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# The Proteom Fund

## A000 Long-Only US Equity Strategy

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### Strategy Analysis

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## 1

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# 2 Executive Summary

## Executive Summary

This study examines the returns and risk characteristics of the A000 Long-Only Strategy of the Proteom Fund. The key findings are:

- The average portfolio size fluctuates from 150 to 300 members of the S&P500 index.
- In the period 1980-2004, the Strategy outperformed the SP500 index on a risk-adjusted basis with a Sharpe ratio of 0.57 (Strategy) vs. 0.33 (S&P500) based on daily net returns.
- The Strategy generated consistently positive alpha year-on-year, with an overall annual alpha of 3.69% in 1980-2004.
- The Strategy outperformed the benchmark S&P500 index by 17.57% to 29.50% in the critical period from 2000-2002.
- The Strategy has lower volatility and downside risk than the benchmark index.
- Evidence suggests that the Strategy is making money through a combination of style and stock selection, accounting for the majority of the incremental alpha.
- The Strategy has a value-style bias, and is much more dynamic in its size-bias and sector allocation than the benchmark S&P500 index.
- The maximum concentration in any individual stock rarely exceeds 2.5% of the investment capital. Therefore, the concentration and liquidity risks are negligible.
- Winning days substantially exceed losing days in proportion and Sharpe ratio.
- There are no significant seasonal effects in Strategy returns.
- Strategy returns process has a large negative skewness and positive kurtosis indicating that upside "risk" is generally greater than downside risk.

## 3

# Strategy Performance

## Overview

### Strategy Description

The Proteom Equity Fund employs tools from computational biology including genetic algorithms, neural networks, and simulated environments to create successful investment strategies. The following Strategy analysis is focused on the A000 Long-Only Strategy within the Proteom Fund. The investment universe of the Strategy is the S&P500 Index membership, and the Strategy occupies about half of those positions with monthly turnover. Successful money management and trading professionals with proven track records oversee portfolio construction and maintenance, using proprietary computer systems, enabling the managers to constantly monitor risk models and to optimize portfolio performance daily.

For more details about the Proteom Fund, including other Strategies within the Fund, visit our web site on [www.proteomcapital.com](http://www.proteomcapital.com)

### Data Set for Analysis 1980-2004

The following pages offer a summary analysis of the A000 long-only Strategy for the Proteom Fund from January 1980 through December 2003. The formatting and content are based primarily on portfolio analysis from Style Advisor, (a performance analysis system licensed by Zephyr Associates), and Atlas, (a financial portfolio analysis system licensed by Wilshire Associates) with some additional analysis performed in SAS. The analysis in Section 3 was performed at the Strategy portfolio level, based on the time series of daily returns. A more detailed analysis of the portfolio composition and its relationship to Strategy performance follows in Section 4.

# Analysis of Strategy Performance

## Performance Summary

A summary of long-only Strategy performance is shown in figure 1.

The Strategy has outperformed the SP500 index by over 300 basis points per annum over the back-test period, with an annual volatility 160 basis points lower than the index. The superior risk/return characteristics of the Strategy are reflected in the higher Sharpe ratio and the annual alpha of 3.69%. The relatively lower risk of the Strategy is reflected in the lower volatility, reduced downside risk, and beta of 0.82.

**Figure 1: Performance Summary 1980-2004**

	Return	Volatility	Sharpe Ratio	Downside Risk	Best Year	Worst Year	Alpha	Beta	Correlation	Information Ratio
<b>Fund</b>	12.91	15.15	0.57	10.91	78.04	-19.93	3.69	0.83	0.92	0.48
<b>Index</b>	9.81	16.75	0.33	12.21	59.07	-34.35				

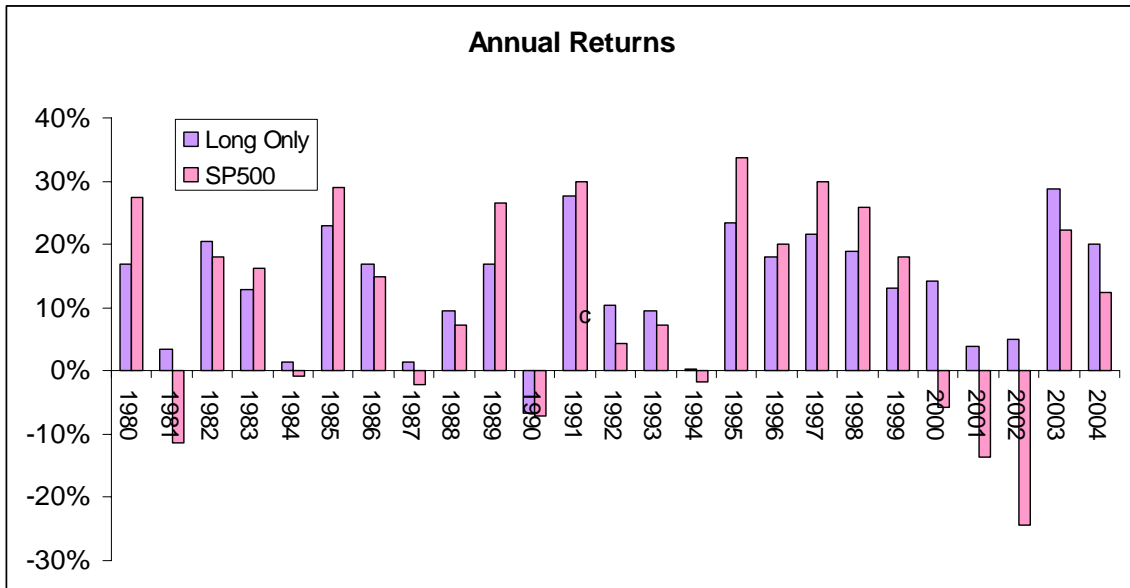
## Net Returns

A summary analysis for net returns for years 1980-2004 is shown in figures 2 and 3 below. Notice the Strategy out-performed the index by 19.84%, 17.57%, and 29.50%, respectively, during the years 2000, 2001 and 2002, when conditions for the broad market were poor. The superior performance of the Strategy during this critical period are detailed in Section 3: Strategy analysis (page 15) q.

**Figure 2: Annual Net Returns 1980-2004**

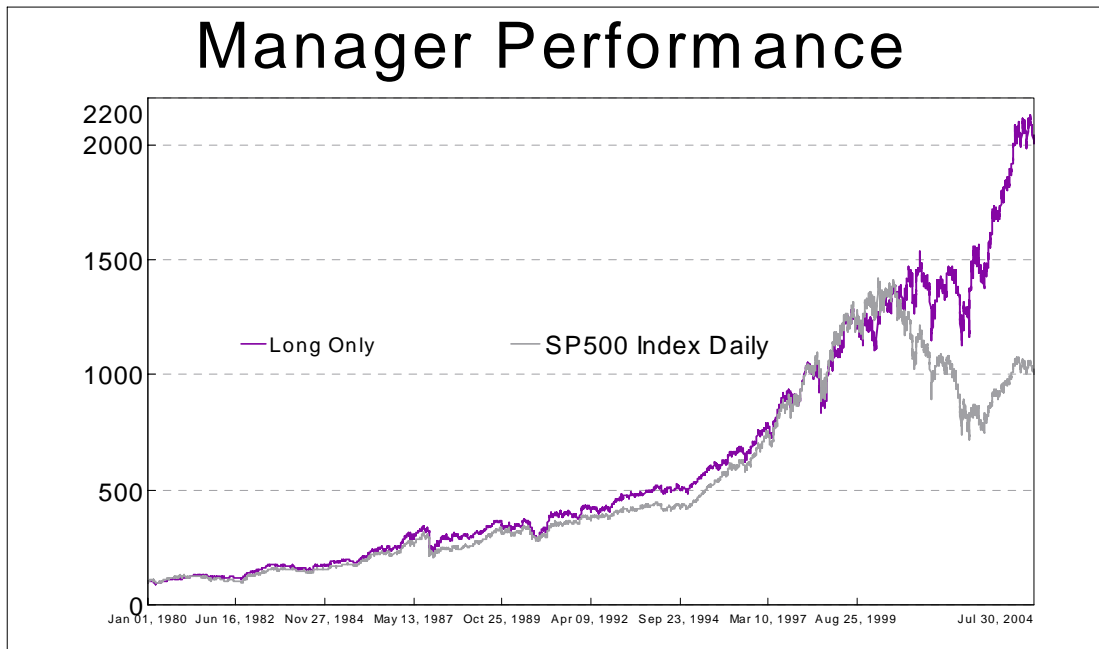
<u>Year</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
<b>Fund</b>	16.98	3.52	20.55	12.88	1.31	22.88	16.89	1.34	9.55	16.80
<b>Index</b>	27.45	-11.27	18.01	16.18	-0.93	29.08	14.96	-2.25	7.27	26.47
<u>Year</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>
<b>Fund</b>	-6.61	27.57	10.34	9.57	0.39	23.44	18.03	21.68	19.02	13.13
<b>Index</b>	-7.15	29.93	4.39	7.35	-1.63	33.69	20.11	29.80	25.81	18.03
<u>Year</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>					
<b>Fund</b>	14.18	3.96	5.00	28.78	3.87					
<b>Index</b>	-5.66	-13.61	-24.50	22.38	-1.00					

**Figure 3: Annual Returns 1980-2004**



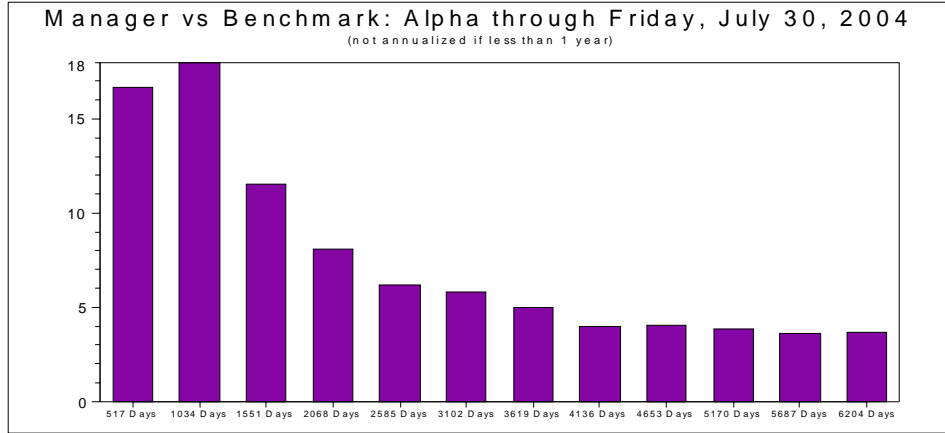
Cumulative Net Return 1980-2004

**Figure 4: Cumulative Net Returns 1980-2004**



Rolling Alpha 1980 - 2004

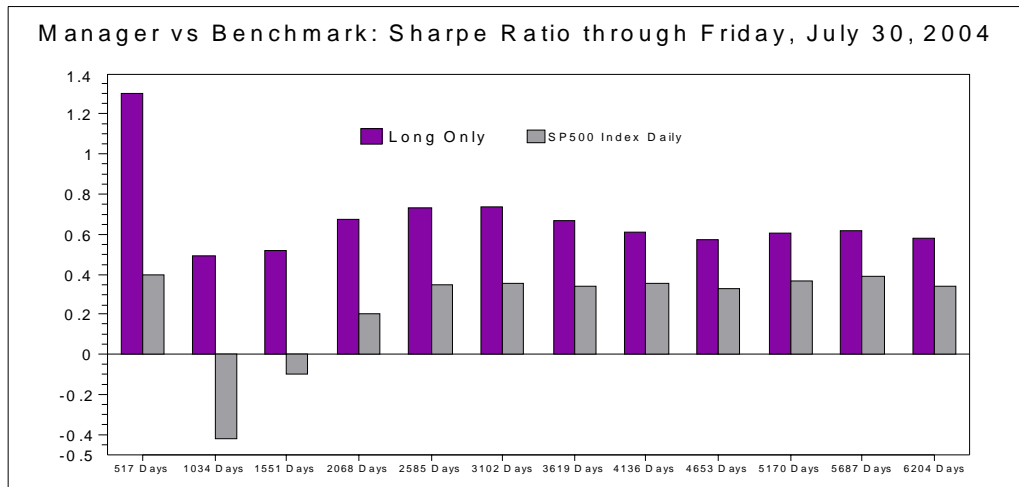
Figure 5: Rolling Alpha 1980-2004



Rolling Sharpe 1980 - 2004

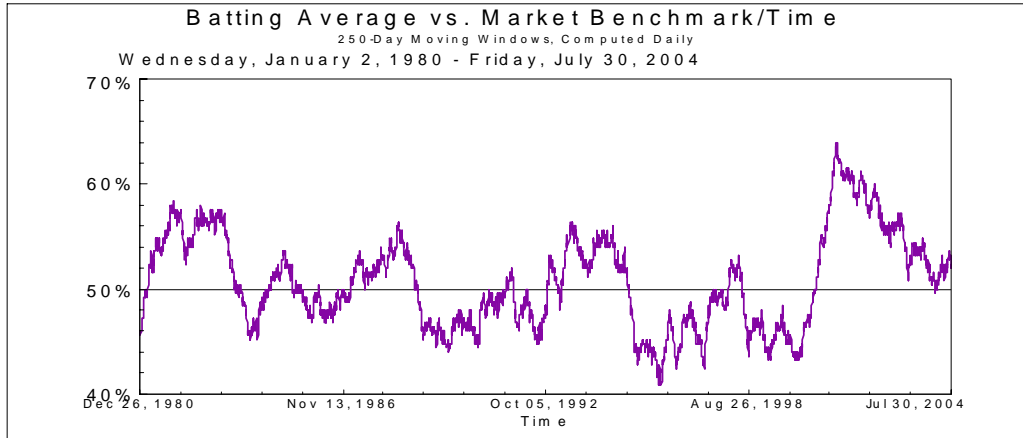
As figure 6 indicates, the Strategy has dominated the benchmark in terms of risk-adjusted return throughout the 24 year back-test period.

Figure 6: Rolling Sharpe Ratio 1980-2004



Batting Average 1980 - 2004

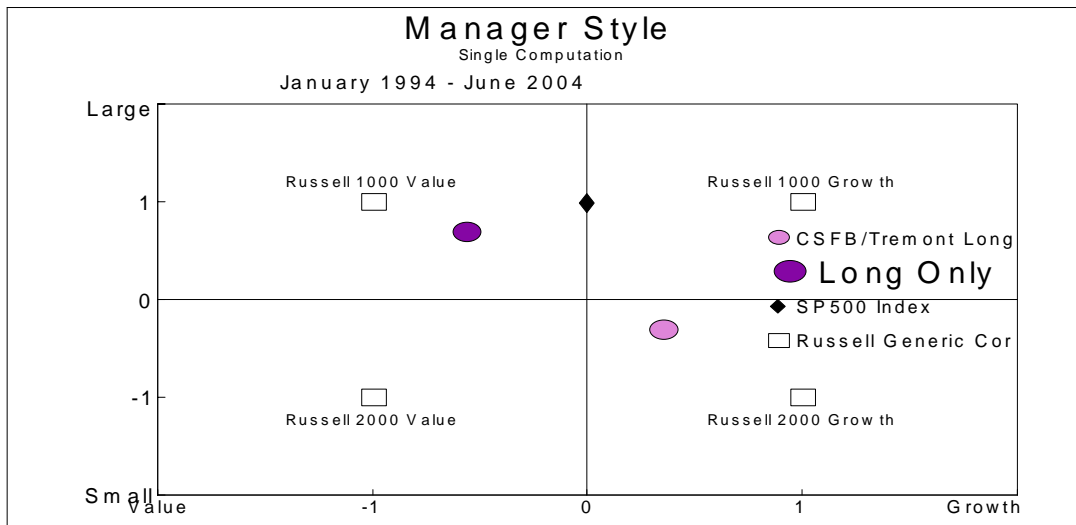
Figure 7: Batting Average 1980-2004



Style Analysis 1994 - 2004

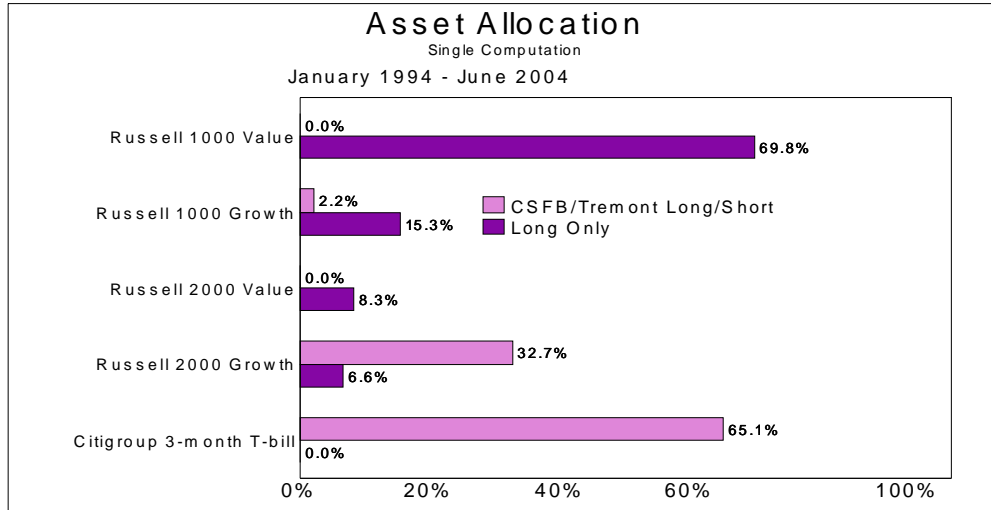
The figure below gives a strategy style analysis for 1994-2004. Compared to the benchmark S&P500 index, the Strategy is more heavily focused on mid-cap, value stocks. This is further confirmed by the attribution analysis in figure 9, which demonstrates a substantial attribution weighting on the Russell 1000 Value index.

Figure 8: Style Analysis 1994-2004



Attribution Analysis 1994 - 2004

Figure 9: Attribution Analysis 1994-2004



Analysis of Net Returns

A summary of the pattern of returns for the Strategy vs. the benchmark index is shown in figure 10 below.

Figure 10: Analysis of Net Returns 1980-2004

Overall	S&P500	Proteom	Up Mkt	Dn Mkt
Mean	0.043%	0.053%	0.206%	-0.117%
St Dev	1.059%	0.958%	0.982%	0.901%
Ann Vol	16.81%	15.21%	15.59%	14.31%
#	6206	6206	3269	2937
<b>t-stat</b>	<b>3.21</b>	<b>4.37</b>	<b>11.98</b>	<b>-7.01</b>
Win %	53%	54%	65%	41%
Worst	-20.47%	-16.10%	-16.10%	-5.71%
Skewness	-1.21	-0.72	-1.7	0.52
Kurtosis	26.74	18.63	28.77	7.2
Correlation		0.211	0.056	0.218
Beta		0.191	0.035	0.142
Sharpe Ratio	0.528	0.75	3.197	-2.194
Auto-Correlation		0.092	0.085	0.097

## Seasonal Effects in Strategy Returns

An analysis of the pattern of returns indicates that there are no significant weekday effects. None of the t-statistics comparing the average weekday return vs. the overall daily average is significant at the 95% level.

**Figure 11: Weekday Effects in Daily Net Returns 1980-2004**

Week Day	Return	StdDev	Count	t-stat	t-stat vs avg
1	0.000%	1.110%	1182	0.01	-1.64
2	0.053%	0.896%	1271	2.11	-0.01
3	0.093%	0.906%	1270	3.67	1.57
4	0.054%	0.939%	1246	2.02	0.02
5	0.062%	0.935%	1237	2.35	0.34
<b>Avge</b>	<b>0.053%</b>	<b>0.958%</b>	<b>6206</b>		

The only statistically significant month effect is the small negative average daily return for September. An analysis of day-of-month effects shows no meaningful or significant patterns in Strategy returns.

**Figure 12: Month Effects in Daily Net Returns 1980-2004**

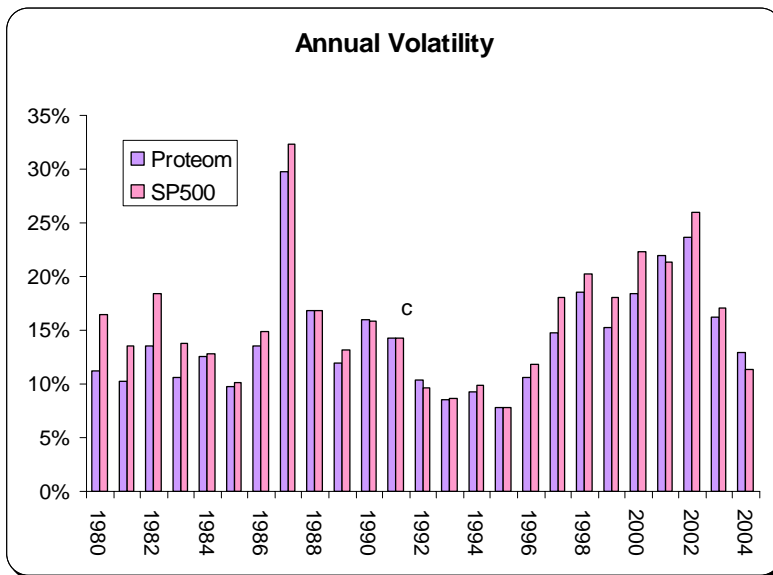
Month	Return	StdDev	Count	t-stat	t-stat vs avg
1	0.114%	1.002%	525	2.61	1.40
2	0.056%	0.813%	480	1.50	0.07
3	0.057%	0.909%	547	1.46	0.09
4	0.091%	0.948%	517	2.18	0.91
5	0.091%	0.818%	527	2.55	1.05
6	0.016%	0.724%	534	0.51	-1.19
7	0.000%	0.873%	531	0.01	-1.40
8	0.007%	0.948%	529	0.16	-1.13
9	-0.054%	0.931%	487	-1.28	-2.54
10	0.049%	1.490%	533	0.75	-0.07
11	0.104%	0.935%	487	2.45	1.20
12	0.108%	0.873%	509	2.80	1.42
<b>Avge</b>	<b>0.053%</b>	<b>0.958%</b>	<b>6206</b>		

# Analysis of Strategy Risk

## Portfolio Volatility Risk

The Strategy exposes assets to considerably less risk than a similar investment in the benchmark index. This is demonstrated by its uniformly less volatile returns process over the back-test period from 1980-2004. The average annual volatility of the Strategy is estimated (using daily data) to be 15.15% (7.5% using annual data), compared to 16.75% (14.9% using annual data) for the S&P500 index. The volatility of volatility of the Strategy, 5.15% per annum, is slightly less than that of the benchmark, 5.68% per annum. Yearly breakdowns of volatility for the index and the Strategy follow in figure 12 below.

**Figure 12: Annual Volatility 1980-2004**



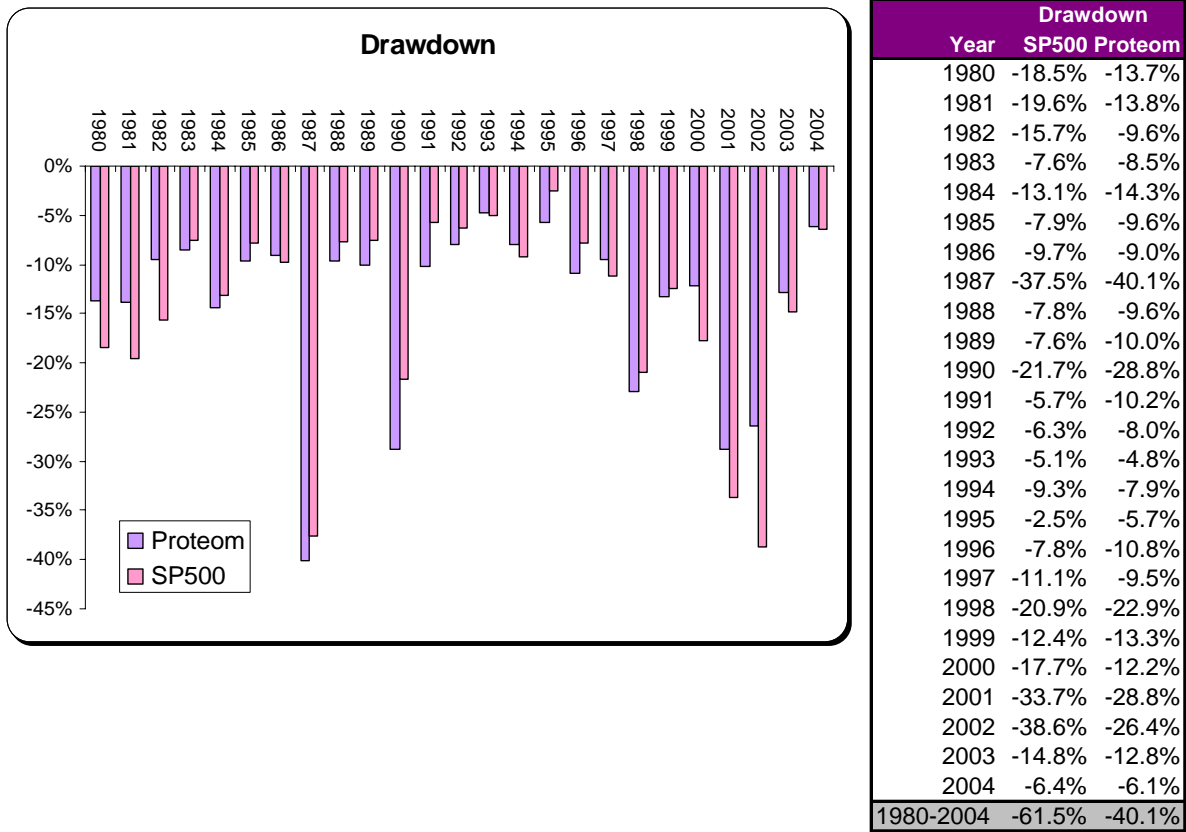
Year	Volatility	
	SP500	Proteom
1980	16.5%	11.2%
1981	13.6%	10.2%
1982	18.4%	13.6%
1983	13.8%	10.6%
1984	12.8%	12.6%
1985	10.2%	9.8%
1986	14.9%	13.6%
1987	32.3%	29.8%
1988	16.8%	16.8%
1989	13.1%	11.9%
1990	15.9%	15.9%
1991	14.2%	14.2%
1992	9.7%	10.4%
1993	8.6%	8.5%
1994	9.8%	9.3%
1995	7.8%	7.8%
1996	11.8%	10.7%
1997	18.1%	14.7%
1998	20.3%	18.5%
1999	18.1%	15.2%
2000	22.3%	18.5%
2001	21.4%	21.9%
2002	26.0%	23.7%
2003	17.1%	16.3%
2004	11.3%	12.9%
<b>1980-2004</b>	<b>16.9%</b>	<b>15.3%</b>

Tail Risk

Strategy risk may also be assessed by comparing annual drawdown, with drawdown defined as the maximum peak-to-valley loss during the course of each calendar year. The results of the analysis are shown in figure 13 below.

For much of the back-test period from 1980, the annual drawdown experience by the Strategy was lower than that for the S&P500 index. The average annual drawdown for the Strategy was -13.9%, compared to -14.4% for the benchmark. The average downside risk for the Strategy (-10.91%), is also lower than for the index (-12.21%). There are some notable exceptions, however: the drawdown for the Strategy exceeded that for the benchmark during the market crash of 1987, again in 1990 and once more in 1998. Some investors may prefer volatility-protected variants of the Strategy, which are designed to mitigate downside risk.

Figure 13: Annual Drawdown 1980-2004



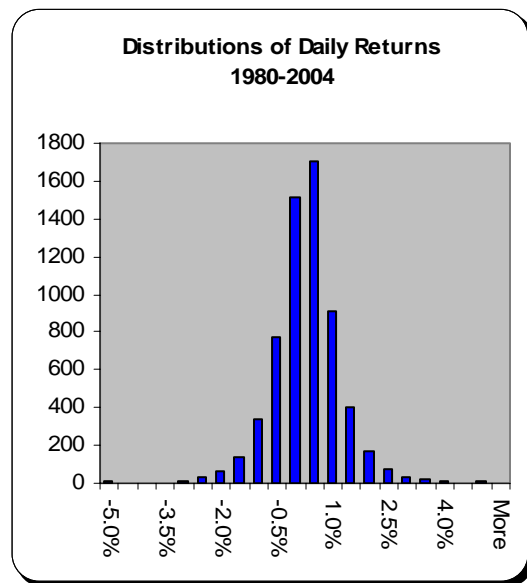
A breakdown of performance into winning days and losing days demonstrates that more of Strategy return variability is the result of upside volatility than downside volatility. Upside volatility, at 15.59%, is 128 basis points larger than downside volatility, at 14.31%.

Taken together, these findings suggest that the appropriate quantity to consider for risk management purposes is the downside volatility estimate of 14.31% and consequently that the Strategy is less risky (in the sense of the probability of loss) than might otherwise be inferred. Furthermore, an analysis of Value-at-Risk based on the standard Delta-Normal model is likely to overstate the downside risk (and underestimate the upside potential) if the higher, overall strategy standard deviation is used.

Analysis of higher moments of the returns distribution add support to the theory that upside “risk” far outweighs the risk to the downside. Overall, the Strategy returns process has a negative skewness (-0.72) and kurtosis (18.63). This is reflected in both the number and magnitude of the extreme positive returns (72 daily returns of 3% or more vs. only 25 negative returns of -3% or less).

While the Strategy returns distribution is definitely non-normal, it is so in a manner which is favorable both for risk and return: the right tail is significantly “fatter” than the left tail and the overall distribution is negatively skewed. See figure 14 below for a histogram of daily returns.

**Figure 14: Distributions of Daily Returns**



## Concentration and Liquidity Risk

The investment universe of the Strategy encompasses the entire membership of the S&P500 index and the Strategy typically holds positions in approximately 150 -300 equities at any given time.

Although no limits are imposed on the maximum allocation permitted for any individual stock, in practice the Strategy rarely allocates more than 2.5% of capital to any specific stock, while the average allocation is 0.5%. For a \$1Bn investment portfolio, the maximum capital allocation to any one equity would not be greater than \$25 million. This represents less than 0.25% of the equity value of the smallest-cap stock invested in by the Strategy, which has a market value of more than \$10Bn.

Furthermore, in a \$1Bn portfolio, the typical shareholding in any individual name would comprise less than 180,000 shares and hence would pose minimal risk to trade execution or liquidity. In a handful of cases, the holdings might be as large as 800,000 shares, but given the liquidity of the investment universe and the efficiency of the Proteom trading platform, the risks are manageable and well within risk limits typically operated by comparable strategies.

# 4 Strategy Analysis

## Analysis Summary

### Detailed Strategy Analysis

The following pages provide an in-depth analysis of the S&P500 long-only Strategy for the Proteom Fund from January 2000 through December 2003. We will describe in detail the asset allocation strategy that enabled the Proteom Fund to outperform the S&P500 index, with special attention paid to equity market capitalization and sector weighting. The formatting and content are based primarily on portfolio analysis from Atlas, (a financial portfolio analysis system licensed by Wilshire Associates) and Style Advisor, (a performance analysis system licensed by Zephyr Associates, with some additional analysis performed in SAS. Time frames of detailed analysis (sometimes down to the individual position) were chosen for their clarity in conveying key concepts.

## Strategy Performance

### Performance Summary 2000 - 2003

2000-2003 produced some of the best returns for the long-only Strategy, outperforming the index by almost 30% in 2002, the worst year for the overall market. In the following sections we will suggest reasons for the superior performance of the Strategy during this critical period for the US equity market.

**Figure 15: Net Returns 2000-2003**

<u>Year</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
<b>Fund</b>	14.18	3.96	5.00	28.78
<b>Index</b>	-5.66	-13.61	-24.50	22.38
<b>Relative</b>	19.84	17.57	29.50	6.40

**Strategy Returns 2000 - 2003**

Market timing ability was not the source of superior performance by the Strategy over this period. The proportion of up-days (days on which the Strategy returns were positive) is slightly lower than for the benchmark S&P500 index. However, on average, Strategy up-day returns were larger than returns for the benchmark, and the average loss on down-days was smaller. The differentiation between the Strategy and benchmark average profit and loss is more marked when portfolio composition is taken into consideration and the weighted average profit and loss are compared. This suggests, and later analysis will confirm, that one source of the superior performance characteristics of the Strategy is related to its greater flexibility in security selection and capital allocation.

**Figure 16: Average Net Returns 2000-2003**  
2000–2003

	<i>S&amp;P500</i>	<i>Fund</i>
Up Days (%)	48.71%	48.12%
Profit / Loss	0.0278%	0.1040%
Profit (mean)	2.1710%	2.2020%
Loss (mean)	-2.0870%	-2.0495%
Weighted (Profit / Loss)	0.0001%	0.0003%
Mean Weighted Profit	0.0044%	0.0087%
Mean Weighted Loss	-0.0042%	-0.0083%

**Figure 17: Yearly Net Returns 2000-2003**

	2000		2001	
	<i>S&amp;P500</i>	<i>Fund</i>	<i>S&amp;P500</i>	<i>Fund</i>
Up Days (%)	41.13%	40.99%	45.98%	44.97%
Profit / Loss	0.0470%	0.0660%	0.0155%	0.1020%
Profit (mean)	2.6200%	2.5600%	2.1500%	2.3400%
Loss (mean)	-2.4200%	-2.3900%	-2.1000%	-2.1200%
Weighted (Profit / Loss)	0.0001%	0.0002%	0.0000%	0.0003%
Mean Weighted Profit	0.0058%	0.0101%	0.0041%	0.0086%
Mean Weighted Loss	-0.0053%	-0.0096%	-0.0040%	-0.0080%

	2002		2003	
	<i>S&amp;P500</i>	<i>Fund</i>	<i>S&amp;P500</i>	<i>Fund</i>
Up Days (%)	45.74%	48.05%	50.45%	50.46%
Profit / Loss	-0.0560%	0.0700%	0.1390%	0.1760%
Profit (mean)	2.2300%	2.3800%	1.5600%	1.6080%
Loss (mean)	-2.1600%	-2.2050%	-1.4000%	-1.4180%
Weighted (Profit / Loss)	-0.0001%	0.0000%	0.0002%	0.0006%
Mean Weighted Profit	0.0040%	0.0111%	0.0027%	0.0056%
Mean Weighted Loss	-0.0038%	-0.0109%	-0.0025%	-0.0051%

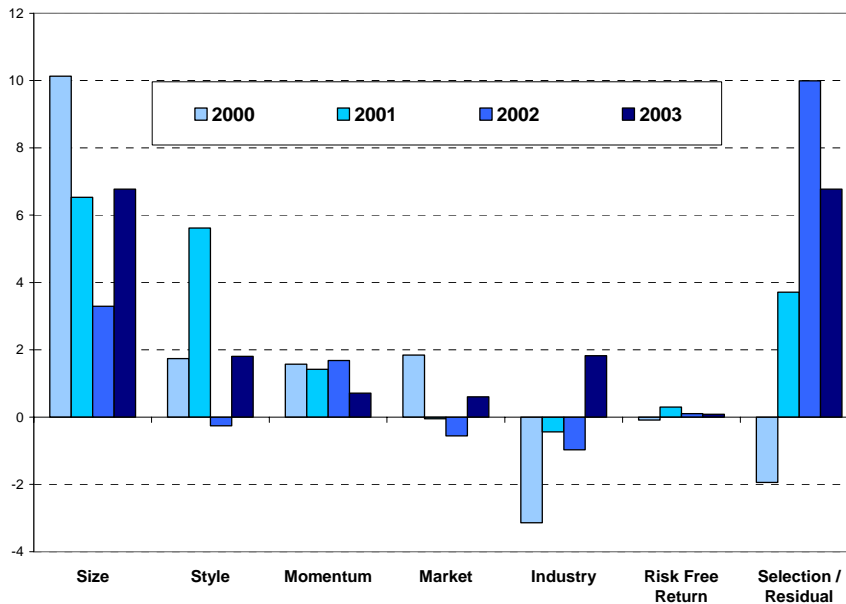
# Attribution Analysis

## Attribution Analysis Summary

Wilshire-Atlas Performance Attribution Analysis examines five “sources of returns” to determine how the managed portfolio differs from the index, thereby finding equity selection criteria that enable Proteom to outperform the S&P500. These sources are categorized into **size**, **style**, **momentum**, **market** and **industry**. In addition, Wilshire-Atlas examines potential differences in **risk-free return**, and combines all “sources of returns” not explainable by the six factors above into category **Stock Selection/Residual**. Abbreviated definitions are below. For more details go to [www.wilshire.com](http://www.wilshire.com).

Figure 18 below summarizes the Wilshire-Atlas attribution analysis. **Size** and **Stock Selection/Residual** are the largest and most consistent factors contributing to the long-only Strategy’s out-performance of the S&P500.

**Figure 18: Atlas Attribution Analysis 2000-2003**



**Size** is measured as the natural logarithm of market capitalization, which is defined as the natural logarithm of the product of a security's price multiplied by the number of shares outstanding.

**Style** is based on Earnings/Price and Book Value/Price.

**Momentum** is comprised of Earnings Per Share Revision, Reversal and Earnings Torpedo.

The **market** component represents market risk and is measured by historic beta. Historic beta is the slope coefficient in a regression of a security's total returns over the past sixty months versus the returns of the S&P500 index

over this same period. In order for the beta calculation to be valid, we require a minimum of the most recent twelve months' returns observations.

The **industry** component represents the exposures of the portfolio to Wilshire's 39 industry classifications. Each stock in the portfolio can have an exposure to only one industry.

The **risk-free return** (RFR) is the domestic risk-free rate for the time period analyzed. It is usually the same for both the managed and benchmark portfolio unless there are cash holdings.

## Attribution Analysis Detail

Figures 19-22 below differentiate between the equities held in the Strategy portfolio and those held by the S&P500 for 2000-2003 [note especially the Log Market Cap (line3)].

**Figure 19: Annual Attribution Analysis Year 2000**

	12/31/1999 Exposures			Returns		12/31/1999 Total	
	Portfolio	Benchmark	Net	Factor	Management	Portfolio	Benchmark
E/P Ratio(EP)	0.483	0.073	0.41	9.11	4.88	21.11	31.79
Book/Price(BP2)	0.569	-0.074	0.642	-7.5	-3.14	2.75	5.48
Log Market Cap(LNMCAP2)	-0.817	0.371	-1.187	-13.2	10.13	17304.18	143220.23
Net Earnings Rev(EPSREV)	-0.182	0.044	-0.226	0.12	0.49	-1.89	2.88
Resid Prc Rtn-Lst Mo(PRICERES)	-0.203	-0.046	-0.157	-6.26	1.32	-0.88	2.39
EPS Torpedo(EPSTORP)	0.027	-0.042	0.069	4.5	-0.23	1881.59	1820.48
Historic Beta(HBETA)	0.783	1	-0.218	-13.88		1.84	0.78
<b>Total</b>					<b>15.28</b>		

**Figure 20: Annual Attribution Analysis Year 2001**

	12/29/2000 Exposures			Returns		12/29/2000 Total	
	Portfolio	Benchmark	Net	Factor	Management	Portfolio	Benchmark
E/P Ratio(EP)	0.661	0.065	0.596	15.19	2.29	15.18	24.93
Book/Price(BP2)	0.614	-0.097	0.711	3.47	3.34	2.27	4.44
Log Market Cap(LNMCAP2)	-0.668	0.351	-1.019	-5.67	6.53	25970.69	111761.22
Net Earnings Rev(EPSREV)	-0.483	-0.045	-0.438	-6.37	1.47	-26.37	-11.61
Resid Prc Rtn-Lst Mo(PRICERES)	0.217	-0.09	0.308	1	0.5	4.93	0.48
EPS Torpedo(EPSTORP)	-0.272	-0.079	-0.193	-3.32	-0.54	1417.57	1605.05
Historic Beta(HBETA)	0.903	0.997	-0.094	-3.2	-0.05	0.9	1
<b>Total</b>					<b>13.53</b>		

**Figure 21: Annual Attribution Analysis Year 2002**

	12/31/2001 Exposures			Returns		12/31/2001 Total	
	Portfolio	Benchmark	Net	Factor	Management	Portfolio	Benchmark
E/P Ratio(EP)	-0.067	0.046	-0.112	4.3	-0.46	36.36	28.78
Book/Price(BP2)	0.21	-0.058	0.268	-1.09	0.2	2.48	3.49
Log Market Cap(LNMCAP2)	-0.698	0.266	-0.964	-2.31	3.29	21573.6	105158.92
Net Earnings Rev(EPSREV)	0.345	-0.021	0.366	0.4	0.85	6.27	-4.22
Resid Prc Rtn-Lst Mo(PRICERES)	0.525	-0.092	0.618	-4.96	0.9	4.34	-0.61
EPS Torpedo(EPSTORP)	-0.091	-0.017	-0.074	-1.51	-0.07	1643.76	1702.58
Historic Beta(HBETA)	1.081	1	0.081	-16.27	-0.56	1.08	1
<b>Total</b>					<b>4.15</b>		

**Figure 22: Annual Attribution Analysis Year 2003**

	12/31/2002 Exposures			Returns		12/31/2002 Total	
	Portfolio	Benchmark	Net	Factor	Management	Portfolio	Benchmark
E/P Ratio(EP)	0.063	0.059	0.004	3.01	-0.37	21.09	21.96
Book/Price(BP2)	0.158	-0.027	0.185	3.52	2.17	2.11	2.56
Log Market Cap(LNMCAP2)	-0.525	0.254	-0.778	-6.06	6.77	26296.47	76711.12
Net Earnings Rev(EPSREV)	0.037	-0.02	0.057	1.66	0.58	0.46	-1.14
Resid Prc Rtn-Lst Mo(PRICERES)	0.074	-0.015	0.09	-4.47	0	-0.21	-0.86
EPS Torpedo(EPSTORP)	-0.033	-0.05	0.016	2.73	0.13	1498.18	1485.5
Historic Beta(HBETA)	1.044	0.999	0.045	22.96	0.6	1.04	1
<b>Total</b>					<b>9.88</b>		

## Selection Effects in Strategy Returns

Attribution analysis indicates that one of the key factors in determining the superior performance characteristics of the Strategy lies in its stock selection capabilities. The Strategy's enhanced selection capabilities derive from:

1. Identification of stocks which are likely to outperform the index average under current and projected market conditions.
2. Identification of stocks which are likely to underperform the index average during current and projected market conditions.
3. Flexibility to weight asset allocations to take advantage of capabilities (1) and (2). The benchmark index is relatively inflexible.

The tables in figure 23 below provide evidence of the degree of overlap and differentiation between the Strategy and Benchmark for 2000-2003.

**Figure 23: Highest Gain and Greatest Loss for S&P500 Index Members vs. Fund Members**

		Low					High					
		1	2	3	4	5	5	4	3	2	1	
2000	SP500	ticker	NSI	AAPL	PMTC	CTXS	APCC	BBBY	CCK	NTAP	NTAP	CNXT
	change	-53.4%	-51.9%	-49.0%	-46.0%	-44.5%	30.3%	32.5%	35.8%	40.9%	42.0%	
2000	Fund	ticker	NSI	CTXS	CPWR	BMC	BMC	AET	BBBY	BBBY	CPC	CNXT
	change	-53.4%	-46.0%	-40.4%	-40.0%	-40.0%	28.9%	30.3%	30.3%	31.7%	42.0%	
2001	SP500	ticker	PVN	AES	PLMO	DAL	HAL	XRX	BRCM	BMC	NSI	NSI
	change	-58.5%	-49.5%	-48.0%	-44.6%	-42.4%	39.1%	40.5%	42.7%	51.5%	73.0%	
2001	Fund	ticker	PVN	PVN	PVN	CMVT	CCL	XRX	BRCM	BMC	BMC	BMC
	change	-58.5%	-58.5%	-33.9%	-33.5%	-31.9%	39.1%	40.5%	42.7%	42.7%	42.7%	
2002	SP500	ticker	DYN	WMB	Q	EDS	AYE	CNP	DYN	DYN	MDR	WMB
	change	-63.6%	-61.0%	-57.3%	-52.8%	-49.5%	63.1%	75.3%	76.5%	78.3%	87.7%	
2002	Fund	ticker	AV	GAS	GLW	PSFT	CNP	SANM	SANM	SEE	SEE	CNP
	change	-45.5%	-40.1%	-35.2%	-32.7%	-31.7%	47.0%	47.0%	56.0%	56.0%	63.1%	
2003	SP500	ticker	UNM	AMR	AYE	CMS	UNM	DAL	NVDA	DCN	DYN	MDR
	change	-36.6%	-34.0%	-32.3%	-28.9%	-26.7%	27.6%	33.1%	34.8%	45.1%	52.6%	
2003	Fund	ticker	AYE	AYE	UNM	UNM	THC	CPN	NVDA	NVDA	NVDA	NVDA
	change	-32.3%	-32.3%	-26.7%	-26.7%	-26.0%	21.5%	33.1%	33.1%	33.1%	33.1%	

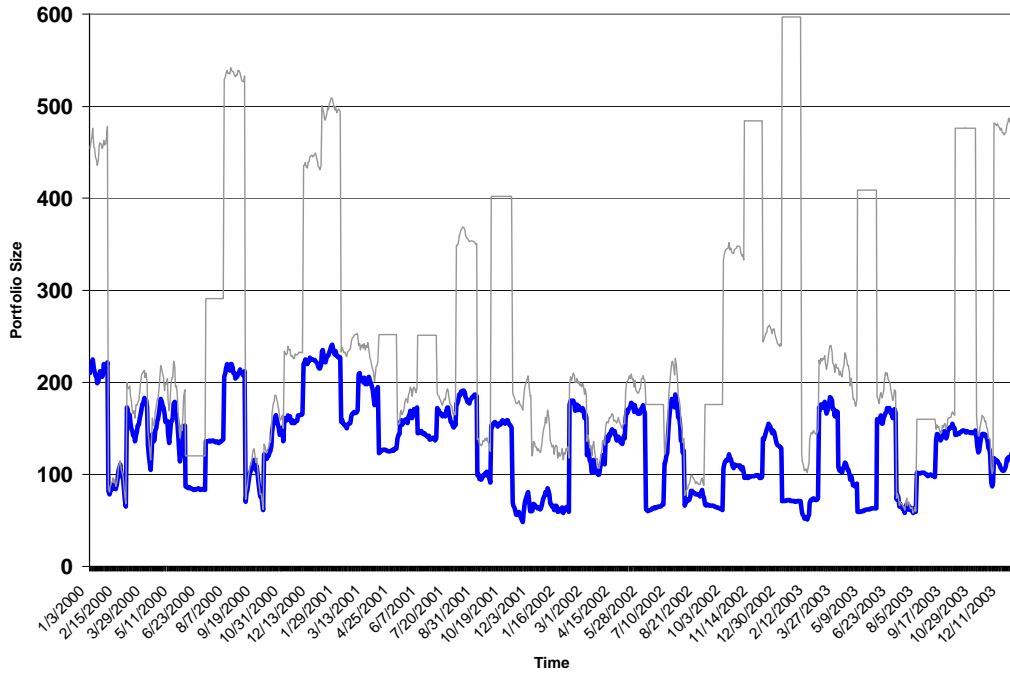
  

		Low					High					
		1	2	3	4	5	5	4	3	2	1	
2000	SP500	ticker	INTC	MSFT	MSFT	LU	NT	CSCO	CSCO	CSCO	MSFT	CSCO
	change	-0.5569%	-0.5341%	-0.4448%	-0.4364%	-0.3260%	0.4128%	0.4208%	0.4892%	0.5220%	0.6367%	
2000	Fund	ticker	CPC	CTXS	NSI	SAFC	TIF	LSI	CA	CNXT	MU	CPC
	change	-0.4583%	-0.3964%	-0.3707%	-0.3397%	-0.3191%	0.3455%	0.4114%	0.4373%	0.4788%	1.3194%	
2001	SP500	ticker	GE	GE	GE	CSCO	CSCO	ORCL	GE	INTC	GE	CSCO
	change	-0.3960%	-0.3575%	-0.3321%	-0.2858%	-0.2712%	0.3196%	0.3675%	0.3823%	0.4785%	0.5956%	
2001	Fund	ticker	CTXS	NXTL	CCL	NC	LTR	XRX	CTXS	BBBY	PCG	BBBY
	change	-0.4358%	-0.3872%	-0.3794%	-0.3665%	-0.3585%	0.3045%	0.5909%	0.7731%	0.8086%	0.9804%	
2002	SP500	ticker	GE	C	INTC	JNJ	C	C	XOM	CSCO	MSFT	GE
	change	-0.3079%	-0.2973%	-0.2907%	-0.2551%	-0.2402%	0.2691%	0.2882%	0.2927%	0.3324%	0.3479%	
2002	Fund	ticker	CVG	GLW	CZN	TXU	TIF	PWER	NXTL	EP	HSY	NXTL
	change	-0.5969%	-0.4104%	-0.4056%	-0.3873%	-0.3834%	0.4595%	0.5518%	0.6879%	0.7022%	1.1803%	
2003	SP500	ticker	MSFT	MSFT	MSFT	PFE	MSFT	MSFT	WMT	MSFT	MSFT	GE
	change	-0.2411%	-0.2321%	-0.1633%	-0.1605%	-0.1568%	0.1498%	0.1523%	0.1868%	0.1907%	0.1937%	
2003	Fund	ticker	SUNW	SUNW	HCA	HCA	NOVL	GTW	PWER	GTW	NSM	CMCSA
	change	-0.4018%	-0.3014%	-0.1988%	-0.1988%	-0.1735%	0.2112%	0.2426%	0.3906%	0.3916%	0.4103%	

## Portfolio Size

Figure 24 below shows the number of unique tickers held by the Strategy (dark blue line) and the total number of positions (light grey line). At any one time, the Strategy holds roughly 150 members of the S&P500 Index. Gains made over the index come from (1) removal of poorly performing equities and (2) increased weighting of high performing equities held in the portfolio.

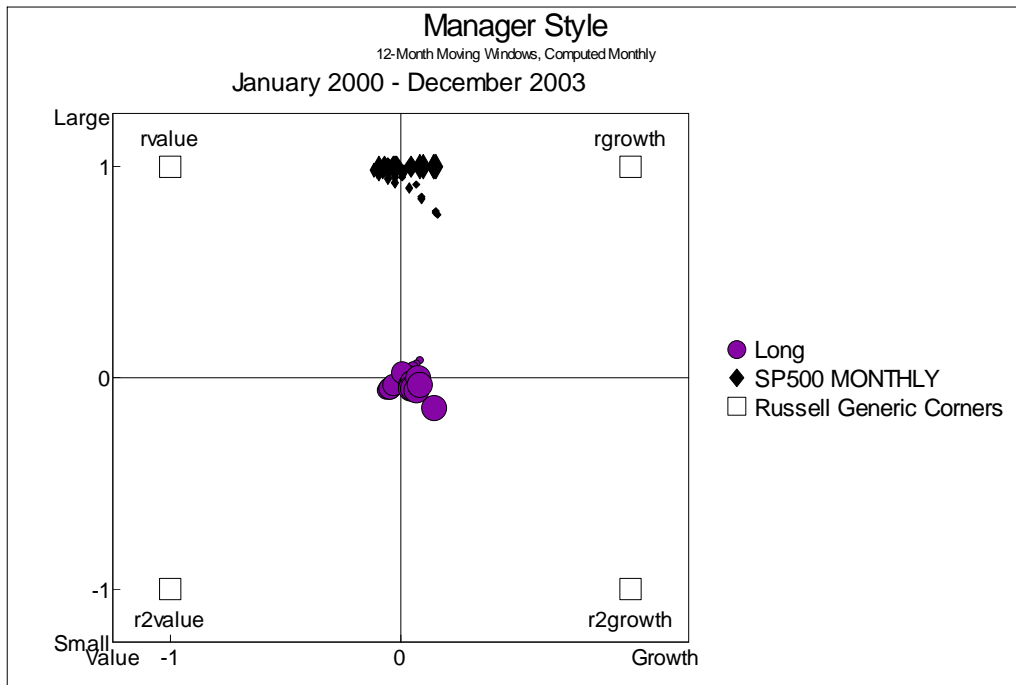
**Figure 24: Portfolio Size**



## Style Analysis

In figure 25 below, from the Zephyr Style Advisor analysis, the portfolio is nearly identical to the S&P500 in terms of growth/value allocation. However, while the S&P500 performance is most highly correlated with high cap stocks only, the Proteom fund is much more balanced in terms of the size of equity capitalization.

**Figure 25 Zephyr Style Analysis 2000-2003**



## Sector Weighting

Figure 26 describes the range of sector weights observed in the portfolio vs. the sector weights in the S&P500 Index over 2000-2003. Average allocations to the Industrials, Materials and Utilities sectors were significantly higher within the Strategy portfolio than the S&P500 index. The latter are all defensive sectors likely to outperform during adverse market conditions. Conversely, the Strategy was underweighted in sectors such as Financials and Telecommunications, two of the sectors which typically perform poorly during market declines.

There is significantly more variation in sector weights within the Strategy than the benchmark, implying that the superior performance of the Strategy is due in part to an ability to adjust sector allocations to best suit market conditions. Again, we reiterate that the market is constrained by its market value-weighted composition.

See Appendix 1 for greater detail on Strategy adjustment of sector weightings over time.

**Figure 26: Sector Allocations 2000-2003**

SECTOR	Fund	Minimum	Maximum	Mean	Std Dev
CONSUMER DISCRETIONARY	Protoem	3.92	25.02	14.29	5.09
	SP500	7.78	11.14	9.83	0.88
CONSUMER STAPLES	Protoem	0.99	10.05	5.43	2.32
	SP500	4.70	8.93	7.04	1.15
ENERGY	Protoem	0.00	14.37	5.02	3.18
	SP500	5.33	7.59	6.14	0.57
FINANCIALS	Protoem	7.81	25.44	14.95	4.36
	SP500	12.08	21.24	18.13	2.72
HEALTH CARE	Protoem	4.35	35.89	10.79	6.54
	SP500	8.87	15.44	13.35	1.61
INDUSTRIALS	Protoem	7.23	25.32	14.79	4.14
	SP500	10.26	18.25	13.01	2.26
INFORMATION TECHNOLOGY	Protoem	3.96	28.09	13.26	4.73
	SP500	11.05	22.38	14.51	3.30
MATERIALS	Protoem	3.37	21.60	10.87	4.56
	SP500	7.36	8.67	8.00	0.32
Miscellaneous	Protoem	0.00	2.63	0.65	0.78
	SP500	0.82	1.57	1.08	0.18
TELECOMMUNICATION	Protoem	0.00	12.01	3.10	2.35
	SP500	3.39	8.02	5.18	1.33
TRANSPORTATION	Protoem	0.00	3.59	0.49	0.72
	SP500	0.27	1.29	0.65	0.42
UTILITIES	Protoem	0.87	13.18	6.37	3.35
	SP500	2.29	4.17	3.09	0.47

## Market Capitalization

The un-weighted distribution of the market capitalization of Portfolio and Index members for December 2000 are remarkably similar. (This is the “size” factor in Atlas Attribution model). In both the Proteom Long-Only Strategy and the S&P500, 80% to 90% of members have less than \$50 billion in market capitalization.

**Figure 27: Frequency Distribution of Market Capitalization, Proteom (blue) vs. S&P500 Index (red)**

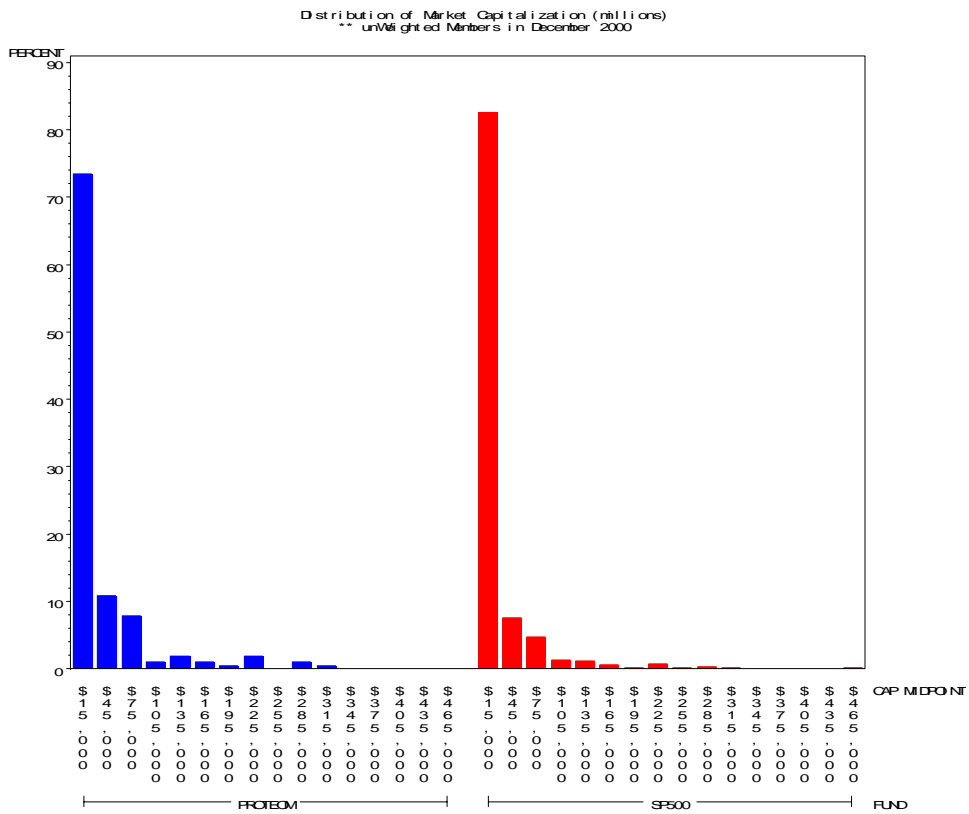
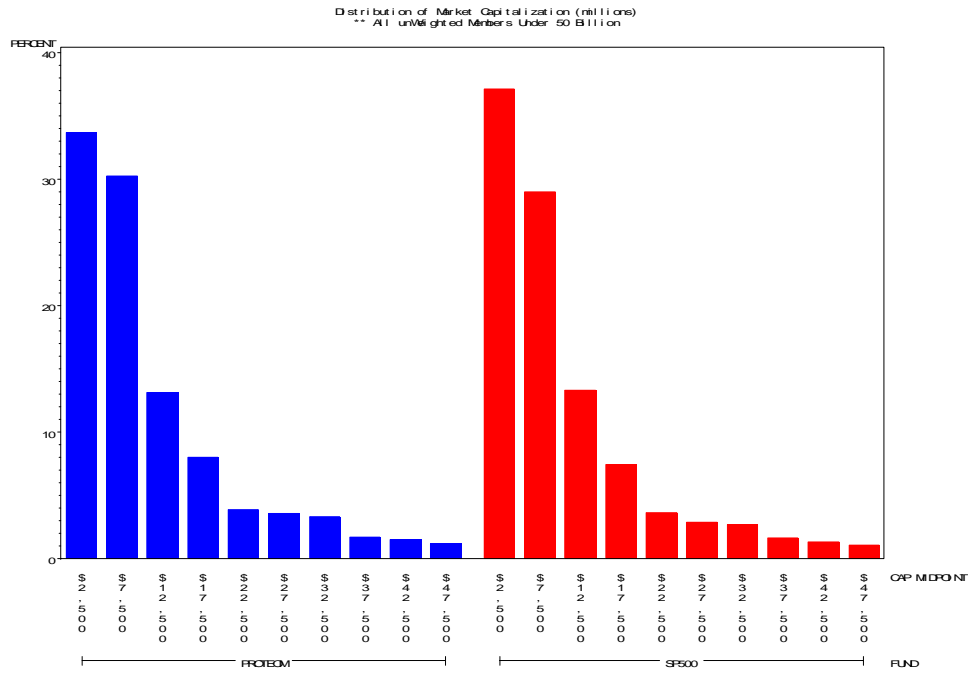


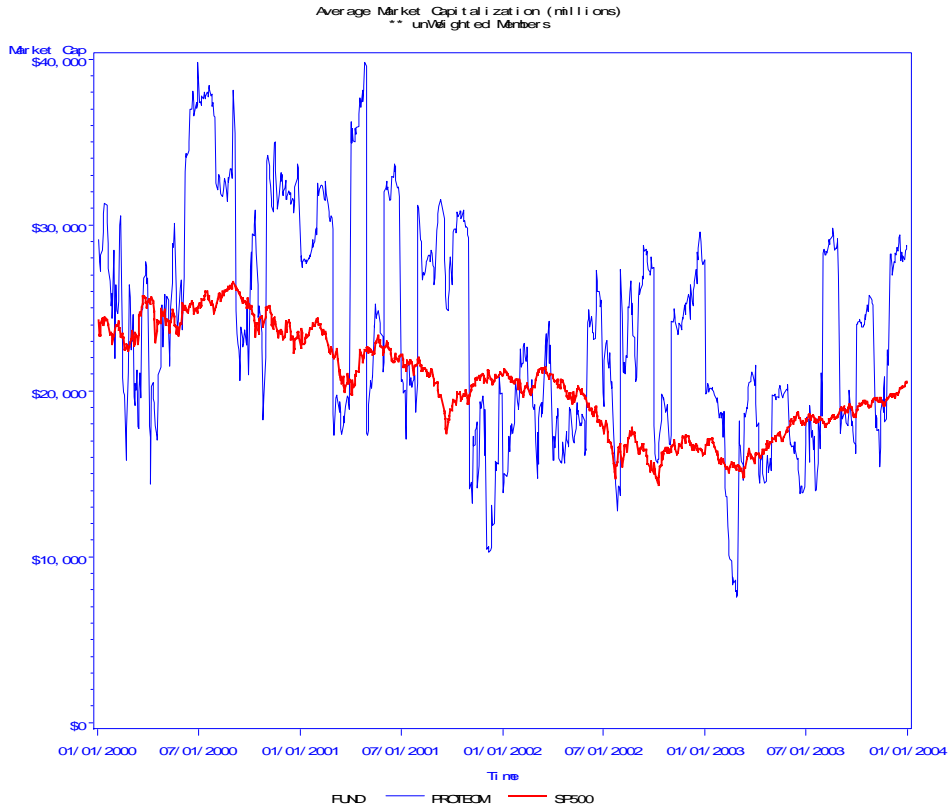
Figure 28 gives a more detailed breakdown for equities with less than \$50 Bn in market capitalization. Again the Proteom Strategy and the S&P500 Index are very similar.

**Figure 28: Frequency Distribution of Market Capitalization, Proteom (blue) vs. S&P500 Index (red) For Companies < \$50 Bn Market Capitalization**



Figures 29 and 30 show the un-weighted and weighted average market capitalization for the portfolio and the S&P500 Index. Using equal weights in both funds (figure 29) shows that they are very similar in market capitalization. This confirms conclusions from the frequency distributions in figures 27 and 28.

**Figure 29: Un-weighted Market Capitalization.**



The weighted market capitalization over time of Proteom is almost always below that of the S&P500 index, confirming the Atlas attribution analysis.

**Figure 30: Weighted Market Capitalization**

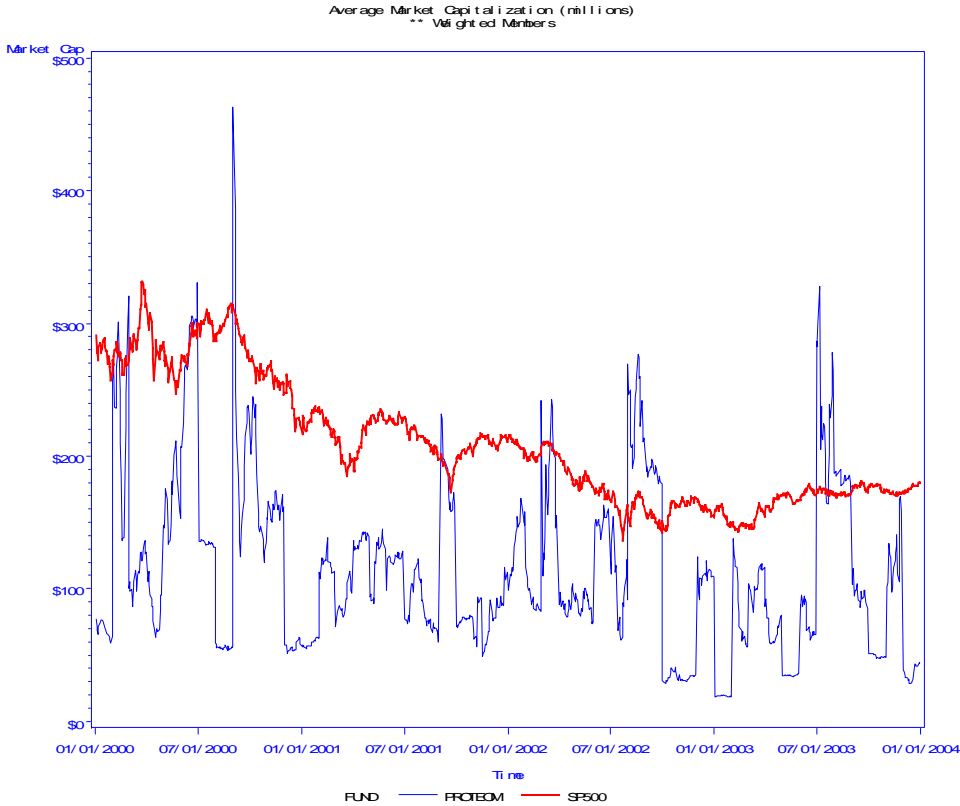
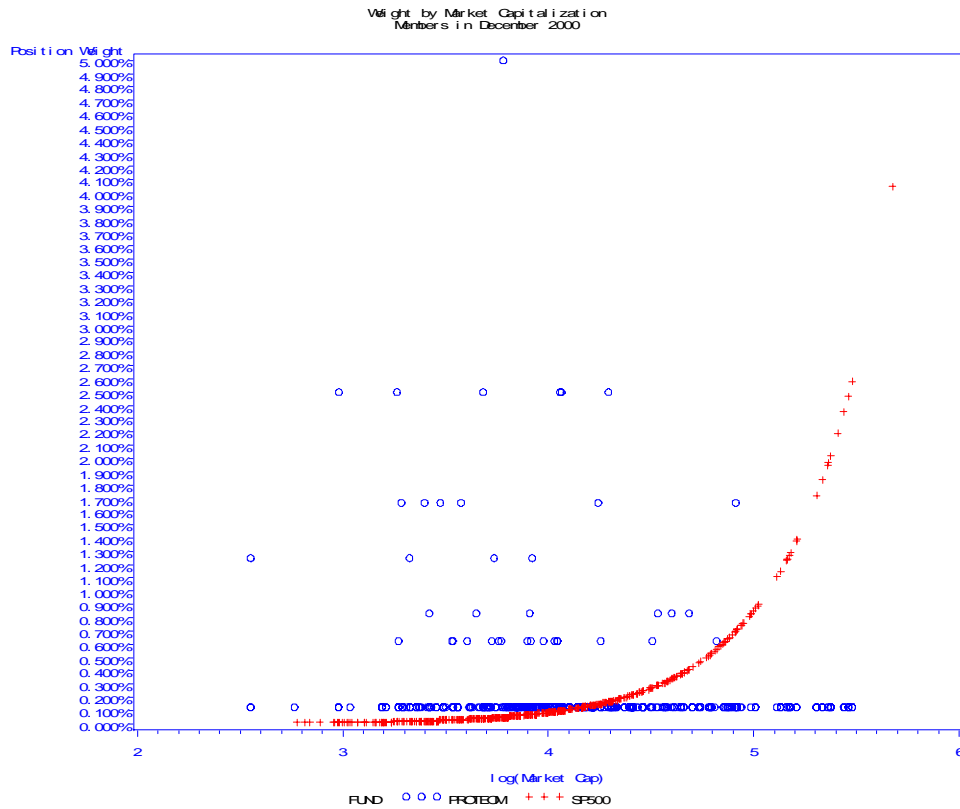


Figure 31 shows how the fund maintains a lower average market capitalization in comparison to the S&P500 Index. The S&P500 Index (red) weights its members exclusively on the Log of market capitalization so that the largest positions are in the largest companies. The portfolio weights positions according to predicted cycles of gain and loss. Notice the largest Proteom position is at 3.8 log[market cap] (x axis) and 5% Position Weight (y axis) and is independent of market capitalization.

**Figure 31: Position Weighting by Market Capitalization (log10[\$millions]).**



# 5 Appendices

## Appendix 1 – Sector Weightings

Figure A: Consumer Staples Sector

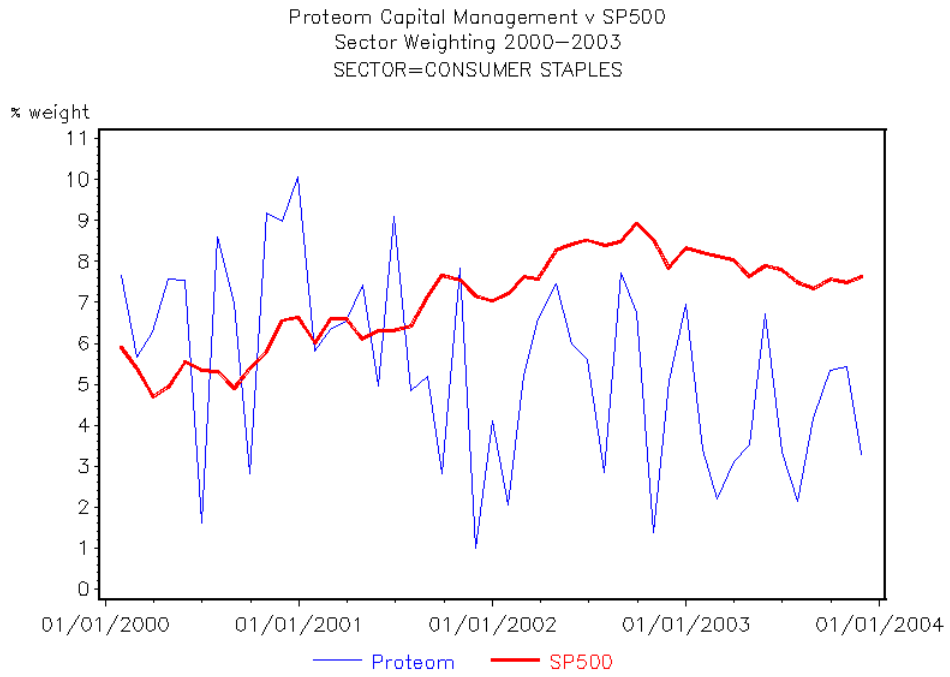


Figure B: Consumer Discretionary Sector

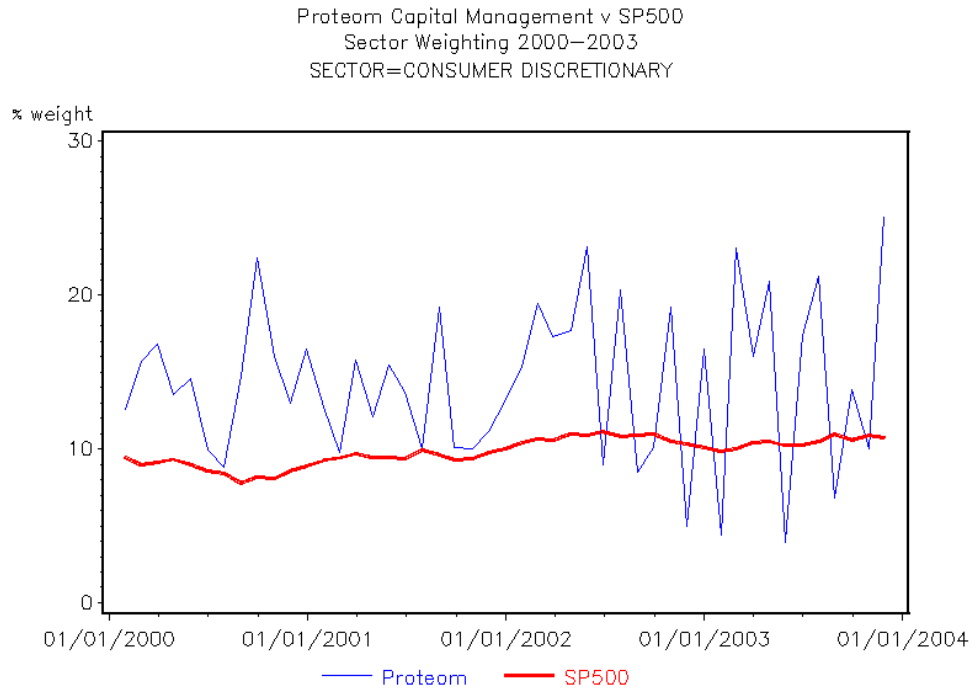


Figure C: Energy Sector

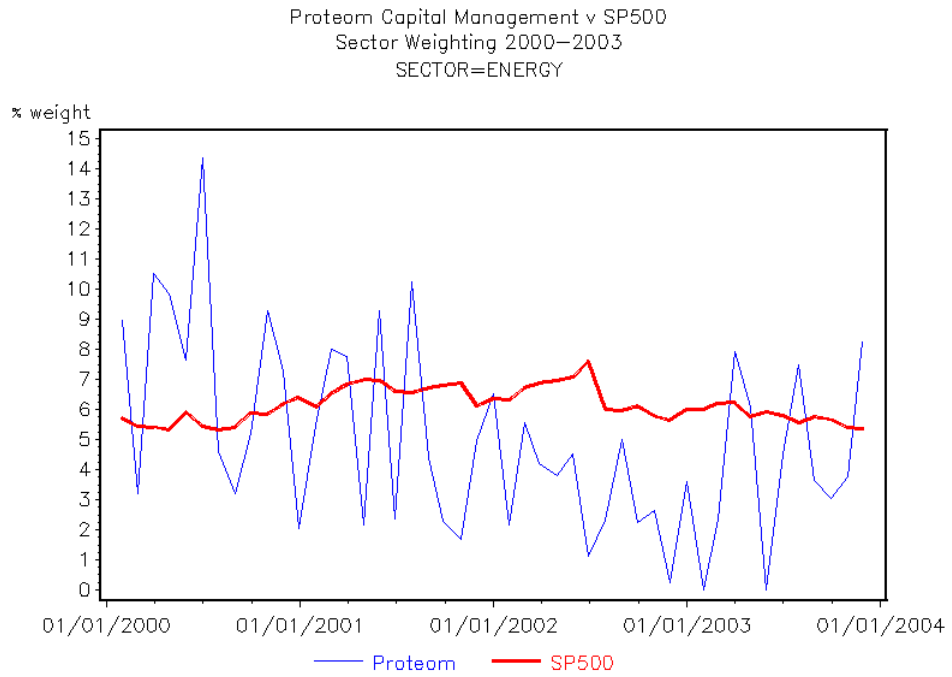


Figure D: Financial Sector

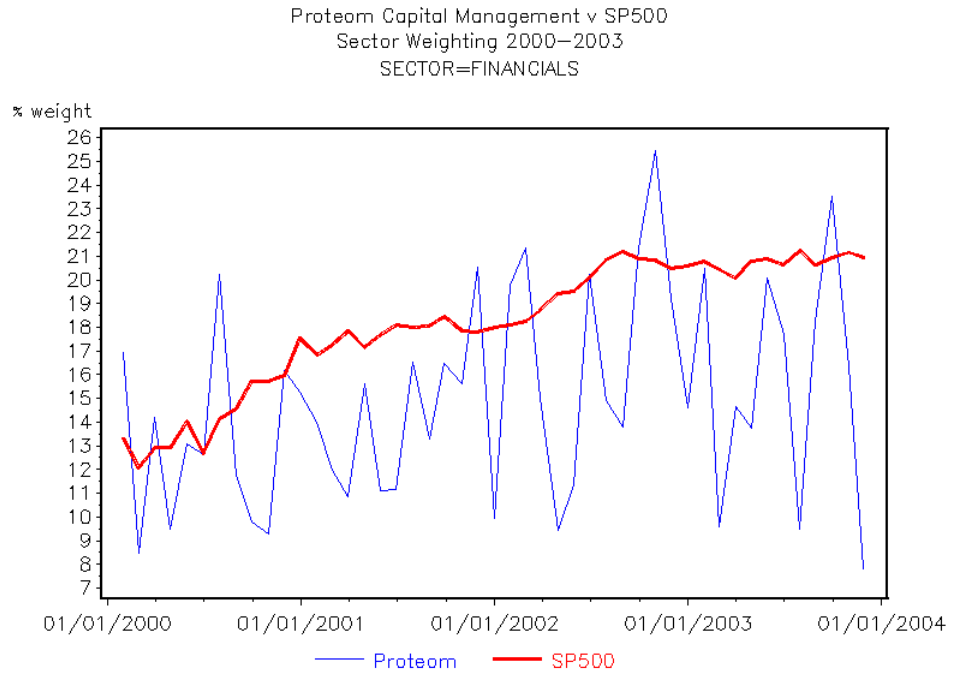
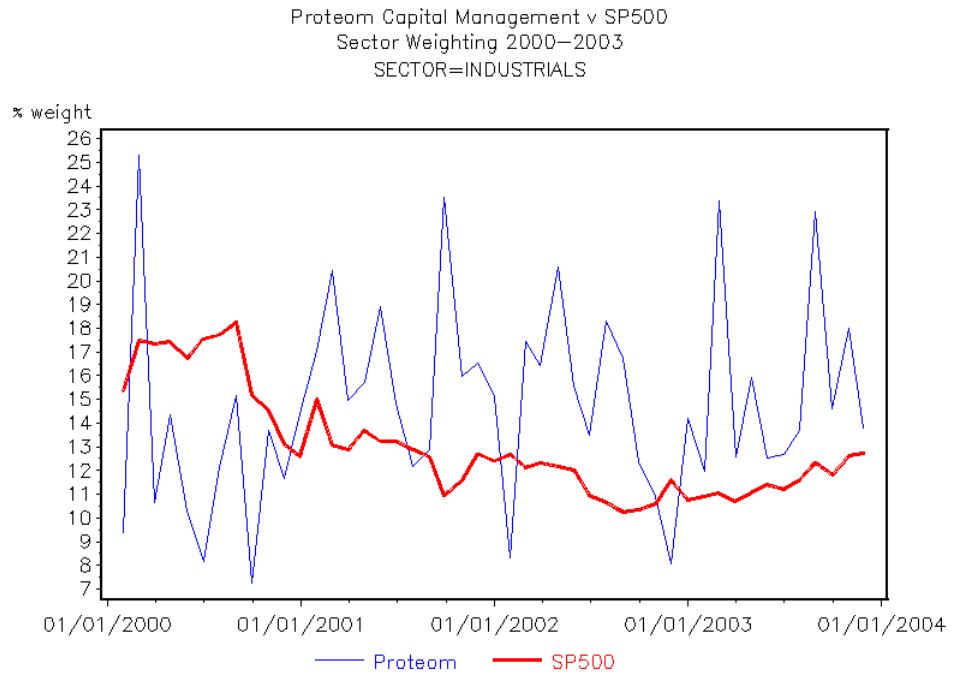


Figure E: Industrial Sector.



C

Figure F: Health Care Sector

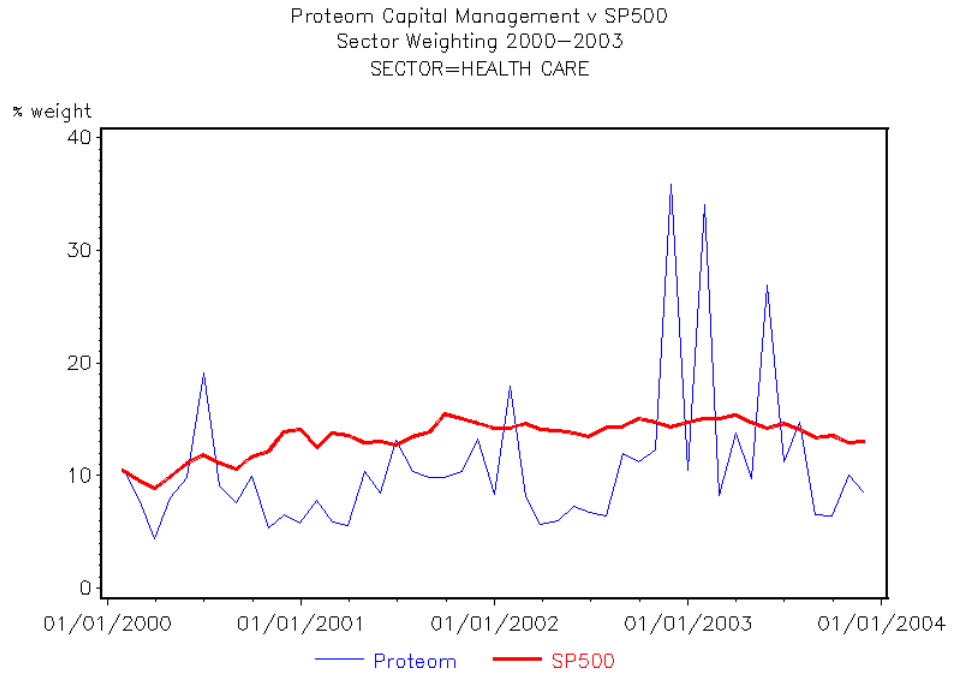


Figure G: Information Technology Sector

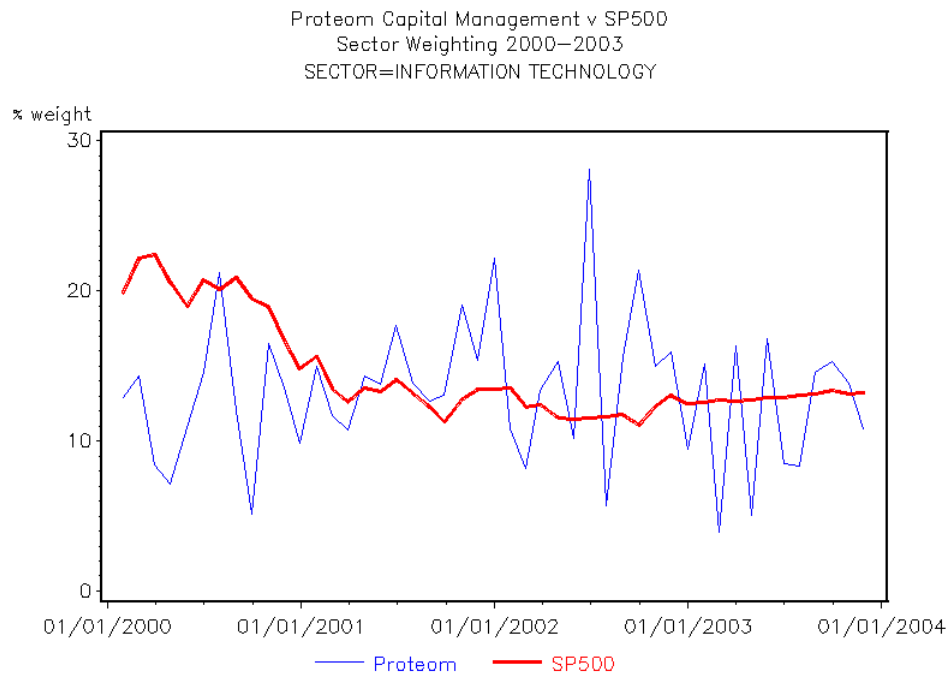


Figure H: Materials Sector

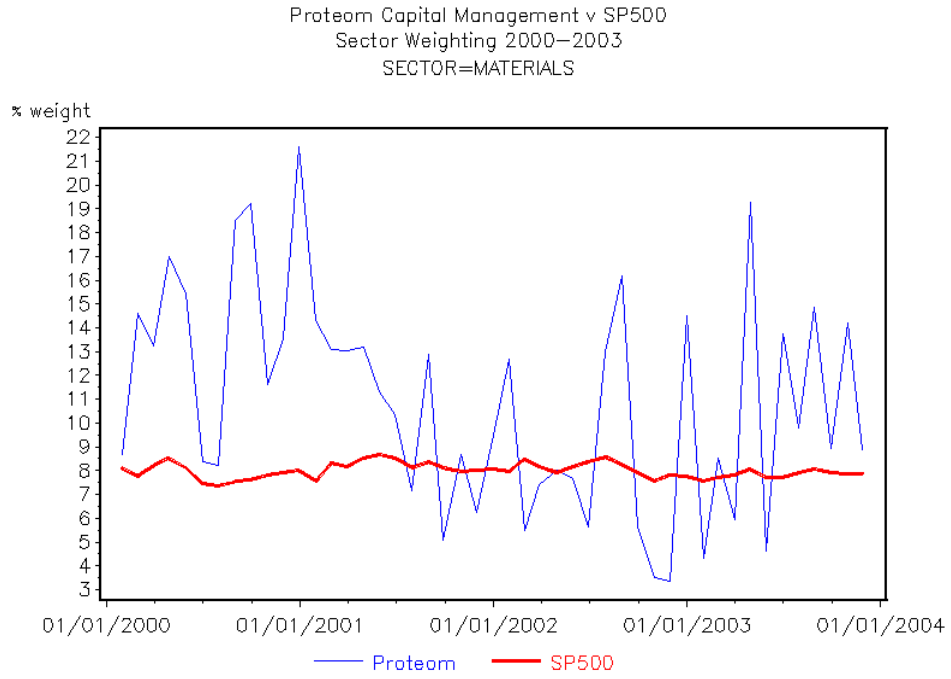


Figure I: Telecommunications Sector

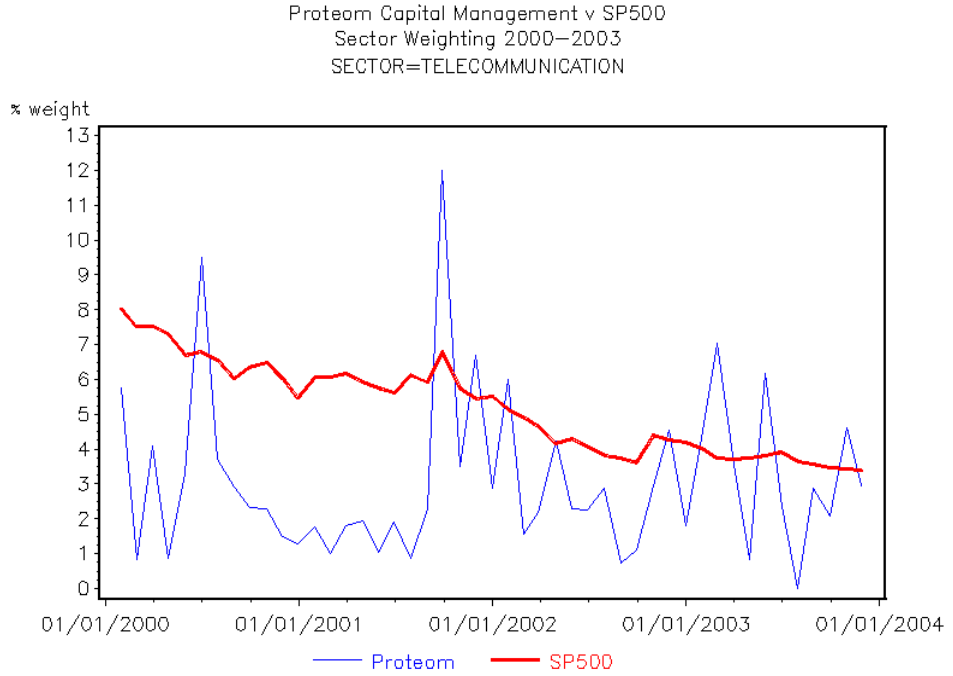


Figure J: Transportation Sector

Proteom Capital Management v SP500  
Sector Weighting 2000–2003  
SECTOR=TRANSPORTATION

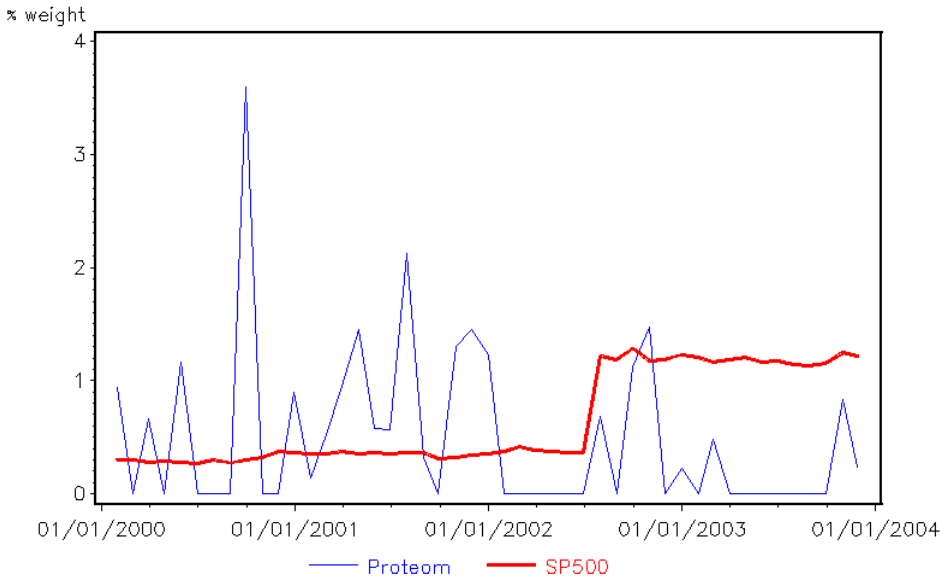


Figure K: Utilities Sector

Proteom Capital Management v SP500  
Sector Weighting 2000–2003  
SECTOR=UTILITIES

