WAstyler
Returns-based Style Analysis
Screen-shot Presentation

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Returns-based Style Analysis

- Analysis approach described by William F. Sharpe (http://www.stanford.edu/~wfsharpe)
  - Objective is to minimize the variance of the residuals given a specific set of linear constraints
  - Non-negative allocation constraint for each benchmark
  - Sum of all benchmark allocations equals 100%

- Software uses quadratic optimization to solve the Style Analysis problem

- User interface is a Microsoft Excel workbook (requires version 8 or better; currently Excel 97 and Excel 2000 are supported)

- Quadratic optimization is performed quickly and efficiently by a dynamic link library (DLL)

- Price for a single user license of *WAstyler* is USD $500

- For users who want to integrate our Style Analysis library into their own applications, we also offer licenses for the *WAstyler* engine
  - We provide the DLL together with a User's Guide
  - Pricing depends on the proposed application

StyleControl Screen
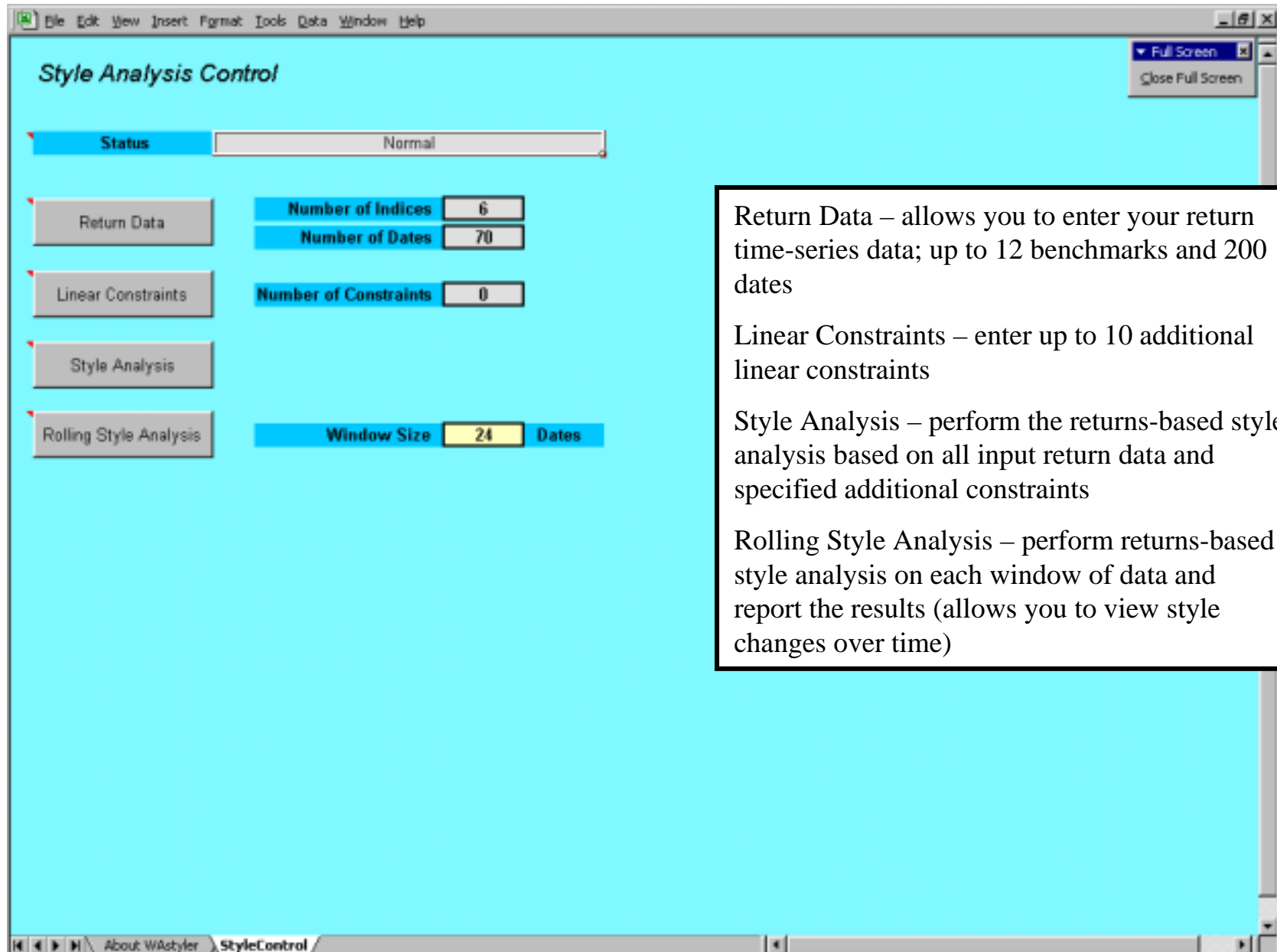
Return Data – allows you to enter your return time-series data; up to 12 benchmarks and 200 dates

Linear Constraints – enter up to 10 additional linear constraints

Style Analysis – perform the returns-based style analysis based on all input return data and specified additional constraints

Rolling Style Analysis – perform returns-based style analysis on each window of data and report the results (allows you to view style changes over time)

Returns Sheet

File Edit View Insert Format Tools Data Window Help

Return Time Series Data

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Close Full Screen

Number of Indices	6
Number of Dates	70
Reference Date	2/1/99

| Prospectus Style | Min | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| | Max | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Prospectus Allocation Bounds

	Fund	Benchmark Indices					
Names	Manager	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6

Dates and Returns

	Manager	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6
Date 1	1.64%	1.92%	1.63%	2.47%	2.59%	1.25%	1.40%
Date 2	2.01%	2.67%	1.93%	3.24%	2.86%	1.45%	1.43%
Date 3	0.58%	0.66%	0.55%	1.09%	0.87%	0.78%	0.77%
Date 4	1.35%	1.54%	1.16%	1.93%	1.77%	0.84%	0.95%
Date 5	3.97%	3.82%	2.82%	6.22%	7.71%	1.68%	1.92%
Date 6	0.74%	0.81%	0.64%	1.06%	1.17%	0.54%	0.62%
Date 7	-0.55%	-0.12%	0.05%	-0.98%	-1.62%	0.42%	0.44%
Date 8	1.04%	1.24%	0.82%	2.25%	2.24%	0.61%	0.36%
Date 9	1.10%	0.93%	0.67%	1.62%	1.86%	0.52%	0.54%
Date 10	1.39%	1.18%	1.10%	1.51%	2.79%	0.79%	0.92%
Date 11	1.11%	1.67%	1.22%	2.33%	2.56%	0.80%	0.93%
Date 12	0.79%	1.27%	0.99%	2.30%	2.67%	0.75%	0.85%
Date 13	0.90%	0.93%	0.84%	0.16%	-0.03%	0.76%	0.85%
Date 14	-1.11%	-1.60%	-1.06%	-3.69%	-4.85%	-0.17%	-0.33%
Date 15	-0.66%	-0.72%	-0.46%	-1.08%	-1.97%	0.05%	0.02%
Date 16	-0.25%	-0.57%	-0.29%	-1.27%	-1.68%	0.10%	0.12%
Date 17	-0.09%	-0.16%	-0.05%	-0.20%	-0.52%	0.23%	0.25%
Date 18	0.87%	1.23%	1.02%	1.90%	2.15%	0.79%	0.80%
Date 19	0.30%	0.25%	0.31%	0.09%	0.05%	0.37%	0.45%
Date 20	0.31%	-0.04%	0.11%	-0.79%	-1.27%	0.34%	0.37%
Date 21	1.51%	1.74%	1.29%	2.81%	2.79%	0.92%	0.96%
Date 22	1.51%	2.21%	1.64%	3.69%	3.94%	1.08%	1.22%
Date 23	1.48%	1.70%	1.21%	2.91%	3.36%	0.70%	0.85%
Date 24	-0.73%	-0.98%	-0.54%	-2.08%	-2.42%	0.09%	0.01%
Date 25	0.71%	0.41%	0.38%	-0.32%	-0.72%	0.47%	0.50%
Date 26	0.25%	0.28%	0.16%	0.66%	0.06%	0.26%	0.29%
Date 27	0.77%	1.09%	0.57%	2.36%	2.55%	0.04%	0.11%

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Enter return data for up to 12 benchmarks and 200 dates

Reference Date used for display purposes

Prospectus Style as specified in the fund's prospectus; used to determine best and worst performance assuming the manager strictly adheres to the fund's prospectus
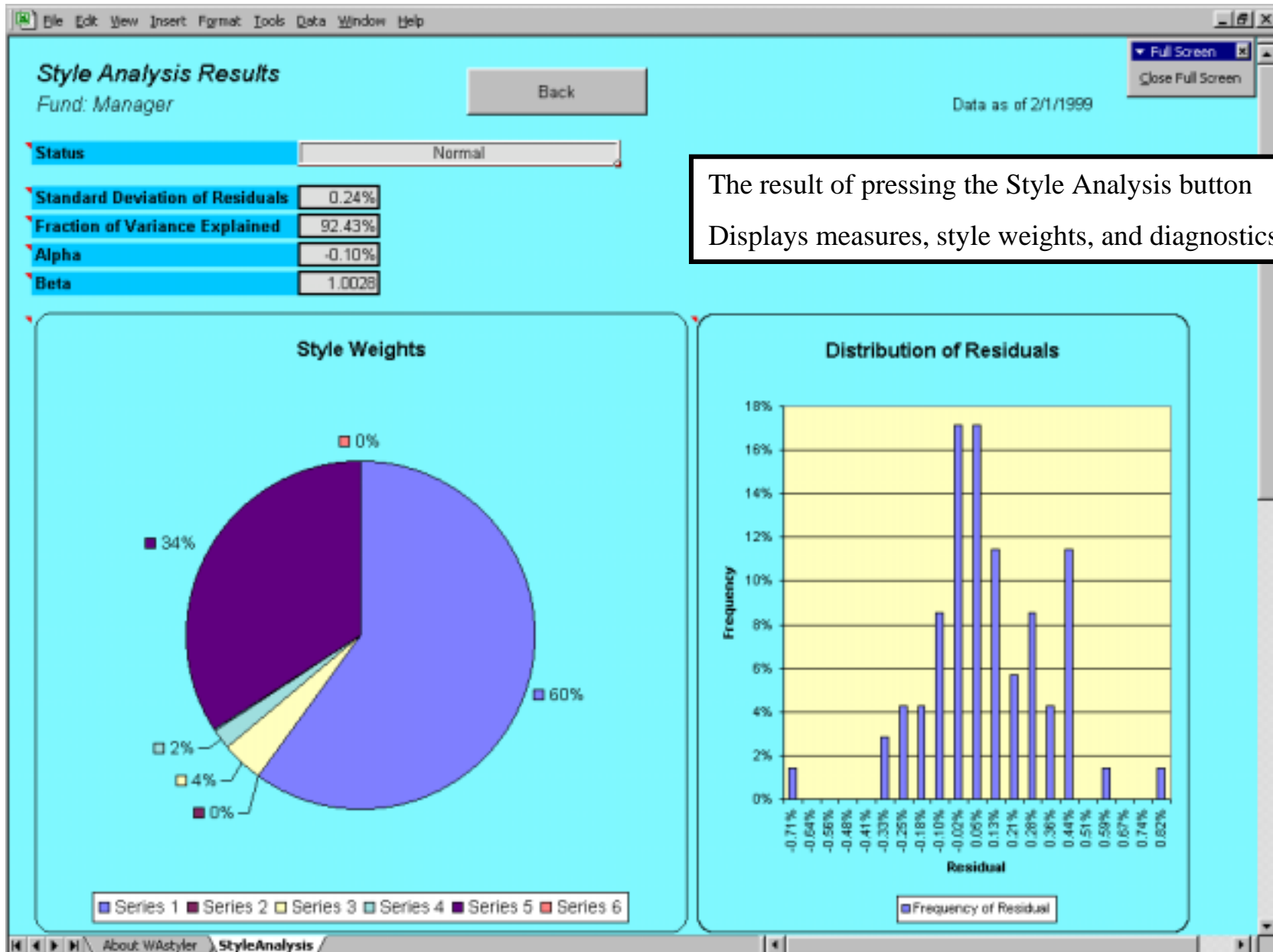
Constraints Sheet

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Linear Constraints

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Number of Constraints　　0

Constraints	Coefficients						Relation	Bound
	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	<, =, >	

Any additional linear constraints can be entered here
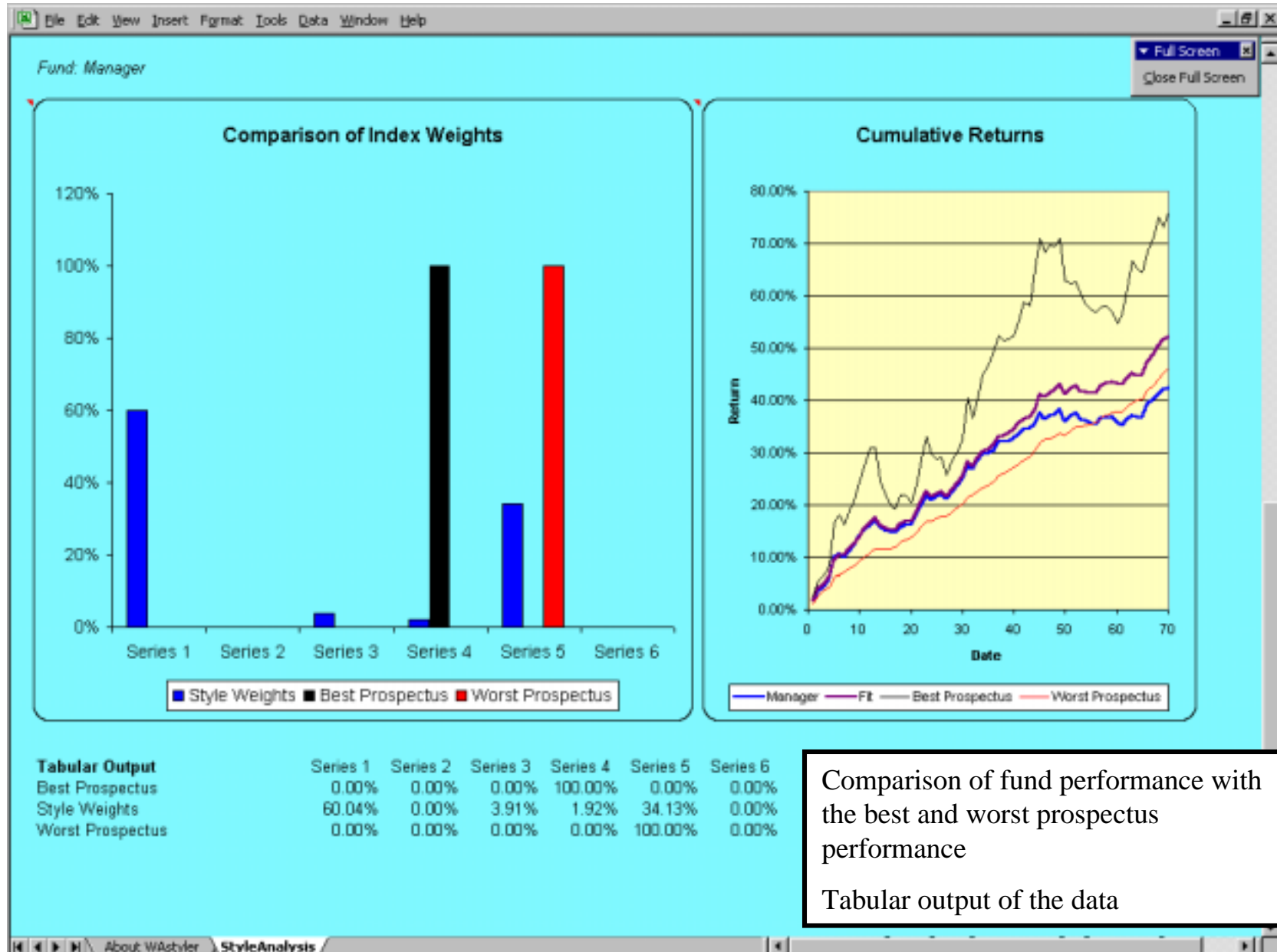
The software automatically imposes two constraints:

- non-negativity of benchmark allocation

- total allocation sums to 100%

About WAstyler　Constraints
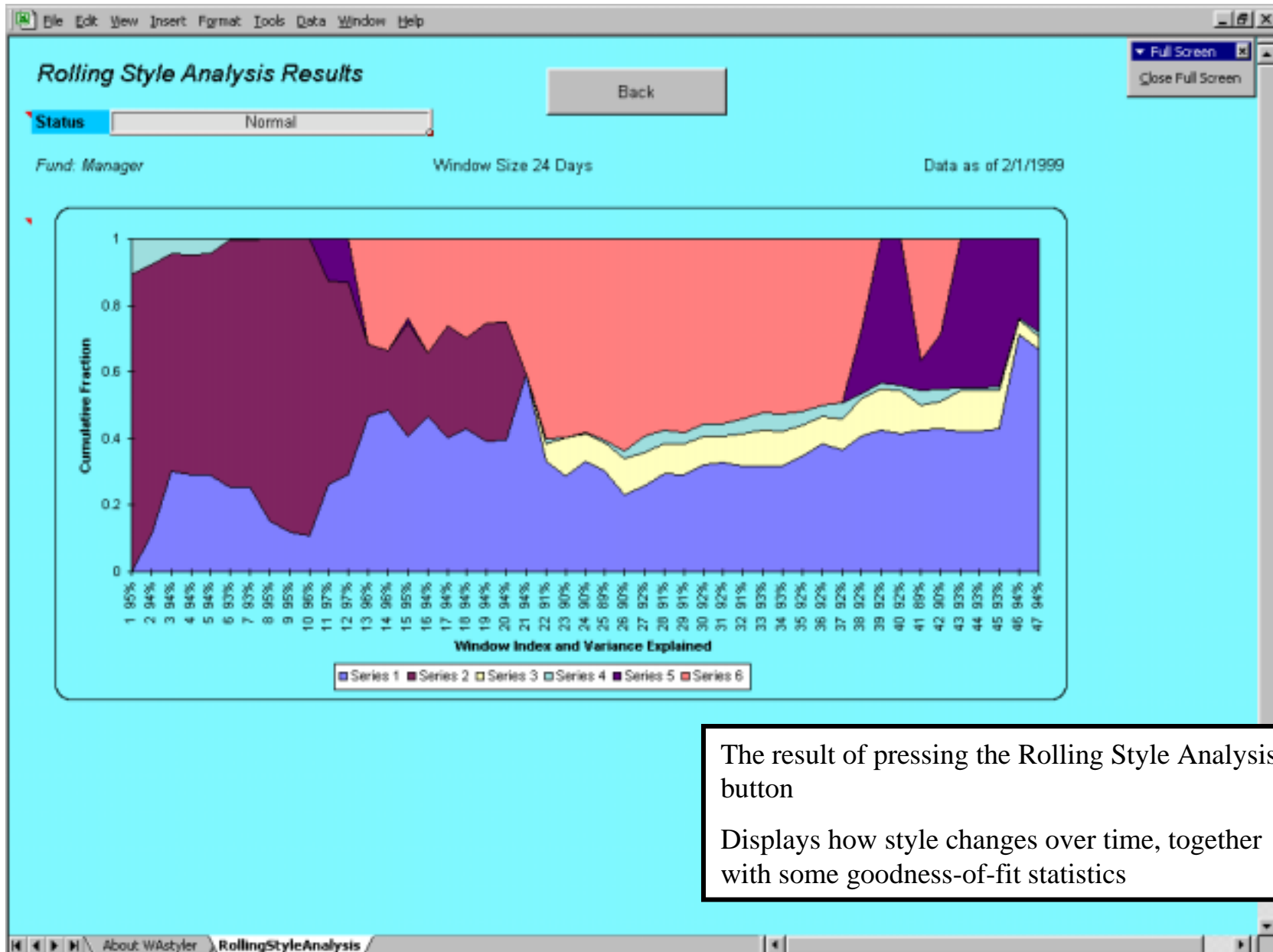
Style Analysis Sheet

Style Analysis Sheet (Continued)

Comparison of fund performance with the best and worst prospectus performance

Tabular output of the data

Rolling Style Analysis Sheet

The result of pressing the Rolling Style Analysis button

Displays how style changes over time, together with some goodness-of-fit statistics