Maybe Style Is Not Enough

You want growth or value? What kind of growth? What kind of value?

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Existing growth and value indexes have been criticized for failing to deliver meaningful differences in return from the broad market. Combining the familiar growth vs. value classification with a new stable vs. variable classification based on past return stability and trading volume improved results and sharpened investment focus when applied to recent historical data. This extension of the traditional growth vs. value framework also helped determine whether a "growth" manager or "value" manager was performing as advertised. Finally, it provided investors with two new investment tools: Stable and Variable Equity Indexes.

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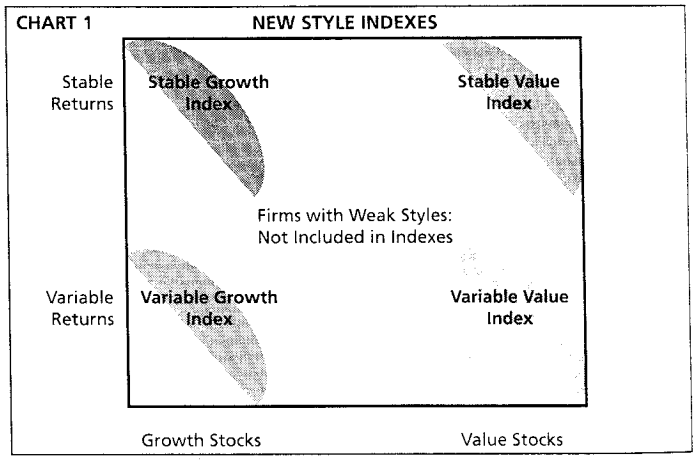
The standard approach to style-based investing has been to categorize firms according to their valuation — growth or value. However, there is another investment factor that has proved as effective as valuation in explaining the performance of large-cap stocks over the last 15 years. This factor is the stability of a stock's past returns relative to other stocks. Focusing on the stocks of the S&P 500, we combine valuation and stability measures. We find ourselves with four basic indexes with distinct performance patterns over a market cycle. Their back-tested performance suggests they may be very useful management and investment tools.

We use price-to-earnings ratios and price-to-book ratios that have been modified to eliminate accounting biases to classify firms as growth or value — pretty standard stuff. But we also use an average of monthly absolute returns, an average of absolute daily returns, and average trading volume relative to free float to classify firms as stable, like utilities, or variable, like, say, many technology stocks. As Chart 1 illustrates, only those stocks with strong characteristics on both axes, value vs. growth and stable vs. variable, are assigned to one of the four

CHART 1 NEW STYLE INDEXES



basic indexes. That gives us: Variable Growth, Stable Growth, Variable Value or Stable Value. (Details of the index construction process are reported in Appendix A.)

We have developed this approach only recently, but simulated annual returns for the four basic style indexes and four combined indexes derived from them are reported in Tables 2 and 3, with details of the simulation provided in Appendix B. Monthly returns are available upon request.

BETTER GROWTH AND VALUE INDEXES

There are several benefits to this new approach to style-based investing. The first benefit is a sharper delineation of the growth and value styles. The new indexes deliver much larger return differentials, relative to the broad market and relative to one another, than do many of the leading growth and value indexes. This is because we focus on the stocks that have the clearest relevant characteristics. Other indexes, like BARRA, often include unclear or borderline cases that may muddle results.

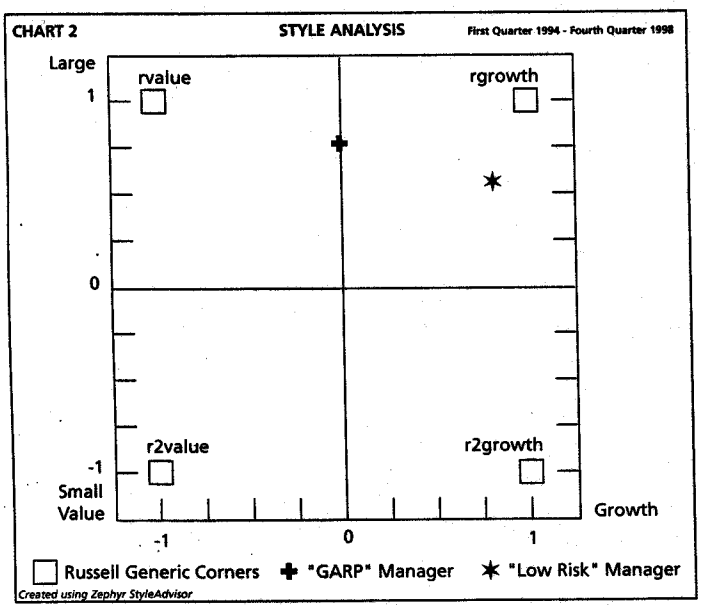
Consider our Variable Growth Index. From 1985 to 1998, the annual tracking error of the Variable Growth Index relative to the S&P 500 was 7.94%, more than twice as large as the 3.32% tracking error of the S&P/BARRA Growth Index relative to the S&P 500. The larger size of Variable Growth's tracking error reflects a sharper focus on growth stocks. This is illustrated by the strong performance of the Variable Growth Index in periods where the rate of earnings growth is low, an environment in which growth indexes tend to outperform. Between 1985 and 1998, the Variable Growth Index outperformed the S&P 500 by an average of 1.35% during quarters where the reported rate of year over year growth in aggregate corporate after-tax earnings was below 8%. Over the same period, the S&P/BARRA Growth Index outperformed the S&P 500 by an average of 0.62% per quarter, the Wilshire Large Growth Index by 0.61%, and the Russell 1000 Growth Index by 0.45%.

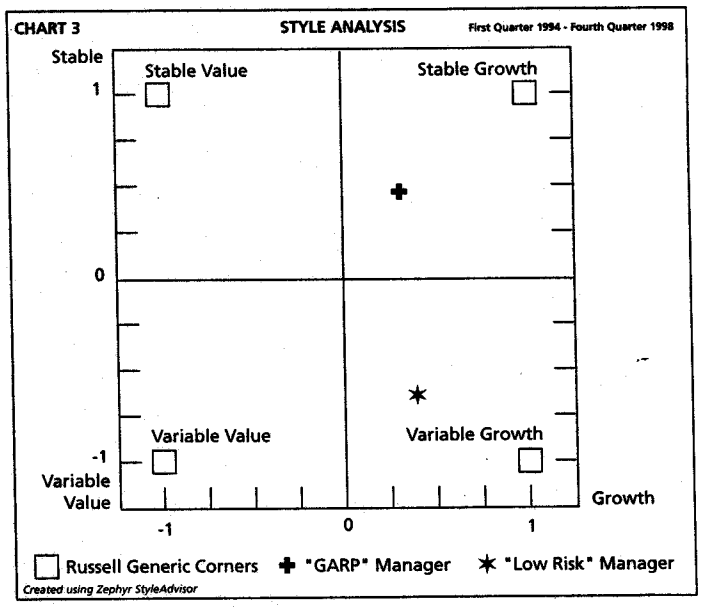
Similar results follow for value stocks. From 1985 to 1998, the annual tracking error of the Stable Value Index relative to the S&P 500 was 8.96%, more than twice as large as the 3.47% tracking error of the S&P/BARRA Value Index to the same index. Stable Value also delivered strong returns in the high earnings growth environments where one would expect a value index to outperform the S&P 500, comparable to other value indexes. During quarters where reported earnings growth exceeded 8%, the Stable Value Index outperformed by an average of 0.11% per quarter (that would be 44 basis points per year). Over the same quarters, the S&P/BARRA Value Index outperformed the S&P 500 by 0.06% per quarter on average, the Wilshire Large Value Index by 0.11%, and the Russell 1000 Value by 0.09%.

Not surprisingly, the return differential between the Variable Growth and Stable Value Indexes is considerably larger than the return differential between existing growth and value pairs. The 14.79% annual tracking error of the Variable Growth Index relative to the Stable Value Index is more than twice as large as the 6.77% annual tracking error of S&P/BARRA Growth Index relative to S&P/BARRA Value Index.

BETTER MANAGER STYLE IDENTIFICATION

In addition to their use as investment vehicles, style indexes may be used to objectively determine manager style. Nobel Laureate William F. Sharpe [1992] developed one method of style analysis renowned for its speed, simplicity, and accuracy. His return-based style analysis theory asserts that one can classify a manager by fitting a straight line that describes the manager's returns as a combination of various benchmark indexes. This can be done using the regression commands found in most spreadsheet programs or by using specialized software packages. We found that basing the analysis on a style index family that also classifies stocks on the basis of return stability can enhance results.





To illustrate, we used the Zephyr Associates Style Advisor software package to conduct style evaluations using two different style index families. Chart 2 shows the results of a style analysis of two managers using the Russell Generic Corners: Russell 1000 Growth, Russell 1000 Value, Russell 2000 Growth and Russell 2000 Value. Using these indexes, which categorize stocks on the basis of capitalization and valuation, it is not possible to determine whether this large-cap "low risk" growth manager (which is how he presents himself) is truly low risk growth or whether a Growth-At-a-Reasonable-Price (GARP) manager is following a growth style. Chart 3 displays a style analysis for the same two managers using our New Style Indexes. Because this set of indexes classifies stocks on the basis of stability rather than capitalization, we can see more clearly that the "low risk" manager is actually high risk and the GARP manager does in fact follow a growth style.

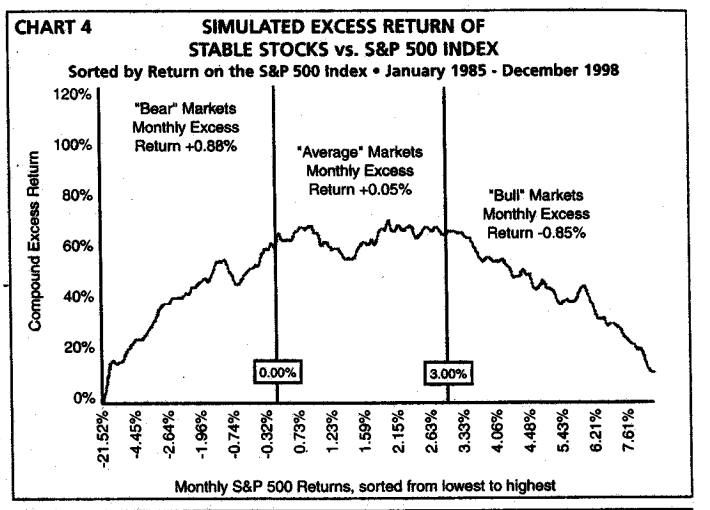
POWERFUL NEW INDEXES

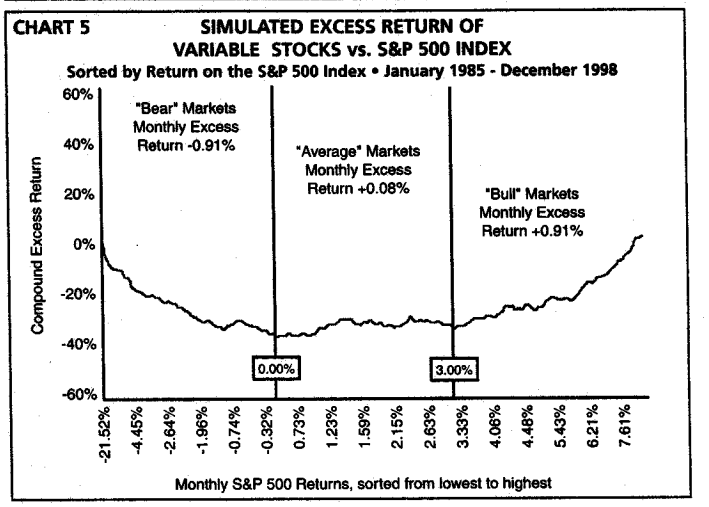
The importance of the stable and variable classifications goes beyond improving the ability of indexes to isolate growth and value behavior. They are important investment categories in their own right. To illustrate, we have combined the stocks in the Stable Growth and Stable Value indexes to form a Stable Index. Similarly, the Variable Growth and Variable Value Indexes form a Variable Index. As can be seen in Table 1, the annual tracking error of the Stable Index relative to the Variable Index is larger than the annual tracking error between growth and value for leading index providers. Based on these figures, the difference in behavior between stable and variable stocks is at least as large as the difference in behavior between growth and value stocks.

TABLE 2 BASIC STYLE INDEXES: SIMULATED RETURNS

	Variable Growth	Stable Growth	Variable Value	Stable Value	S&P 500
1985	23.03	45.29	25.78	32.38	31.73
1986	14.35	32.01	7.89	28.18	18.67
1987	8.58	10.28	2.31	-1.47	5.25
1988	5.99	17.31	23.36	21.17	16.61
1989	32.31	35.04	16.60	29.79	31.69
1990	-3.53	6.44	-18.74	-5.19	-3.10
1991	44.39	31.01	35.95	32.25	30.46
1992	4.73	8.17	21.90	10.70	7.62
1993	-0.45	7.99	24.01	15.41	10.08
1994	8.34	4.16	-1.90	-6.30	1.32
1995	39.60	32.34	41.63	34.21	37.58
1996	28.37	16.12	25.70	15.04	22.96
1997	34.56	31.28	40.31	29.88	33.36
1998	56.85	24.10	15.72	9.83	28.58
3 years	39.41	23.68	26.85	17.95	28.23
5 years	32.59	21.13	23.18	15.59	24.06
10 years	22.92	19.09	18.63	15.68	19.21
Overall	19.94	20.89	17.41	16.70	18.77
RISK*					
Stdev	19.73	15.23	19.30	12.27	15.10
Tracking	7.94	5.55	7.84	8.96	0.00
Beta	1.22	0.94	1.18	0.65	1.00

What are the return characteristics of the Stable and Variable Indexes? The Stable Index has strong defensive properties. In months between January 1985 and December 1998 when the S&P 500 return was negative, the simulated Stable Index outperformed the S&P 500 by an average of 0.88% per month. Chart 4 displays the cumulative excess return of the Stable Index when observations are sorted by the return on the S&P 500 rather than in chronological order. In contrast, the Variable Growth Index is an aggressive and highly volatile investment vehicle. In months between January 1985 and December 1998 when the S&P 500 return exceeded 3%, the simulated Variable Index outperformed the S&P 500 by an average of 0.91% per month. The price for this outperformance, not surprisingly, was weak performance in down markets. In months when the S&P 500 return was negative, the simulated Variable Index underperformed the S&P 500 by an average of 0.91% (Chart 5).

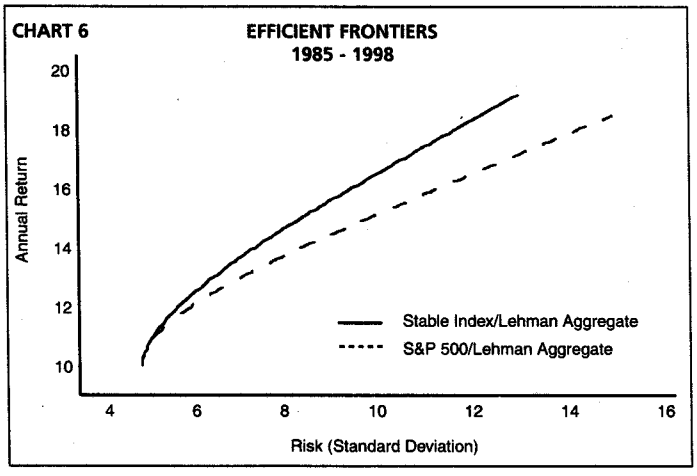




EXPANDING THE EFFICIENT FRONTIER STABILITY

Because of the Stable Index's excellent defensive properties, substituting the Stable Index for the S&P 500 can lower the overall risk of a balanced portfolio without sacrificing long run return. This is shown in Chart 6, which displays the risk/return combinations that might have been achieved for portfolios combining the Stable Index and Lehman Aggregate Bond Index (solid line) and for portfolios combining the S&P 500 Index and the Lehman Aggregate Bond Index (dashed line). Moving from left to right along either curve, potential risk and return obvious-

ly increase as equity exposure is raised from 0 to 100%. As you compare the solid line with the dashed line, it becomes apparent that at each level of risk the solid line provides a greater level of return. Alternatively, at each return level, the solid line provides the same return at a lower level of risk. Clearly, in a balanced portfolio, the Stable Index can be a useful tool to enhance return without increasing overall portfolio risk.



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APPENDIX A • INDEX CONSTRUCTION

The process begins with the construction of a preliminary set of Variable Growth stocks and a preliminary set of Stable Growth stocks. These stocks are selected from the S&P 500 using distinct ranking variables that weigh several factors, including price-to-earnings ratio, price-to-book ratio, stability of past returns and trading volume. Both groups contain stocks with valuations above the median valuation of the S&P 500. The major difference between the two is that the Variable Growth group emphasizes firms with highly volatile returns, while the Stable Growth group emphasizes firms with more moderate valuations whose past returns have been more stable.

The average return for each set of stocks is calculated for several months. Then, each stock in the S&P 500 is ranked according to which group's return it tracks more closely. This ranking is combined with the variables used to select the preliminary set of Variable Growth stocks, and the combination is used to determine the final set of 65 stocks included in the Variable Growth Index. We found empirically that including more stocks reduced distinctive performance — it was simply hard to find many more than 65 good examples of variable growth stocks in the S&P 500 — and using less hurt diversification too much. Firms in certain industries are always excluded from this index, such as those in natural resources, where sporadic gluts and shortages distort results, and packaged foods, where unsustainable growth spurts, as from temporarily hot products, proved too frequent.

From the 435 S&P stocks that remain, we next select 65 stocks for the Stable Value Index. The ranking variable used identifies stocks with valuations below the median for the S&P 500 that have stable return and trading histories. Any utility or integrated oil stocks meeting these criteria will be automatically included in the index — the market expects them to be there.

Focusing on the 370 S&P stocks that remain, the program uses the ranking variable that was used to construct the preliminary set of Stable Growth stocks to select the 65 stocks in the Stable Growth Index.

From the 305 S&P stocks that remain, the computer uses a ranking variable to identify the 90 stocks in the Variable Value Index. We found these stocks tend to be smaller and more erratic, so this index needs more diversification — also, more S&P 500 stocks fall naturally into the variable value category than into any of the three other groups. The ranking variable emphasizes firms that have below median valuation and highly volatile returns.

The four indexes are rebalanced twice per year, at the end of each June and December. They are cap weighted with the exception of the very largest stocks whose initial portfolio weights are limited to a maximum of 4% within each index.

TABLE 1

DIFFERENCES IN RETURN BETWEEN VARIOUS STYLE INDEXES
JANUARY 1985 — DECEMBER 1998

INDEX PAIR	ANNUAL TRACKING ERROR
New Stable vs. Variable	9.89%
S&P/BARRA Growth vs. Value	6.77%
Wilshire Growth vs. Value	9.07%
Russell Growth vs. Value	6.87%

APPENDIX B • SIMULATED ANNUAL RETURNS

The model performance results reported in Tables 2 and 3 are based on simulated portfolio holdings and returns. The results do not represent the actual performance of any funds — these products are too new to have a track record. As is true of any index, the simulated returns are gross of all fees and expenses, including management fees, broker's commissions and market impact costs. Actual fees and expenses would have reduced the returns shown by up to 45 basis points per year. The simulated portfolio holdings were calculated by applying a proprietary computer model to historical market data. The length of the study period was limited by the availability of certain data items critical to the functioning of the computer model. The value of each simulated portfolio at the beginning of January 1985 was $100 million, and their values at the close of December 1998 ranged from $869 million to $1536 million. The simulated portfolio returns were calculated monthly. At the end of each six month period, the simulated portfolio was rebalanced to a target portfolio constructed based on the selections of the computer model and the composition of the S&P 500 Index at the end of the holding period. This process was repeated through the end of the study period. As with any study that is conducted with data collected after the fact, results are subject to back testing bias that can inflate returns. ⊕

TABLE 3 COMBINED STYLE INDEXES: SIMULATED RETURNS

Period	OakBrook Stable	OakBrook Variable	OakBrook Growth	OakBrook Value	BARRA Growth	BARRA Value	S&P 500
1985	37.74	25.48	34.78	29.60	33.31	29.68	31.73
1986	32.05	10.75	25.29	18.96	14.50	21.67	18.67
1987	6.05	6.23	10.19	1.69	6.50	3.68	5.25
1988	18.37	14.82	10.50	22.94	11.95	21.67	16.61
1989	33.60	22.84	33.74	22.37	36.40	25.53	31.69
1990	3.05	-10.39	3.49	-11.31	0.20	-6.85	-3.10
1991	30.23	42.95	39.97	34.07	38.37	22.56	30.46
1992	7.26	8.49	3.78	14.18	5.06	10.52	7.62
1993	11.57	10.61	2.47	21.15	1.69	18.59	10.08
1994	-0.05	3.57	6.87	-2.80	3.14	-0.64	1.32
1995	34.32	40.03	37.66	37.83	38.14	37.00	37.58
1996	16.08	29.91	24.98	21.77	23.97	22.00	22.96
1997	31.90	36.92	34.59	35.73	36.53	29.98	33.36
1998	20.44	43.30	46.53	14.73	42.16	14.67	28.58
3 years	22.63	36.60	35.08	23.77	34.00	22.06	28.23
5 years	19.88	29.89	29.39	20.50	27.94	19.88	24.06
10 years	18.17	21.45	22.27	17.73	21.35	16.61	19.21
Overall	19.51	19.30	21.55	17.75	19.84	17.23	18.77
RISK*							
Stdev.	13.02	18.49	17.14	14.98	16.28	14.54	15.10
Tracking	5.14	5.26	5.13	4.50	3.32	3.47	0.00
Beta	0.81	1.19	1.09	0.95	1.06	0.94	1.00

** The risk measures used in the tables above are defined as follows: Stdev. is the annualized standard deviation of monthly returns from January 1985 through December 1998. Tracking is the annualized tracking error of monthly return relative to the S&P 500 from January 1985 through December 1998. Beta is the beta of monthly return relative to the S&P 500 from January 1985 through December 1998.*