UNIVERSITY OF PIRAEUS

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M.Sc. IN FINANCIAL ANALYSIS

DISSERTATION:

PERFORMANCE OF VALUE AND GROWTH PORTFOLIOS

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TABLE OF CONTENTS

1. Introduction	**3**
a. Value and Growth	**3**
b. Adding Value through the style allocation.	**4**
2. Literature Review	**7**
3. Synopsis	**54**
Bibliography	**58**

1. INTRODUCTION

a. Value and Growth

Ninety –seven percent of a portfolio's return can be explained by style exposure. This notion, developed by the Nobel laureate William F. Sharpe (1992), is causing a complete reexamination and rethinking of how portfolios are managed. Because allocation between asset classes (stocks, bonds, cash, etc.) is widely accepted as the key determinant of performance for an entire fund, the concept of equity style allocation as the key driver of equity performance is intuitively appealing.

Equity style investment has been around for years. The most prominent equity investment styles are the "value" investment style and the "growth" investment style. These two investment styles are the result of old investment philosophies. The value investment-style philosophy is based on the assumption that some stocks are under-priced relative to the value of their current assets or current cash flows. These under-priced stocks tend to be the stocks that are oversold by investors due to negative news or less-glamorous stocks that are neglected by general investors, or because they bear a risk factor. The growth investment-style philosophy is based on the optimistic expectation of the future cash flows of fast-growing companies. Such companies tend to be over-priced if measured against the value of their current assets or current cash flows.

The choice of a portfolio style is considered an important step in the investment decision-making process. Investment managers have discussed and debated the notion of growth-stock investing for more than 50 years. In 1939, T. Row Price, argued in Barron's that "most corporations pass through a life cycle which, like the human life cycle, has three important phases – growth, maturity and decadence." Understanding this life cycle was the key to identifying stocks that could grow at sustainable high rates. Mr. Price defined a growth stock as a share in a business enterprise "which demonstrated favorable underlying long-term growth in earnings and which gives indications of continuing secular growth in the future". Advocates of this approach, such as David L. Babson and T. Rowe Price, claim that investing in well –managed companies in industries experiencing above-average growth leads to superior portfolio performance (Babson 1951).

Growth stocks are expected to grow their earnings at greater-than –average growth – rates. Very often, these glamorous-growth stocks experience spectacular earnings per share growth and many securities analysts extrapolate this strong historical

growth well into the future. Investors often reward companies with these high growth-expectations by bidding up the price of those stocks giving them high valuation-multiples (P/E, price/book). Companies have an incentive to encourage a higher rather than a lower valuation-multiple because a high multiple reduces a company's cost of equity capital thereby improving its competitive position. Growth stocks are characterized as having higher market prices in relation to book value per share (P/B) and higher recent growth rates in earnings per share (EPS) than value stocks.

The value style was advocated by Benjamin Graham in the 1930s (Graham and Dodd, 1934) and subsequently by Graham's understudy, Warren Buffet. An early advocate for the profitability of the low price/ earnings ratio approach was S. Francis Nicholson (1960). This notion seems to have evolved from the idea that some stocks are priced low relative to earnings or relative to book value. Value stock characteristically have relatively low market prices in relation to earnings per share (EPS), to cash flow per share, to book value per share, or to dividends per share, and may be less popular stocks that have recently experienced low or negative growth rates in corporate earnings.

Investment managers have also recognized the size segmentation within the equity market. If we were to examine the feasible region of investments, the size and style factor would lead to a style –by –size matrix, as shown below:

	Growth	**Value**
Large - cap		
Small - cap		

This grid implies that four distinct size and style relationships exist – large..cap growth, large..cap value, small..cap growth, and small..cap value.

b. Adding Value through the style allocation.

In First Madison's research piece (1995)[1], "The Importance of Equity Style Allocation", the opportunity to add value through allocation was examined. This two-part study analyzed potential returns from asset class allocation and equity style

[1] First Madison Advisors. "The Importance of Style Allocation", 1/1995, see "Equity Style Management" Robert A. Klein and Jess Lederman.

allocation over the 15-year period 1980 through 1994. The opportunity to add value through allocation was assessed by examining the returns generated from allocating assets between four asset classes (long bond, intermediate bond, S&P 500, and cash) as well as the returns generated from allocating assets between four equity styles (large-cap value, large-cap growth, small-cap value, and small-cap growth).

The study found that over the 15-year period, the return of a normal 60% stocks, 35% bonds, and 5% cash portfolio was 13.2%. However, if one could perfectly shift to the best asset class each quarter, the annualized rate or return exploded to 31.93%. The opportunity to add value through asset class allocation was, therefore, the difference of 18.73%. Obviously, not all these returns can be achieved through asset class allocation, but one can see that asset class allocation is important.

The study went on to hypothesize that unless a great deal of difference exists among the returns of various equity styles, no attempt should be made to shift among them. The annualized return of the Wilshire 5000, an all equity proxy, was 13.98% over the 15-year time frame. Perfectly timed shifting among the four equity styles caused annual returns to mushroom to 29.67%. The difference, 15.69%, represents the opportunity to add value through equity style allocation within an equity portfolio. Again, the returns from either perfect asset class allocation or perfect equity style allocation presented above are unattainable best-case scenarios. However, one can see that the magnitude of increased returns from equity style allocation rivals that of asset class allocation in relative importance and opportunity.

According to Bruce D. Westervelt and Thomas J Schwab (1995)[2], the key point of what equity style allocation is all about is maximizing return while minimizing risk. The risk of an equity-style –driven investment process is often equal to that of the market but the process is still able to generate excess returns. What generally occurs is that the portfolio is at a lower risk (beta) level than the market half of the time while at a higher risk level the rest of the time. Over time, the two offset each other giving market – like risk. However, in the short run the risk of being different from the market must be accepted to achieve excess return.

Burton G Malkiel (1993)[1] has stated in his research "there appeared to be a considerable degree of predictability of stock returns on the basis of certain fundamental ratios and variables. Stock returns appeared to be predictable on the basis of such variables as initial dividend yields, market capitalization (size), price /

[1] See "Basic Issues and Key Elements for Equity Style Management", "Equity Style Management" Robert A. Klein and Jess Lederman.

earnings ratios, and price / book value ratios. Of course, return predictability need not imply inefficiency of equity markets. Time-Series tests of return predictability may reflect rational variation through tie in expected returns….The apparent robustness of certain predictable patterns has led to a view that our 1970s belief in the simplistic efficient-markets constant-returns model was unwarranted".

The work of French and Fama (1992), "The Cross-Section of Expected Stock Returns", contributed to this new way of thinking. The research found that size and book market value accounted for differences in return for segments of the market. This work and the research of others have reached the same conclusion. Specifically, segments of the market act differently over time and pattern predictability exists.

2. LITERATURE REVIEW

William F. Sharpe (1992)

The author considered 12 asset class (style) portfolios. His idea was to regress fund returns on indexes representing a range of asset classes. The regression coefficient on each index would then measure the implicit allocation to that "style". Because funds are barred from short positions, the regression coefficients are constrained to be either zero or positive and to sum to 100%, so as to represent a complete asset allocation. The R-square of the regression would then measure the percentage of return variability attributed to the effects of security selection.

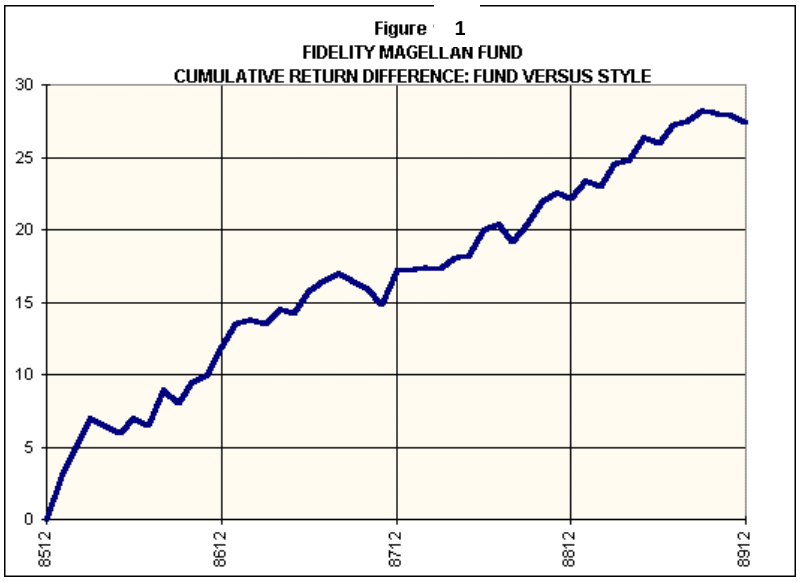
Table 1. shows the study of the author of the monthly returns on Fidelity's Magellan Fund over the period January 1985 through December 1989. While there are 12 asset classes, each one represented by a stock index, the regression coefficients are positive for only 4 of them. The conclusion is that the fund returns are well explained by only four style portfolios. Moreover, these three style portfolios alone explain 97.3% of returns.

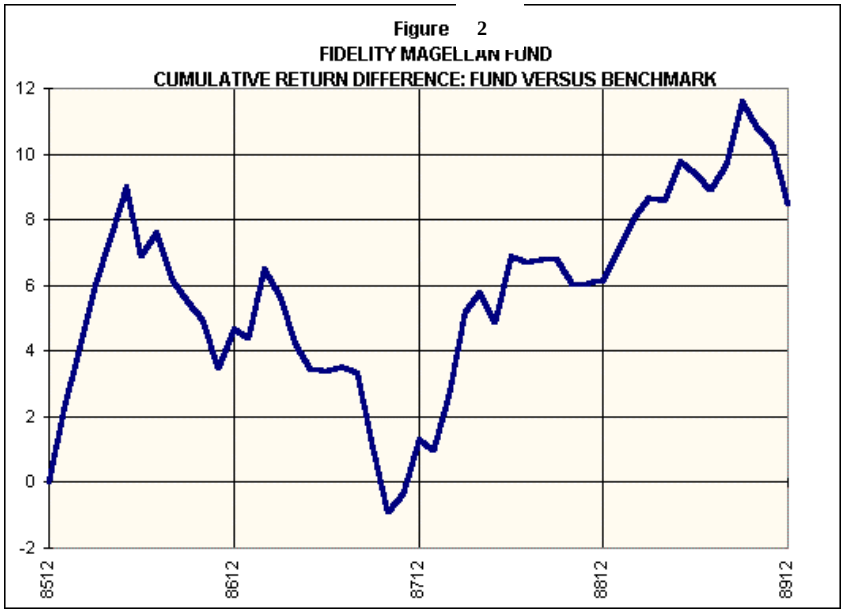
Table 1. **Sharpe's Style Portfolios for the Magellan Fund**

	Regression Coefficient*
Bills	*0*
Intermediate bonds	*0*
Long-term bonds	*0*
Corporate bonds	*0*
Mortgages	*0*
Value stocks	*0*
Growth stocks	*47*
Medium-cap stocks	*31*
Small stocks	*18*
Foreign stocks	*0*
European stocks	*4*
Japanese stocks	*0*
Total	*100.00*
R-squared	*97.3*

**Regressions are constrained to have nonnegative coefficients and to have coefficients that sum to 100%.*

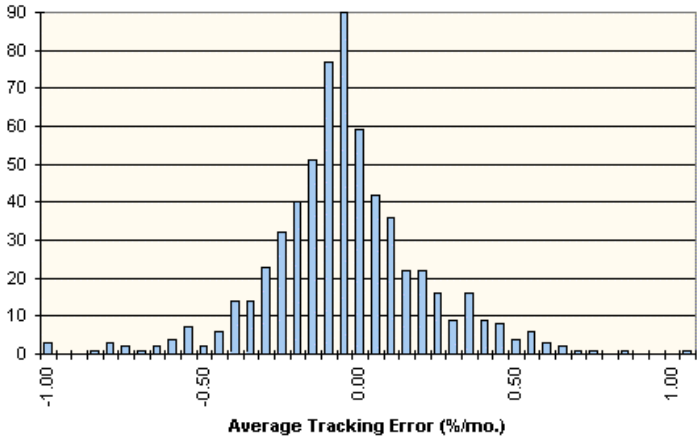
The proportion of return variability not explained by asset allocation can be attributed to security selection within asset classes. For Magellan, this was 100-97.3=2.7%. To evaluate the average contribution of stock selection to fund performance the residuals form the regression are tracked and displayed in Figure 1. The Figure plots the cumulative effect of these residuals; the steady upward trend confirms Magellan's success at stock selection in this period. The plot in Figure 1 is far smoother than the plot in Figure 2, which shows Magellan's performance compared to a standard benchmark, the S&P 500. This reflects the fact that the regression-weighted index portfolio tracks Magellan's overall style much better than the S&P 500. The performance spread is much noisier using the S&P as the benchmark.





Of course, Magellan's consistently positive residual returns (reflected in the steadily increasing plot of cumulative return difference) is hardly common. Figure 3 shows the frequency distribution of average residuals across 636 mutual funds. The distribution has the familiar bell shape with a slightly negative mean of –0.74% per month.

Figure 3
AVERAGE TRACKING ERROR
636 MUTUAL FUNDS, 1985-1989



Eugene F. Fama and Kenneth R. French (1992)

The authors, show that the relation between β and average return is weak in the last half century (1941-1990) of returns on NYSE stocks. Their test, do not support the central prediction of the Sharpe-Lintner-Black model, that average stock returns are positively relate to market β.

Variables like size, E/P, leverage, and book-to-market equity, as reported from previous studies, are all scaled versions of a firm's stock price. They can be regarded as different ways for extracting information from stock prices about the cross-section of expected stock returns (Ball (1978), Keim (1988)). Since all these variables are scaled versions of price, it is reasonable to expect that some of them are redundant for explaining average returns. Their main result is that for the 1963-1990 period, size and book-to-market equity capture the cross-sectional variation in average stock returns associated with size, E/P, book-to market equity, and leverage.

They conclude that two easily measured variables, size and book-to-market equity, seem to describe the cross-section of average stock returns. Prescriptions for using this evidence depend on (a) whether it will persist, and (b) whether it results from rational or irrational asset-pricing.

Marc R. Reinganum (1992)

The author, in his analysis, tries to investigate whether the relative performance between small-and large-cap stocks displays cyclical behavior. What he seeks is not whether small stocks or large stocks exhibit cyclical returns. Rather, the issue is whether the differential return between small- and large-cap stocks reveals cyclical behavior. Stated differently, does the size effect follow a pattern of predictable reversals?

He concludes that the difference in performance between the small-cap and the largest-cap stocks (i.e. the size effect) can be predicted in part. On average, small-cap stocks outperform the largest-cap ones, and this is true for almost any definition of a small-cap portfolio. This performance advantage, however, is volatile, and there are periods during which large-cap stocks earn higher returns than the small-cap stocks.

The evidence suggest that relative performance of small-versus large –cap stocks can be predicted at longer-run investment horizons, such as five years. The size effect exhibits a tendency to reverse itself. That is, periods when the size effect is negative tend to be followed by periods when the size effect is positive. Stated differently, over longer investment horizons, the size effect is negatively auto correlated.

The strength of these reversals is statistically and economically important. For example, the very smallest firms always outperform the very largest ones following a five-year period in which small-firm returns lag behind large-firm returns. Te empirical evidence reveals the size effect exhibits a strong tendency to reverse itself in fine-year intervals.

Fama, Eugene F., and Kenneth R. French, (1993)

The authors provide several tests that suggest that a firm's book-to-market ratio and size are proxies for the firm's loading on priced risk factors. First, they show that the prices of high book-to-market and small size stocks tend to move up and down together in a way that is suggestive of a common risk factor. Secondly, they find that the loadings on zero cost factor portfolios formed based on size (a small capitalization portfolio minus large capitalization portfolio they call SMB) and book-to-market ratios (a high book-to-market portfolio minus a low book-to-market portfolio

they call HML) along with a value-weighted market portfolio (Mkt) explain the excess returns of a full set of book-to-market and size-sorted portfolios.

Lakonishok, josef, Andrei Shleifer, and Robert W. Vishny, (1994)

The authors provide evidence that value strategies yield higher returns because these strategies exploit the sub optimal behavior of the typical investor and not because these strategies are fundamentally riskier.

The results in this article establish (in varying degrees of detail) three propositions. First, a variety of investment strategies that involve buying out-of-favor (value) stocks have outperformed glamour strategies over the April 1968 to April 1990 period. Second, a likely reason that these value strategies have worked so well relative to the glamour strategies is the fact that the actual future growth rates of earnings, cash flow, etc. of glamour stocks relative to value stocks turned out to be much lower than they were in the past, or as the multiples on those stocks indicate the market expected them to be. That is, market participants appear to have consistently overestimated future growth rates of glamour stocks relative to value stocks. Third, using conventional approaches to fundamental risk, value strategies appear to be no riskier than glamour strategies. Reward for bearing fundamental risk does not seem to explain higher average returns on value stocks than on glamour stocks.

While one can never reject the “metaphysical” version of the risk story, in which securities that earn higher returns must by definition be fundamentally riskier, the weight of evidence suggests a more straightforward model. In this model, out-of-favor (or value) stocks have been under priced relative to their risk and return characteristics, and investing in them has indeed earned abnormal returns.

This conclusion raises the obvious question: how can the 10 to 11 percent per year in extra returns on value stocks over glamour stocks have persisted for so long? One possible explanation is that investors simply did not know about them. This explanation has some plausibility in that quantitative portfolio selection and evaluation are relatively recent activities. Most investors might not have been able, until recently, to perform the analysis done in this article. Of course, advocacy of value strategies is decades old, going back at least to Graham and Dodd (1934). But such advocacy is usually not accompanied by defensible statistical work and hence might not be entirely persuasive, especially since many other strategies are advocated as well.

According to authors another possible explanation is that they have engaged in data snooping (Lo and MacKinlay (1990)) and have merely identified an ex post pattern in data. On the other hand, they think there is good reason to believe that the cross-sectional return differences reported here reflect an important economic regularity rather than sampling error. First, similar findings on the superior returns of value strategies have been obtained for several different time series. Davis (1994) finds similar results on a sub sample of large U.S. firms over the period 1940 to 1963. Chan, Hamao and Lakonishok (1991) find similar results for Japan. Capaul, Rowley, and Sharpe (1993) find similar results for France, Germany, Switzerland, and the United Kingdom, as well as for the United States and Japan.

Second, they have documented more than just a cross-sectional pattern of returns. The evidence suggests a systematic pattern of expectation errors on the part of investors that is capable of explaining the differential stock returns across value and glamour stocks. Investor expectations of future growth appear to have been excessively tied to past growth despite the fact that future growth rates are highly mean reverting. In particular, investors expected glamour firms to continue growing faster than value firms, but they were systematically disappointed. La Porta (1993) shows that a similar pattern of expectation errors and returns on value strategies obtains when growth expectations are measured by analysts' 5-year earnings growth forecasts rather than by financial ratios such as E/P or C/P. The evidence on expectation errors supports the view that the cross-sectional differences in returns reflect a genuine economic phenomenon.

They conjecture that the results in this article can best be explained by the preference of both individual and institutional investors for glamour strategies and by their avoidance of value strategies. Below they suggest some reasons for this preference that might potentially explain the observed returns anomaly.

Individual investors might focus on glamour strategies for a variety of reasons. First, they may make judgment errors and extrapolate past growth rates of glamour stocks, such as Walmart or Microsoft, even when such growth rates are highly unlikely to persist in the future. Putting excessive weight on recent past history, as opposed to a rational prior, is a common judgment error in psychological experiments and not just in the stock market. Alternatively, individuals might just equate well-run firms with good investments, regardless of price. After all, how can you lose money on Microsoft or Walmart? Indeed, brokers typically recommend "good" companies with "steady" earnings and dividend growth.

Presumably, institutional investors should be somewhat more free from judgment biases and excitement about "good companies" than individuals, and so should flock to value strategies. But institutional investors may have reasons of their own for gravitating toward glamour stocks. Lakonishok, Shleife, and Vishny (1992b) focus on the agency context of institutional money management. Institutions might prefer glamour stocks because they appear to be "prudent" investments, and hence are easy to justify to sponsors. Glamour stocks have done well in the past and are unlikely to become financially distressed in the near future, as opposed to value stocks, which have previously done poorly and are more likely to run into financial problems. Many institutions actually screen out stocks of financially distressed firms, many of which are value stocks, from the universe of stocks they pick. Indeed, sponsors may mistakenly believe glamour stocks to be safer than value stocks, even though, as we have seen, a portfolio of value stocks is no more risky. The strategy of investing in glamour stocks, while appearing "prudent" , is not prudent at all in that it earns a lower expected return and is not fundamentally less risky. Nonetheless, the career concerns of money managers and employees of their institutional clients may cause money managers to tilt towards "glamour" stocks.

Another important factor is that most investors have shorter time horizons than required for value strategies to consistently pay off (De Long et al. (1990) and Shleifer and Vishny (1990)). Many individuals look for stocks that will earn them high abnormal returns within a few months, rather than 4 percent per year over the next 5 years. Institutional money managers often have even shorter time horizons. They often cannot afford to under perform the index of their peers for any nontrivial period of time, for if they do, their sponsors will withdraw the funds. A value strategy that takes 3 to 5 years to pay off but may under perform the market in the meantime (i.e., have a large tracking error) might simply be too risky for money managers from the viewpoint of career concerns, especially if the strategy itself is more difficult to justify to sponsors. If a money manager fears getting fired before a value strategy pays off, he will avoid using such a strategy. Importantly, while tracking error can explain why a money manager would not want too strong tilt toward either value or growth, it does not explain why he would not tilt slightly toward value given its apparently superior risk / return profile. Hence, these horizon and tracking error issues can explain why money managers do not more aggressively "arbitrage" the differences in returns across value and glamour stocks, but they cannot explain why such differences are there in the first place. In the authors' view, such return differences are ultimately explained by the tendency of investors to make judgmental errors and perhaps also

by a tendency for institutional investors to actively tilt toward glamour to make their live easier.

James L. Davis (1994)

Using a database that is free of survivorship bias, this article finds that book-to-market equity, earnings yield, and cash flow yield have significant explanatory power with respect to the cross-section of realized stock returns during the period from July 1940 through June 1963. There is a strong January seasonal in the explanatory power of these variables, even though small stocks are, by construction, excluded from the sample.

Eugene F. Fama and Kenneth R. French (1995)

The authors study whether the behavior of stock prices, in relation to size and book-to-market –equity (BE/ME), reflects the behavior of earnings. Consistent with rational pricing, high BE/ME signals persistent poor earnings and low BE/ME signals strong earnings. Moreover, stock prices forecast the reversion of earnings growth observed after firms are ranked on size and BE/ME. Finally, there are market, size, and BE/ME factors in earnings like those in returns. The market and size factors in earnings help explain those in returns, but they find no link between BE/ME factors in earnings and returns.

Sorensen, Eric, and Craig Lazzara, (1995)

The authors in their study summarize some of the history of growth – and value-equity management, and describe efforts to classify stocks in terms of their growth and value characteristics. They make a classification to develop indices of growth and value, and demonstrate how investors can rotate between these indices in order to add value to a static style mix.

They show that rising industrial production generally signals a period that value outperforms growth, which means that among other things, industrial production can play an important role in building an ex ante model of the relative performance of growth and value styles. The way that industrial production affect style selection is that, if the economy is expanding rapidly, investors have no need to pay growth-stock multiples in order to achieve acceptable levels of earnings growth. During economic

stagnation of contraction, however, the higher sustainable earnings-growth potential of growth stocks makes them especially attractive investments. It is not surprising, therefore, to observe negative correlations between industrial production and the relative performance of growth stocks; when growth is relatively rare, it is more expensive than when it is common.

Interest rates similarly have a plausible economic link to the Growth / Value relative. Since a growth stock's valuation is highly dependent on the discounted value of distant, rather than near-term, dividends, interest-rate changes should affect growth stocks more than value stocks, according to authors. It is not surprising therefore, to find an inverse linkage between changes in long-term interest rates and changes in the Growth / Value relative. They find that leading correlation is zero, while there is negative contemporaneous correlation between changes in long-term interest rates and changes in the Growth / Value relative. Interest rate changes this month tell us nothing about growth / value changes next month. This means that, on their own, long –term interest –rate changes are unlikely to be helpful in an ex ante forecasting model. On the other hand, a manager who can forecast interest rates could gain additional leverage from that ability by rotating between growth and value styles.

Stephen C. Fan (1995)

The author shows that skillful equity style timing can be quite profitable. He introduces three hypotheses for equity style timing: The economic-cycle hypothesis, the stock –valuation hypothesis and the mean – reversion hypothesis. The economic cycle hypothesis is based upon the assumption that the style trend reflects the economic cycles. The stock valuation hypothesis is based upon the assumption that the style trend reflects the fundamental value of individual stocks in each style pool. The mean –reversion hypothesis is based upon the assumption that the style trend reflects the mean reversion of the overvalued and the undervalued stocks.

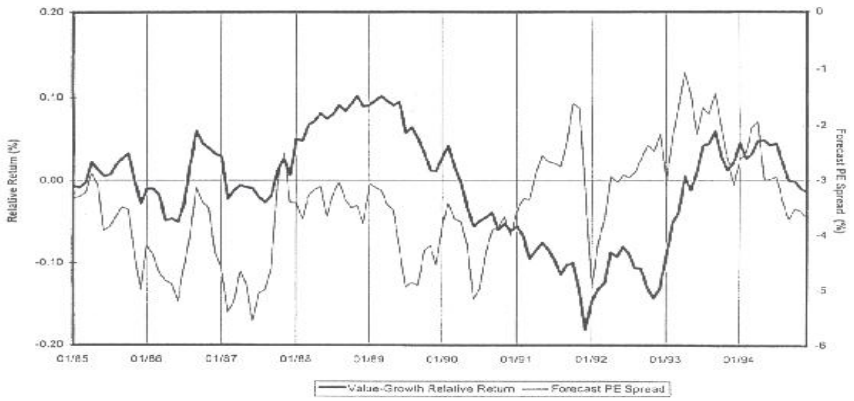
Four successful equity-style timing models were subsequently derived from these three hypotheses; namely, the forecast real GDP model, the earning-revision spread model, the forecast P/E spread model, and the residual- risk spread model. This study shows that any one of these four models can produce a profitable investment strategy. It also demonstrates that a properly structured multifactor style timing-model can enhance the effectiveness of the single-factor models. There are many ways to implement a multifactor styling timing-model. First of all, the multifactor model can be intuitively put together based on the GARCH concept. The main spirit

of the GARCH approach is to capture the major information-shocks from the market events. For instance, if there is a drastic change in the real GDP growth forecast, the forecast real GDP model should play the central role in the style-trend forecast. These style –timing models can be tailored into a variety of investment strategies.

One intuitive explanation of the equity style trends is that they result from different economic-sector composition. In general, the value universe is overweighed in the more matured economic sectors, while on the other hand, the growth-style universe is overweighed in the less matured or still growing economic sectors. Observing the characteristics of economic-sector concentration, one would expect that the style trend is related to economic cycles. In general, the value-style should do well during strong economic cycles because the matured economic sectors tend to expand and shrink with the general economy. On the other hand, the growth-style should do better during weaker economic cycles because only the growing companies can defy the force of a shrinking economy. This is where the real GDP forecast model is based, on the economic-cycle hypothesis.

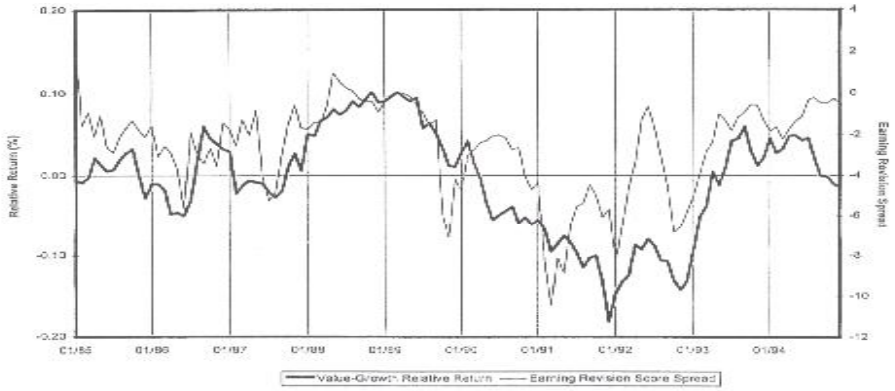
The second model, the forecast P/E spread model, is based on the mean-reversion hypothesis. Under this hypothesis, the trend of the narrowing forecast P/E ratio between the value index and the growth index should favor the value-style investment. In general, the growth index has a higher P/E ratio than the value index. This reflects the higher growth-potential of stocks in the growth index. This model assumes that the P/E spread between the growth index and the value index maintains an equilibrium level in the long run. Hence, when the forecast P/E narrows, the value index should do well. Figure 1 shows the relationship between the forecast P/E spread (the forecast P/E is calculated based on the IBES year-one earnings forecast versus the current stock-price) and the relative cumulative return of S&P 500 Value Index against the S&P 500 Growth Index.

Figure 1. **Value – Growth Relative Return versus Forecast P/E Spread**



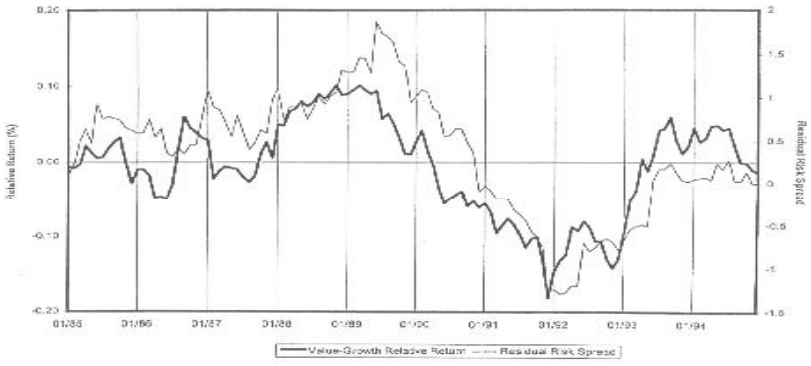
The third model, the earning-revision spread model is based on the stock-valuation hypothesis. Under this hypothesis, when the earning-revision score of the value-style index is higher than that of the growth index, the value index should outperform the growth index and vice versa. The earning-revision model used in this study is the weighted – average five-month earning forecast changes. Figure 2 shows the close relationship between the earning-revision model score-spread and the relative cumulative return between S&P Value Index relative to the S&P 500 Growth Index.

Figure 2. **Value-Growth Relative Return versus Earnings-Revision Score Spread**



The fourth model, the residual–risk spread model, is also based on the mean–reversion method. When a stock's residual risk increases, it indicates that the stock is either falling out of market fad or is being neglected by investors. Given the mean –reversion nature of the style trend, one would expect that the bottom-up specific-risk spread between the style indices would shed some light on the style trend. Under this hypotheses, when the residual risk of the value-style index is higher than that of the growth index, the value index is under performing the growth index, and vice versa. Figure 3 shows the relationship between the spread of residual risk between the value-style index and the growth index and the relative cumulative return of S&P 500 Value Index against the S&P 500 Growth Index.

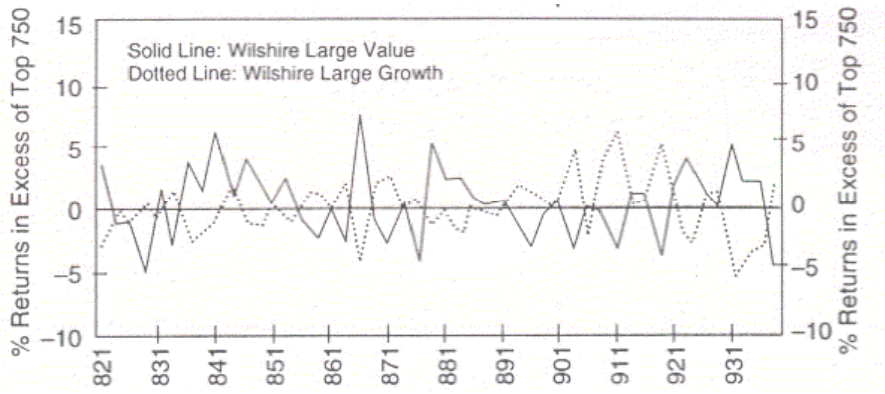
Figure 3. **Value-Growth Relative Return versus Residual –Risk Spread**



Douglas W. Case, Steven Cusimano (1995)

The author introduce the proposition, based on the statistical evidence (the examined period is 1982 through 1993), that a deterministic process linked to the economic cycle was prevalent in historical relative style-return behavior, which show that opportunities may exist to develop an intra-asset-class style allocation strategy. The relative return distinctiveness can be seen in Figure 1: when one component of a paired style is outperforming its universe, the other component is typically underperforming.

Figure 1. **Quarterly Returns of Wilshire Large Value and Large Growth in Excess of Wilshire Top 750[1].**



Their style prediction theorem states that the industry compositions of value and growth have significantly different sensitivities to the economic cycle. Value styles tend to be dominated by banks, utilities, basic industrials, and, to a lesser extent, energy. Growth styles are typically dominated by consumer no durables and, to a lesser degree, technology. The demand for each industry's output has a certain sensitivity to overall economic growth. Table 1 shows the results from a study that attempted to determine which industries were the most, and least sensitive to overall economic growth. While this study did not include utilities and banks, one can observe the heavy consumer-nondurable representation among those industries that are the least sensitive to economic activity.

[1] The Wilshire Large Value and Large Growth indices are derived from the Wilshire Top 750 index. The Wilshire Top 750 was chosen as a representative large-cap index for use as the Salomon Brothers universe return.

Table 1. **Industrial Sensitivity to Overall Economic Activity**

Most Economically sensitive

Industry	*Coefficient of Percent Change in Real GDP*
1. Coal mining	11.08
2. Autos	8.85
3. Trucks & buses	7.37
4. Iron, steel	5.60
5. Motor vehicle parts	4.68
6. Metal mining	4.44
7. TV and radios	3.58
8. Synthetic materials	3.14
9. Nonferrous metals	3.00
10. Railroad & misc. equip.	2.62

Least Economically Sensitive

Industry	*Coefficient of Percent Change in Real GDP*
1. Agriculture	0.06
2. Drugs, medicine	0.19
3. Services	0.25
4. Oil well drilling	0.30
5. Food	0.31
6. Electric, gas, sanitary services	0.39
7. Communications	0.42
8. Finance, insurance, real estate	0.44
9. Tobacco	0.49
10. Soaps	0.57

Estimated equation was:

% change (real industrial output)=[coefficient] x % change (real GNP)

Period of estimation was 1955:QI – 1986:QIV.

Industrial sensitivities to economic growth are important considerations when developing style-return expectations to the extent that ownership in the growth of future earnings is actually being purchased. Therefore a crucial evaluation is the nature of the investment's earnings growth. Those companies with greater economic sensitivities will have their earnings growth tending to mirror cycles in overall

economic activity. Companies with little sensitivity to the general economy must be able to create demand for their output in a self-sustained manner. These notions have given rise to the classic differential stock-categories of cyclical and consumer stocks whose industrial representations have tended to map favorably into value and growth stocks, respectively.

Given that the dominant characteristics of business cycles are changes in output, employment, and prices along with procyclical movements in real interest-rates, two priors are established. The first is that value investing would be relatively better suited for an economy characterized by troughing and /or expanding output and employment, plus rising prices and real interest-rates due to increased demand for goods and credit. The second is that growth-investing is better suited in an economy where output and employment growth are peaking and /or contracting, where growth characteristics are scarce in general.

In general also, it would appear that movements in the business-cycle characteristics have tended to lead subsequent relative returns between style, as illustrated by the higher correlations between economic activity prior to observed returns than correlations measured coincident and subsequent to the observed return periods. It would also appear that having perfect forecasts regarding the movements of key economic characteristics offer inferior insights to style performance versus simply acting upon available historic economic information.

Satya Dev Pradhuman and Suzanne M. Crosby (1995)

Comparing Small-Cap versus Large-cap value, the authors justify the reasons that may support the extreme small-cap style results. They point out that first, the pool of small-cap value stocks may be greater than the pool of large-cap value companies. As a result, small-cap managers may have greater access to value candidates.

Second, limited access to finance may also suggest that a small company with dim prospects is likely to see its stock price remain depressed. After all, a large company has more access to financing, and therefore is better capable of offering projects which may return superior growth. This is less likely for smaller firms, especially smaller value-firms. This may be analogous to a large, low-expectation company versus a large, fast-growing company. The large-cap growth stock may have an advantage in financing which allows it to pursue more aggressive projects. While a large-cap value firm may have access to capital, the cost of such of such capital may be significantly higher than its large-cap growth counterpart. Access to capital may

alter the prospects enough, such that a large-cap value firm changes from being a company of low or no expectation to a firm with some prospects.

Third, firms that have a greater value-bent are unlikely to be the topic of discussion. These “beaten-down” firms tend to be more the backwater rather than at the forefront of the investment spectrum. While the neglect factor may be operating among all value stocks, it is more dramatic at the small-cap value level. Avner Arbel and Paul Strebel have pointed to neglect as an operating factor to account for risk among equities. They also suggest that the neglect of securities is linked to the small-cap effect. Smaller stocks in general tend to be an under followed set of stocks. The average number of analysts that cover a large stock is approximately 22 compared to an average of four for a small stock.

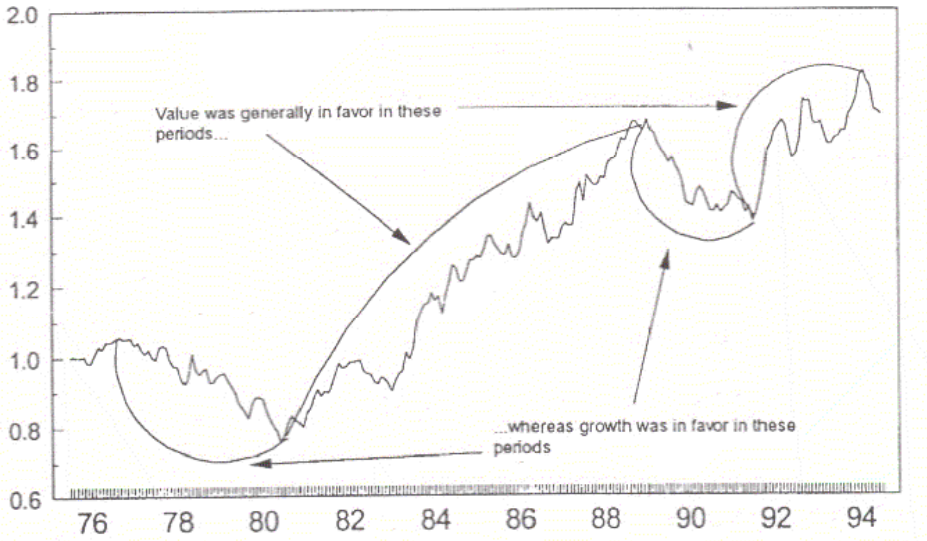
The indication that smaller stocks tend to be under followed suggests that smaller stocks are less efficiently priced. While the small-cap value portfolio coverage is not lower than the average small stock, the smaller number or analysts that cover smaller companies strongly suggests that neglect as a value factor may be much more significant at the small-stock level. The small-cap value portfolio reflects slightly higher-than-average analyst coverage partly because of a manager’s need for information. An active manager is more likely to look at an idea if there is some form of research information. Because of a manager’s preference for coverage, the average active portfolio is more likely to contain issues with greater analyst-coverage. The coverage figure is likely to be well below that of an active manager’s level because of the many issues that trade within the small-stock universe.

Claudia E. Mott, Kevin C. Condon of Prudential Securities (1995)

The authors examine the performance cycles that small-cap growth and value styles experience, as well as the reasons for this relative performance differential.

Using total rates of return of the Prudential Securities Small-Cap Style Indices from 12/1975 to 12/1994 they point out that small-cap value can outperform small-cap growth, and vice versa, for multiyear periods depending on which investment style is or out of favor with investors. Figure 1 details the growth of $1.00 invested in a portfolio which generated a monthly return equal to the spread between small-cap value’s and small-cap growth’s monthly total-return. In this relative-performance analysis, small-cap value is considered to be out of favor when the line is trending down and in favor when the line is rising. Clear and distinct style-cycles are depicted in this exhibit.

Figure 1. **Small-Cap Growth and Value Outperform in Cycles**
Cumulative relative growth of $1 invested (value relative to growth)



They believe that the majority of the performance differential between growth and value can be explained by factor exposure. Factor exposure refers to a stock's, or in this case a portfolio's, characteristics, such as its P/E ratio, financial leverage, market capitalization, and responsiveness to macroeconomic events, like unanticipated changes in inflation or the price oil.

Unfortunately for growth-stock investors, their lofty expectations for earnings growth are all too often overly optimistic. When an expensive stock with a high valuation-multiple announces lower-than-expected earnings, the market unmercifully pummels these once-high-flying glamour stocks into submission.

It is their belief that the small-cap growth index's high exposure to these expensive, high multiple and ultimately disappointing stocks is the primary reason that, over the long run, small-cap value outperform small-cap growth.

According to them, one of the most cognizant and intuitive explanations for style cycles is relate to the ebbs and flows of the economy. This explanation argues that when the stock market begins to anticipate a slowdown in the economic cycle, the market will begin to favor growth stocks. The reason being, that growth stocks are generally less cyclical than value stocks so these growth stocks should be able to maintain reasonable earnings-growth despite the economic downturn. The market rewards this earning growth "stamina" by bidding up the price of growth stocks.

The value cycle is said to begin when the market starts to anticipate an upturn in the economy. Value stocks are more cyclical than growth and may experience higher earnings-growth rates during an economic boom than their growth counterparts.

The analysts of prudential securities conclude their analysis highlighted that:

- This strategy of forecasting style-cycles by forecasting economic activity works better in theory than in reality. Part of the reason for this is that shifts in the economy are notoriously difficult to predict. Stock markets and economists alike often fail to predict economic downturns or upswings. And even if one could correctly time a shift in the economy, style –cycle shifts do not lead or lag the economic shift by a consistent amount of time, and that makes it difficult to decide when to alter one's investment style
- Long-term investors will be better off allocating a larger proportion of their asset to small-cap value stocks than to small-cap growth stocks. Growth stocks, however, remain a necessary investment vehicle due to the cyclical nature of the style cycles and of the importance of diversification.

S.P. Kothari, Jay Shanken, and Richard G. Sloan (1995)

The authors' examination of the cross-section of expected returns reveals economically and statistically significant compensation (about 6 to 9 percent per annum) for beta risk, when betas are estimated from time-series regressions of annual portfolio returns on the annual return on the equally weighted market index. The relation between book-to-market equity and returns is weaker and less consistent than that in Fama and French (1992). They conjecture that past book-to-market results using COMPUSTAT data are affected by a selection bias and provide indirect evidence.

Kenneth L. Fisher, Joseph L. Toms and W. Kevin Blount (1995)

The authors believe that semi predictable relationships exist which allow style-based market analysis to be used as the basis for timely shifts in sub asset allocations that outperform the overall domestic stock-market while maintaining a fully invested exposure to the market. All of this falls under the heading of style-based investing.

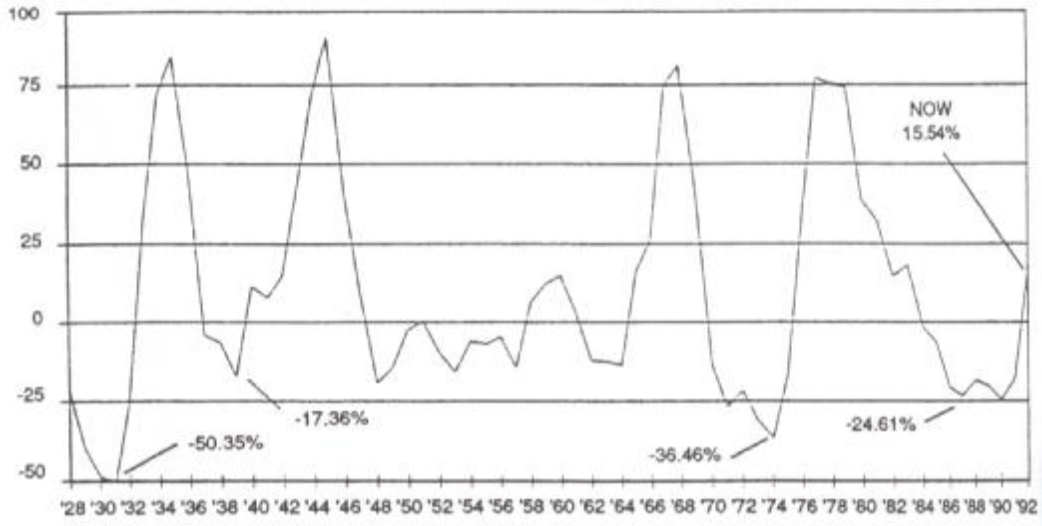
Eugene Fama and Kenneth French conducted research into stock market returns and demonstrated that the two most important determinants of a stock's performance

are market capitalization and valuation. They concluded that the market's return over the past 20 years can be explained by these two variables.

Based on the Fama/French determinant variables they divide the market by valuation and capitalization using what they term six-style analysis.

By graphing the performance spread between small –cap stocks and big-cap stocks over three-year rolling periods from 1928 to 1992, a clear cyclical picture emerges. Figure 1 gives a visual perspective. There have been four distinct periods of small-cap out performance and four periods of big-cap out performance. One time frame, the 1950s was mixed. Mid-cap will also show a cyclical pattern in a similar comparison. Their research has shown mid –cap's returns typically split the gap between small-cap and big-cap returns.

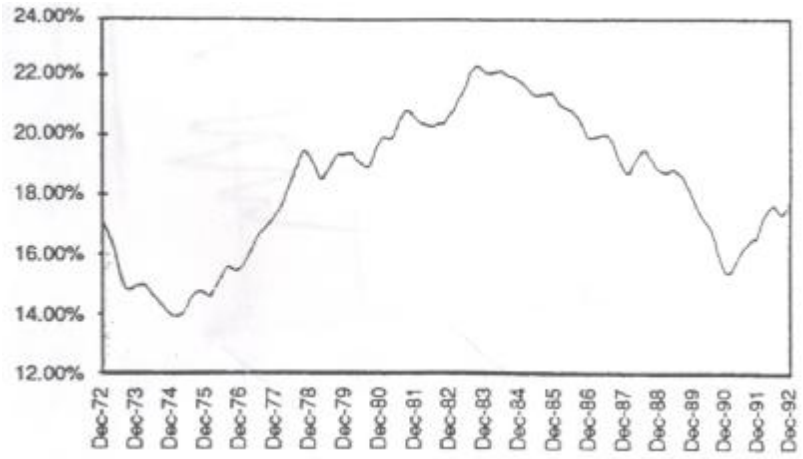
Figure 1. **Small-Cap versus Big-Cap: Three-Year Relative Performance Spread**



An other term they introduce in their analysis is the "market share". One has to examine the market share of its style in order to differentiate between them. The market share is defined as the percent of the aggregate value of the total stock-market represented by each style.

According to them low market-share for a style relative to its historic market-share is one indication of low popularity, a limited down-side risk, and substantial upside opportunity. When a style has a high market-share relative to history, its value has been bid up and the majority of the stocks are typically fully valued or overvalued. Figure 2 examine the small-cap's market share over time.

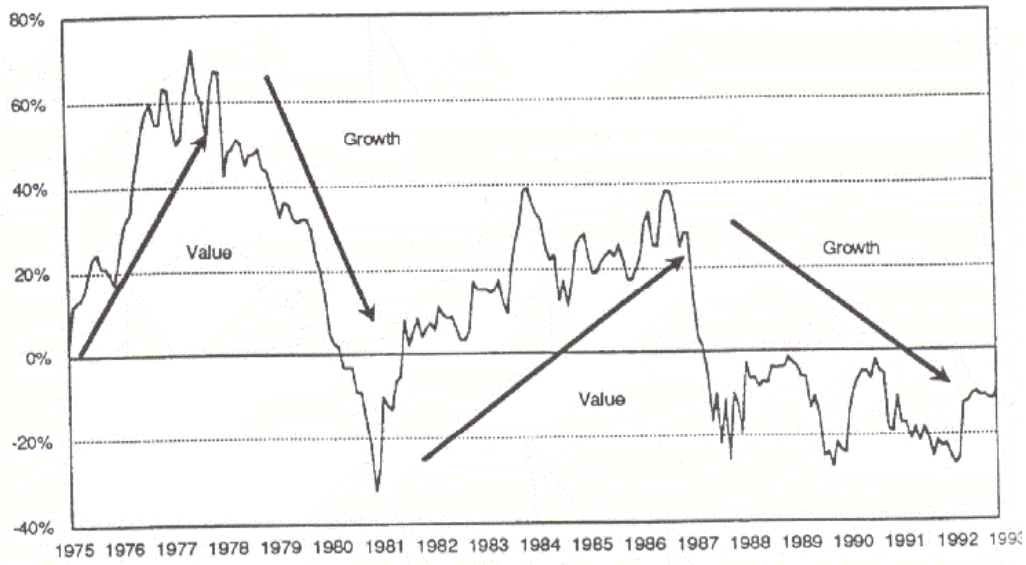
Figure 2. **Small-Cap's Capitalization as a Percent of the Market's**



Further findings are:

- Just as big-cap and small-cap stocks perform in alternating cycles, an alternating cycle exists between value and growth stocks in big-cap. Figure 3 shows distinct periods of value and growth dominance.

Figure 3. **Big-Cap Value versus Growth: Three Year Value Return Minus Growth Return (**Three-year rolling period)

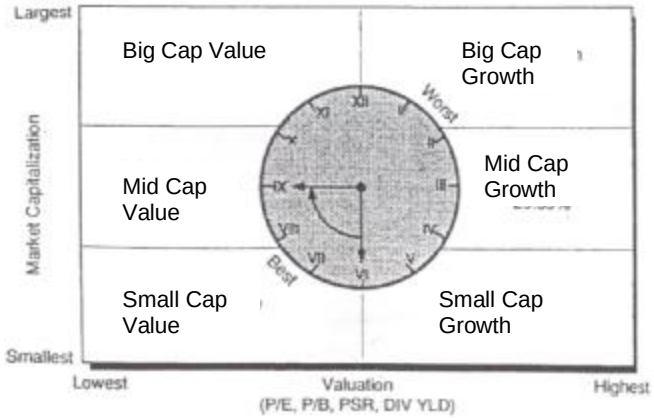


- The same cyclicality between value and growth holds true for small-cap and mid-cap stocks.
- The magnitude of the swings between value and growth is larger in small-cap than in big-cap, a misunderstood and greatly underaprreciated point. Mid-cap is

nearly always in the range between, more volatile than big-cap, but not as extreme as small-cap.

- When any one style dominates in terms of returns, the opposite style performs worst. This should logically follow. If big-cap growth is the "hot" style, then the opposite style-small-cap value-should be the worst. The elements that make big-cap growth attractive will be lacking in small-cap value, which will perform poorly as a result. The same holds true for big-cap value versus small-cap growth, so in terms of styles, diagonal styles will be the best and worst performers. Styles rotate-much like a clock. Figure 4 is a graphic representation with the specific returns for each style. If the number-one style for a period was small-cap value the worst performer was big-cap growth. Connaturally, when the best performing style is big-cap value the worst performer was small-cap growth. Big cap value contrast to small cap growth, small cap value contrast to big cap growth and mid cap value contrast to mid cap growth.

Figure 4. **Outperforming style rotation**



- But what provides the impetus for cycles to change? More specifically, what causes value cycles to start? According to the authors, the answer relates heavily to interest rates and the yield-curve spread between short and long rates.

Whenever interest rates drop significantly, if one wait a couple of years, a value cycle starts. Whenever they rise significantly, with a time lag, the result is a growth cycle. Longer –term cyclical interest-rate fluctuations seem to tie in directly with whether value or growth will be the dominant style.

Although it seems counterintuitive falling interest rates benefit value stocks. It relates to the overall level of debt (both short-and long-term) that value companies carry relative to growth companies.

This extra leverage and debt-financing sensitivity is a result of the fact that it makes more sense for growth companies to raise capital by offering equity than by issuing debt. The tradeoff is quite simple. If a growth company is selling at 30-times earnings, that translates into an earning yield of 1/30 or 3.3%. Selling stock at this level is, in essence, borrowing money at a 3.3% interest rate, as compared to current long-term rates of over 8%, saving the company over 4.7%. This tradeoff doesn't work as well for value companies, which sell at much lower valuations and thus have higher earnings yields-a company with a P/E of 10, for instance, would have a 10% earnings yield, making an 8% rate on debt very attractive. The result is that value companies tend to look to debt for additional capital while growth companies look to equity.

The impact of this difference in leverage is that when rates rise, with a time lag to work through maturity schedules, the interest costs of value companies rise faster than growth companies, negatively affecting earnings of value companies relative to growth companies. With suppressed earnings, value stocks perform more poorly than their growth counterparts. The opposite effect occurs after rates fall. Values stocks' earnings improve-because of reduced interest costs- on an absolute level and also relative to growth stocks. With any economic recovery (slow or strong), the relative potential earnings increases on the value side become dramatic.

So it's not surprising to find that when one takes Treasury rates and overlay growth and value cycles, they tend to follow reasonably closely the longer-term direction of interest rates. Often there is a lag as it takes time for the interest –rate change to translate into investor expectations. But as this happens, and with interest rates as the catalyst, the cycle changes.

As important an indicator to the value and growth cycles as the interest rates, and directly related to it, is the difference in the three-month T-bill rate and the 30-year Treasury bond rate-the yield curve spread. The difference between these rates has an important impact on availability of credit, cost of debt, and the earnings potential of different stocks and investment styles.

A shrinking yield-curve spread forces bankers to make credit more available to lesser creditworthy customers. When the spread narrows it makes capital more available

as the banking system looks for more customers. Capital is deployed, the economy grows, earnings increase, and the stock market rises.

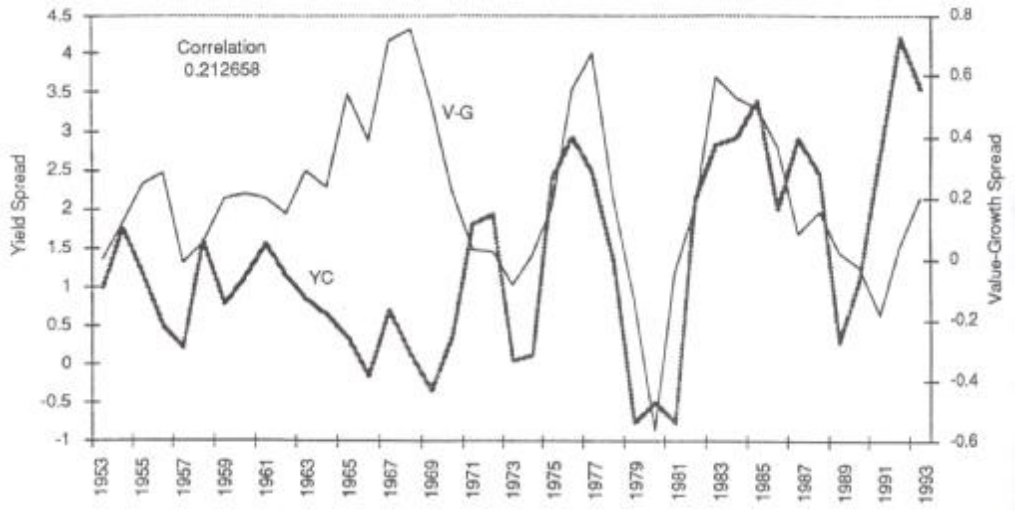
Figuring the yield curve spread with the price performance of the S&P 500, one can find that when spread diminishes the stocks rise. On the contrary when the spread is widening, or inverted stocks do poorly. While the timing of each isn't perfect, they correlate well.

Just as the yield-curve spread affects the market as a whole, its effect on the value and growth cycles of the market can be shown even more dramatically.

The key for a value / growth cycle is a narrowing or widening of the yield curve. When the spread widens or inverts, banks stop lending, whereas when it is flattening, they lend aggressively. Since value firms are much more debt-dependent, when credit is tight they become defensive and do poorly; when credit is more easily available, they do well.

Figuring the history of yield-curve spread, as well as the history of the value/ growth cycle (subtract value's return from growth's return) since 1953 (Figure 5) one can see that a negative correlation exist from 1953 to 1971, while a good correlation of 0.60 for 1972 to 1993. The 0.6 number is statistically meaningful since it occurs with two phenomena not normally thought of by market participants as related.

Figure 5. **Yield Curve Spread versus Value-Growth Cycle**



The correlation become meaningful since 1971 as the United States abandoned the gold standard in late 1971. In this environment, yield-curve spreads have a heavy

influence on the value / growth cycle as banks respond immediately to any yield curve shifts.

We have argued that expansions create demand for money which in turn flattens the yield curve. Charles Clough at Merrill Lynch, shows this basic relationship. He uses unfilled nondefense capital-goods orders to measure future strength In the economy. Its predictive ability in terms of a flattening yield curve is excellent.

While interest rates and the yield-curve spread are excellent indicators of changing cycles, they are not the only ones. Many other drivers exist, both macroeconomic and microeconomic, fundamental and technical. For example, the foreign exposure of the style plays a role. Big-cap stocks drive over 40% of their revenue from foreign markets. In a global environment where the U.S. economy is trailing its foreign partners big-cap stocks have a distinct advantage over mid-cap and small –cap stocks because of this foreign income. In periods when the percentage change in U.S. gross-domestic product lags U.S. economical rivals, the big-cap style, all else being equal, will outperform the small-cap and mid-cap styles. The opposite will apply during the eras when the U.S. economy is expanding at a faster rate than those of its trading partners. Nonetheless, interest rates and the yield-curve spread are excellent primary indicators of style swings.

To sum up, the authors introduce six-style analysis as a simple and effective way of isolating the distinct equity styles within the stock market. It clearly illustrates the variations in style valuations and characteristics, as well as the cyclical nature of the styles performance. To truly replicate the U.S. market requires exposure to all six styles, while performance superior to the market is possible with accurate selection of the styles in which to invest and those to avoid. Rotating a portfolio among the different styles, or adjusting the weights of the styles, can yield significant performance gains over the broad market. The analysis of market share, interest rates, and yield-curve spreads are some of the ways to help determine the equity allocations among the six styles.

Rafael La Porta (1996)

Previous research has shown that stocks with low prices relative to book value, cash flow, earnings, or dividends (that is, value stocks) earn high returns. Value stocks may earn high returns because they are more risky. Alternatively, systematic errors in expectations may explain the high returns earned by value stocks. The authors test for the existence of systematic errors using survey data on forecasts by stock

market analysts. He shows that investment strategies that seek to exploit errors in analysts' forecasts earn superior returns because expectations about future growth in earnings are too extreme.

Gerald R. Jensen, Jeffrey M. Mercer, Robert R. Johnson (1996)

The authors reexamine Fama and French's (1989) findings that predictable variation in expected stock and bond returns is rational, in that it is related to business conditions as proxied by the term spread, dividend yield, and default spread. In light of recent evidence that stock returns are affected by monetary developments, they add the monetary sector to the analysis. They find that after including a broad measure of monetary stringency, business conditions explain future stock returns only in expansive monetary policy periods, and only the dividend yield and the default premium are significant. No longer does the term spread, a variable known to forecast bond returns, also forecast stock returns.

They also find, after controlling for monetary stringency, that the term spread alone contributes significantly in explaining expected bond returns in restrictive monetary policy periods. In contrast, only the dividend yield plays a role in expansive policy periods, and it is only marginally significant. Thus, there is the interesting result that the business-conditions proxies play substantially different roles in explaining variation in expected stock and bond returns, depending upon monetary stringency. Only in periods that are characterized by a restrictive (expansive) monetary environment do we find significant explanatory contribution by any of the forecasting variables in explaining expected bond (stock) returns. The cumulative evidence supports the proposition that the predictable variation through time of expected stock and bond returns is rational, in that it is, in part, related to monetary as well as business conditions.

Robert A. Haugen, Nardin L. Baker (1996)

The authors find that the determinants of the cross-section of expected stock returns are stable in their identity and influence from period to period and from country to country. Out-of-sample predictions of expected return are strongly and consistently accurate. Two findings distinguish this paper from others in the contemporary literature. First, stock with higher expected and realized rates of return are unambiguously lower in risk than stocks with lower returns. Second, the important

determinants of expected stock returns are strikingly common to the major equity markets of the world. Overall, the results seem to reveal a major failure in the Efficient Market Hypothesis.

Kent Daniel and Sheridan Titman (1997)

In their study, the authors indicate that (1) there is no discernible separate risk factor associated with high or low book-to-market (characteristic) firms, and (2) there is no return premium associated with any of the three factors identified by Fama and French (1993), suggesting that the high returns relate to these portfolios cannot be viewed as compensation for factor risk. To elaborate, they find that although high book-to-market stocks do covary strongly with other high book-to-market stocks, the covariances do not result from there being particular risks associated with distress, but rather reflect the fact that high book-to-market firms tend to have similar properties; e.g., they might be in related lines of businesses, in the same industries, or from the same regions. Specifically, they find that while high book-to-market stocks do indeed covary with one another, their covariances were equally strong before the firms became distressed. To determine whether characteristics or covariances determine expected returns they investigate whether portfolios with similar characteristics, but different loadings on the Fama and French (1993) factors, have different returns. They find that the answer is no. once they control for firm characteristics, expected returns do not appear to be positively relate to the loadings on the market, HML, or SMB factors.

According to them, their results are disturbing in that, like Fama and French (1992), they suggest that traditional measures of risk do not determine expected returns. In equilibrium asset pricing models the covariance structure of returns determine expected returns. Yet they find that variables that reliably predict the future covariance structure do not predict future returns. Their results indicate that highbook-to-market stocks and stocks with low capitalizations have high average returns whether or not they have the return patterns (i.e., covariances) of other small and high book-to-market stocks. Similarly, after controlling for size and book-to-market ratios, a common share that “acts like” a bond (i.e., has a low market beta) has the same expected return as other common shares with high market betas.

The analysis in this article demonstrates two thing: First, they show that there is no evidence of a separate distress factor. Most of the comovement of high book-to-market stocks is not due to distressed stocks being exposed to a unique “distress”

factor, but rather, because stocks with similar factor sensitivities tend to become distressed at the same time. Second, their evidence suggests that it is characteristics rather than factor loadings that determine expected returns. They show that factor loadings do not explain the high returns associated with small and high book-to-market stocks beyond the extent to which they act as proxies for these characteristics. Further, their results show that, with equities, the market beta has no explanatory power for returns even after controlling for size and book-to-market ratios. Although their analysis focused on the factor portfolios suggested by Fama and French (1993), they conjecture that factor loadings measured with respect to the various macro factors used by Chan, Chen, and Hsieh (1985), Chen , Roll, and Ross (1986), and Jagannathan and Wang (1996) will also fail to explain stock returns once characteristics are taken into account.

According to Davis, Fama and French (2000), Daniel and Titman argue that past research cannot distinguish the risk model from the characteristics model. The problem is that the value and growth characteristics are associated with covariation in returns. For example, industries move through periods of distress and growth. When portfolios are formed to capture a risk factor relate to relative distress, they pick up return covariation within industries that is always present but for the moment happens to be associated with growth or distress. In this view, the value premium seems to be related to the covariance of returns with a common distress factor, when in fact it is due to the growth and distress characteristics. As a result, one cannot distinguish the risk story from the characteristics story in the typical tests that focus on common factors.

Daniel and Titman suggest a clever way to break this logjam. If characteristics (growth and distress drive expected returns, there should be firms with characteristics that do not match their risk loadings. For example, there should be some firms in distressed industries. In the characteristics model, these firms have low returns because they are strong. But they can have high loadings on a distress risk factor if the factor is in part due to covariation of returns within industries. Thus, the returns on these firs will be too low, given their risk loadings. Conversely, there are distressed firms in strong industries. Because they are distressed, they have high returns, but in terms of risk loadings they look like strong firms. If characteristics drive prices, their returns will be too high given their risk loadings.

W. Scott Bauman and Robert E. Miller (1997)

The authors compare the performance of value stocks with growth stocks in order to offer the adaptive expectations hypothesis as an explanation for the differences in their performance. This hypothesis asserts that forecasters rely too heavily on past trends when formulating their expectations about the future. This, in turn, may lead to biased forecasts of future equity returns. To test the adaptive expectations hypothesis, samples of stocks were selected as of March 31 for each of fourteen years commencing with 1980.

According to their conclusion, the adaptive expectations hypothesis gains support with the results of this study. Value stocks, with relatively low prices in relation to EPS and to cash flow per share, and low past EPS growth rates, evince favorable investment performance. They find, however, that the difference in performance may be associated with large negative earnings surprises for stocks with high prices relative to EPS and cash flow per share, and high past EPS growth rates.

Although these biased forecasts persist over the entire fourteen-year study period, there is, of course, no assurance that such biased behavior will continue in the future. It is possible that forecasters will learn from past mistakes, although the low price/ earnings ratio anomaly has persisted over many decades.

Given these findings, authors sum up that investors and analysts need to be sensitive to the possibilities that the future performance of companies will be either better or worse than recent past performance. Investors should attempt to determine whether current market prices appear reasonable in relation to realistic current corporate fundamentals and to discount any non-recurring elements affecting past performance.

Brad M. Barber and John D. Lyon (1997)

This research analyzes the returns for a sizable holdout sample of financial firms, which Fama and French (1992) exclude from their analysis. Their analysis reveals that the relation between size, book-to-market, and security returns is similar for financial and nonfinancial firms. In short, firm size and book-to-market ratios have similar meanings for financial and nonfinancial firms-at least as they relate to security returns. According to the authors, their evidence, documents the robustness of the book-to-market / return relation and allows them to reject the hypothesis that this relation is a result of collective data – snooping by academic, as some have

maintained. Furthermore, they present evidence that survivorship bias in COMPUSTAT data does not significantly affect the estimate of the size or book-to-market premium for either financial or nonfinancial firms, as suggested by Kothari, Shanken, and Sloan (1995).

This study indicates that firm size and book-to-market ratios explain in an economically meaningful way cross-sectional variation in security returns. At this juncture, the critical issue, which remains unresolved, is whether size and book-to-market are proxies for unidentified risk factors (as suggested by Fama and French, 1993, 1996) or security mispricing (as suggested by Lakonishok, Shleifer, and Vishny, 1994). Data –snooping and CUMPUSTANT survivorship bias cannot explain the relation.

Eugene F. Fama and Kenneth R. French. (1998)

The authors present additional out of sample evidence on the value premium. They examine two questions.

1. Is there a value premium in markets outside the United States
2. If so, does it conform to a risk model like the one that seems to describe U.S. returns?

Their results are easily summarized. The value premium is indeed pervasive. They conclude that value stocks tend to have higher returns than growth stocks in markets around the world. Sorting on book-to-market equity, value stocks outperform growth stocks in twelve of thirteen major markets during the 1975-1995 period. The difference between average returns on global portfolios of high and low B/M stocks is 7.68 percent per year (t=3.45). There are similar value premiums when they sort on earnings/price, cash flow/price, and dividend/price. There is also a value premium in emerging markets. Since these results are out-of-sample relative to earlier tests on U.S. data, they suggest that the return premium for value stocks is real.

An international CAPM cannot explain the value premium in international returns. But o one-state-variable international ICAPM (or a two-factor APT) that explains returns with the global market return and a risk factor for relative distress captures the value premium in country and global returns.

According to them, they do not, however, mean to push a strong asset pricing story for their results, here or in Fama and French (1993,1996). For example, a reasonable conclusion, agnostic with respect to equilibrium asset pricing, is that a

global market portfolio and a global portfolio formed to mimic relative distress are close to two-factor MMV in the limited set of portfolio opportunities covered by (i) global value and growth portfolios formed in various ways; and (ii) market, value, and growth portfolios of individual countries. In this view, the international two-factor model simply provides a parsimonious way to summarize the general patterns in international returns. Similarly, the apparent success of the three-factor model in Fama and French (1993,1996) simply says that the three U.S. portfolios they use to describe returns are close to three-factor MMV in the set of investment opportunities covered by the U.S. portfolio returns they attempt to explain. Thus, the three U.S. explanatory returns provide a parsimonious way to summarize most of the general patterns in U.S. stocks returns.

F. Larry Detzel and Robert A. Weigand (1998)

This study investigates the factors contributing to persistence in mutual fund performance. The particular hypothesis tested is that a greater amount of the persistence in mutual fund returns can be explained than has been found by previous researchers. Motivated by recent studies into the cross-section of expected stock returns (Daniel & Titman, 1997), a model is developed that avoids the use of factor-mimicking portfolios and characteristic benchmarks and instead directly relates mutual fund returns to the properties of the stocks held by funds.

Consistent with the results reported by previous studies, market risk and fund expense ratios explain only a small amount of the momentum in mutual fund returns. Examining the period in which mutual fund return persistence has been most pronounced (1975-1986), however, the results indicate that accounting for the size of the stocks held by funds and fund manager investment styles (characterized by ratios such as book-to-market, earnings-to-market, and cash flow-to-market) explains all of the persistence in mutual fund returns. Both firm size and investment style characteristics contribute to explaining persistence. As found by previous studies, there is little evidence of momentum in fund returns during the late 1980 and early 1990s.

These Findings suggest that investors interested in allocating money among mutual funds would be wise to consider more than recent past performance. Investors should also take into account recent trends in the overall stock market, such as whether large company stocks are outperforming small company stocks and whether value stocks are outperforming growth stocks. The persistence in fund performance

appears to be driven almost entirely by trends in these well-known and widely-publicized investment categories. In other words, instead of simply buying the best-performing funds from prior periods, investors should identify the size and style characteristics of funds and research current market trends in these factors. During periods when large-capitalization stocks begin outperforming smaller stocks, buying funds that invest in larger stocks should also produce superior results. Similarly, recent trends in value and growth stocks should be reflected in the relative performance of funds that invest according to these criteria.

Robert C. Kuberek (1998)

The author analyzes sixteen and a half years of stock returns, from January 1981 through June 1997, to determine if the components of equity style – size, book-to-price, earnings – to – price, and yield – can differentiate investment performance over short horizons.

The principal conclusions are:

The study confirms the Roll finding that earnings-to-price is the most important determinant of long-term investment performance (and contradicts the Fama and French finding that book-to-price and size are most important). The study also confirms the Fama and French finding that beta is not significant in differentiating investment performance over long horizons.

Size is not significant in differentiating investment performance over long horizons.

In differentiating short-term investment performance, beta, yield, and earnings-to-price, in that order, are the most important factors.

These results are robust to the universe of securities used. In particular, the results are robust to whether the universe includes financial companies or not.

Also, earnings-to-price, book-to-price, and yield appear to be different factors, in the sense that, for example, portfolios tilted toward E/P but not B/P will perform differently over short periods from portfolios tilted toward B/P but not E/P.

Gerald R. Jensen, Robert R. Johnson, and Jeffrey M. Mercer (1998)

The authors investigate the consistency of small –firm and value premiums. Their extensions investigate the consistency of return premiums across time, across

monetary policy conditions, and across alternative measures of value and growth. Several important implications for investors emerge from this analysis.

First, value strategies have historically provided a return premium over growth strategies, without producing a corresponding increase in risk. Using four different value versus growth criteria, they find substantial value premiums throughout the thirty –two years studied (7/1963-6/1995), providing a premium of approximately 0.8 percentage points per month. Over the same period, small firms are observed to provide a premium over large firms of approximately 0.9 percentage points per month, but also entail considerably more risk.

Second, they observe positive value premiums across all four decades examined, suggesting that value investing has consistently been an attractive strategy. They also observe positive small-firm premiums over all four decades, suggesting that small-cap investing has consistently provided higher returns over time.

The size of the value and small-firm premiums, however, has varied considerably over time. Surprisingly, they find the lowest small-firm premium in the two decades (the 1970s and 1980s) that Siegel (1994) argues include the nine years that drive the small-firm premium. Obviously, these decades also include years of large-firm out performance.

Third, they find that value investing has provided large, statistically significant return premiums when the Fed is following an expensive monetary policy. The return premiums to value investing are generally insignificant or negative when the Fed is in a restrictive policy stance.

The premium associated with small-cap stocks follows the same pattern, yet is even more pronounced. The premiums are large and significant in all periods when the Fed is in an expansive mode, but insignificant or negative in all cases when Fed policy is restrictive.

Fourth, they find general support for the contention of Barbee, Mukherji, and Raines (1996) that price-to-sales (P/S) is a slightly better means of identifying attractive value stocks than other traditional value measures. After they separate returns by the monetary environment, however, it appears that P/S is the best measure in expansive environments, but the poorest indicator of value in restrictive periods.

Finally the authors point out that the inconsistencies identified in previous research are due to a failure to control for changes in monetary conditions. The evidence indicates there are very strong, consistent premiums associated with small-cap and

value investing when the Fed is following an expansive policy, but that these premiums diminish or disappear when Fed policy is restrictive. Previous researchers have failed to consider changes in the premiums to be largely a function of time. Changes in the monetary environment, not time, play the prominent role in determining the magnitude of the value and small-firm premiums.

Bala Arshanapalli, T. Daniel Coggin, and John Doukas (1998)

This study documents the relationship among beta, size, book-to-market, and average regional industry portfolio returns in a sample of up to 2641 stocks in eighteen equity markets (including the U.S.) over the twenty –one –year period 1975-1995.

The first objective is to examine the robustness of the value investing strategy using monthly data for eighteen equity markets and four regions of the world (North America, Europe, the Pacific Basin, and international) obtained from Independence International Associates, Inc. of Boston (IIA) for the period 1975-1995. The second objective of the article is to investigate whether value stocks are riskier than growth stocks, since this issue remains controversial among researchers. The third objective of this study is to examine the fit of the Fama and French (1996) three-factor model internationally.

The evidence shows that value stock portfolios generally have superior absolute and risk-adjusted returns relative to growth stocks, and that correlations among international value-growth return spreads are low.

Building on these results and similar findings previously reported for the U.S. and a few major foreign equity markets, the authors further examined whether, international industry returns are explained by size and book-to-market effects. Specifically, following Fama and French (1996), they address this question by using a three-factor, asset pricing model. The international evidence is consistent with the U.S. findings reported by Fama and French (1996), and shows that the three-factor-model largely explains the variation in average returns on regional industry portfolios. Thus their findings suggest that application of the Fama and French (1996) multifactor asset pricing model is not related to the U.S. stock market.

W Scott Bauman, C. Mitchell Conover, and Robert E. Miller (1999)

The authors, examine why value stocks generally outperform growth stocks in international stock markets, trying to answer to several questions. They examine data for the 1986-1996 period in the twenty established markets represented by the Morgan Stanley Capital international (MSCI) Europe/ Australia/ Far East (EAFE) Index, plus the Canadian Market, classifying value stocks and growth stocks on the basis of two separate measures-price-to-book value ratio (P/B), and past three-year EPS growth rates. They find several explanations for why value stocks outperform growth stocks.

First, evidence suggests that investors overreact to past growth rates in EPS by driving the market prices of growth stocks too high and the prices of value stocks too low.

Second, it appears that investors and research analysts tend to assume that past growth rates in EPS will continue into the future. Yet, the evidence here suggests that extremely high or low past growth rates tend to revert to a normal or average growth rate. Consequently, when earnings disappointments are reported, stocks that have high P/B ratios and high past EPS growth rates tend to have lower returns than value stocks. Although value stocks outperform growth stocks for the total sample, there are occasional exceptions in which growth stocks have higher returns in some years and in some countries, suggesting that investor overreactions or optimism can persist over two years or longer.

Finally, there appears to be a small-firm effect in international markets in that small firms with lower price-to-book value ratios outperform large firms.

According to the authors the evidence provided here reveals the superior performance of value stocks over an extended period of time in international markets. As investors and analysts focus on this fact and gain a clear understanding about the reasons for the value stock anomaly, the difference in performance between value and growth stocks may diminish in the future.

Jonathan Lewellen (1999)

The author examines the time-series relations among expected return, risk and book-to-market (B/M) at the portfolio level. He finds that B/M predicts economically and statistically significant time-variation in expected stock returns. Further, B/M is strongly associated with changes in risk, as measured by the Fama and French

(1993) three factor model. After controlling for risk, B/M provides no incremental information about expected returns. The evidence suggests that the three-factor model explains time-varying expected returns better than a characteristics-based model.

Mario Levis and Manolis Liodakis (1999)

The authors assess the profitability of style rotation strategies based on value/growth and small/large cap segments of the market. First, they explore the potential of such strategies in the U.K. during the period 1968-1997. Using a Monte Carlo simulation, they assess the average gains from rotation after adjusting for transaction costs. Second, they develop and test a style rotation model based on a set of macroeconomic factors selected for their ability to predict the direction of the style spread at a given month.

Their conclusions are that during the thirty-year period 1968 through 1997, value and small-cap stocks in the U.K. outperformed their growth and large-cap counterparts by an average of 1,160 and 80 bp per year. Their simulation results suggest that forecasting the size spread with a 65%-70% accuracy rate may be sufficient to outperform a long-term small-cap strategy. Beating a long-term value strategy, however, is markedly more difficult; it requires more than 80% forecasting accuracy.

They identify a number of macroeconomic and market factors that appear to predict the direction of the next month's style spread. Their results suggest that while style rotation strategies based on small and large firms can be highly rewarding, they are only marginally successful in the case of value and growth stocks.

Style consistency is a prudent strategy for investors with very long investment horizons and strong views on the performance of the targeted style. In all other cases, controlled style rotation strategies based on the underlying fundamental characteristics of the relevant style indexes can be value-enhancing.

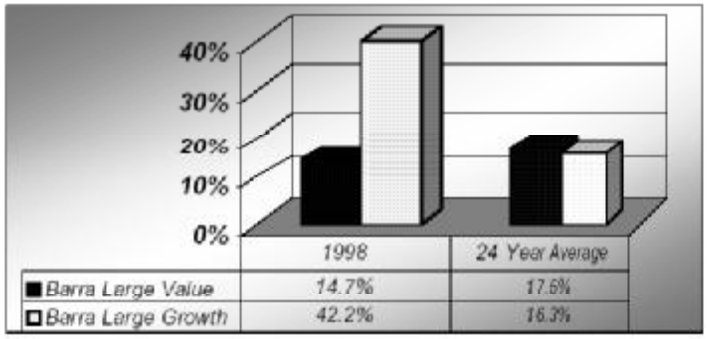
Larry Thompson & Associates, Inc. (1999)[1]

The purpose of this paper is to examine the cyclical nature of the growth / value[2] cycle within the large-cap market, and factors that may influence relative performance of growth and value stocks.

[1] **Larry Thompson & Associates is an Investment Management Consulting firm specializing in improving the operation and performance of pensions, foundations and endowments, family office portfolios, and other public and private investment funds.**

Since 1975 (the inception of the S&P 500/ BARRA Growth and Value indices), it has not made much of a difference if ones investment portfolio was dominated by large-cap growth stocks or large-cap value stocks; either way one probably earned a fantastic return. However, according to the authors, 1998, saw the disparity between growth and value as represented by the S&P 500/ BARRA Growth and Value indices reach its widest calendar year-end margin ever. The growth index was up 42,16% compared to a relatively modest 14.67% for the value index (see exhibit 1). This comes on the heels of four straight years of outperformance (although very slight) by the growth stock index.

Exhibit 1



Based on 1998's returns, those investors who believe that asset values eventually revert to their long-term historical mean may be feeling an urge to shift assets from growth to value. The problem with this simplistic "reversion to the mean" thesis is that these cycles can last for years, and the cost of being early or late in shifting from growth to value or vice versa can be quite expensive.

The question that begs to be answered then, is what can we expect in the future in terms of relative performance between growth and value; and what action, if any, should prudent long-term investors take to position their portfolios for these expectations. To answer these questions, one need to gain a better understanding of factors that influence the relative performance of growth and value stocks.

There are multiple factors that influence the relationship between growth and value stocks, all of them exerting their pull simultaneously on the markets. Trying to quantify them in a single model is a hopeless endeavor at best according to the

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[2] The S&P 500 / BARRA Growth and Value indexes are constructed by dividing the stocks of the S&P 500 Index according to their price to book ratio. The indexes are mutually exclusive and split to the total market capitalizations of each index are approximately 50 % of the total market capitalization of the S&P 500. Stocks in the index with the highest price to book ratios comprise the growth index and vice versa. The indexes are rebalanced semi-annually on the first day of January and July. They are adjusted each month to reflect any additions or deletions to the S&P 500.

authors. However, it would be useful to identify variables that have had a measurable relationship with the growth/value cycle in the past and incorporate that information into our decision-making framework going forward. Two such variables are the economy and interest rates. Although the past seldom repeats itself and relationships between variables are dynamic, being aware of the historical information can be of use in helping one confirm asset allocation decisions.

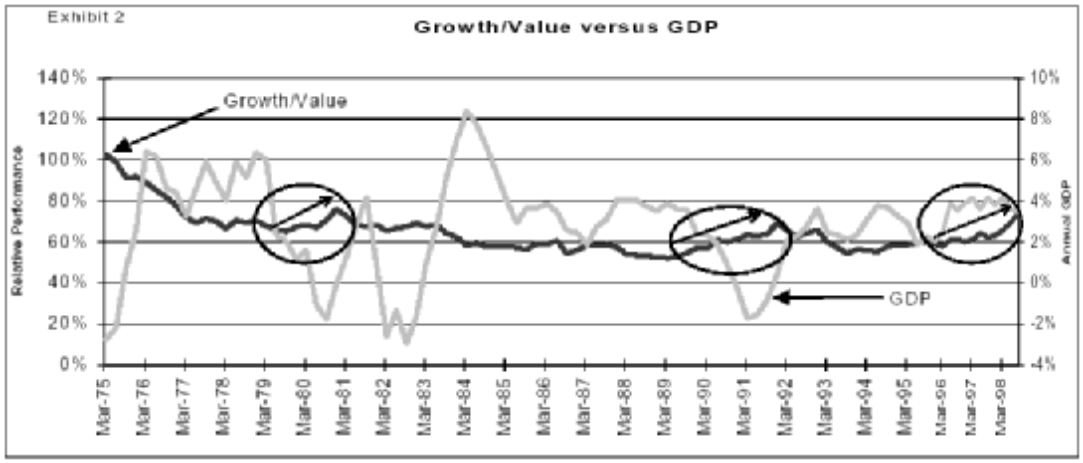
Economically Speaking

Looking at the relationship between economic activity and the growth/value cycle from an intuitive perspective, on would expect growth to outperform value when the economy is weak. The logic follows this line: when the economy is weak, companies that produce goods/ services whose demand is sensitive to the health of the economy suffer more than companies that are producers of goods/services that people consume regardless of the health of the economy.

These companies dependent on the health of the economy for strong profits (automobile manufacturers, airlines, banks, etc.) tend to be classified as value stocks. The recession resistant companies such as sellers of pharmaceuticals and necessary household products usually exhibit growth stock characteristics.

Exhibit 2 plots the relationship of growth versus value against a measure of economic activity, (in this case, a one-year rolling average of GDP). Based on the above intuitive hypothesis, one would expect that when the economy is slowing, growth stocks should outperform, and when the economy bottoms and begins to recover, value stocks should take the lead. The one caveat that is thrown into the mix is that the stock market is a forward-looking mechanism that embodies the expectations of its participants. Therefore, we would expect the growth/value cycle to lead a historical measure of economic activity, and the actual relationship to be imprecise when expectations are deviant from reality.

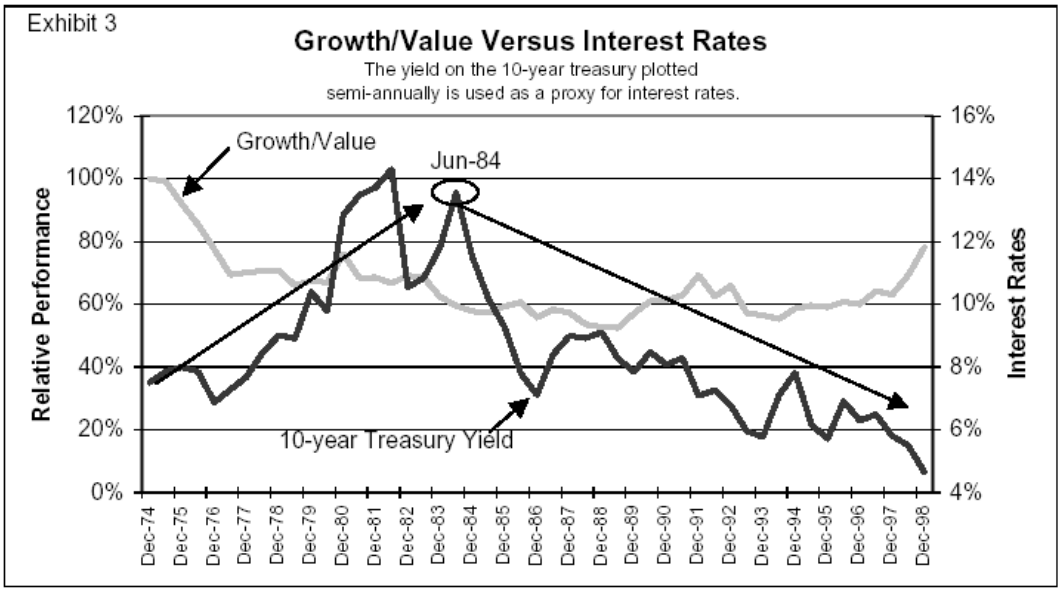
The circled periods in exhibit 2 represent time periods when growth stocks enjoyed strong relative performance versus value stocks. It's evident that when the growth / value relationship turned upward in late 1979, that the economy was slowing dramatically. Likewise, when the growth/value line turned upward in late 1989, it forecasted the recession that followed in late 1990. This evidence seems to support the notion that value stocks outperform when the economy bottoms and picks up steam, and growth stocks outperform in the later stages of an expansion as the economy begins to slowdown.



But what about the recent growth cycle of the mid-90s? According to the historical relationship, the market is telling us our economy should have slowed. According to the author either there are other forces at work here or the expectations of market participants have been out-of-line with reality. Before we offer other explanations, let's examine the relationship between interest rates and the growth/value cycle.

Interest Rates and Growth / Value

One common method used to value stocks is to take the present value of the future cash flows discounted at some interest rate. That interest rate is a function of risk, inflation, and the general level of interest rates. Growth stocks tend to pay little or no dividends so any future cash flow will occur in the distant future. Value stocks tend to pay quarterly dividends as soon as the next quarter. Working through the math, a change in interest rates will have a greater impact on the price of a stock with expected cash flows in the distant future than one with cash flows occurring every quarter. Thus, growth stocks should exhibit strong relative performance when rates are low/falling, and value should outperform when rates are high/rising. Looking at exhibit 3, the inverse appears to hold for longer periods of time but is not as robust over shorter periods.



From the beginning of 1975 through June of 1984, interest rates went from 7,5 % to 13,5% (actually hitting 15,3% on September 30, 1981) and value stocks grew at a 17.32% annual clip compared to growth at 11.07%. From that point until the end of 1998, 10-year Treasury rates dropped to 4.65% and growth stocks soared, outperforming value stocks 19.89% versus 17.64%. So while the economy remains healthy, low interest rates have certainly boosted the attractiveness of growth stocks.

Of course, the benefit of hindsight is everything, and a good data manipulator can make the numbers tell almost any story that he or she desires. The stock market does not exist in a vacuum, but is subject to many external factors.

Technology has made our world smaller. The speed at which information travels and the amount of information available have grown exponentially allowing investors at all levels to access and process more information at a much faster rate than ever before. Quite possibly, the markets today discount information further into the future than the markets of yesteryear because of this. If this argument has any basis, value stocks may not have to wait for a traditional economic bottom to take the lead, but rather start their move in the latter stages of an economic expansion.

Finally, one factor that is possibly overlooked (and certainly harder to quantify) is the shift in our economy from manufacturing an industrial production to one that relies more heavily on technology and information/knowledge management. It's interesting to note the make-up of the S&P 500/BARRA Growth and Value Indices for years 1994 –1998 (exhibit 4). The growth index has twice as much in technology as it did at the end of 1994!

Exhibit 4

S&P 500 Barra Growth			S&P 500 Barra Value	
1998	**1994**		**1998**	**1994**
1.14%	7.42%	Basic Materials	7.57%	11.52%
0.03%	1.45%	Energy	11.72%	17.75%
10.93%	4.55%	Financials	26.04%	21.34%
18.05%	20.89%	Consumer Non-Cyclicals	2.46%	2.78%
19.97%	17.23%	Health Care	2.67%	1.83%
26.71%	13.02%	Technology	10.40%	8.89%

The impact of this gradual shift over time from an industrial to service economy may be showing up in the form of growth stocks enjoying strong relative performance. This trend may take years to play out and ultimately change how investors define growth and value. Investors that are passively investing in the S&P indices should pay particular attention to this trend and consider the risk it may be introducing into their portfolios as the technology sector plays a larger and larger role.

Ralph R. Trecartin Jr. (2000)

The author, in his study, examines whether the book equity ratio and other value/ growth variables predict returns consistently from 1963 to 1997 using monthly intervals, as well as the possibility of the individual investor using a value investment strategy to expect at any point in time to outperform a growth strategy over subsequent months. Average returns are reported over long intervals as in other studies. Subperiods are then examined over ten –year, five-year, and one-year periods. The study documents the dependability of returns, or the lack thereof, for value firms, and also indicates whether BE/ME or some competing variable captures the most variation in return.

Evaluation of a value investment strategy reveals that the high returns found over long time horizons are not uniform or dependable over short time intervals.

The book-to-market effect (BE/ME) is statistically related to return as predicted in less than 50% of the monthly periods examined. Also, the variable is not always significant in five-year subperiods. However in ten –year period BE/ME is significantly related to return. Thus the data supports the view that the BE/ME variable is not a reliable predictor of return over short time horizons. An investor can

capture superior returns only if the holding period is extended to cover fairly long intervals.

It is the author' s opinion that short term BE/ME unreliability does not negate the usefulness of the value effect for a patient investor as evidenced by the long term positive and statistically significant coefficients presented in this and other studies. But, there is no certainty that the historical data will predict trends that will persist into the future. The professional investment community may be aware of the "value" effect, but be unwilling to risk the possible short-term underperformance resident in such a strategy. They are more likely to invest in securities more closely aligned with common performance measurements such as the S&P 500 Index.

In this study three questions were examined. First, can the long term returns documented in the literature, be consistently captured on a short-term basis? The answer is no, not on a reliable basis through time. Second, does the BE/ME variable do the best job of predicting return, or are there better alternative value/ growth variables? Although BE/ME is weak at times, and is positive and statistically significant in only 43% of the monthly regressions, the BE/ME ratio is a more consistent predictor of return than other competing value/growth variables such as cash flow, size, and sales growth. And third, when the results are known do they support the risk proxy theory or the investor overreaction explanation? Because the BE/ME effect is not reliable over short horizons can argument ca be made that either the market is not efficient, or that the BE/ME variable is not an adequate proxy for risk.

One would expect a useful risk proxy to be related to return on a reliable basis if markets are efficient. Perhaps there is a consistent relationship between true underlying risk and return through time. As a proxy for risk the BE/ME variable does not adequately predict return on a consistent basis, and so the results of this study do not provide support for the risk proxy theory. Rather, it is plausible that some investor overreaction is behind the positive but variable returns derived from the value effect. Investing fads (value style or growth style) can be expected to come in and out of favor with investors. An investor overreaction story would help explain why the effect is stronger during some time periods than others.

James L. Davis, Eugene F. Fama, and Kenneth R. French (2000)

The authors find that the value premium in U.S. stock returns is robust. The positive relation between average return and book – to – market equity is as strong for 1929

to 1963 as for the subsequent period studied in previous papers. A three –factor risk model explains the value premium better than the hypothesis that the book-to-market characteristic is compensated irrespective of risk loadings.

The authors extend Davis' data findings (that the relation between average return and BE/ME observed for the US returns extends back to 1940), back to 1926 and they expand the coverage to all NYSE industrial firms. They found that the value premium in pre-1963 returns is close to that observed for the subsequent period in earlier work. These results argue against the sample specific explanation for the value premium from other studies. In that way they support the supposition that the value premium is a compensation for risk.

The characteristic hypothesis for explaining the value premium says that relative distress drives stock returns, and BE/ME is a proxy for relative distress. This is the theory of Daniel and Titman (1997). Low BE/ME (characteristic of strong firms) produces low stock returns, irrespective of risk loadings. Similarly, high BE/ME stocks (distressed firms) have high returns, regardless of risk loadings. In contrast, the risk story says expected returns compensate risk loadings, irrespective of the BE/ME characteristics. It is clear, then, that the empirical key to distinguish the risk model from the characteristics model is to find variation in risk loadings unrelated to BE/ME. The authors, testing the July 1929 to June 1997 period, find that the evidence of Daniel and Titman (1997) in favor of the characteristics model is special to rather short sample period (July 1973 to December 1993, 20.5 years). In the more powerful tests for their 68-year period, the risk model provides a better story for the relation between BE/ME and average return.

To summarize, the authors find that the value premium in average stock returns is robust. The size effect in average returns is smaller. The three-factor risk model explains the value premium better than a popular competitor, the characteristics model of Daniel and Titman (1997). The analysis in the greater period proves that the evidence of Daniel and Titman (1997) in favor of the characteristics model is special to their rather short sample period.

Finally, when portfolios are formed from independent sort of stocks on size and BE/ME , the three factor model is rejected by the Gibbons et al. (1989) test. This result shows that the three factor model is just a model and thus an incomplete description of expected returns. What the remaining tests say is that the model's shortcomings are just not those predicted by the characteristics model.

Andre Lucas, Ronald van Dijk, Teun Kloek (2002)

Using US data from June 1984 to July 1999, they show that the impact of firm-specific characteristics like size and book-to-price on future excess stock returns varies considerably over time. The impact can be either positive or negative at different times. This time variation is partially predictable. They investigate whether the partial predictability signals security mispricing or risk compensation by formulating alternative modeling strategies. The strategies are compared empirically. In particular, they allow for a state-dependent choice of investment styles rather than a once-and-for-all choice for a particular style, for example based on high book-to-price ratios or small market cap values. Using alternative ways to correct risk, they find significant and robust excess returns to style rotating investment strategies. Business cycle oriented approaches exhibit the best overall performance. Purely statistical models for style rotation or fixed investment styles reveal less robust behavior.

The authors use two macroeconomic variables in their style rotation model, the term-spread of interest rates, and a composite of leading indicators of the business cycle. At least two reasons can be given for the potential influence of the term –spread of interest rates on expected stock returns according to the authors. First, the term spread can be considered as an indicator of economic activity. In an expanding economy, it decreases because short rates generally rise more than long rates. Similarly, during a contraction, it generally increases. Hence, the term spread may affect expected stock market returns because of the effect on expected company earnings (see also, Schwert 1990; Chen, 1991;Jensen et al. 1996). This suggest that in periods of small term spread, some equity classes, likely to be small and rapidly growing firms, show higher returns as a result from higher and better quality earnings expectations. Second the term spread affects the sensitivity of stock prices to changes in interest rates. An increase in the term spread causes short-term earnings to play a relatively more important role in a dividend or free-cash flow discount model, while the long-run earnings are relatively less significant. How shifts of the term structure of interest rates influence a stock price depends on the term spread and distribution of earnings. Consequently, equity premia, which are among other factors determined by interest rate risks, may differ over equity classes. The second macroeconomic variable is a composite of leading indicators of the business cycle. Different equity classes may profit in different ways from changes in the business cycle. Especially small and growing firms are likely to be flexible to react on and profit from improving economic conditions. Large and mature firms are in

general more diversified, which makes them less sensitive to deteriorating economic circumstances.

This paper develops a framework for capturing the time-varying impact of firm characteristics like size and book-to-price on excess returns. Both the magnitude and direction of this impact displayed considerable time-variation. By linking the impact to macroeconomic conditions through the term structure and a business cycle leading indicator, the authors found significant and robust excess returns to portfolios of clear predicted winners. The returns were robust to various ways of risk-correction, choice of holding period, way of portfolio construction, and outlier control. Standard Small-size and high book-to-market investment strategies were not robust in this respect. By allowing for rotating investment styles over time, they examine whether the excess returns are in effect the manifestation of a more dynamic asset pricing model. The robustness of the resulting excess returns on a rotating investment scheme that is consistent with such a dynamic asset pricing model, contrasts with the less robust patterns found for conventional Size and book-to-market investment strategies.

Zvi Bodie, Alex Kane, Alan J. Marcus (2002)

The authors present the record of past rates of return as a possible source of information about risk premiums and standard deviations. One can estimate the historical risk premium by taking an average of the past differences between the returns on an asset class and the risk-free rate. Table 1 presents the annual rates of return on five asset classes for the period 1926-1999. “Large Stocks” refers to Standard & Poor’s market-value-weighted portfolio of 500 U.S. common stocks with the largest market capitalization. “Small Stocks” represents the value –weighted portfolio of the lowest-capitalization quintile (that is, the firms in the bottom 20% of all companies traded on the NYSE when ranked by market capitalization). Since 1982, this portfolio has included smaller stocks listed on the Amex and Nasdaq markets as well. The portfolio contains approximately 2.000 stocks with average capitalization of $100 million. “Long-Term T-Bonds” are presented by a government bond with at least a 20-year maturity and approximately current-level coupon rate. “Intermediate-Term T-Bonds” have around a seven –year maturity with a current-level coupon rate. “T-Bills” are of approximately 30-day maturity, and the one-year holding period return represents a policy of “rolling over” the bills as they mature. Because T-bill rates can change from month to month, the total rate of return on these T-bills is riskless only

for 30-day holding periods. The last gives the annual inflation rate as measured by the rate of change in the Consumer Price Index.

Figure 1 gives a graphic representation of the relative variabilities of the annual holding period return for the three different asset classes. We have plotted the three time series on the same set of axes, each in different color. The graph shows very clearly that the annual return on stocks is the most variable series. Moreover there is evidence of the risk-return trade-off that characterizes security markets: The markets with the highest average returns also are the most volatile. We can mark in the table as well as in the figure that small stocks (lowest capitalization) outperform large stocks in average return in the specified period, a characteristic affiliated with increased volatility.

Figure 1. **Rates of Return on Stocks and Long-Term T-Bonds**

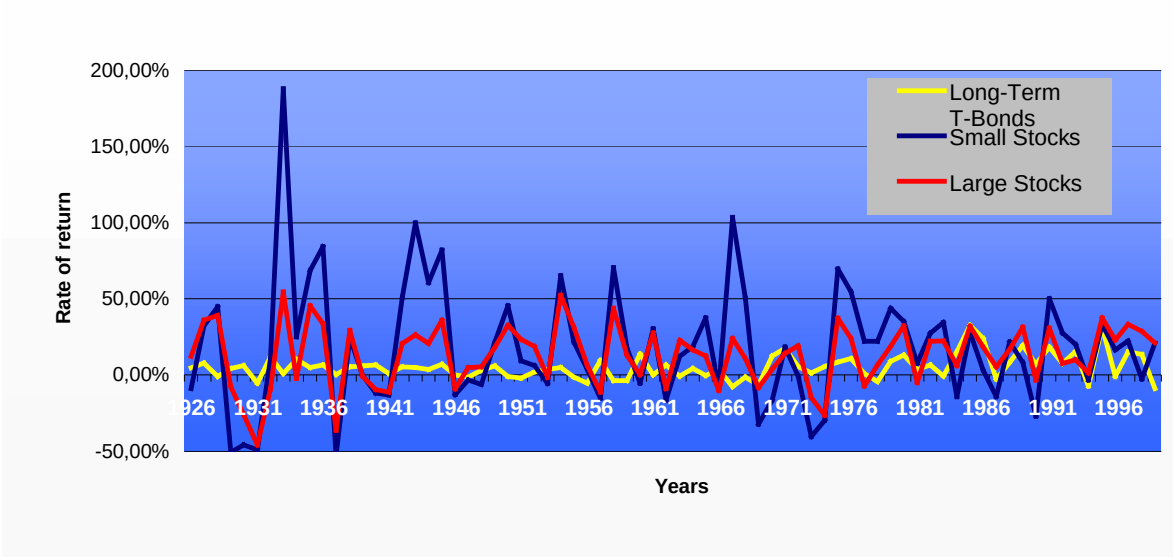


Table 1. RATES OF RETURN, 1926-1992

Year	Small Stocks	Large Stocks	Long-Term T-Bonds	Intermediate-Term T-Bonds	T-Bills	Inflation
1926	-8,91%	12,21%	4,54%	4,96%	3,19%	-1,12%
1927	32,23%	35,99%	8,11%	3,34%	3,12%	-2,26%
1928	45,02%	39,29%	-0,93%	0,96%	3,21%	-1,16%
1929	-50,81%	-7,66%	4,41%	5,89%	4,74%	0,58%
1930	-45,69%	-25,90%	6,22%	5,51%	2,35%	-6,40%
1931	-49,17%	-45,56%	-5,31%	-5,81%	0,96%	-9,32%
1932	10,95%	-9,14%	11,89%	8,44%	1,16%	-10,27%
1933	187,82%	54,56%	1,03%	0,35%	0,07%	0,76%
1934	25,13%	-2,32%	10,15%	9,00%	0,60%	1,52%
1935	68,44%	45,67%	4,98%	7,01%	-1,59%	2,99%
1936	84,47%	33,55%	6,52%	3,77%	-0,95%	1,45%
1937	-52,71%	-36,03%	0,43%	1,56%	0,35%	2,86%
1938	24,69%	29,42%	5,25%	5,64%	0,09%	-2,78%
1939	-0,10%	-1,06%	5,90%	4,52%	0,02%	0,00%
1940	-11,81%	-9,65%	6,54%	2,03%	0,00%	0,71%
1941	-13,08%	-11,20%	0,99%	-0,59%	0,06%	9,93%
1942	51,01%	20,80%	5,39%	1,81%	0,26%	9,03%
1943	99,79%	26,54%	4,87%	2,78%	0,35%	2,96%
1944	60,53%	20,96%	3,59%	1,98%	-0,07%	2,30%
1945	82,24%	36,11%	6,84%	3,60%	0,33%	2,25%
1946	-12,80%	-9,26%	0,15%	0,69%	0,37%	18,13%
1947	-3,09%	4,88%	-1,19%	0,32%	0,50%	8,84%
1948	-6,15%	5,29%	3,07%	2,21%	0,81%	2,99%
1949	21,56%	18,24%	6,03%	2,22%	1,10%	-2,07%
1950	45,48%	32,68%	-0,96%	0,25%	1,20%	5,93%
1951	9,41%	23,47%	-1,95%	0,36%	1,49%	6,00%
1952	6,36%	18,91%	1,93%	1,63%	1,66%	0,75%
1953	-5,68%	-1,74%	3,83%	3,63%	1,82%	0,75%
1954	65,13%	52,55%	4,88%	1,73%	0,86%	-0,74%
1955	21,84%	31,44%	-1,34%	-0,52%	1,57%	0,37%
1956	3,82%	6,45%	-5,12%	-0,90%	2,46%	2,99%
1957	-15,03%	-11,14%	9,46%	7,84%	3,14%	2,90%
1958	70,63%	43,78%	-3,71%	-1,29%	1,54%	1,76%
1959	17,82%	12,95%	-3,55%	-1,26%	2,95%	1,73%
1960	-5,16%	0,19%	13,78%	11,98%	2,66%	1,36%
1961	30,48%	27,63%	0,19%	2,23%	2,13%	0,67%
1962	-16,41%	-8,79%	6,81%	7,38%	2,72%	1,33%
1963	12,20%	22,63%	-0,49%	1,79%	3,12%	1,64%
1964	18,75%	16,67%	4,51%	4,45%	3,54%	0,97%
1965	37,67%	12,50%	-0,27%	1,27%	3,94%	1,92%
1966	-8,08%	-10,25%	3,70%	5,14%	4,77%	3,46%
1967	103,39%	24,11%	-7,41%	0,16%	4,24%	3,04%
1968	50,61%	11,00%	-1,20%	2,48%	5,24%	4,72%
1969	-32,27%	-8,33%	-6,52%	-2,10%	6,59%	6,20%
1970	-16,54%	4,10%	12,69%	13,93%	6,50%	5,57%
1971	18,44%	14,17%	17,47%	8,71%	4,34%	3,27%
1972	-0,62%	19,14%	5,55%	3,80%	3,81%	3,41%
1973	-40,54%	-14,75%	1,40%	2,90%	6,91%	8,71%
1974	-29,74%	-26,40%	5,53%	6,03%	7,93%	12,34%
1975	69,54%	37,26%	8,50%	6,79%	5,80%	6,94%
1976	54,81%	23,98%	11,07%	14,20%	5,06%	4,86%
1977	22,02%	-7,26%	0,90%	1,12%	5,10%	6,70%
1978	22,29%	6,50%	-4,16%	0,32%	7,15%	9,02%
1979	43,99%	18,77%	9,02%	4,29%	10,45%	13,29%
1980	35,34%	32,48%	13,17%	0,83%	11,57%	12,52%
1981	7,79%	-4,98%	3,61%	6,09%	14,95%	8,92%
1982	27,44%	22,09%	6,52%	33,39%	10,71%	3,83%
1983	34,49%	22,37%	-0,53%	5,44%	8,85%	3,79%
1984	-14,02%	6,46%	15,29%	14,46%	10,02%	3,95%
1985	28,21%	32,00%	32,68%	23,65%	7,83%	3,80%
1986	3,40%	18,40%	23,96%	17,22%	6,18%	1,10%
1987	-13,95%	5,34%	-2,65%	1,68%	5,50%	4,43%
1988	21,72%	16,86%	8,40%	6,63%	6,44%	4,42%
1989	8,37%	31,34%	19,49%	14,82%	8,32%	4,65%
1990	-27,08%	-3,20%	7,13%	9,05%	7,86%	6,11%

Year	Small Stocks	Large Stocks	Long-Term T-Bonds	Intermediate-Term T-Bonds	T-Bills	Inflation
1991	50,24%	30,66%	18,39%	16,67%	5,65%	3,06%
1992	27,84%	7,71%	7,79%	7,25%	3,54%	2,90%
1993	20,30%	9,87%	15,48%	12,02%	2,97%	2,75%
1994	-3,34%	1,29%	-7,18%	-4,42%	3,91%	2,67%
1995	33,21%	37,71%	31,67%	18,07%	5,58%	2,54%
1996	16,50%	23,07%	-0,81%	3,99%	5,50%	3,32%
1997	22,36%	33,17%	15,08%	7,69%	5,32%	1,70%
1998	-2,55%	28,58%	13,52%	8,62%	5,11%	1,61%
1999	21,26%	21,04%	-8,74%	0,41%	4,80%	2,68%
Average	***18,81%***	***13,11%***	***5,36%***	***5,19%***	***3,82%***	***3,17%***
Standard Deviation	***39,68%***	***20,21%***	***8,12%***	***6,38%***	***3,29%***	***4,46%***
Minimum	***-52,71%***	***-45,56%***	***-8,74%***	***-5,81%***	***-1,59%***	***-10,27%***
Maximum	***187,82%***	***54,56%***	***32,68%***	***33,39%***	***14,95%***	***18,13%***

Sources
Inflation data: Bureau of Labor Statistics.
Security return data 1929 -1995: Center for Research in Security Prices Chicago GSB
Security return data since 1996: Returns on appropriate index portfolios:
Large stocks: S&P 500
Small stocks: Russell 2000
Long-term government bonds: Lehman Bros. long-term Treasury index
Intermediate-term government bonds: Lehman Bros. intermediate-term Treasury index
T-bills: Salomon Smith Barney 3-month U.S. T-bill index

*Source of table: Investements, ZVI BODIE - ALEY KANE - ALAN I MARCUS, © 2002

3. Synopsis

In examining the forecasting power of firm characteristics for excess returns, the academic literature conventionally focuses on long-term returns. The systematic patterns found provide evidence that some equity classes generate above –average returns in the long run. In particular, value stocks outperformed growth stocks historically, and small capitalization stocks had higher annual returns than large capitalization stocks. In the investment management industry nowadays, value and size strategies are used for discriminating relative future performance. This implementation is known as style investing.

Positive risk –adjusted returns associated with low price/ earnings ratio stocks were first documented by Basu (1977). Banz (1981) documents a strong negative relation between average return and firm size and Basu (1983) finds a positive relation between average return and E/P. Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) document a positive relation between average return and book-to-market equity for U.S. stocks, and Chan, Hamao, and Lakonishok (1991) find that BE/ME is also a powerful variable for explaining average returns on Japanese stocks. Connaturally in the out performance of value and small capitalization stocks referred the papers of Fama and French (1992), La Porta (1996), Daniel and Titman (1997), Barber and Lyon (1997) and Lewellen (1999).

In an efficient market one would expect that risk and return would be highly related on a reliable basis through time. Any useful risk proxy will be expected to explain variation in return on a consistent basis. If instead the relationship between the risk proxy and return is not reliable through time, it can be argued that the superior returns are generated during some time periods because of investor overreaction or by chance rather than because of risk, or one may argue that markets are efficient only part of the time. At least, four alternative theories have been put forward to explain the long-term out performance of value and small capitalization stocks.

First, the firm variables might proxy for a risk factor. Fama and French (1993,1995), Jensen et al. (1997) and Lewellen (1999) argue that the higher returns are a compensation for higher risk. Firms with similar firm characteristics are sensitive to the same macroeconomic factors like economic growth surprises and interest rate risk. Fama and French (1993) suggest that book-to-market and size are proxies for distress and that distressed firms may be more sensitive to certain business cycle

factors, like changes in credit conditions, than firms that are financially less vulnerable.

A second and alternative view is that the firm variables provide information about security mispricing. Kahneman and Tversky (1982) suggest that forecasters overweight recent information more than other data. De Bondt and Thaler (1985, 1987) believe that investors overreact in the market to recent past events.

Lakonisthok et al. (1994) and Haugen (1995) argue that the value premium in average returns arises because the market undervalues distressed stocks and overvalues growth stocks. High B/M, E/P, and C/P firms tend to have persistently low earnings; low B/M, E/P, and C/P stocks tend to be strong (growth) firms with persistently high earnings. They suggest that the higher returns on value strategies are due to an incorrect extrapolation of past stock performance. They suggest that investors are overly optimistic about firms which have done well in the past and are overly pessimistic about those that have done poorly. Lakonishok et al. (1994) also suggest that low book-to-market (or growth) stocks are more glamorous than value stocks and may thus attract naïve investors who push up prices and lower the expected returns of these securities. Value strategies work because they are contrary to the strategies followed by naïve investors who make systematic errors in their expectations about the future.

Dreman and Berry (1995) suggest that investment research analyst EPS forecasts reflect an overreaction to prior events, so that subsequent EPS disappointments adversely affect the market prices of growth stocks (with higher price-earnings ratios) more than the market prices of value stocks (with low price-earnings ratios). La Porta (1996) finds evidence that value strategies work because expectations about future growth in earnings are too optimistic. Haugen and Baker (1996) suggest that the relationship is caused by inefficient markets and investor overreaction. Bauman and Miller (1997) observe that EPS growth rates of companies have a mean reversion tendency over time, so high growth rates associated with growth stocks subsequently tend to decline, while low growth rates associated with value stocks tend to increase. See also Bauman, Conover and Miller (1999).

As a third possible reason for reported out performance, is that the value premium is sample specific. Its appearance in past U.S. returns is a chance result unlikely to recur in future returns. A standard check on this argument is to test for a value premium in other samples. Davis (1994) shows that there is a value premium in U.S. returns before 1963. Capaul, Rowley, and Sharpe (1993); Bauman, Conover, and

Miller (1998); Fama and French (1998); Chan, Hamao, and Lakonishok (1991) and Arshanapalli, Coggin, and Doukas (1998) show that value stocks also produce higher returns than growth stocks in many international stock markets. Hawawini and keim (1999), in their review of international evidence, suggest broadly similar results for small capitalization stocks. Davis, Fama and French (2000), also reinforce the argument against the sample-specific explanation for the value premium.

The fourth view is that suggested by Daniel and Titman (1997) in which value premium traces to the value characteristic. For example, a behavioral story that does not require overreaction is that investors like growth stocks (strong firms) and dislike value stocks (weak firms). The result is a value premium (low prices and high expected returns for value stocks relative to growth stocks) that is not due to risk. The behavioral overreaction story can also be viewed as a variant of the characteristics model.

Some authors use the time-variation in the relation between firm characteristics and returns to investigate whether the mispricing or risk compensation view provides a more plausible explanation for realized excess returns. Fama and French (1993), Daniel and Titman (1997) and Lewellen (1999), for example, examine the returns on value and size based investment styles using a factor model with three factors: (i) the returns on a value-weighted market portfolio, (ii) the excess returns on a small-capitalization over a large –capitalization portfolio, and (iii) the excess return on a high book-to-market portfolio over a low book-to-market portfolio. By relating returns on value or size –based investment styles to current realizations of the risk factors, the authors argue that excess returns are more in line with the risk compensation rather than with the mispricing view.

Lakonishok, Shleifer, and Vishney (1994), Haugen (1995) and Ralph R. Trecartin Jr. (2000), give a different rationale as to why fund managers may avoid investing in value firms on the extreme end of the continuum. They reason that professional money managers cannot risk having a portfolio that subastantially underperforms the market even on a short-term basis because performance is measured and rewarded monthly or quarterly. Haugen (1995) and Ralph R. Trecartin Jr. (2000) claim that the value effect is a tremendous opportunity for individual investors who can continue to earn above normal long-term returns. They suggest that the effect should continue to persist because of the potential short-term uncertainty in returns which drives away the professional managers.

The performance of value or size related investment styles are not stable over time. Some periods depart from the long-term patterns documented in the literature. Reinganum (1992) shows that periods when the size effect is negative tend to be followed by periods when the size effect is positive. Chan et al. (2000), show that the regular size and value effects are inversed over the period 1990 through 1998. This can be a major worry for professional investment managers with value or size-based investment styles. Returns over a multi-year period are frequently not a sufficient factor to consider a particular fixed investment style a success. Professional money managers are often assessed on their intra-year returns relative to a prespecified benchmark. Both annual out performance and intra-year variability of the out performance are important (Roll, 1992). Managers are therefore looking for systematic patterns in the time-varying impact of value and size on returns in order to enhance their performance. As argued above, such patterns may be caused by macroeconomic conditions.

Various studies have linked macroeconomic indicators to asset returns, e.g., Chen et al. (1986), Chen (1991) and Peasant and Zimmermann (1994,1995). The main idea underlying these models is that differing growth prospects and expectations on discount factors can make stock investments more or less attractive at different points in time. Analogously, alternative investment styles can be preferred at different points in time. Fama and French (1993) suggest that book-to-market and size are proxies for distress, and that distressed firms may be more sensitive to certain business cycle factors. Sorensen, Eric and Lazzara (1995), argue that there is a negative (positive) correlation between industrial production and the relative performance of growth stock (value stocks), as well as a negative contemporaneous correlation between changes in long-term interest rates and changes in the Growth/ Value relative. Stephen Fan (1995) shows in his study a rational relation between economic cycles and style trend. Jensen, Johnson, and Mercer (1998), find that size and book-to-market depend on the monetary environment. Andre Lucas, Ronald van Dijk and Teun Kloek (2002) find significant and robust excess returns to style rotating investment strategies when combined with business cycles performance.

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