

Comparative Performance of Value and Growth Stock Indexes

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A substantial body of literature has focused on comparing the return performance of value stocks and growth stocks, over varying time periods and in numerous markets. Using a variety of approaches to identify value and growth stocks, researchers (for example, Fama and French [1998]; Chan and Lakonishok [2004]) have generally concluded that, in the long run, value stocks generate higher returns than growth stocks. Further, these results are generally consistent in U.S. equity markets as well as in many international markets.

Numerous researchers (for example, Davis, Fama, and French [2000]) have concluded that the existence of a positive value premium (i.e., value stock returns minus growth stock returns greater than zero) in equity markets is not unusual. It has been proposed that value stocks generate comparatively higher returns than growth stocks because value stocks are relatively more risky. Consequently, the existence of a value premium (i.e., value stock returns greater than growth stock returns) has been viewed as consistent with the efficient market hypothesis.

The investment community, however, has continued to debate the relative merits of these alternative investment strategies. During the late 1990s, a period when growth stocks outperformed value stocks, advocates for growth stock investment strategies generated renewed enthusiasm for their position that a

growth stock strategy is the superior approach. Proponents of the value investment style, however, have concluded that the data for this period represent an aberration, and that a value investment strategy will continue to outperform a growth investment strategy in the long run. Results of some recent studies (for example, Ibbotson and Reipe [1997]) suggest that investors should consider a balanced asset allocation approach that includes investments in both value stocks and growth stocks.

Our objectives in this study are modest, but our conclusions may prove significant for equity investors. First, we reexamine the comparative performance of value and growth investment strategies using recent data from a relatively new data series. Second, we attempt to explain our comparative performance results for the two strategies in the context of overall stock market performance. We present a review of selected literature in the next section.

LITERATURE REVIEW

Fama and French [1998] report that value stocks outperformed growth stocks, during the period 1975 through 1995, in twelve of thirteen countries they examined. They find that the difference in annual returns between high and low book-to-market stocks (i.e., value and growth stocks, respectively) was 7.68%. Fama and French state that the single-factor CAPM does not explain the value premium in

international equity markets, but a two-factor model does capture the value premium in international markets.

Chan, Karceski, and Lakonishok [2000] show that in recent years, large capitalization growth stocks outperformed both small capitalization stocks and value stocks. They investigated whether the historical relationship between size and value premiums had vanished during the later years of their study and concluded that recent market behavior can best be explained by behavioral considerations. Davis, Fama, and French [2000] found that a positive value premium has continued to persist in U.S. securities markets. They demonstrated that the value premium for the period July 1963 to June 1997 was close to that observed during the earlier period, July 1929 to June 1963. Chan and Lakonishok [2004] updated the findings of earlier studies, and reported that value stocks generated higher returns than growth stocks even after taking in to account the data of the late 1990s. They conclude that the higher returns of value stocks compared to those of growth stocks can be explained to some extent by behavioral considerations.

Siegel and Alexander [2000] indicate that a value investing strategy is not consistently superior to a growth investment strategy. For studies that examine longer time periods, value stocks generate higher returns than growth stocks, but this relationship has changed in recent years. Siegel and Alexander reported that growth stocks outperformed value stocks during the period December 31, 1997 to February 29, 2000, and that, in recent years, growth stocks had higher risk than did value stocks.

Speidell and Graves [2001] found that value stocks generated higher returns than did growth stocks in 11 of 19 years between 1975 and 1993. However, growth stocks outperformed value stocks in six straight years, from 1993 to 1999. In the last two years of their study, value stocks rebounded, outperforming growth stocks in 2000 and 2001. Speidell and Graves conclude that recent increased return volatility has created a further need to reexamine the performance of these two style approaches.

Ibbotson and Reipe [1997] demonstrate that in some years, value stocks have outperformed growth stocks while, in other years, growth stocks have outperformed. They suggest that investors maintain a balance between value and growth stocks in their asset allocations. Moskal [2002] reports that value stocks have outperformed growth stocks in the long run, while growth stocks have performed better during some shorter time spans. Moskal also concludes that there is an increased need to reexamine these two

investment styles. He suggests that, since there is tremendous variation over time in the relative performance of value and growth stock portfolios, investors should maintain a balance between the two styles in their portfolios.

Recently published studies demonstrate that value stock portfolios do not consistently generate higher returns than growth stock portfolios. There have been time periods when a growth stock investment strategy has outperformed a value stock strategy. Therefore, it seems to have become more important to reexamine the relative performance of these alternative investment styles using recent data. Finally, evidence from prior studies appears mixed in identifying which of the two styles is more risky. In the next section, we briefly discuss the primary data series used in our study.

DATA

On September 16, 2005, Standard and Poor's (S&P) began to provide new style data series, the Standard and Poor's/Citigroup U.S. Style Indices. These series became Standard and Poor's official style series on December 16, 2005, replacing the S&P/Barra Growth and Value series. Each of the S&P/Citigroup Style Indices uses a June 30, 1995 base date. Monthly data, beginning with July 1995, are available on the S&P website, www2.standardandpoors.com.

The S&P/Citigroup U.S. Style Indices are comprised of two separate data series: the S&P/Citigroup Style Indices and the S&P/Citigroup Pure Style Indices. Each of these series is maintained by S&P for the S&P 500 and for the S&P Composite 1500, as well as for the other components of the S&P Composite 1500, that is, the S&P MidCap 400, the S&P SmallCap 600, the S&P 900, and the S&P 1000. Both the Style Indices and the Pure Style Indices are subsets of each of the respective broader S&P indices and are based on a more comprehensive methodology than previously had been employed in generating the S&P/Barra series.

The S&P/Citigroup methodology computes style scores using seven risk factors; four factors are used for classifying value stocks and three to classify growth stocks. A stock's growth score is calculated by taking an average of the following three growth rates: 5-year earnings per share, 5-year sales per share and 5-year internal growth rates. Similarly, the value score is an average of four value factors: the book value to price, the cash flow to price, and the sales to price ratios, plus the dividend yield.

The S&P 500/Citigroup Pure Value Index and the S&P 500/Citigroup Pure Growth Index are each comprised of the 33% of the S&P 500 Index, measured by market capitalization, with the highest score for each of the respective styles. Within each of these Pure Style Indices, stocks are weighted according to the style score. Both style indices are rebalanced once each year, on the third Friday of December. On the other hand, the S&P 500/Citigroup Value Index and the S&P 500/Citigroup Growth Index are exhaustive indices, each comprised of approximately 50% of the S&P 500 Index, measured by market capitalization, with the highest scores for the respective style. In contrast to the Pure Style Indices, stocks in the Style Indices are weighted according to market capitalization. Further details regarding the construction of the style index series are available at the S&P website.

For this study, we initially collected monthly total return data for each of the following: the Standard & Poor's 500 Index, the S&P 500/Citigroup Pure Value Index and the S&P 500/Citigroup Pure Growth Index. Our sample covers the period July 1995 through May 2006, resulting in 131 observations for each index. Our initial results are detailed in the next section.

EMPIRICAL RESULTS

We report mean monthly returns for the overall period, July 1995 through May 2006, in Exhibit 1. During this period, the S&P 500 Index generated a mean monthly return of 0.88%. The S&P 500/Citigroup Pure Value Index and Pure Growth Index mean returns were 1.19% and 1.20%, respectively, so that the mean monthly value premium (mean Pure Value Index return minus mean Pure Growth Index return) was -0.01%. It appears that the value and growth stocks generated virtually identical

returns for the overall period, while each of these style series substantially outperformed the S&P 500. However volatility, as measured by standard deviation, was substantially higher for the growth index (7.09%) than for either the value index (4.70%) or the S&P 500 (4.36%).

Based on the results of earlier studies, and also our understanding of the performance of the overall U.S. stock market, we create two sub-periods. The first sub-period, July 1995 through December 1999, represents a period when the U.S. stock market generated relatively high returns; the second sub-period is a recent period when the U.S. stock market generated lower returns. These observations are confirmed in Exhibit 2, where we report mean monthly return for the S&P 500 index of 2.09% for the first sub-period versus only 0.04% during the second period. Our interest is in comparing the relative performance of the value and growth stocks during these two sub-periods that produced substantially different overall mean returns.

Mean monthly return for the Pure Value Index was 1.21% during the first sub-period and 1.18% for the second sub-period. While the period-to-period variation in returns for the Pure Value Index is minimal, the variation in returns was dramatic for the Pure Growth Index. For the first sub-period, the growth index generated mean monthly returns of 2.74%, whereas mean return for the growth index during the second sub-period was only 0.13%. For each sub-period, total risk (i.e., standard deviation) for the growth index is substantially greater than for the value index. Also, systematic risk (i.e., beta) for the growth index is substantially higher than that of the value index in each of the sub-periods.

The mean value premium is negative (-1.53%) in the first sub-period and positive (1.05%) for the second sub-period. Recall that mean monthly returns for the overall market (S&P 500) index were higher in the first

EXHIBIT 1

Monthly Returns (%) of S&P 500, S&P 500/Citigroup Pure Value & Pure Growth Indices July 1995 through May 2006

Index	Mean	Std. Deviation	N
S&P 500 Index	0.88	4.36	131
S&P 500/Citigroup Pure Value Index	1.19	4.70	131
S&P 500/Citigroup Pure Growth Index	1.20	7.09	131
Value Premium	-0.01	6.19	131

EXHIBIT 2

Monthly Returns (%) of S&P 500, S&P 500/Citigroup Pure Value & Pure Growth Indices By Two Time Periods

Index	Mean	Std. Deviation	Beta	N
Panel A: Sub-period 1 (July 1995 through December 1999)				
S&P 500 Index	2.09	4.23	1.00	54
Pure Value Index	1.21	4.03	0.72	54
Pure Growth Index	2.74	6.50	1.38	54
Value Premium	-1.53	5.20	N/A	54
Panel B: Sub-period 2 (January 2000 through May 2006)				
S&P 500 Index	0.04	4.28	1.00	77
Pure Value Index	1.18	5.15	0.85	77
Pure Growth Index	0.13	7.32	1.46	77
Value Premium	1.05	6.62	N/A	77

sub-period (2.09%) and substantially lower in the second sub-period (0.04%). The size of the value premium is apparently inversely related to returns for the overall market index. We next investigate this interesting relationship in greater detail.

In Exhibit 3, we report mean differences in monthly returns, from the first sub-period to the second, for each data series. Mean difference in return for each Pure Style Index is negative, as is the mean difference for the S&P 500 index, indicating that mean monthly returns for the second sub-period are less than those of the first sub-period for each of the three index series. As shown in the exhibit, the mean difference in monthly return for the Pure Growth Index is statistically significant, while the mean difference in return between the two sub-periods is not statistically significant for the Pure Value Index. Consequently, the mean monthly value premium was statistically significantly greater in the second sub-period than in the first. Conclusions regarding statistical significance derived from parametric T-tests and from

non-parametric Mann-Whitney U tests were virtually identical for each comparison.

The data in Exhibits 2 and 3 lead us to further investigate the relationship between the size of the value premium and monthly returns for the overall market index. In Exhibit 4, we report correlation coefficients between monthly returns for each Pure Style Index and the S&P 500 index returns. We calculate both parametric Pearson correlation coefficients and non-parametric Spearman rank correlation coefficients. In each sub-period, we observe that both the Pure Value Index and the Pure Growth Index returns are positively correlated with S&P 500 returns. However for each sub-period, the magnitude of the correlation coefficient between the S&P 500 index and the growth index is substantially greater than that between the S&P 500 and the value index. These results are clearly a consequence of the fact that mean monthly return for both the S&P 500 index and the growth index decreased substantially from the first sub-period to the second, while mean return for the value

EXHIBIT 3

Significance Tests for Inter-Period Differences in Mean Monthly Returns (%) of S&P 500, S&P 500/Citigroup Pure Value & Pure Growth Indices & Value Premium

Index	Mean Difference	T-Tests			Mann-Whitney U Tests	
		T-value	Significance	d.f.	Z-value	Significance
S&P 500 Index	-2.05	-2.72	0.007	129	-3.00	0.003
Pure Value Index	-0.03	-0.04	0.968	129	-0.21	0.837
Pure Growth Index	-2.61	-2.11	0.037	129	-2.20	0.028
Value Premium	2.58	2.39	0.018	129	-2.65	0.008

EXHIBIT 4

Correlations Between S&P 500/Citigroup Pure Value & Pure Growth Indices and Market Index By Two Time Periods

Index	Pearson Correlation Coefficients	Spearman Rank Correlation Coefficients	N
Panel A: Sub-Period 1 (July 1995 through December 1999)			
S&P 500 – Pure Value Index	0.758**	0.749**	54
S&P 500 – Pure Growth Index	0.899**	0.894**	54
S&P 500 – Value Premium	-0.536**	-0.537**	54
Panel B: Sub-Period 2 (January 2000 to May 2006)			
S&P 500 – Pure Value Index	0.710**	0.705**	77
S&P 500 – Pure Growth Index	0.854**	0.881**	77
S&P 500 – Value Premium	-0.392**	-0.411**	77

Note: ** Significant at the 0.01 level (2-tailed).

index decreased only slightly. As a result, we find a statistically significant negative correlation between returns for the S&P 500 index and the value premium in each of the two sub-periods.

We next analyze the inverse relationship between the value premium and the S&P 500 index in greater detail. We bifurcate each of the two sub-periods according to whether the S&P 500 increased (Up month) or decreased (Down month) during a given month. We then investigate the relationship between the value premium and the performance of the Pure Style Indices when the overall stock market experienced Up months and Down months. These results are reported in Exhibit 5.

Since returns for each style index are highly correlated with S&P 500 returns, we find, as expected, that mean monthly returns for each Pure Style Index are substantially higher (lower) during S&P 500 Up months (Down months) in each sub-period. Further, growth index returns are substantially higher (lower) than value index returns during Up months (Down months), which is consistent with our earlier findings that growth stocks have greater volatility than value stocks, both in terms of systematic risk and total risk. Therefore, the value premium is inversely related to S&P 500 index returns. In each sub-period the mean value premium for Down months is greater than the mean value premium for Up

EXHIBIT 5

Mean Returns (%) of S&P 500/Citigroup Pure Style Indices by Two Time Periods During S&P 500 Up Months and Down Months

Index	Up Months	N	Down Months	N
Panel A: Sub-Period 1 (July 1995 through December 1999)				
S&P 500 Index	4.05	40	-3.49	14
Pure Value Index	2.82	40	-3.37	14
Pure Growth Index	5.27	40	-4.48	14
Value Premium	-2.45	40	1.11	14
Panel B: Sub-Period 2 (January 2000 through May 2006)				
S&P 500 Index	2.98	43	-3.69	34
Pure Value Index	3.77	43	-2.09	34
Pure Growth Index	4.47	43	-5.36	34
Value Premium	-0.70	43	3.27	34

months. Additionally, the premium is positive for Down months and negative for Up months. The results of this analysis are consistent with our earlier findings that the value premium is lower (higher) when the overall stock market generates high (low) returns.

In Exhibit 6, we first present the mean differences in monthly returns for each index, as well as the mean difference in the value premium, between S&P 500 Up months and Down months, for each sub-period. We also report in Exhibit 6 the results of statistical significance tests for each of these mean differences.

The mean difference (Down month mean return minus Up month mean return) for both the Pure Value Index and the Pure Growth Index is negative and statistically significant for each sub-period, which is a consequence of the fact that both Pure Style Indices move in the same direction as the overall stock market. In both sub-periods, the magnitude of the difference is substantially greater for growth stocks than for value stocks, so that the value premium is positive and statistically significant in both sub-periods. Parametric (T-tests) and non-parametric (Mann-Whitney U tests) statistics produce virtually identical results. More specifically, our results indicate that the value strategy produces higher returns than the growth strategy during Down months, while the growth strategy is superior during Up months. Our data reveal that these conclusions apply regardless of whether the time period under consideration is generally a period of increases in the overall stock market (e.g., the first

sub-period) or a period of little or no increase in the market (e.g., the second sub-period). The dominant factor determining the size of the value premium appears to be the immediate direction of the market (i.e., Up months compared to Down months). These results are not unexpected. Recall that in Exhibit 2 we reported that the Pure Growth Index beta exceeds the Pure Value Index beta in both sub-periods of our study. When the market index rises, we expect the higher beta (growth) portfolio to increase more than the lower beta (value) portfolio. For Up months, the growth stock strategy should produce the higher return, or, equivalently, a negative value premium. Conversely, we expect that during periods when the market index declines, the lower beta (value) portfolio will decline less than the higher beta (growth) portfolio so that the value premium is positive.

In Exhibits 7 and 8 we summarize the results from Exhibits 5 and 6, respectively, for the entire period of our study. In Exhibit 7, we report that the mean value premium is negative (-1.54%) for the 83 Up months of our study, and positive (2.64%) for the 48 Down months. The mean difference in the value premium between Down months and Up months is 4.18%, a result that demonstrates both statistical significance, as shown in Exhibit 8, and substantial economic significance for equity investors concerned about understanding returns for value and growth strategies.

We believe our results can prove important to investors who seek to further their understanding of

EXHIBIT 6

Significance Tests for Monthly Returns (%) of S&P 500/Citigroup Pure Style Indices By Two Time Periods During S&P 500 Up Months and Down Months

Index	Mean Difference	T-Tests			Mann-Whitney U Tests	
		T-value	Significance	d.f.	Z-value	Significance
Panel A: Sub-Period 1 (July 1995 through December 1999)						
S&P 500 Index	-7.54	-9.23	0.000	52	-5.53	0.000
Pure Value Index	-6.19	-6.67	0.000	52	-4.92	0.000
Pure Growth Index	-9.75	-6.40	0.000	52	-5.03	0.000
Value Premium	3.56	2.30	0.026	52	-2.07	0.038
Panel B: Sub-Period 2 (January 2000 through May 2006)						
S&P 500 Index	-6.67	-10.73	0.000	75	-7.50	0.000
Pure Value Index	-5.86	-6.00	0.000	75	-5.41	0.000
Pure Growth Index	-9.83	-7.84	0.000	75	-6.77	0.000
Value Premium	3.97	2.72	0.008	75	-2.90	0.004

EXHIBIT 7

Mean Returns (%) of S&P 500/Citigroup Pure Style Indices During S&P 500 Up Months and Down Months: July 1995 through May 2006

Index	Up Months	N	Down Months	N
S&P 500 Index	3.49	83	-3.63	48
Pure Value Index	3.31	83	-2.47	48
Pure Growth Index	4.85	83	-5.11	48
Value Premium	-1.54	83	2.64	48

the relative performance of value stocks and growth stocks. We demonstrate that growth stock returns have comparatively greater volatility, both in terms of total risk and systematic risk, than do value stock returns. Growth stocks generate comparatively higher returns than do value stocks when the overall stock market performs well. The value premium is lower, and possibly negative, during periods when the stock market generates high positive returns. Further, both value stocks and growth stocks perform poorly during overall stock market downturns. However, since growth stock returns decline substantially more in magnitude than do value stock returns, the value premium is higher, and generally positive, during stock market downturns.

In the next three sections of our article we evaluate the robustness of our conclusions by analyzing the relationship between the value premium and performance of the overall market for several alternative scenarios. In the next section, we study the impact on our conclusions of the alternative approach to construction of style series that is employed in the S&P 500/Citigroup Style Indices. As noted earlier, these style series modify the approach of

the S&P 500/Citigroup Pure Style Indices in two ways: first, these are exhaustive data series in that each of the S&P 500/Citigroup Style Indices is comprised of approximately 50% of the market capitalization of the S&P 500 Index, and, second, stocks in the Style Indices are weighted according to market capitalization rather than style scores. Then, in the subsequent section, we analyze data over a substantially longer time period, making use of three decades of data available for the S&P/Barra style series. In the penultimate section of our article, we incorporate a broader definition of the overall market (i.e., the Dow Jones Wilshire 5000) and also extend our results to the S&P/Citigroup Pure Style Indices for the S&P Composite 1500 and its components. Throughout these analyses, our results remain remarkably robust.

EXHAUSTIVE STYLE SERIES: THE S&P 500/CITIGROUP STYLE INDICES

To this point in our analysis, we have studied the narrower S&P 500/Citigroup Pure Style Indices. However, some investors may prefer style index funds such as

EXHIBIT 8

Significance Tests for Monthly Returns (%) of S&P 500/Citigroup Pure Style Indices During S&P 500 Up Months and Down Months: July 1995 through May 2006

Index	Mean Difference	T-Tests			Mann-Whitney U Tests	
		T-value	Significance	d.f.	Z-value	Significance
S&P 500 Index	-7.12	-14.60	0.000	129	-9.52	0.000
Pure Value Index	-5.78	-8.39	0.000	129	-7.12	0.000
Pure Growth Index	-9.96	-10.53	0.000	129	-8.61	0.000
Value Premium	4.18	3.93	0.000	129	-3.89	0.000

those represented by the S&P 500/Citigroup Style Indices, which are exhaustive and cost-efficient and have broader coverage than the Pure Style Indices. Here, we reexamine our earlier conclusions in the context of these broader style series and we summarize our results in Exhibit 9. Panel A of Exhibit 9 presents correlations between overall market returns (as measured by the S&P 500 Index) and returns for each of the Pure Style Indices, as well as correlations between overall market returns and the value premium. Analogous data for the Style Indices appears in Panel B of Exhibit 9.

As we would expect, correlations between the style index returns and S&P 500 returns are both very high and statistically significant in Panel A and in Panel B. Further, the broader Style Indices in Panel B are more highly correlated with the S&P 500 than are the Pure Style Indices in Panel A. Additionally, the value premium is inversely and statistically significantly correlated with S&P 500 returns in both Panel A and Panel B. Most important in terms of the objectives of this article, this negative relationship between the value premium and the overall S&P 500 Index remains highly robust in Panel B.

S&P/BARRA GROWTH AND VALUE INDEXES

Next, we collected from the Barra website (www.barra.com) monthly return data for the S&P 500 Index, the S&P 500/Barra Value Index and the S&P 500/Barra Growth Index over the period January 1975 through November 2005, resulting in 371 observations for each

index. As noted previously, the S&P/Citigroup series replaced the S&P/Barra data series in December 2005. The S&P/Barra Value Index and the S&P/Barra Growth Index are exhaustive subsets of the S&P 500 Index, created by using the book-to-price ratio to differentiate between the two sub-indexes. The Value Index is comprised of those stocks with high book-to-price ratio and the Growth Index is comprised of stocks with low book-to-price ratios. Each sub-index contains approximately 50% of the total market capitalization of the S&P 500. The S&P 500/Barra Indexes are market capitalization-weighted indexes, as is the S&P 500 Index. In general, the methodology for construction of the S&P/Barra series is more closely related to the methodology of the S&P/Citigroup Style Indices than it is to the S&P/Citigroup Pure Style Indices.

Results for the analysis of this section are shown in Exhibit 10. Given the similarities between the S&P/Barra methodology and that of the S&P/Citigroup Style Indices, it is not surprising that the correlations between the overall market index and each of the style indices in Exhibit 10 are very similar to the corresponding correlations in Panel B of Exhibit 9; these correlations are all strongly positive and statistically significant. We find results consistent with our earlier findings. Also, in each of these exhibits, the magnitude of the correlation between the S&P 500 and the growth index is greater than that between the S&P 500 and the value index. Consequently, we again find in Exhibit 10 that the value premium is inversely correlated with the S&P 500 Index, and that the correlation is statistically significant.

EXHIBIT 9

Correlations Between S&P 500/Citigroup Indices and Market Index: July 1995 to May 2006

Index	Pearson Correlation Coefficient	Spearman Rank Correlation Coefficient	N
Panel A: Pure Style Indices			
S&P 500 – Pure Value Index	0.704**	0.692**	131
S&P 500 – Pure Growth Index	0.874**	0.887**	131
S&P 500 – Value Premium	-0.467**	-0.485**	131
Panel B: Style Indices			
S&P 500 – Value Index	0.932**	0.921**	131
S&P 500 – Growth Index	0.966**	0.967**	131
S&P 500 – Value Premium	-0.469**	-0.478**	131

Note: ** Significant at the 0.01 level (2-tailed).

EXHIBIT 10

Correlations Between S&P/Barra Value & Growth Indexes and Market Index: January 1975 to November 2005

Index	Pearson	Spearman Rank	N
	Correlation Coefficient	Correlation Coefficient	
S&P 500 – Barra Value Index	0.955**	0.947**	371
S&P 500 – Barra Growth Index	0.968**	0.966**	371
S&P 500 – Value Premium	-0.230**	-0.268**	371

Note: ** Significant at the 0.01 level (2-tailed).

S&P 1500 AND COMPONENT PURE STYLE INDICES

In this section, we extend our study in two directions. First, in Panel A of Exhibit 11 we repeat the analysis of Exhibit 9, Panel A, for the same time period, except that we use a broader definition of the overall market. We define overall market returns as returns for the Dow Jones Wilshire 5000 Total Market Index, a market-capitalization weighted index of all publicly traded U.S. equities. Comparing these two exhibits, we

again find notable similarities; all correlations are statistically significant, with the expected signs, and the magnitude of the coefficient for each of the respective correlations is very similar. In addition, the most significant results for this article, the correlations between the size of the value premium and the returns for the overall market, are of greater magnitude in Exhibit 11. We find that the analysis with the broader DJ Wilshire 5000 further supports our primary conclusions about the inverse relationship between the value premium and market returns.

EXHIBIT 11

Correlations Between S&P/Citigroup Pure Style Indices and Market Index: July 1995 to May 2006

Index	Pearson	Spearman Rank	N
	Correlation Coefficient	Correlation Coefficient	
Panel A: S&P 500 Index			
DJ Wilshire 5000 – Pure Value Index	0.685**	0.682**	131
DJ Wilshire 5000 – Pure Growth Index	0.921**	0.932**	131
DJ Wilshire 5000 – Value Premium	-0.534**	-0.522**	131
Panel B: S&P 1500 Index			
DJ Wilshire 5000 – Pure Value Index	0.707**	0.685**	131
DJ Wilshire 5000 – Pure Growth Index	0.901**	0.900**	131
DJ Wilshire 5000 – Value Premium	-0.587**	-0.567**	131
Panel C: S&P 400 Index			
DJ Wilshire 5000 – Pure Value Index	0.121	0.183*	131
DJ Wilshire 5000 – Pure Growth Index	0.900**	0.892**	131
DJ Wilshire 5000 – Value Premium	-0.744**	-0.718**	131
Panel D: S&P 600 Index			
DJ Wilshire 5000 – Pure Value Index	0.653**	0.629**	131
DJ Wilshire 5000 – Pure Growth Index	0.783**	0.777**	131
DJ Wilshire 5000 – Value Premium	-0.456**	-0.447**	131

Note: ** Significant at the 0.01 level (2-tailed). * Significant at the 0.05 level (2-tailed).

Next we use the DJ Wilshire 5000 in order to extend our analysis to the S&P/Citigroup Pure Style Indices for the S&P Composite 1500, the S&P MidCap 400 and the S&P SmallCap 600. These analyses are summarized in Exhibit 11, Panels B, C and D, respectively.

We continue to find very interesting results strongly supportive of our earlier observations. Specifically, the S&P 1500/Citigroup Pure Style Indices, as well the Pure Style Indices for the S&P MidCap 400 and the S&P SmallCap 600, generate results similar to those in earlier sections of our article. We find that the returns for the Pure Style Indices are (with one exception) strongly positively and significantly correlated with returns for the overall stock market (i.e., the DJ Wilshire 5000). Since the magnitude of the correlation coefficients between each of the respective growth indexes and the overall market index is greater than those for the value indexes in each data series, the value premium is negatively, and statistically significantly, correlated with the returns for the DJ Wilshire 5000.

CONCLUSION

We have reexamined the comparative performance of value and growth stock indexes during the recent period July 1995 through May 2006. In the first sub-period of our study, July 1995 to December 1999, when the overall stock market generated relatively high returns, growth stocks outperformed value stocks, resulting in a negative value premium. During the second sub-period, January 2000 to May 2006, when overall market returns were lower, value stocks outperformed growth stocks so that the value premium was positive.

We reveal an interesting and predictable relationship between the value premium and returns for the overall stock market index. We document that the value premium is inversely related to returns for the S&P 500 index. We explain this relationship by documenting that growth stocks had greater volatility than did value stocks during each sub-period of our study. Therefore, when the overall stock market generates higher returns, growth stocks (i.e., stocks with higher betas) generate substantially higher returns than do value stocks (i.e., stocks with lower betas), resulting in a negative value premium. Conversely, when the overall market performs poorly, growth stocks (high beta stocks) generate substantially lower returns than value stocks (lower beta stocks), thereby producing positive value premiums.

In recent years a large number of exchange traded funds (ETFs) that track value and growth indexes have begun to trade in U.S. financial markets. For example, State Street Global Advisors sponsors value and growth ETFs based on Dow Jones Wilshire indexes, and Vanguard's value and growth VIPER ETFs track Morgan Stanley Capital International (MSCI) indexes. Barclays Global Investors sponsors ETFs, known as iShares, based on several different data series, including the S&P/Citigroup Style Indices, while Rydex Investments sponsors an ETF for each of the S&P 500/Citigroup Pure Style Indices. Rydex also sponsors ETFs that replicate each of the S&P MidCap 400 Pure Style Indices and each of the S&P SmallCap 600 Pure Style Indices. Trading in the Rydex S&P 500 Pure Value ETF (ticker symbol: RPV) and the Rydex S&P 500 Pure Growth ETF (ticker: RPG) commenced March 1, 2006 on the American Stock Exchange. Given the S&P/Citigroup Pure Style methodology, we would expect both annual expense ratios and portfolio turnover ratios for these Rydex ETFs to be somewhat greater than the respective ratios for broader based index funds or ETFs, such as S&P 500 or DJ Wilshire 5000 index funds.

Portfolio turnover ratios of 50% to 100% are common for managed value or growth funds. Growth fund turnover is often well in excess of 100%, and average portfolio turnover for mid-cap and small-cap growth funds is greater than 100% (Yahoo Finance website). In contrast, turnover for broad-based index funds is typically less than 10%. According to Standard & Poor's, turnover ratios for the S&P 500, the MidCap 400 and the SmallCap 600 were 3%, 11% and 12%, respectively, over the three-year period ending in 2004 (S&P website). Turnover ratios for the S&P 500/Citigroup Pure Value Index and the S&P 500/Citigroup Pure Growth Index were 22% and 16%, respectively, for the same three-year period, while turnover for the MidCap 400 and SmallCap 600 Pure Style Indices ranged from 15% to 24%.

The existence of the Pure Style ETFs clearly demonstrates that investment strategies based on performance of the S&P/Citigroup Pure Style Indices are investable for individuals as well as institutions. In addition, the numerous ETFs based on other value and growth indexes greatly expand investors' alternatives with regard to value and growth index strategies. Our results suggest a number of important conclusions for investors' general approach to the style issue as well as for the specifics of investments in the S&P/Citigroup Pure Style Indices.

We believe that our results can guide investors seeking improved understanding of the comparative performance of the two investment strategies. The significant inverse relationship between the value premium and the overall market index documented in our research strongly suggests an obvious market-timing strategy based on the investor's expectation regarding the direction of the broad market over some specified investment horizon. Based on our results, for a short-term horizon, if a market-timer speculates that the overall market will perform well (poorly), then funds should be allocated more heavily towards growth (value) stocks.

Investors adopting a more passive, longer-term investment strategy might be inclined to view our results from a somewhat different perspective. We find that over the longer-term of our study, the Pure Value Index and the Pure Growth Index had virtually identical monthly returns (Exhibit 1). This observation suggests that, consistent with the concept of market efficiency, a long-term investor who adopts a passive investment strategy might reasonably choose to adopt a balanced approach, including in one's portfolio both value and growth index funds.

ENDNOTE

We would like to thank anonymous reviewers for helpful comments and suggestions.

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SMALL CAP AND VALUE INVESTING OFFER BOTH HIGH RETURNS AND A HEDGE 44

BALA ARSHANAPALLI AND WILLIAM B. NELSON

Recent evidence shows that low book-to-market portfolios (value) tend to perform better than high book-to-market portfolios (growth). This article investigates the performance of portfolios sorted by size and book-to-market during the periods when the stock market declined and when the economy is in recession. The results reveal that value investment did not do as well as growth investment in the bull markets but surpassed the growth portfolios during bear markets. Value investment beat growth investment in non-recessionary and recessionary periods and thus acted as a hedge during recessions.

COMPARATIVE PERFORMANCE OF VALUE AND GROWTH STOCK INDEXES 51

JAYEN B. PATEL AND R. BRUCE SWENSEN

The authors demonstrate that a growth stock index generated higher returns than a value stock index when the overall stock market performed well. Alternately, the value stock index generated higher returns than the growth stock index when the overall stock market performed poorly. This article provides compelling evidence that the value premium is inversely related to the performance of the overall stock market. The authors believe that this simple relationship will help investors better understand the comparative performance of the two investment styles.

RETHINKING PRINCIPAL PROTECTION 62

DAVID KREIN

A "principal-protected" note is a common design for structured product offerings. It is often marketed as a conservative and prudent approach to buffer against a complicated or risky market exposure. In practice, a "principal-protected" note is made up of two underlying components: a zero-coupon bond and a call option. Thorough analysis of these notes suggests that investors might benefit significantly from acquiring and managing the two underlying components

independently. This unbundled approach likely improves the market and credit risk profile of the strategy, as well as enhances the liquidity, transparency, fee, and tax aspects. Finally, it readily allows for the consideration of alternative tools to best address a particular investor's objective.

A QUANTITATIVE APPROACH TO TACTICAL ASSET ALLOCATION 69

MEBANE T. FABER

This article presents a simple quantitative method that improves risk-adjusted returns across various asset classes. A moving-average timing model is tested in-sample on the United States equity market and out-of-sample on more than twenty additional domestic and foreign markets. The approach is then examined since 1972 in an allocation framework utilizing a combination of diverse and publicly traded asset class indices, including the Standard and Poor's 500 Index (S&P 500), Morgan Stanley Capital International Developed Markets Index (MSCI EAFE), Goldman Sachs Commodity Index (GSCI), National Association of Real Estate Investment Trusts Index (NAREIT), and United States Government 10-Year Treasury Bonds. The empirical results are equity-like returns with bond-like volatility and drawdown, and over thirty consecutive years of positive performance.

INVESTING IN ART: *A Cautionary Tale* 80

JAMES E. PESANDO AND PAULINE M. SHUM

In recent years, there has been increased interest in art as an investment class and in the possibility of securitizing art portfolios. Several entrepreneurs have sought to market art investment funds, targeted in the main to wealthy clients. The authors use an early study of the investment potential of one segment of the art market, the market for modern prints, as a cautionary tale. Passive investment in a diversified portfolio of art is not likely to provide high real returns, except during a transition period when the segment of the art market is moving from the periphery to the mainstream. The authors show that, in the period 1979 to 2003, the real return on a diversified portfolio of modern prints averaged only 1.22% per year, less than the real return on Treasury Bills. This is in dramatic contrast to the estimated real return of 21% per year in the preceding 25 years.