Investor Overreaction in International Stock Markets

Value stocks outperform outside the U.S.

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It is axiomatic that value stocks produce higher returns than growth stocks in the United States market. Capaul, Rowley, and Sharpe [1993]; Bauman, Conover, and Miller [1998]; Fama and French [1997]; and Arshanapalli, Coggin, and Doukas [1998] show that value stocks also produce higher returns than growth stocks in many international stock markets. While there is a considerable body of research explaining why value stocks outperform growth stocks in the U.S. market, very little published research examines the reasons for the performance difference in international markets.

Many studies of the U.S. stock market offer various explanations for why value stocks produce higher returns than growth stocks. Fama and French [1992, 1997] suggest that value stocks may be riskier and require a higher return, while others believe the difference is due to systematic, suboptimal market behavior on the part of investors and securities research analysts. 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.

Kahneman and Tversky [1982] suggest that forecasters overweight recent information more than other data. Lakonishok, Shleifer, and Vishny [1994] believe that investor expectations are based on extrapolation of the recent past performance, and De Bondt and Thaler [1985, 1987] believe that investors overreact in the market to recent past events.

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). Likewise, 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.

Value and growth stocks could perform differently in many international markets because of different financial or social conditions. Investors may behave differently in particular markets, if there are differences in the quantity, quality, and timeliness of the available research information.

We examine why value stocks generally outperform growth stocks in international stock markets. We seek to answer several questions. Does the EPS growth rate of companies have a mean reversion tendency, so that high past growth rates decrease and low past growth rates increase over time? For behavioral reasons, do investors and securities research analysts appear to forecast EPS growth rates by systematically extrapolating past growth rates, and tend to overestimate the EPS of growth stocks and underestimate the EPS of value stock? Consequently, do investors overreact to past EPS growth rates by driving the market prices of growth stocks too high and the prices of value stocks too low? Answers to these questions may explain why value stocks outperform growth stocks in international markets.

We examine data for the 1986-1996 period in the twenty established markets represented by the Morgan Stanley Capital International (MSCI) Europe/Australasia/Far East (EAFE) Index, plus the Canadian market.[1] We classify 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. To facilitate cross-country market comparisons, rates of returns, EPS growth rates, and corporate stock market capitalizations are measured in U.S. dollar terms. Because Bauman, Conover, and Miller [1998] find that small companies outperform large companies in these international markets, we also determine whether this difference in performance is associated with differences in P/Bs or expectations regarding future EPS growth rates.

Our data base consists of two files: The IBES Historical Database — The International Edition, Analysts Estimates Detail Report, for June 1987 (the first year that data were available) through June 1996; and Standard & Poor's Compustat Global Vantage Database, from 1983 to 1996.[2] Using the data available from these two sources, we identify value stocks and growth stocks from the twenty-one countries and measure their performance annually, commencing with June 1986 and ending in June 1996. We examine companies with the two most common fiscal year-ends (FY): March (about 37% of our sample), and December (the other 63% of the sample). The stocks are classified as value stocks and growth stocks each year from 1986 through 1995, on the basis of two separate criteria, P/Bs and EPS growth rates.[3]

To classify stocks and measure their performance, stock prices are used six months after the respective company fiscal year-end. Most companies publish annual financial reports within three to six months after the close of their fiscal year. Therefore, closing market prices on June 30 are used for December FY companies, and market prices on September 30 are used for March FY companies. Annual rates of return for December FY stocks equal the percentage price change plus the dividend yield expressed in U.S. dollar terms from June 30 to the subsequent June 30, while the return for March FY stocks is measured from September 30 to the subsequent September 30.[4]

The P/B for each stock is measured as the market price six months after the end of the fiscal year divided by the book value per share as of the end of the prior FY. For the EPS growth rate criterion, the average annual growth rate in EPS over the prior three FYs is determined for each stock in each of the years studied.[5]

The IBES consensus EPS forecasts made by securities research analysts are used as a proxy for the expectations of investors regarding future returns, as corporate earnings are considered an important determinant of investment value. For inclusion in the study, each stock must have had two or more analyst EPS forecasts.

An earnings surprise indicator (ES), sometimes referred to as the standardized unexpected earnings (SUE), is calculated for each stock in each year in order to measure the overestimation and the underestimation of EPS forecasts. It is calculated as follows:

$$ES_t = \frac{A - F}{SD}$$

where

A = actual EPS in the current year, year t;

F = consensus median EPS forecast for year t (as estimated in June of year t for December FY companies and in September for March FY companies); and

SD = standard deviation of individual analyst forecasts, expressed in monetary terms. This variable calibrates the earnings surprise by the degree of uncertainty among the analysts.

OVERREACTION AS INDICATED BY P/B RATIOS

We group the stocks into quartiles on the basis of P/B ratios each year and then pool the results over all years in the study. As presented in Exhibit 1, of a total of 10,852 observations, approximately one-fourth of the sample with the lowest P/B ratios, considered the value stocks, is assigned to quartile 1, and one-fourth of the sample with the highest P/Bs, considered the growth stocks, is assigned to quartile 4. Quartile 3 represents one-fourth of the stocks with the second-highest P/Bs, while quartile 2 has the remaining one-fourth with the second-lowest P/Bs.

The median P/B for year t (at the beginning of each year studied) is shown for each quartile. There is a vast spread in P/Bs between the value quartile of 0.93 and the growth quartile of 3.95.[6] The quartile median P/Bs for those same stocks at the end of each annual holding period (designated as year t + 1) is calculated as the market price at the end of the holding period of the year studied, divided by the book value at the end of the current FY.

The changes in the P/B ratios over the twelve-month period suggest evidence of adjustments to a market overreaction. The value quartile, with the lowest P/Bs, is the only quartile that shows an increase in P/Bs, 3.8%, while the growth quartile, with the highest P/Bs, reveals the greatest subsequent decrease, 11.9%.

The mean annual return of the stocks in each quartile is shown in the next section of Exhibit 1. The spread in returns of 900 basis points between the return of 12.8% for the value quartile and the return of 3.8% for the growth quartile reflects a subsequent market correction to an apparent overreaction in the preceding year.

This relationship is confirmed by the Spearman correlation coefficients, which are positive and highly significant for changes in P/Bs and rates of return for the value and growth quartiles. That is, positive changes in P/Bs are associated with high returns, while negative changes in P/Bs are associated with lower returns.

MARKET REACTION ASSOCIATED WITH EARNINGS SURPRISES

To investigate the market reaction to earnings surprises, the sample of 9,049 observations consists of stocks for which earnings forecasts were made by at

EXHIBIT 1
VALUE STOCKS AND GROWTH STOCKS BASED ON P/B RATIO 1986-1996

| Item | Quartile | | | | Sample Total | Spread Between 1 and 4 |
	1 Value	2	3	4 Growth		
P/B Ratio in Year t (median)	0.93	1.57	2.28	3.96	1.97	3.03
P/B Ratio in Year t + 1 (median)	0.97	1.53	2.10	3.48	1.83	2.51
Change in P/B Ratio (%)	3.8	−2.6	−7.8	−11.9	−7.1	
Return (%)	12.75	8.53	6.67	3.75	7.89	9.00
Standard Deviation	34.62	34.10	32.71	32.51	33.64	
Spearman Correlation Between Return and						
Change in P/B Ratio Coefficient	0.7569	0.8446	0.8514	0.7897	0.8112	
P-Value	0.0001	0.0001	0.0001	0.0001	0.0001	
Number of Observations	2,655	2,749	2,730	2,718	10,852	

least two or more research analysts for the years 1987 to 1995. As shown in Exhibit 2, the average P/B ratio for the growth stocks is almost four and three-quarters times higher than the average P/B ratio for the value stocks. The earnings surprise ratios are all negative, indicating that research analysts tend to overestimate EPS, perhaps because sell-side analysts have an optimistic bias. The EPS forecasts for value stocks are overestimated as a group to a moderately greater degree than growth stocks.

The market nevertheless appears to react quite negatively to earnings disappointments for growth stocks, inasmuch as quartile 4 has a mean return of only 1.7%, the lowest of the four groups. The relationship between P/B ratios and returns for the four groups is monotonic and negative, and the value quartile has the highest return at 15.4%. The large spread in return between the value and growth quartiles, 1,370 basis points, suggests that investors in growth stocks registered a clear disappointment in the reported EPS, while investors in value stocks, with the much lower P/B ratios, appeared to be unperturbed by the earnings disappointments as reflected by research analyst expectations.

Dreman and Berry [1995] find similar empirical evidence for U.S. stocks. They attribute this difference in performance to investor extrapolation of past growth rates into the future and investor overreaction to past growth rates.

ANNUAL PORTFOLIO PERFORMANCE

We compare annual returns for value and growth stocks formed as portfolios in order to determine how consistent the differences in performance are on a year-to-year basis. Stocks are again assigned to

quartiles on the basis of P/B ratios at the beginning of each year studied. This is done separately for companies with December FYs and with March FYs.

As shown in Exhibit 3, the value portfolio outperformed the growth portfolio over the total ten-year period by 240 basis points for December FY companies (13.9% versus 11.5%) and by 960 basis points for March FY companies. For December FY companies, the growth portfolio outperformed the value portfolio in six out of ten years, but the value portfolio had substantially superior double-digit spreads in three years.

The variability in annual returns, as measured by the standard deviation, is somewhat greater for the value portfolio; the return-to-risk ratio over the ten-year period for the value portfolio with December FYs is lower (0.77) than for the growth portfolio (0.86). The performance of the value portfolio with March FYs was vastly superior over the growth portfolio over the ten-year period on both a total return basis (15.8% versus 6.2%) and on a return-to-risk basis (0.65 versus 0.35). Furthermore, value stocks outperformed growth stocks in eight out of ten years. These results suggest that investors cannot expect a superior performance from value stocks in every year.

EARNINGS PER SHARE GROWTH RATES

We also identify growth stocks and value stocks on the basis of EPS growth rates. The three-year average annual EPS growth rate for each stock is identified commencing with the three years 1985-1987, and ending with the three years 1993-1995. Stocks are then pooled and assigned to quartiles. Stocks with the highest growth rates are assigned to quartile 4 (growth); stocks with the lowest growth rates including the most negative growth rates are assigned to quartile 1 (value);

EXHIBIT 2
EARNINGS SURPRISES FOR QUARTILES BASED ON P/B RATIO 1987-1996

| Item | Quartile | | | | Sample Total | Spread Between 1 and 4 |
	1 Value	2	3	4 Growth		
P/B Ratio in Year t (median)	1.01	1.76	2.55	4.75		3.74
Earnings Surprise (median)	−0.83	−0.68	−0.60	−0.51		
Return (%)	15.4	12.2	7.5	1.7		13.7
Standard Deviation	38.0	37.8	37.2	35.9		
Number of Observations	2,243	2,267	2,268	2,271	9,049	

EXHIBIT 3
ANNUAL RETURNS FOR VALUE AND GROWTH STOCKS BASED ON P/B RATIO

| Holding Period Ends in Year Indicated | Quartile | | | | Spread Between 1 and 4 | Number of Obs. |
	1 Value	2	3	4 Growth		
December Fiscal Year Companies						
June 1987	52.9%	50.8%	37.6%	38.6%	14.3%	820
1988	2.5	−2.2	7.7	0.1	2.4	894
1989	22.1	16.6	11.2	6.8	15.3	1,019
1990	22.8	25.2	30.1	26.3	−3.5	1,314
1991	−14.5	−13.4	−12.6	−13.8	−0.7	1,485
1992	10.1	18.4	12.4	12.4	−2.3	1,601
1993	−0.2	3.2	8.0	6.5	−6.7	1,541
1994	41.5	28.1	22.4	13.4	28.1	1,528
1995	9.7	10.1	9.2	12.5	−2.8	1,752
1996	7.4	9.7	13.2	20.2	−12.8	1,871
Compound Return	13.9	13.4	13.2	11.5	2.4	
Arithmetic Return	15.4	14.7	13.9	12.3	3.1	
Standard Deviation	20.0	17.8	13.8	14.3		
Return-to-Risk Ratio	0.77	0.82	1.01	0.86	−0.09	
March Fiscal Year Companies						
September 1987	80.0%	70.3%	56.9%	54.2%	25.8%	705
1988	12.0	12.9	13.9	10.7	1.3	774
1989	33.0	38.5	39.2	32.8	0.2	941
1990	−17.2	−31.2	−33.3	−35.7	18.5	1,092
1991	20.9	25.6	19.0	14.0	6.9	1,180
1992	−7.1	−17.7	−19.5	−21.2	14.1	1,211
1993	47.1	44.2	35.4	31.3	15.8	1,208
1994	12.9	9.5	1.6	−2.0	10.9	1,135
1995	−7.8	−9.9	−8.1	−5.1	−2.7	1,133
1996	14.0	14.2	7.3	14.6	−0.6	1,044
Compound Return	15.8	11.9	8.0	6.2	9.6	
Arithmetic Return	18.8	15.7	11.2	9.4	9.4	
Standard Deviation	28.9	30.6	27.7	26.7		
Return-to-Risk Ratio	0.65	0.51	0.41	0.35	0.30	

and the remaining stocks with the intermediate growth rates are assigned to quartiles 2 and 3.

The growth rate in EPS is then measured in the subsequent fourth year. The annual quartile stock returns are measured in the same manner as before, commencing six months after the fiscal year-end. Exhibit 4 presents the quartile return performance, based on 11,336 observations, over the eight-year holding period from 1988 to 1996.

The prior three-year compound annual EPS growth rate reflects a considerable difference, ranging from a negative 22.9% per year for quartile 1 to a high of 35.6% for quartile 4. The EPS growth rate in the subsequent fourth year, designated as year t, reflects a much narrower range in that the growth rate for quartile 1 is a positive 11.3%, while quartile 4 is only 0.2%.

This empirical evidence suggests that earnings growth rates have a mean reversion tendency; high past growth rates subsequently decrease, and low or negative past growth rates subsequently rise. This is consistent with the negative Spearman correlation coefficients for the relationship between the prior three-year EPS growth rates and the subsequent growth rate in year t.

Nevertheless, the quartile mean returns tend to cluster closely together in the 7.5% to 8.4% range, as shown in Exhibit 4. Given this somewhat consistent

EXHIBIT 4
STOCKS IN VALUE QUARTILES AND GROWTH QUARTILES
BASED ON PRIOR THREE-YEAR EPS GROWTH RATE 1988-1996

| Item | Quartile | | | | |
	1 Value	2	3	4 Growth	Sample Total
Prior Three-Year EPS Growth Rate (median) (%)	−22.9	−1.5	12.5	35.6	6.7
EPS Growth Rate in Year t (median)[†]	11.3	2.3	0.7	0.2	3.1
Change in Growth Rate in Basis Points[†]	+5,498	+365	−1,200	−3,454	−367
Spearman Correlation Between Prior and Current Year Growth Rate[†]					
Coefficient	−0.2588	−0.0152	0.0144	−0.0040	−0.1134
P-Value	0.0001	0.4243	0.4504	0.8391	0.0001
Return (%)	7.48	7.77	8.40	7.91	7.89
Standard Deviation	34.95	32.42	31.87	35.33	33.64
Spearman Correlation Between Prior Growth Rate and Return					
Coefficient	−0.0996	−0.0360	−0.0499	−0.0620	−0.0214
P-Value	0.0001	0.0551	0.0047	0.0009	0.0224
Number of Observations	2,825	2,836	2,831	2,844	11,336

[†]Excludes 484 company observations showing deficit EPS in year t.

market response to the divergent growth rate patterns, investors may be anticipating, to some extent, reversals in high and low past growth rates. At the same time, the Spearman negative correlation coefficient between the prior three-year EPS growth rates and the returns of the stocks is highly significant. This implies that higher returns tend to be associated with lower past growth rates (and vice versa).

EARNINGS SURPRISES AND EPS GROWTH RATES

To examine whether past EPS growth rates influence analyst EPS forecasts, the stocks in the IBES data base are formed into quartiles on the basis of their prior three-year EPS growth rates. The prior three-year growth rates and the subsequent-year (t) growth rates are shown in Exhibit 5 for 2,111 observations. Once again, a mean reversion tendency in growth rates is evident for the value quartile 1 and the growth quartile 4, as reflected by the negative Spearman correlation coefficients.

The mean earnings surprises (ES) for all quartiles are negative, which conforms to the results reported in Exhibit 2. There appears to be a clear difference between the ES for quartile 1 (−2.42) and quartile 4

(−11.16), and the Spearman correlations between the prior three-year growth rates and ES for all quartiles are negative and significant. This indicates that stocks with high past growth rates tend to be associated with larger (more negative) earnings disappointments, while stocks with lower (even negative) past growth rates tend to be associated with smaller (less negative) earnings disappointments. Although earnings growth rates appear to have a mean reversion tendency, these Spearman correlations imply that analysts tend to forecast EPS by extrapolating past growth rates.

Exhibit 5 shows that the return of the value quartile is 13.95%, which exceeds the return of 10.04% for the growth quartile by 391 basis points. It may be inferred that this difference in performance is associated with the reversal in EPS growth rates and the larger market reaction to the strong decrease in the EPS growth rate for the stocks in the growth quartile.

The inference is further supported by the negative Spearman correlations between the past three-year growth rates and the mean returns for the value quartile and growth quartile. This indicates that the stocks with high past growth rates tend to have lower subsequent returns, while stocks with lower or negative past growth rates tend to have higher subsequent returns.

| | Quartile | | | | |
Item	1 Value	2	3	4 Growth	Sample Total
Prior 3-Year EPS Growth Rate (median) (%)	−18.9	0.8	13.4	33.1	8.5
EPS Growth Rate in Year t (median)[†]	7.0	4.3	0.8	4.2	4.3
Change in Growth Rate in Basis Points[†]	+2,590	+350	−126	−2,890	−420
Spearman Correlation Between Prior and Current Year Growth Rate[†]					
Coefficient	−0.1352	0.0149	0.1070	−0.0631	−0.0509
P-Value	0.0025	0.7395	0.0169	0.1579	0.0228
Earnings Surprise (mean)	−2.42	−4.84	−5.07	−11.16	−5.89
Spearman Correlation Between Prior Growth Rate and ES					
Coefficient	−0.0814	−0.1333	−0.1381	−0.1494	−0.0604
P-Value	0.0623	0.0021	0.0015	0.0006	0.0055
Return (%)	13.95	11.22	12.43	10.04	11.69
Standard Deviation	32.49	30.50	33.54	31.4	31.49
Spearman Correlation Between Prior Growth Rate and Return					
Coefficient	−0.0743	0.0256	−0.00835	−0.0614	−0.0551
P-Value	0.0891	0.5565	0.0555	0.1576	0.0113
Number of Observations	525	528	527	531	2,111

[†]Excludes 113 company observations showing deficit EPS in year t.

VALUE STOCKS VERSUS GROWTH STOCKS BY COUNTRY

We have so far compared the performance of value stocks and growth stocks for the twenty-one countries as a whole. To what extent are the relationships for the total sample applicable to the individual countries? To answer this question, we now form value and growth portfolios within each country. Quartiles are formed on the basis of the prior three-year EPS growth rates for each country in each year when there are at least forty stocks. Consequently, some countries and some annual observations are excluded because of inadequate samples.

Exhibit 6 presents the results for ten countries. Value stocks outperform growth stocks in three of the largest markets: Japan, the United Kingdom, and France. In three other countries (Italy, Malaysia, and Singapore), value stocks also outperform growth stocks, although the results are based on only two years of data. In the four remaining countries (Australia, Canada, Germany, and the Netherlands), the growth quartile has the highest return. This difference may reflect dif-

ferences in investor behavior and accounting for EPS.

Based on 8,814 stock returns, stratified by the ten separate markets, the value stocks as a group outperform the growth stock group by 462 basis points.

STOCK PERFORMANCE BASED ON COMPANY SIZE

We finally examine whether the size of companies relates to the performance of stocks using data for all twenty-one countries as a whole. The total market value of each stock expressed in U.S. dollar terms is determined at the beginning of each holding period, and companies are assigned to quartiles on the basis of market capitalization size. Based on 6,854 observations, quartile A represents one-fourth of the sample with the smallest cap size; quartile D represents a fourth with the largest cap size; and quartiles B and C represent the remaining intermediate-size firms.

The size of firms varies considerably, as shown in Exhibit 7, ranging from an average of $181.5 million in quartile A to an average of $4,893.3 million in quartile D. The P/B ratios increase monotonically with size, as

EXHIBIT 6
**ANNUAL RETURNS BY COUNTRY FOR VALUE STOCKS AND GROWTH STOCKS
BASED ON PRIOR THREE-YEAR EPS GROWTH RATE**

| Country and Holding Period | Quartile | | | | Spread Between 1 and 4 | Number of Obs. |
	1 Value	2	3	4 Growth		
1990-1996 (6) Australia						
Past EPS Growth	−24.7%	−2.9%	10.1%	32.9%		366
Percent Return	14.2	12.1	10.4	18.0	−3.8%	
1990-1996 (6) Canada						
Past EPS Growth	−33.2	−10.4	5.2	37.7		734
Percent Return	3.1	4.8	5.4	6.8	−3.7	
1990-1996 (6) France						
Past EPS Growth	−19.2	−0.9	11.5	34.5		578
Percent Return	15.4	15.3	12.2	14.4	1.0	
1990-1996 (6) Germany						
Past EPS Growth	−13.5	3.1	13.7	30.9		452
Percent Return	13.8	14.2	14.9	24.2	−10.4	
1994-1995 (1) Italy						
Past EPS Growth	−33.6	−18.9	−10.0	9.9		44
Percent Return	21.1	22.7	24.7	18.4	2.7	
1990-1996 (6) Japan						
Past EPS Growth	−19.4	3.5	14.6	36.0		4,351
Percent Return	5.4	2.7	−0.4	−1.9	7.3	
1995-1996 (1) Malaysia						
Past EPS Growth	−16.1	11.9	29.4	51.1		42
Percent Return	32.8	30.2	40.6	9.0	23.8	
1993-1996 (3) Netherlands						
Past EPS Growth	−26.9	−4.8	8.8	20.3		162
Percent Return	24.3	18.6	26.2	24.9	−0.6	
1994-1996 (2) Singapore						
Past EPS Growth	−16.7	6.5	16.7	40.7		84
Percent Return	32.5	9.3	30.7	27.2	5.3	
1990-1996 (6) United Kingdom						
Past EPS Growth	−27.8	−6.9	4.7	25.9		2,001
Percent Return	13.1	10.6	10.5	8.5	4.6	
Spread Between Average Value Stock and Average Growth Stock					4.6	8,814

might be expected, since cap size is influenced by market price levels. The average P/B ratio (2.43) for the largest-cap quartile is 31% greater than the P/B for the smallest-cap quartile (1.86).

Quartile A more closely corresponds to the value stock category, while quartile D corresponds to the growth stock category. The earnings (surprise) disappointment indicator is somewhat uniform across the four groups, except it is slightly less (−0.65) for the largest-cap quartile.

Exhibit 7 appears to indicate a substantial small-firm effect. The returns for the smallest-cap quartile (17.2%) are over three times the returns for the largest-cap quartile (5.5%). As measured by standard devia-

tions, the dispersion of returns is much greater for the small-cap stocks (47.7%) than the largest-cap stocks (30.6%). This difference in returns is clearly associated with capitalization size. There are distinct differences in P/B ratios; compared to the returns in Exhibit 1, there appears to be a low P/B ratio effect as well.

SUMMARY

Using two relatively new data bases, we examine ten years of information in twenty-one international stock markets. We find several explanations for why value stocks outperform growth stocks. First, evidence suggests that investors overreact to past growth rates in

EXHIBIT 7
STOCKS IN QUARTILES BASED ON MARKET CAPITALIZATION SIZE 1987-1996

Item	Quartile				
	A	B	C	D	Total
Cap Size (median) (U.S.$ million)	$181.5	$524.4	$1,288.6	$4,893.3	$825.8
P/B Ratio (median)	1.86	2.16	2.26	2.43	2.16
Earnings Surprise (median)	−0.71	−0.71	−0.71	−0.65	−0.71
Return (%)	17.2	8.9	9.4	5.5	10.3
Standard Deviation	47.7	35.9	33.4	30.6	37.7
Number of Observations	1,718	1,714	1,716	1,706	6,854

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.

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.

ENDNOTES

[1] The countries consist of Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Japan, Malaysia, Netherlands, New Zealand, Norway, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.

[2] The Compustat file provides sufficient information for us to derive EPS growth rate data for the years 1985 through 1996, book values for fiscal year-ends from 1985 through 1995, and stock rates of return from 1986 through 1996.

[3] For tests that do not require the more limited sample in

the IBES data base with EPS forecasts, we also use June and September FY companies.

[4] For June and September FY companies, we also use a six-month lag from their FY to calculate returns and ratios.

[5] For December FY companies, prior three-year growth rates begin with the 1985-1987 period and end with the 1993-1995 period. For March FY companies, the three prior-year growth rates commence with the FYs 1985-1987 and end with the FYs 1993-1995.

The past three-year growth rate is the compound growth rate calculated as follows:
$$[(1 + G_1) (1 + G_2) (1 + G_3)]^{1.3} - 1$$
where G is the annual percentage change in EPS.

[6] In order to reduce the effects of outliers, we eliminate firms with returns and EPS growth rates higher than the ninety-ninth percentile.

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