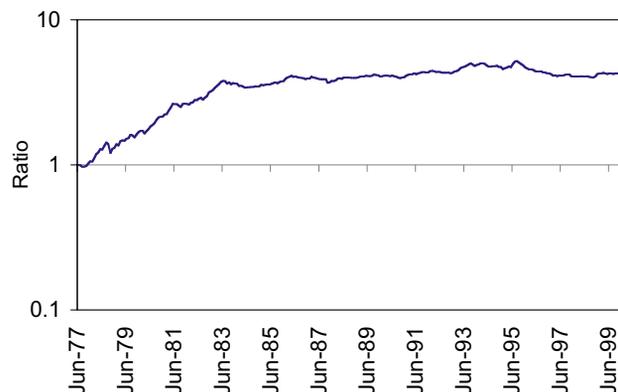
When value stocks fell sharply starting in mid-1998, however, Berkshire Hathaway's returns were sharply lower than those of the S&P, and Buffett's reputation for wizardry faltered. The company's March 2000 return of +30% marked the start of a recovery for the company and for value strategies in general.

### Magellan Fund

Fidelity's Magellan Fund was started in 1962 as an international fund, but the now-forgotten Interest Equalization Tax soon forced the fund to reorient itself to U.S. investments. When Peter Lynch began running Magellan in 1977, it had only \$22 million under management. By June 1985, only eight years later, Magellan had become the largest mutual fund in the world, and as of this writ-

## EXHIBIT 3

**Magellan Cumulative Return in Excess of S&P 500—July 1977–April 2000**



ing it represents over \$100 billion in assets.<sup>6</sup>

According to John Train [1998], Peter Lynch owes his fund's success to an insatiable appetite for work—especially meetings with companies. Lynch is reported to have “tentatively” scheduled 41 meetings in a single day. (It is not known how many of these meetings took place.)

In contrast to Buffett's patient, value-oriented approach and to the big bets taken by such outstanding investors as George Soros, Lynch prefers to make money a little at a time. Train (who is nothing if not literary) compares him to a baleen whale, relentlessly sifting through tons of plankton and discarding most of it to find the little morsels of food hidden within.

Magellan's performance record from 1977 through about mid-1983, shown in Exhibit 3, is what one might expect from an extremely smart baleen whale.<sup>7</sup> Returns in excess of the S&P 500 were earned very consistently and with only one-third the tracking risk of Berkshire Hathaway. As we saw earlier in the style analysis, Magellan also achieved its results without any net exposure to either growth or value factors.

Over July 1977 through March 2000, the longest period for which we collected data, Magellan had the highest Sharpe ratio of any fund. The Magellan track record shows that a high Sharpe ratio over a long period can be achieved by truly stellar performance in a relatively short time span—in this case, the first quarter of the period studied. Lynch did little more than stay even with the S&P after mid-1983, and in June 1990 Morris Smith was selected by Fidelity to run the fund in place of Lynch, who retired at the age of 46.

## EXHIBIT 4

### BGI TAA Cumulative Return in Excess of 60/40 Benchmark—July 1977–April 2000



Smith's tenure was brief, and he was followed by Jeffrey Vinik, whose tenure was blemished by a return 17 percentage points lower than the S&P 500 for the year ended August 31, 1996, principally due to a bet on U.S. Treasury bonds, and then Robert Stansky, whose performance has been similar to that of the overall market.<sup>8</sup>

### BGI TAA

In sharp contrast to Berkshire Hathaway and Magellan, BGI TAA's story is that of a team and an organization, rather than of an individual. BGI's predecessor company, Wells Fargo Investment Advisors, was known in the 1970s as the premier adopter of an academically informed approach to portfolio management, with an emphasis on index funds, risk-controlled active management, and asset class investing.

The academics with whom Wells Fargo consulted during this period include Harry Markowitz, Merton Miller, Myron Scholes, and William Sharpe, all eventually Nobel Prize winners. Other luminaries consulted include Fischer Black, Michael Jensen, and Jack Treynor.

Wells Fargo's investment approach originally focused on the application of a dividend discount model (DDM) to the selection of stocks. In 1973, a Wells vice president named William Fouse first used the DDM at the asset class level, to estimate the expected return on the equity market as a whole for the purpose of making asset allocation decisions. Fouse's process combined the DDM—a concept first proposed 35 years earlier by John Burr Williams—with the more recent theoretical advances of Markowitz and Sharpe.

The process assumes that the expected return on a stock index equals the implied discount rate for the stocks in the index (that is, the rate of return that equates expected future earnings with today's price). The expected equity return, thus calculated, is compared with the expected return on bonds as measured by their yield to maturity. With these expected return estimates plus some assumptions about correlations and the utility of high and low returns to pension plans, the model determined the "optimal portfolio" of stocks and bonds.

Fouse, William Jahnke, Thomas Loeb, and others at Wells Fargo used the model, its optimal portfolio output, and additional analytics to develop a consulting practice for pension clients who were dealing with the aftermath of the 1973–1974 bear market and funding rules instituted by passage of the Employee Retirement Income and Security Act (ERISA). While the model was intended to deal with problems that today might be called long-run—or strategic—asset allocation, it was quickly found that excellent shorter-run performance could be generated by rebalancing toward the optimal portfolio each month.

In June 1977, a client agreed to do exactly that, becoming the first discretionary asset allocation client for Wells Fargo. To differentiate this information-driven strategy from other, rule-based methods, the strategy was named Tactical Asset Allocation (TAA).<sup>9</sup>

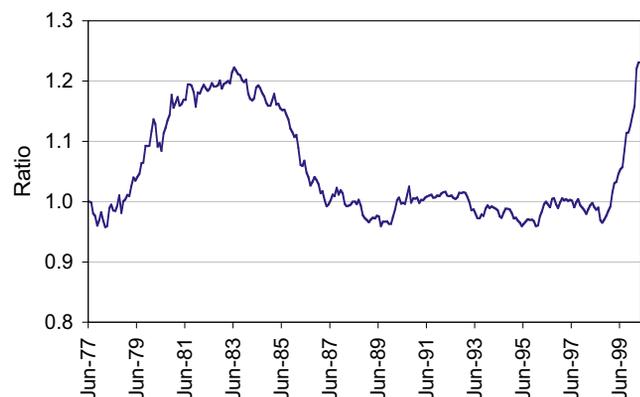
Wells Fargo continued to develop the TAA strategy, adding cash to the universe of available asset classes in 1985 and applying the strategy to non-U.S. markets in the late 1980s and 1990s. While several ownership changes transformed Wells Fargo Investment Advisors into Barclays Global Investors by 1996, the original U.S. TAA strategy continues to this day, with over \$12 billion in assets under management.<sup>10</sup>

Exhibit 4 compares BGI TAA's cumulative returns to those of the 60/40 benchmark. BGI TAA's returns in excess of the benchmark were strongly positive and reasonably consistent from the fund's mid-1977 inception to mid-1986. Then, as stock prices continued to rise, the model regarded stocks as increasingly overvalued. The fund held less and less in equities, culminating in an allocation of only 10% to equities by early October 1987. This underweighting of equities caused a decline in the fund's relative performance as stocks continued to rise.

Then, in the crash month of October 1987, BGI TAA's big bet against the stock market paid off. The fund rose 6.5% (due to Treasury bond exposure) in a month when the S&P 500 fell by 21.9% and the 60/40 benchmark lost 11.5%. This remarkable result, which posi-

## EXHIBIT 5

### Ford Foundation Cumulative Return in Excess of Global Balanced Benchmark—July 1977–April 2000



tioned BGI TAA as a “crash avoider,” produced the huge one-month upward spike in Exhibit 4. The fund then produced below-benchmark returns as the model failed to get back into the recovering market, especially in the first half of 1989.

Returns since that time have generally been in excess of the benchmark but at a slower pace, and with less reliability, than in the fund’s early years. BGI TAA’s return in the August 1998 crash (as some observers now call it) was slightly below that of the benchmark.

To BGI TAA’s credit, however, the fund maintained an above-benchmark equity exposure during the powerful bull run of September 1998 through December 1999, and has thus avoided the generally bearish, contrarian posture of most other tactical asset allocators.

### The Ford Foundation

Founded in 1936 by Henry and Edsel Ford of the Ford Motor Company, the Ford Foundation funds programs in asset building and community development; education, media, arts, and culture; and peace and social justice. The investment portfolio is managed by a combination of internal managers (staff members), who are responsible for U.S. large-cap equities and two fixed-income portfolios, and external managers of private equities, U.S. small-cap and value stocks, international stocks, real estate, and corporate bonds. The equity portfolios have a growth bias on net. The policy benchmark for the fund is a blend of 45% in the S&P 500, 15% in MSCI EAFE, 35% in bonds, and 5% in cash.

Following a sharp decline in the Ford Foundation’s asset values due to the 1973–1974 bear market and high spending rates, the organization’s newly selected president, Franklin Thomas, ushered in an era of conservative investment management. The Ford Foundation quickly regained its financial health and over the period covered by this study grew from \$2.1 billion in assets in September 1977 to \$14.7 billion today *while giving away more than \$6 billion*.

In the latter part of the period studied, the Ford Foundation’s investment approach again became more aggressive under the guidance of Linda Strumpf, who was selected as chief investment officer in 1993. Strumpf, an adventurous soul who dives in the open ocean to feed sharks (not the ones on Wall Street) and who was once charged by an elephant in Africa, increased the equity allocation and revived the Foundation’s private equity program, which would later generate the high returns that catapulted the fund’s Sharpe ratio into the top ranks of managers.

Exhibit 5 compares the Ford Foundation portfolio’s performance to that of its global balanced policy benchmark. Relative to this retrospective benchmark (not in use over the whole period), the gains of the late 1970s were given back in the 1980s as the benchmark, but not the portfolio, raced ahead due to international equity exposure. More recently, extraordinary returns were earned by the Foundation’s private equity program and by the large-cap growth strategy pursued in the U.S. public-equity portfolio.<sup>11</sup>

The Ford Foundation thus became one of the “greatest return stories” through risk control, which helped achieve a high Sharpe ratio, and through strong performance at the *end* of the time period studied, when the fund was large. The more typical way, shared by Berkshire Hathaway, Magellan, and BGI TAA, is to have one’s best years at the beginning when assets are small.

### THE GREATEST RETURN ANECDOTES EVER TOLD

Finally, some well-known managers—and a few who are less well-known—have exceptional returns and/or Sharpe ratios but are not covered in our data because the time period for which we have data is too short, because some of the data are missing, or because we have only anecdotal return information. Here are the stories of a few notable ones.

## George Soros's Quantum Fund

We were able to obtain return data for the Quantum Fund, managed by Soros Fund Management, only over March 1985–April 2000—a period quite a bit shorter than the funds covered in the exhibits. Despite high volatility, Quantum returned 26.0% compounded annually over March 1985–March 2000 (we leave out April 2000 so we can compare the results to other funds). More than all of Quantum's outperformance was in 1985–1991, with the fund losing ground to the S&P starting in 1992.

The annualized standard deviation of monthly returns, 25.2%, caused the Sharpe ratio to be 0.844, well below that of many other funds over the same period and just barely above that of the S&P 500 (which had a Sharpe ratio of 0.842). The diversified U.S. 60/40 benchmark, in contrast, had a Sharpe ratio of 0.927 over that period.<sup>12</sup> Quantum's April 2000 return of –20.0%, which is not included in the comparisons, further subtracted from risk-adjusted performance.

In fairness, however, the period for which we have monthly data is just the tail end of a more than 30-year stretch of remarkable absolute performance. According to the web-site of the Fraternity Fund, a hedge fund that invests only in funds managed by George Soros and/or Soros Fund Management, “the Quantum Fund has had an average annual return of 31.90% for the past 30 years (1969–1998).”<sup>13</sup> “An initial investment of \$100,000 in 1969 in...the Quantum Fund,” the Fraternity description continues, “would now be worth over \$500 million ending 31 December 1999 assuming reinvestment of dividends.”

If this latter claim is accurate, then Quantum's compound annual return over the 30-year period ending December 31, 1999, was 32.8%.<sup>14</sup> Using the monthly data we describe above, and backing into the early-period return, the compound annual return from 1969 through February 1985—a less than stellar period for most managers—was a startling 36.3%.<sup>15</sup>

## Julian Robertson's Tiger Fund

We collected quarterly returns for the Tiger Fund (the first of Tiger Management's hedge fund offerings named after big cats) from its inception on May 15, 1980, through March 31, 2000, falling just short of the time period required for inclusion in our main data exhibit. The fund returned 31.5% compounded annually, before fees, with an annualized standard deviation of 24.7%, for a Sharpe ratio of 0.999.<sup>16</sup>

This is the highest Sharpe ratio of any fund for which we have data over that particular period, even though the time period studied includes the dramatic late-1990s falloff in performance that resulted in the recent decision to liquidate the fund. (From June 30, 1998, through March 31, 2000, Tiger lost 44.7%.)<sup>17</sup>

Having generated truly remarkable returns for most of the fund's life, Robertson's highly leveraged, often value-oriented strategy proved as volatile on the downside as it had on the upside.

## Elliott Associates

Elliott Associates, a relatively small hedge fund, earned a compound annual return of 13.9% over the 22 years and 6 months ended December 31, 1999, with minuscule risk—an annualized standard deviation (based on quarterly data) of only 5.5%, for a Sharpe ratio of 1.253. This is the highest Sharpe ratio of any manager for which we have data over that particular period. (Over the same period, the S&P 500 had a Sharpe ratio of 0.664.)

Elliott is excluded from our main data exhibit because of the fund's low standard deviation, which classifies it as a cash-like fund. Elliott pursues an opportunistic strategy that has included event arbitrage, distressed debt litigation, and “opening up” a closed-end fund so that it trades at net asset value (NAV).

While the Elliott result is extraordinary on its face, one must be careful in interpreting Sharpe ratios and other risk-adjusted return measures from low-risk funds because the return may not have been fully scalable to higher risk levels. Elliott experienced an 11.7% downturn in the second half of 1998, its only two-quarter decline. The fund's previous worst quarter was the fourth (crash) quarter of 1987, when it returned –3.5%.

## The Windsor Fund As Managed by John Neff

Over the 31 years and 3 months ended October 31, 1995, the Windsor Fund, a long-only U.S. equity mutual fund that was managed by John Neff over that entire time span, returned 13.7% per year compounded, net of fees, surpassing the S&P 500 by more than 3% per year. Martin Fridson [2000] cautions that Neff's strategy would have been more accurately benchmarked by a small-cap value index (if such an index had existed at the time) than by the S&P 500.

A small-cap value index retrospectively constructed

by Eugene Fama and Kenneth French returned 17.8% over the same period, although the stocks in that index are smaller than those managed by Neff, and the index return does not adjust for market impact costs that would have been incurred in trading these small, illiquid issues.<sup>18</sup>

Neff should, however, be considered a true hero of the investment management profession. No one told him that small-cap value stocks (or so they would be called a generation later) would beat the broad market. He figured that out himself, through stock-picking.

### Other Funds

Several other anecdotal return stories are worth noting. Market folklore would place Michael Steinhardt's hedge fund, Steinhardt Partners, in the same league as Soros's and Robertson's funds, but it was liquidated in 1996 so it did not meet the survival-to-the-present condition of this study. At any rate, the Steinhardt fund is said to have produced an average annual return of 24% "over several decades."<sup>19</sup>

Caxton Corporation, founded in 1983 by Bruce Kovner, manages some \$4 billion using a diversified trading and arbitrage strategy that combines aspects of managed futures and hedge funds, and has produced an annual return of over 30% net to investors from 1983 to the present.<sup>20</sup>

Our review of anecdotally high-performing long-term investment track records is obviously incomplete (for example, we have no information for venture capital funds), and investors are invited to tell us their *documented* favorite stories.

### SUMMARY AND CONCLUSION

One common thread that ties these stories together is that, over the period studied, there have been many ways to earn a high Sharpe ratio. As we noted earlier, U.S. growth, value, core, and large- and small-capitalization equities, global equities, fixed-income, balanced funds, hedge funds, tactical asset allocation funds, and multiasset class endowment portfolios are all represented in our collection of great return stories. No purely *international*—that is, exclusively non-U.S.—equity fund was a winner because of the poor performance of the asset class, but we would not bet on international equities being out of the winner's circle in the *next* 20 years.

For the comparisons across asset classes that we set out to make, the Sharpe ratio is the best measure of risk-adjusted return, but it is not perfect: It mixes together asset

class and active returns. For example, BGI TAA's and the Ford Foundation's winning Sharpe ratios included a large active management component (the balanced benchmarks for these funds did not particularly have the wind at their back), while some of the winning managers had high Sharpe ratios because of their asset class or style focus, not because of active bets against that focus. To isolate the effect of active management, one has to look at alpha, information ratio, and other benchmark-sensitive indicators.

Looking at CAPM alpha, the highest alpha over a period a little more than 20 years long was about 850 basis points per year, and the tenth-highest was less than 300. This scale is stretched somewhat by the failure of the alpha calculation to adjust fully for the risks taken in concentrated strategies, and by mismatch between the strategy and the benchmark.

This result gives a sense of scale as to what active management can achieve. The range of alphas generated by the best managers in the past suggests that, going forward as well, 20-year annualized alphas of, say, 2,000 basis points are all but inconceivable, while alphas of 100 basis points should be generated by quite a few managers.

Ranking on other indicators of active management ability tells a similar story. For example, the highest information ratio achieved over the period was less than 0.9 and the tenth-highest less than 0.5. While managers often point to information ratios above 0.5 as being indicative of skill, it turns out that such a track record has very rarely been sustained over a 20-year period.

We have *not* demonstrated that the highest returns exceed what one ought to expect purely from random variation around an average. Marcus [1990] does show that the track record of one manager (he focuses on the Magellan Fund in the 1980s) was better than one would predict using statistical estimators for the maximum of a sample. Grinold and Kahn [2000] comment that:

The Marcus study is a rigorous version of the classic (and anecdotal) defense of active management: "Look at Peter Lynch, look at Warren Buffett...." He shows that the very top funds do outperform.... Lynch and...Buffett don't appear to be just two out of tens of thousands of investors who are lucky enough to flip heads 10 or 15 times in a row.... This is one study that demonstrates that successful active management is possible [2000, p. 562].

Our study enriches the anecdotal defense noted by Grinold and Kahn. We show that there are quite a few other managers that cluster around (or beat) Berkshire Hathaway and Magellan when ranked by various metrics. While we have not tried to figure out a method for predicting *which* managers will produce exceptional performance, we have shown that such performance is not impossibly rare.

Thus, although our findings do not formally contradict the efficient markets hypothesis, one would have to be a hard-core believer in efficient markets to deny that the best managers in our study had skill. We (and, we are sure, the funds' investors) congratulate the managers ranking at or near the top of our tables for a job well done.

## ENDNOTES

Special thanks are due Tim Aurthur of the Ford Foundation for extensive and expert work in programming the data analysis. The authors are indebted to those who provided the data analyzed in this article: Harold Reynolds and Thomas Stevens of Wilshire Associates, who provided the institutional composite returns; Paul Kaplan at Morningstar, Inc., who contributed the mutual fund returns; William Kurtz at The Northern Trust, who contributed the institutional separate account returns; and Todd Petzel of Commonfund Asset Management, who contributed various hedge fund returns. Julie Martin of the Ford Foundation provided the return data for that institution.

John Pirone and Duane Whitney of Barclays Global Investors also contributed to the programming, data gathering, and statistical analysis. Mary Ida Compton of Investment Decision Analytics, Clinton Stevenson of the Ford Foundation, and Jason Zweig of *Money* magazine provided extensive and invaluable editorial comments. Elizabeth Hilpman of Barlow Partners, Winston Holt of Maverick Capital, and most notably Barton Waring of Barclays Global Investors also deserve special mention for ideas and comments provided in extensive discussions with the authors. Nothing in this article implies endorsement of any investment product or service by The Ford Foundation.

<sup>1</sup>Even if manager returns vary only randomly around the benchmark, there are always some managers beating the benchmark over some measurement period. The interesting question is whether they beat the benchmark in the next period. For evidence on this question see Goetzmann and Ibbotson [1994]. They find only a weak winners-repeat effect. On Goetzmann's web page, <http://viking.som.yale.edu/will/vitae/resear2.htm>, he acknowledges that this result could have been due to survival bias. Further work by Goetzmann and Brown [1995] suggests that the observed effect is due to losers repeating (so that winners look successful on a relative basis)

rather than the actual repeating of winning track records.

<sup>2</sup>See Sharpe [1991]. The concept of active management as a zero-sum game is much older—Sharpe said it in the 1960s—but his 1991 article is the best presentation of it.

<sup>3</sup>A draft is available from the authors; contact [l.siegel@fordfound.org](mailto:l.siegel@fordfound.org).

<sup>4</sup>For more information on Warren Buffett and Berkshire Hathaway, see Lowenstein [1995].

<sup>5</sup>The July 1977–April 2000 period is the longest for which data are available for all four managers, since July 1977 is the first full month after BGI TAA's inception.

<sup>6</sup>Magellan reached \$100 billion in March 2000. As of April 6, 2000, it was reported by the Associated Press to have fallen to number two in ranking; on that date Magellan had \$106.9 billion in assets, and the Vanguard Group's Index 500 Fund had \$107.2 billion.

<sup>7</sup>Jason Zweig, of *Money* magazine, notes that the Magellan Fund was closed to new money from the starting date of our study until some time in 1981—in his words, “a long and happy period of incubation that most fund managers would kill for.”

<sup>8</sup>Vinik resigned on May 24, 1996. The return through August 31, 1996, is shown because it is the lowest one-year return (on calendar month-ends) during the period associated with Magellan's Treasury bond position.

<sup>9</sup>Some additional context is in Jahnke [1990]; see especially pp. 178–180.

<sup>10</sup>Fouse and Loeb now pursue a similar TAA strategy at Mellon Capital.

<sup>11</sup>Because conservative accounting practices are used for private equity investments, the standard deviation of returns for these investments tends to be understated. This has the effect of increasing the Sharpe ratio of the Ford Foundation slightly above the level that would be observed if private equity could be marked to market with precision on a monthly basis. The bias is small because private equity did not constitute an appreciable part of the Ford Foundation's asset base until the 1997–2000 period

<sup>12</sup>All the Sharpe ratios in our discussion of Quantum are based on monthly data. Most of the other data in this article are quarterly.

<sup>13</sup>It is not clear what is meant by “average” in this context, but a compound annual return of 31.90% is consistent with the cumulative growth described by Fraternity.

<sup>14</sup>This analysis assumes, conservatively, that the 1969 return took the whole year to earn.

<sup>15</sup>Again assuming conservatively that the 1969 return took a whole year.

<sup>16</sup>Hedge fund returns calculated before fees are interesting in that they represent what managers can achieve in markets. The investor, of course, received a substantially lower return because of a performance fee amounting to 20% of profits in excess of a benchmark (with losses carried forward according to a “high-water mark” formula), in addition to a fixed-percentage fee.

The standard deviation for Tiger is calculated as if the 4-1/2 month initial return of 35.2%, achieved over May 15–September 30, 1980, had instead been achieved over the third quarter of 1980.

<sup>17</sup>This is the cumulative total return over the period, not the annualized rate.

<sup>18</sup>Note that the return on the Fama–French small-cap value index is before fees and transaction costs. Of course, it was not “investable” over June 1964–October 1995 because it had not yet been constructed; it should go without saying that no index fund existed to track it.

<sup>19</sup>The source of this information is <http://www.magnuminvestments.com/magarticles.html#Mystery>.

<sup>20</sup>The source of this information is a personal discussion with Tanya Styblo Beder of Caxton Corporation.

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