



What Should You Expect From an Investment Style?

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Abstract

Changing expectations for the rate of economic growth and inflation had a dramatic impact on the relative performance of growth and value stocks during the first half of year 2000. Investors obviously have definite opinions on the best style for each environment. The question is how well do these opinions match up to historical data? Many of the growth and value behavioral stereotypes are more properly applied to groups constructed on the basis of past return stability or variability. Analysis of returns during the 1985 to 1999 period indicates that sequential declines in corporate after tax profits are favorable for growth stocks and unfavorable for value. Over the same period, a surging equity market or a rise in long term bond yields enhanced the excess return of variable stocks at the expense of more stable stocks.

Methodology

To identify the most favorable market environments for a number of different investment styles, the quarterly excess returns (relative to the S&P 500) of six different style indices are regressed against a number of different factors thought to influence excess return.¹ These factors include the raw return of the S&P 500, the rate of Real GDP growth, growth in corporate after tax profits, the unemployment rate, inflation, changes in bond yields and the steepness of the yield curve. Regressions involving the BARRA Growth and Value indices establish baseline behavioral profiles for growth and value stocks. We then compare these baseline results against regressions using indices that refine the growth and value categories by sub-dividing stocks on the basis of past return stability and variability. This allows us to distinguish behaviors that truly reflect growth or value behaviors from those that reflect a temporary bias toward stable or variable stocks within the category.

Baseline

Tables 1 through 6 list regression coefficients, t-statistics and significance levels for several variables thought to influence excess return. The ratio of the 30 year bond yield to the 90 day treasury yield and the ratio of the 2 year treasury yield to the 90 day treasury yield are used to measure the "steepness" of the yield curve, with high values of the ratio indicating a steep curve. Variables are generally constructed so as to be contemporaneous with the excess return being studied. However, there is some ambiguity with real GDP and corporate profit data as the best estimates are normally obtained two months after the close of the quarter of interest. For this reason, both contemporaneous and lagged values of these variables are considered. The raw data used to construct the variables was retrieved from the Bloomberg and FactSet data services.

¹ Please see the performance disclosure at the end of the document.

Comparing the regression results for the S&P/BARRA Growth reported in Table 1 and the regression results for the S&P/BARRA Value reported in Table 2 provides prototypical favorable environments for growth and value stocks. As the highlighted lines in each table indicate, favorable conditions for growth stocks include:

- 1) high S&P 500 returns,
- 2) a sequential decline in corporate after tax profits during the prior quarter,
- 3) an increase in real long term bond yields during the year, and
- 4) a “flat” or “inverted” yield curve as measured by the ratio of the 2 year treasury yield to the 90 day treasury yield.

The most favorable conditions for value stocks are the inverse of those for growth, though only low S&P 500 returns have a statistically significant effect:

- 1) low S&P 500 returns,
- 2) a sequential increase in corporate after tax profits during the prior quarter,
- 3) a decline in real long term bond yields during the quarter, and
- 4) a “steep” yield curve.

Note the slight difference in the period considered for condition three. The BARRA Value Index is more sensitive to sequential changes in long term bond yields than to annual changes.

Variable Growth and Stable Growth

Looking at the regression results for the variable and stable variants of growth constructed by OakBrook Investments, LLC, the Variable Growth Index (Table 3) provides the closest correspondence to the behavior of the growth prototype.² Variable Growth exhibits all four of the behavioral characteristics identified with the BARRA Growth Index, though the impact of a decline in corporate after tax profits is not statistically significant. Variable’s positive response in up markets is particularly strong, with each 1% quarterly rise in the S&P 500 resulting in a 1.27% increase in the return of the Variable Growth Index. The gains of BARRA Growth are much more modest, with BARRA rising slightly more than 1.10% for each 1% increase in the S&P 500.

Stable Growth (Table 4) shares one tendency with the BARRA Growth – responding favorably to a sequential decline in corporate after tax profits during the prior quarter. However, the effect is much stronger for contemporaneous profit data than the lagged data which appears to influence the BARRA Growth Index. The focus on stable stocks leads to substantial differences in other areas as well. Not surprisingly, stable stocks exhibit a tendency to “lean against the wind” which reduces the excess return of the Stable Growth Index in high return environments. Stable stocks also appear to be insensitive to year over year increases in real interest rates. However, increases in inflation and nominal interest rates can be a negative for the style. While a “flat” or “inverted” yield curve provides a modest (statistically insignificant) lift to the style, a “flattening” of the yield curve provides a meaningful enhancement to excess return. Declining inflation and real economic output are also significant positives for the style.

² For additional information on variable and stable indices please see the article “Maybe Style Is Not Enough” in the July-September, 1999 issue of the Journal of Index Issues in Investment or the article “Will The Real Style Please Stand Up” in the April-June, 2000 issue of the same journal.

In short, anything that suggests a slowing economy benefits the excess return of stable growth, making it an excellent defensive hedge.

Stable Value and Variable Value

Turning to OakBrook's value indices, neither the regression results for Stable Value (Table 5) or Variable Value (Table 6) are a perfect fit to the BARRA Value results. Stable Value comes closest, matching BARRA Value in three of the four prototypical ideal environments. Stable Value responds favorably to a sequential increase in corporate after tax profits during the prior quarter (though the impact is not statistically significant and the reaction to a sequential increase in profits in real time is in the "wrong" direction). Stable Value also provides strong relative returns when overall market returns are weak, and benefits from a sequential increase in real interest rates. Stable Value does not demonstrate the strong positive reaction to a "steep" yield curve that the BARRA Value does. However, this may reflect the presence of stability as Stable Value and Stable Growth are both somewhat insensitive to the steepness of the yield curve (regression coefficients for both indices fail to be statistically significant) but respond favorably to a "flattening" of the curve from one quarter to the next. Both Stable Indices are sensitive to increases in inflation and nominal interest rates, responding negatively in each case. Both indices also exhibit strong relative returns in quarters where real GDP registers a sequential decline. It appears that stable stocks come to the fore in weak economic environments characterized by declining nominal interest rates, a flattening of the yield curve, and declining output.

Focusing on OakBrook's Variable Value, the index matches BARRA Value on two of the four "value" tendencies. Variable Value benefits from a sequential increase in corporate profits during the prior quarter and a "steep" yield curve. Variable Value differs dramatically from BARRA Value in that Variable Value's relative performance benefits from a strong equity market or a rise in real 30 year bond yields. These behaviors may reflect the presence of variable stocks. The Variable Growth Index exhibits the same tendencies, although Variable Growth is more sensitive to yearly changes in the 30 year yield than the sequential/quarterly changes that impact Variable Value.

Epilogue

The preceding review of regression results for OakBrook's four basic style indices suggest the following revisions to the baseline conditions favorable to growth and value. First, growth and value stocks are distinguished chiefly by their reaction to sequential declines in corporate after tax profits. Profit declines during the prior quarter are favorable for growth stocks and unfavorable for value. Second, two of the four tendencies initially ascribed to growth and value stocks are more properly applied to stable and variable stocks. Variable and stable stocks are distinguished by their reaction to rising equity prices and rising bond yields. Variable stocks exhibit strong relative returns in strong equity markets or when real long term bond yields are rising. Stable stocks exhibit strong relative returns in weak equity markets and when real long term bond yields are declining.

Table 1

BARRA Growth

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	0.1047	3.16	99.75%
Real GDP growth, sequential	0.3764	0.69	50.58%
Real GDP growth, year over year	-0.0078	-0.04	2.92%
Real GDP growth, seq, lagged 1 quarter	0.0535	0.10	7.57%
Real GDP growth, yoy, lagged 1 quarter	-0.0194	-0.09	7.37%
Corporate after-tax profits growth, sequential	-0.0071	-0.15	12.03%
Corporate after-tax profits growth, year over year	-0.0163	-0.93	64.32%
* Corporate after-tax profits growth, seq, lagged 1qtr	-0.0888	-1.97	94.67%
Corporate after-tax profits growth, yoy, lagged 1 quarter	-0.0239	-1.38	82.77%
Growth in unemployment rate, sequential	0.0011	0.02	1.25%
Growth in unemployment rate, year over year	0.0059	0.23	17.76%
12 month increase in CPI	-0.1129	-0.48	36.68%
12 month increase in CPI, sequential growth	0.0087	0.77	55.81%
12 month increase in CPI, sequential change	0.0223	0.04	3.56%
Growth in nominal 30 year yield, sequential	-0.0048	-0.12	9.67%
Growth in nominal 30 year yield, year over year	0.0178	0.97	66.57%
Growth in nominal 2 year yield, sequential	-0.0031	-0.12	9.83%
Growth in nominal 2 year yield, year over year	0.0093	0.85	60.10%
Growth in real 30 year yield, sequential	0.0069	0.41	31.57%
* Growth in real 30 year yield, year over year	0.0150	1.61	88.66%
Growth in real 2 year yield, sequential	0.0027	0.32	25.11%
Growth in real 2 year yield, year over year	0.0037	0.91	63.27%
30 year yield / 2 year yield	-2.6111	-2.01	95.13%
30 year yield / 2 year yield, sequential growth	0.0054	0.14	10.80%
30 year yield / 2 year yield, year over year growth	-0.0080	-0.44	33.52%
* 2 year yield / 90 day yield	-5.0743	-2.45	98.27%
2 year yield / 90 day yield, sequential growth	0.0001	0.00	0.24%
2 year yield / 90 day yield, year over year growth	0.0038	0.17	13.30%

Table 2

BARRA Value

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	-0.2002	-3.48	99.90%
Real GDP growth, sequential	0.3337	0.35	26.87%
Real GDP growth, year over year	0.2382	0.64	47.57%
Real GDP growth, seq, lagged 1 quarter	-0.7308	-0.74	53.96%
Real GDP growth, yoy, lagged 1 quarter	0.0558	0.15	12.01%
Corporate after-tax profits growth, sequential	0.0119	0.14	11.47%
Corporate after-tax profits growth, year over year	0.0212	0.69	50.44%
* Corporate after-tax profits growth, seq, lagged 1qtr	0.0958	1.18	75.85%
Corporate after-tax profits growth, yoy, lagged 1 quarter	0.0250	0.81	57.93%
Growth in unemployment rate, sequential	-0.0269	-0.22	17.17%
Growth in unemployment rate, year over year	-0.0151	-0.33	25.54%
12 month increase in CPI	-0.0359	-0.09	6.86%
12 month increase in CPI, sequential growth	0.0120	0.60	45.00%
12 month increase in CPI, sequential change	0.8477	0.97	66.52%
Growth in nominal 30 year yield, sequential	0.0154	0.22	17.43%
Growth in nominal 30 year yield, year over year	0.0199	0.62	46.01%
Growth in nominal 2 year yield, sequential	0.0039	0.09	7.03%
Growth in nominal 2 year yield, year over year	0.0079	0.41	31.64%
* Growth in real 30 year yield, sequential	-0.0309	-1.04	69.94%
Growth in real 30 year yield, year over year	-0.0160	-0.96	65.88%
Growth in real 2 year yield, sequential	-0.0104	-0.72	52.51%
Growth in real 2 year yield, year over year	-0.0041	-0.57	42.91%
30 year yield / 2 year yield	1.9860	0.85	59.88%
30 year yield / 2 year yield, sequential growth	-0.0012	-0.02	1.40%
30 year yield / 2 year yield, year over year growth	-0.0031	-0.10	7.65%
* 2 year yield / 90 day yield	5.1028	1.35	81.86%
2 year yield / 90 day yield, sequential growth	-0.0011	-0.01	1.05%
2 year yield / 90 day yield, year over year growth	0.0390	0.99	67.40%

Table 3

Variable Growth

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	0.2660	3.98	99.98%
Real GDP growth, sequential	1.2469	1.09	72.02%
Real GDP growth, year over year	0.2391	0.54	40.76%
Real GDP growth, seq, lagged 1 quarter	0.9198	0.78	56.40%
Real GDP growth, yoy, lagged 1 quarter	0.0571	0.13	10.32%
Corporate after-tax profits growth, sequential	0.0108	0.11	8.67%
Corporate after-tax profits growth, year over year	-0.0107	-0.29	22.66%
* Corporate after-tax profits growth, seq, lagged 1qtr	-0.0557	-0.57	43.03%
Corporate after-tax profits growth, yoy, lagged 1 quarter	-0.0297	-0.81	57.89%
Growth in unemployment rate, sequential	-0.1031	-0.70	51.58%
Growth in unemployment rate, year over year	-0.0240	-0.44	33.67%
12 month increase in CPI	-0.8320	-1.72	90.94%
12 month increase in CPI, sequential growth	0.0236	1.00	67.86%
12 month increase in CPI, sequential change	-0.2712	-0.26	20.34%
Growth in nominal 30 year yield, sequential	0.0238	0.29	22.45%
Growth in nominal 30 year yield, year over year	0.0560	1.47	85.40%
Growth in nominal 2 year yield, sequential	0.0364	0.69	50.81%
Growth in nominal 2 year yield, year over year	0.0340	1.50	86.19%
Growth in real 30 year yield, sequential	0.0354	1.00	68.07%
* Growth in real 30 year yield, year over year	0.0295	1.50	85.99%
Growth in real 2 year yield, sequential	0.0220	1.28	79.60%
Growth in real 2 year yield, year over year	0.0092	1.10	72.23%
30 year yield / 2 year yield	-3.8962	-1.41	83.47%
30 year yield / 2 year yield, sequential growth	-0.0582	-0.71	51.78%
30 year yield / 2 year yield, year over year growth	-0.0385	-1.00	67.84%
* 2 year yield / 90 day yield	-5.9875	-1.33	81.12%
2 year yield / 90 day yield, sequential growth	0.0460	0.49	37.14%
2 year yield / 90 day yield, year over year growth	0.0173	0.37	28.47%

Table 4

Stable Growth

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	-0.0421	-0.73	52.98%
* Real GDP growth, sequential	-1.7444	-2.03	95.27%
Real GDP growth, year over year	-0.3411	-1.00	67.94%
Real GDP growth, seq, lagged 1 quarter	-0.6945	-0.77	55.43%
Real GDP growth, yoy, lagged 1 quarter	-0.2535	-0.75	54.59%
Corporate after-tax profits growth, sequential	-0.1487	-2.03	95.29%
Corporate after-tax profits growth, year over year	-0.0283	-1.00	67.83%
* Corporate after-tax profits growth, seq, lagged 1qtr	-0.0840	-1.13	73.58%
Corporate after-tax profits growth, yoy, lagged 1 quarter	-0.0108	-0.38	29.44%
Growth in unemployment rate, sequential	0.1356	1.21	76.90%
Growth in unemployment rate, year over year	0.0359	0.85	60.26%
12 month increase in CPI	0.5550	1.48	85.54%
12 month increase in CPI, sequential growth	-0.0248	-1.37	82.48%
* 12 month increase in CPI, sequential change	-1.0876	-1.37	82.31%
Growth in nominal 30 year yield, sequential	-0.1721	-2.86	99.42%
* Growth in nominal 30 year yield, year over year	-0.0515	-1.77	91.84%
Growth in nominal 2 year yield, sequential	-0.0651	-1.64	89.27%
Growth in nominal 2 year yield, year over year	-0.0208	-1.18	75.85%
Growth in real 30 year yield, sequential	-0.0343	-1.27	78.96%
Growth in real 30 year yield, year over year	-0.0009	-0.06	4.66%
Growth in real 2 year yield, sequential	-0.0105	-0.79	56.62%
Growth in real 2 year yield, year over year	0.0009	0.13	10.68%
30 year yield / 2 year yield	-0.0694	-0.03	2.53%
30 year yield / 2 year yield, sequential growth	-0.0071	-0.11	8.85%
30 year yield / 2 year yield, year over year growth	0.0102	0.34	26.53%
2 year yield / 90 day yield	-1.6160	-0.46	35.22%
* 2 year yield / 90 day yield, sequential growth	-0.0944	-1.31	80.42%
2 year yield / 90 day yield, year over year growth	-0.0221	-0.61	45.48%

Table 5

Stable Value

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	-0.4185	-5.58	100.00%
* Real GDP growth, sequential	-2.9476	-2.15	96.46%
Real GDP growth, year over year	-0.5693	-1.05	70.09%
Real GDP growth, seq, lagged 1 quarter	-2.0888	-1.46	85.17%
Real GDP growth, yoy, lagged 1 quarter	-0.3334	-0.62	46.21%
Corporate after-tax profits growth, sequential	-0.1550	-1.30	80.05%
Corporate after-tax profits growth, year over year	-0.0223	-0.49	37.44%
* Corporate after-tax profits growth, seq, lagged 1qtr	0.0537	0.45	34.36%
Corporate after-tax profits growth, yoy, lagged 1 quarter	0.0305	0.67	49.61%
Growth in unemployment rate, sequential	0.2301	1.29	79.70%
Growth in unemployment rate, year over year	0.0641	0.96	65.67%
12 month increase in CPI	0.5574	0.92	63.83%
* 12 month increase in CPI, sequential growth	-0.0618	-2.19	96.74%
12 month increase in CPI, sequential change	-1.5660	-1.23	77.57%
* Growth in nominal 30 year yield, sequential	-0.3116	-3.31	99.84%
Growth in nominal 30 year yield, year over year	-0.0857	-1.85	93.07%
Growth in nominal 2 year yield, sequential	-0.2184	-3.74	99.96%
Growth in nominal 2 year yield, year over year	-0.0459	-1.65	89.64%
* Growth in real 30 year yield, sequential	-0.0684	-1.59	88.36%
Growth in real 30 year yield, year over year	-0.0038	-0.15	12.09%
Growth in real 2 year yield, sequential	-0.0412	-1.99	94.82%
Growth in real 2 year yield, year over year	-0.0060	-0.57	43.14%
30 year yield / 2 year yield	5.4518	1.60	88.59%
30 year yield / 2 year yield, sequential growth	0.2550	2.65	98.97%
30 year yield / 2 year yield, year over year growth	0.0567	1.20	76.51%
2 year yield / 90 day yield	3.2881	0.59	43.96%
* 2 year yield / 90 day yield, sequential growth	-0.2119	-1.87	93.30%
2 year yield / 90 day yield, year over year growth	-0.0344	-0.59	44.32%

Table 6

Variable Value

Quarterly Excess Return (Relative to S&P 500) Regressed Against Various Economic Factors
1985q1 thru 1999q4

Explanatory Variable	Coefficient	T-stat	Significance Level
* S&P 500 Return, Contemporaneous	0.1465	1.96	94.57%
Real GDP growth, sequential	0.5216	0.44	34.10%
Real GDP growth, year over year	-0.1863	-0.41	31.72%
Real GDP growth, seq, lagged 1 quarter	0.2426	0.20	15.92%
Real GDP growth, yoy, lagged 1 quarter	-0.3023	-0.68	50.00%
Corporate after-tax profits growth, sequential	0.2041	2.11	96.09%
Corporate after-tax profits growth, year over year	0.0560	1.51	86.33%
* Corporate after-tax profits growth, seq, lagged 1qtr	0.0977	0.99	67.31%
Corporate after-tax profits growth, yoy, lagged 1 quarter	0.0436	1.17	75.41%
Growth in unemployment rate, sequential	-0.2266	-1.54	87.11%
Growth in unemployment rate, year over year	0.0049	0.09	6.90%
12 month increase in CPI	-0.3084	-0.61	45.70%
12 month increase in CPI, sequential growth	0.0036	0.15	11.77%
12 month increase in CPI, sequential change	-0.6332	-0.59	44.51%
Growth in nominal 30 year yield, sequential	0.1686	2.06	95.57%
Growth in nominal 30 year yield, year over year	0.0154	0.39	30.24%
Growth in nominal 2 year yield, sequential	0.1769	3.64	99.94%
Growth in nominal 2 year yield, year over year	0.0040	0.17	13.31%
* Growth in real 30 year yield, sequential	0.0902	2.63	98.90%
Growth in real 30 year yield, year over year	0.0028	0.13	10.67%
Growth in real 2 year yield, sequential	0.0634	4.05	99.98%
Growth in real 2 year yield, year over year	-0.0012	-0.13	10.54%
30 year yield / 2 year yield	3.8067	1.34	81.58%
30 year yield / 2 year yield, sequential growth	-0.2837	-3.75	99.96%
30 year yield / 2 year yield, year over year growth	-0.0070	-0.18	14.01%
* 2 year yield / 90 day yield	11.4040	2.58	98.76%
2 year yield / 90 day yield, sequential growth	0.1721	1.83	92.75%
2 year yield / 90 day yield, year over year growth	0.0343	0.71	52.14%

Disclosure Statement

Performance histories for OakBrook's indices have been calculated going back to January, 1985. The simulated results are based on total return calculations which include a reinvestment of accrued dividends and price changes. As with other indices, returns are gross of all fees and expenses, including management fees, broker's commissions and market impact costs. The indices were rebalanced bi-annually, at the end of each June and December, with explicit controls to limit index turnover. During each rebalancing, firms were placed in indices based on a computer model which evaluated four years of historical information. Programming of the computer model was completed in May of 1999, based on data through December of 1998.

As with any study conducted after the fact, results are subject to back testing bias that can inflate returns. The results presented do not represent the actual performance of any OakBrook client portfolio and were achieved by means of the retroactive application of a program that was designed with the benefit of hindsight. Results may not reflect the impact of material market or economic factors which occurred during the back test period. OakBrook Investments, LLC has not managed portfolios using the methodology shown and the results presented should not be considered a substitute for the investment performance of actual OakBrook accounts. Results should not be considered indicative of the skill of OakBrook's portfolio managers. The back test results shown are in no way indicative of the future performance of the OakBrook Style Indices or any accounts managed to track those indices and clients may experience a loss while investing in these indices. Total fees are expected to be less than 45 basis points per year. The indices shown are not managed portfolios.

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