

Growth versus Value and Large-Cap versus Small-Cap Stocks in International Markets

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Many studies have shown that value-stock strategies outperform growth-stock strategies in U.S. markets. For international stock markets, however, little published research exists on this subject. Using four valuation ratios to define value stocks and growth stocks for more than 28,000 return observations in 21 countries for a 10-year period, we found that value stocks generally outperformed growth stocks on a total-return basis and on a risk-adjusted basis for the period and in a majority of individual years as well as in a majority of the national markets. When the growth stocks outperformed, the margin of difference was small. We also found a strong firm-size effect. In addition, value stocks outperformed growth stocks in all firm capitalization-size categories except the smallest.

Investors have devoted considerable attention to examining the differences in investment performance between growth stocks and value stocks. The growth-stock portfolio strategy has been promoted (particularly in the post-World War II period) by such well-known professional investors as David L. Babson (1951) and T. Rowe Price. The value-stock portfolio strategy, of which the contrarian approach is considered a subset, was prominently supported beginning in the 1930s by Benjamin Graham (See Graham and Dodd 1934), who is recognized by many investors as the father of fundamental security analysis.

Typically, value stocks are defined in various studies as those in which the market price is relatively low in relation to earnings per share (according to Basu 1977), cash flow per share (according to Lakonishok, Shleifer, and Vishny 1994), book value per share (according to Fama and French 1992), and dividends per share (according to Blume 1980 and Rozeff 1984). In comparison, growth stocks have been defined as having relatively high prices in relation to those same fundamental factors, as well as high past rates of growth in EPS. Nicholson (1960) was an early advocate of the idea that stocks with low P/Es provide superior returns.

Many studies have found that value stocks

produce higher returns than growth stocks in the U.S. stock market. Researchers have offered a variety of reasons for this performance difference. Fama and French (1992) suggested that value stocks may be riskier and thus require a return premium; others have stated that the difference is the result of systematic suboptimal market behavior on the part of institutional investors and security research analysts.

As compared with value stocks, growth stocks are characterized as having high recent growth rates in EPS and market price appreciation. Because the worth of stocks is estimated on the basis of expectations, Kahneman and Tversky (1982) suggested that forecasters overweight more recent information relative to older data. Lakonishok et al. concluded that investors tend to extrapolate recent past performance, and DeBondt and Thaler (1985, 1987) concluded that investors overreact to recent past events. Ball and Watts (1972) and others, however, found that the actual pattern of changes in annual corporate earnings corresponds to a random walk. In addition, Bauman and Miller (1997) observed that the EPS growth rate has a mean-reversion tendency, over time, in which the high growth rates associated with growth stocks subsequently tend to decline whereas the low growth rates associated with value stocks tend to increase. As a result, Bauman and Miller found that investment research analysts systematically overestimate the future EPS of growth stocks relative to value stocks. Therefore, growth stocks appear to experience lower returns subsequently when realized EPS growth rates are disappointingly lower than those that were expected.

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Despite the considerable empirical research about the U.S. stock market, relatively little research has been published regarding the performance of value and growth stocks in the stock markets of other countries. Value and growth stocks may indeed perform differently in non-U.S. markets because of the differences in the ways investors behave in those markets. For example, Bauman (1989, 1996) and Bauman and Johnson (1996) observed that the availability, quality, and timeliness of research information used by investors frequently varies considerably from one country to another. Capaul, Rowley, and Sharpe (1993), using price-to-book ratios (P/Bs), found that value stocks outperformed growth stocks in France, Germany, Japan, and the United Kingdom in the 1981–92 period.

The purpose of our study is to extend the Capaul–Rowley–Sharpe study to the 10 years from 1986 to 1996, to encompass all of the 20 established markets represented in the MSCI Europe/Australasia/Far East (EAFE) Index, as well as Canada, and to classify value and growth stocks on the basis of four valuation ratio measures—P/E, price to cash flow (P/CF), P/B, and dividend yield. By conducting a comprehensive study that uses a large sample of stocks, many international markets, and varied definitions of value and growth, we sought to determine whether the performance of stocks in the non-U.S. markets resembles the performance of stocks in the U.S. market. To facilitate cross-market comparisons, rates of return and market capitalizations were measured in U.S. dollar terms. In addition, because Banz (1981), Reinganum (1981), and others found that the stocks of small companies outperform those of large companies in the United States, we also tested whether small-company stocks outperform large-company stocks in non-U.S. countries.

Our database consisted of the Compustat Global Vantage file from 1985 to 1996.¹ To measure performance, we assigned stocks to quartile groups, or portfolios, in each of the 10 years studied. We examined companies with the four most common fiscal year ends (FYEs): March, June, September, and December. In order to classify the stocks on the basis of public information, we formed the portfolios six months after the respective fiscal year ending because the vast majority of companies publish annual financial reports within three to six months after the close of their fiscal years.² Therefore, companies with December FYEs (approximately 50 percent of the sample) were formed into portfolios on June 30; companies with March FYEs (approximately 35 percent of the sample) were assigned to portfolios as of September 30;

companies with June FYEs (approximately 9 percent) were assigned on December 31; and the remaining 6 percent with September FYEs were assigned on March 31 of the following year.

The valuation ratios were calculated as of the date the portfolios were formed. For December FYE companies, for example, commencing on June 30, 1986, the closing market prices on that date were used. P/Es, P/CFs, and P/Bs were calculated using the prior FY earnings per share, cash flows, and book values commencing with FY 1985.³ One-fourth of the total sample with the lowest P/Es on June 30 of each year were assigned to Quartile 1, considered the value group, and one-fourth of the sample with the highest P/Es went into Quartile 4, considered the growth group. Quartile 3 had the stocks with the second highest P/Es, and Quartile 2 had the stocks with the second lowest P/Es. This procedure was repeated on June 30 for each of the other nine years, 1987 through 1995. In using P/CFs to assign stocks into quartiles, cash flow per share was measured as earnings per share plus depreciation expense per share. (Some analysts prefer this measure because it reduces distortions in earnings caused by differences in depreciation methods used by companies in different countries.) Stocks with the lowest P/CFs were considered value stocks and assigned to Quartile 1, and so on. Similarly, P/Bs were used to form quartiles in each year; stocks with the lowest P/Bs were considered value stocks. An advantage of using book value is that it is more stable over time than EPS. In the classification of stocks by dividend yield, the yield was calculated for December FYE companies as the 12-month cash dividend payment per share through June 30 of the following year divided by the market price on that date. Those stocks with the highest yields were considered value stocks.

Finally, stocks were classified by U.S. dollar market value of common equity. For December FYE companies, company size was calculated as the number of shares outstanding at the end of the fiscal year times the market price on the subsequent June 30. One-fourth of the stocks with the smallest capitalizations were assigned each year to Quartile A, and so forth, with one-fourth of the largest-cap stocks assigned to Quartile D.

Each quartile group was treated as a portfolio composed of equally weighted stocks. The return for each portfolio for the subsequent 12 months was measured as the change in the market price plus the dividends, as a percentage of the initial price.⁴ As was the case for the December FYE companies, for the companies with the other FYEs of March, June, and September, portfolios were formed six months after their respective fiscal year ends.

Performance of Value and Growth Stocks

The results of our study indicate that the superior performance of value stocks over growth stocks that has been noted in the U.S. market also exists in the non-U.S. developed markets.

Full-Period Pooled Results. The performance of stocks classified by quartile for all four fiscal year ends for the total time period is summarized in Table 1. The panels report the performance of the groups in which all the individual stocks were pooled and then classified by P/E, by P/CF, by P/B, and by dividend yield. The table reports the total observations for each group. In each panel, Quartile 1 is the quartile of stocks considered to be value stocks in the 10-year period, Quartile 4 represents the growth stocks, and Quartiles 2 and 3 represent the in-between quartiles.

For the stocks classified by P/E, many of the total 28,463 observed stocks appeared repeatedly over the years.⁵ The median P/E for each quartile group reveals an extremely wide range—from 8.7 for Quartile 1 up to 72.5 for Quartile 4. The quartile group returns decrease as the P/Es increase; the return spread of 440 basis points (bps) is significantly different at the 1 percent level by a two-tailed *t*-test.

The sample of stocks in the second panel consisted of more observations than in the first panel.⁶

The median P/CFs are lower than their corresponding P/Es because depreciation expense is added back in the denominators. Nonetheless, the P/CFs differ considerably among the quartiles. Again, the lowest P/CF (value) quartile outperformed the growth quartile with a statistically significant return spread of 430 bps.

The third panel, reporting results for the P/B criterion, shows that the spread in returns between the value quartile (lowest P/B) and the growth quartile (highest P/B) was even greater, at a statistically significant 570 bps, than for the P/E and P/CF criteria.⁷ The median P/Bs also differed considerably among the quartiles.

The performance of the quartiles based on dividend yields shown in Table 1 is quantitatively similar to the performance based on the prior three categorizations.

Based on all the selection criteria, in this time period and in the international arena, value stocks significantly outperformed growth stocks. Furthermore, the return differences were statistically significant in all cases. For all classifications, the return relationship between value and growth groups was monotonic. These results are consistent with the return relationship previously documented between U.S. value stocks and U.S. growth stocks.

Ten-Year Results of Individual Stocks with Different Fiscal Years. When the stocks were sep-

Table 1. Average Annual Returns of Value and Growth Stocks Based on Selected Characteristics, 1986–96

Selection Criteria	Total Observations	Quartiles				Spread between Quartiles 1 and 4
		1 Value	2	3	4 Growth	
<i>Classification by P/E</i>						
Median P/E		8.7	15.2	24.2	72.5	
Return	28,463	15.0%	13.6%	13.5%	10.6%	+4.4%***
Standard deviation		46.5	38.3	42.5	50.4	
<i>Classification by P/CF</i>						
Median P/CF		4.4	8.2	13.3	34.2	
Return	30,240	15.5%	13.7%	12.9%	11.2%	+4.3***
Standard deviation		48.7	41.2	41.9	51.4	
<i>Classification by P/B</i>						
Median P/B		0.8	1.4	2.2	4.3	
Return	32,265	18.1%	14.4%	12.6%	12.4%	+5.7***
Standard deviation		69.6	45.9	45.1	57.0	
<i>Classification by dividend yield</i>						
Median dividend yield		5.6%	3.2%	1.9%	0.6%	
Return	25,394	14.1%	14.1%	12.5%	9.3%	+4.8***
Standard deviation		40.5	38.7	38.9	42.0	

***Significant at the 1 percent level.

arated by fiscal year ends and the quartiles of stocks were examined, value stocks generally outperformed growth stocks in international markets for the 10 years studied. Table 2 reports quartile returns for companies grouped by their fiscal year ends and classified by their P/Es. The largest number of stock returns observed had fiscal years ending in December; next in size were stocks with March FYEs. Considerably fewer companies had June and September FYEs.⁸ The majority of value stocks (those in Quartile 1 in the December, March, and June FYE groups) had much higher returns than the growth stocks in Quartile 4. The exception is the small sample of companies with September FYEs.⁹ In short, when defined by P/E, value stocks in the different FYE groups, by and large, outperformed the growth stocks.

When the stocks were classified by their P/Bs, the results were similar to the results shown for classification by P/E in Table 2. The pattern of returns was similar—that is, value stocks outperformed growth stocks—but the returns of value stocks with March and June FYEs were considerably higher than they were for the P/E classification. Approximately three-fourths of the March FYE companies are Japanese, and approximately one-half of the June FYE companies are Australian; so, one reason may be that the accounting measures for book value in Japan and Australia are more indicative of investment value than are reported

earnings. P/B for stocks with December FYEs did not discriminate strongly between value and growth stocks; the value stock quartile had a return of 14.8 percent, only 180 bps higher than the growth-stock quartile return of 13.0 percent.

In summary, the results provide evidence that value stocks outperform growth stocks in international markets. When value and growth were measured by P/Es, value companies (low P/Es) outperformed growth companies in three out of the four FYE groups, which accounted for 94 percent of the companies studied; in two of those FYE cases, the return difference is statistically significant. When the value and growth groups were determined by P/Bs, value companies outperformed growth companies for the four fiscal year ends examined; the return differences are statistically significant in two of the four FYE cases.

Annual Portfolio Performance. We examined the performance of the international stock portfolios in each year to measure the consistency of the return difference over time between a value strategy and a growth strategy. Value stocks in the internationally diversified portfolios outperformed growth stocks for the 10-year period but not in every year.

First, we measured annual portfolio returns for companies with December FYEs in each of 10 years from June 30, 1986, to June 30, 1996. Table 3 presents the total number of stock returns observed in each

Table 2. Average Annual Returns for Value Stocks and Growth Stocks Based on P/E, for Each Corporate Accounting Fiscal Year, 1986–96

Companies by FYE	Total Observations	Quartile				Spread between Quartiles 1 and 4	EAFE Mean Return
		1 Value	2	3	4 Growth		
<i>December</i>							
	13,805						
Median P/E		7.4	13.0	20.3	49.0		
Return		13.9%	13.1%	13.8%	10.3%	3.6%***	9.9%
Standard deviation		42.1	36.6	41.4	49.9		
<i>March</i>							
	10,497						
Median P/E		13.6	31.8	52.7	113.2		
Return		14.0%	12.9%	10.6%	7.9%	6.1***	8.8
Standard deviation		42.2	38.7	40.9	40.6		
<i>June</i>							
	2,478						
Median P/E		7.6	12.5	18.0	39.7		
Return		25.3%	17.6%	17.6%	18.9%	6.4***	13.4
Standard deviation		76.8	43.7	49.5	79.0		
<i>September</i>							
	1,683						
Median P/E		8.2	13.9	22.9	57.0		
Return		15.4%	16.5%	22.7%	17.1%	-1.7***	10.8
Standard deviation		39.2	40.0	48.2	54.3		

***Significant at the 1 percent level.

Table 3. Portfolio Returns and Standard Deviations by Year for Value Stocks and Growth Stocks Based on P/E

Time Period	Total Observations	P/E Quartile				Spread between Quartiles 1 and 4	EAFE Mean Return
		1 Value	2	3	4 Growth		
6/86–6/87	816						
Return		47.7%	40.2%	39.6%	51.2%	-3.4%	56.3%
Standard deviation		47.8	40.0	49.5	58.6		
6/87–6/88	890						
Return		0.7	-2.8	4.1	6.0	-5.3	2.8
Standard deviation		28.2	25.2	37.7	43.3		
6/88–6/89	1,014						
Return		21.4	11.9	15.7	9.0	12.4***	8.2
Standard deviation		35.9	28.0	40.3	35.2		
6/89–6/90	1,313						
Return		20.9	20.2	32.6	30.4	-9.5**	1.9
Standard deviation		49.8	33.9	41.0	51.3		
6/90–6/91	1,488						
Return		-13.7	-11.6	-12.4	-17.1	3.4*	-13.1
Standard deviation		28.1	25.2	23.7	24.5		
6/91–6/92	1,596						
Return		17.5	22.0	12.8	1.0	16.5***	-2.5
Standard deviation		42.1	39.1	51.4	71.0		
6/92–6/93	1,541						
Return		-0.9	3.5	1.1	13.3	-14.2***	18.1
Standard deviation		59.6	40.1	40.8	60.3		
6/93–6/94	1,526						
Return		34.2	25.8	2.0	19.7	14.5***	15.3
Standard deviation		38.0	38.7	33.4	43.9		
6/94–6/95	1,751						
Return		12.2	13.4	12.8	2.9	9.3***	0.1
Standard deviation		28.9	30.1	27.6	30.6		
6/95–6/96	1,870						
Return		12.9	14.2	16.2	7.8	5.1**	11.5
Standard deviation		35.0	35.2	42.1	37.7		
6/86–6/96 ^a	13,805						
Return		13.9	13.1	13.8	10.3	3.6***	8.6
Standard deviation		42.1	36.6	41.4	49.9		
<i>Portfolio performance, 6/86–6/96</i>							
Median P/E		7.3	12.8	18.9	49.3	—	—
Geometric mean return		14.1	12.8	13.9	11.1	3.0	8.6
Arithmetic mean return		15.3	13.7	14.9	12.4	2.9	9.9
Standard deviation of returns		17.7	14.8	15.3	18.4	—	18.7
Return-to-risk ratio		0.86	0.92	0.97	0.68	—	0.53

^aData from Table 2.

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

year and the results for portfolio quartiles of stocks classified by P/E. The value portfolio significantly outperformed the growth portfolio in six years; the growth portfolio had higher returns in the other four years, but in only two years was the difference statistically significant. Therefore, the geometric (compound) annual mean return on the value portfolio (14.1 percent) exceeded the return on the growth portfolio (11.1 percent) by 300 bps. The variability (standard deviation) of annual portfolio returns for the 10 years was slightly lower for the value portfolio than the growth portfolio. The return-to-risk ratio, measured as the arithmetic mean return to standard deviation, shows that the value portfolio had a higher risk-adjusted return than the growth portfolio. The portfolio with the lowest total return and risk-adjusted return was Quartile 4, the growth portfolio; Quartiles 1, 2, and 3 had better performance. The value portfolio did not outperform the growth portfolio each year, but when the value portfolio did outperform the growth portfolio, it tended to do so by a much wider spread than when the growth portfolio outperformed. The growth-stock portfolio had the lowest return and the highest risk, as measured by standard deviation, which suggests that the more favorable performance of the value portfolio is not the result of differences in the risk premium.

As another basis of comparing annual performance, we present the portfolio quartile returns of stocks classified by P/Bs. Table 4 states the total number of stocks represented in the value and growth portfolios (respectively, Quartiles 1 and 4) for companies with December FYEs and for companies with March FYEs and shows the annual return results.¹⁰ For December FYE companies, the annual differences in performance between the value portfolio and the growth portfolio are, as previously reported, much weaker than for the March FYE stocks. For December FYE stocks, the value portfolio outperformed the growth portfolio in only 4 of the 10 years. In 3 of those years, however, the outperformance was by a significantly large spread, so the compound return of the value portfolio (15.3 percent) exceeded the growth portfolio return (12.6 percent) by 270 bps. Because the variability of annual returns for the December FYE stocks in the 10-year period was much higher for the value portfolio than for the growth portfolio, the risk-adjusted return for the growth portfolio is greater than for the value portfolio.

In contrast, the value portfolio composed of March FYE companies significantly outperformed the growth portfolio in six years. Moreover, in the three years in which the growth portfolio did outperform, the spreads were relatively modest. This strong difference between value stocks and growth

stocks was previously mentioned. The compound return for the 10 years for the value portfolio (16.9 percent) greatly exceeded the return for the growth portfolio (7.6 percent).

The results reported in Tables 3 and 4 indicate that, although international value stocks outperformed international growth stocks over the entire 10-year period, this relationship did not hold in every year of the study. This result is consistent with studies of the U.S. market.

The summary results for portfolios based on all four criteria indicate that value portfolios outperform growth portfolios in the majority of cases. Table 5 provides summary results for compound annual portfolio performance for the 10-year period on the basis of strategies defined by P/CF and dividend yield, together with summaries of the results already discussed for the P/E and P/B groupings, for the stocks of December and March FYE companies. For December FYE companies, the performance of the P/CF portfolios appears similar to the performance for the P/E portfolios. The value portfolio (the portfolio with the highest dividend yields) had a compound return of 13.4 percent, which exceeds the return of 11.7 percent for the growth portfolio (the lowest dividend yield) by 170 bps. For the March FYE companies, all the value portfolios had substantially higher returns and higher risk-adjusted returns than the corresponding growth portfolios.

For December and March FYE companies, all the value groups had compound annual returns higher than those of the growth portfolios. Moreover, in terms of the return-to-risk ratio, value portfolios outperformed growth portfolios in the majority of cases.

Investment Results by Country. The performance of particular investment strategies may vary from one country to another. Therefore, the next question we asked is to what extent the results for markets in each individual country correspond to the international aggregate stock market results examined thus far.

For this portion of the study, we used the P/B criterion to assign the stocks in each country to quartiles. For each portfolio to have a reasonable minimum number of stocks, we required quartile groups in each year to have at least 10 stocks. Quartile groups were thus not available for Ireland and New Zealand because of their small stock markets. In addition, because the databases in some countries did not contain at least 40 stocks for the earlier years of the overall study, we used time periods for those countries of less than 10 years. The time periods are defined for each country in Table 6. Except for Australia and Japan, the annual

Table 4. Portfolio Returns and Standard Deviations by Year for Value Stocks and Growth Stocks Based on P/Bs: December and March FYE Companies

Time Period	December FYE Companies				March FYE Companies						
	Total Observations	Quartile		Spread between Value and Growth	EAFE Mean Return	Time Period	Total Observations	Quartile		Spread between Value and Growth	EAFE Mean Return
		Value	Growth					Value	Growth		
6/86-6/87	446	62.1%	38.2%	23.9%***	56.3%	9/86-9/87	375	8.3%	55.4%	27.6%***	43.2%
Return		80.1	50.6			Return		68.0	56.3		
Standard deviation						Standard deviation					
6/87-6/88	491	4.7	2.4	2.2	2.8	9/87-9/88	423	13.6	18.5	-4.9	-2.1
Return		32.2	39.1			Return		37.7	62.2		
Standard deviation						Standard deviation					
6/88-6/89	544	23.2	7.2	16.0***	8.2	9/88-9/89	497	32.9	32.9	0.0	20.9
Return		41.1	30.9			Return		35.7	37.7		
Standard deviation						Standard deviation					
6/89-6/90	705	23.8	26.3	-2.5	1.9	9/89-9/90	572	-17.6	-35.6	18.0***	-28.7
Return		79.7	45.2			Return		26.0	33.2		
Standard deviation						Standard deviation					
6/90-6/91	803	-13.8	-13.5	-0.3	-13.1	9/90-9/91	607	19.8	13.6	6.2**	19.7
Return		34.1	29.3			Return		33.1	34.6		
Standard deviation						Standard deviation					
6/91-6/92	905	5.2	11.8	-6.6**	-2.5	9/91-9/92	637	-6.9	-19.3	12.5***	-8.9
Return		56.7	41.5			Return		38.8	30.9		
Standard deviation						Standard deviation					
6/92-6/93	941	6.1	12.7	-6.6	18.1	9/92-9/93	658	50.7	31.2	19.5***	24.3
Return		88.7	90.7			Return		49.2	33.2		
Standard deviation						Standard deviation					
6/93-6/94	960	45.2	15.7	29.5***	15.3	9/93-9/94	669	14.7	-1.4	16.1***	8.3
Return		54.3	57.8			Return		31.9	22.8		
Standard deviation						Standard deviation					
6/94-6/95	1,079	8.7	10.5	-1.8	0.1	9/94-9/95	676	-6.6	-6.1	-0.5	4.1
Return		8.4	37.4			Return		38.2	31.7		
Standard deviation						Standard deviation					

Table 4. (continued)

Time Period	December FYE Companies				March FYE Companies						
	Total Observations	Value	Growth	Spread between Value and Growth	EAFE Mean Return	Time Period	Total Observations	Value	Growth	Spread between Value and Growth	EAFE Mean Return
6/95-6/96	1,074					9/95-6/96	621				
Return		5.7%	22.9%	-17.2%***	11.5%	Return		16.4%	18.1%	-1.7%	7.5%
Standard deviation		35.0	71.9			Standard deviation		27.6	42.5		
6/86-6/96	7,948					9/86-6/96	5,738				
Return		14.8	13.0	1.8	8.6	Return		17.4	8.3	9.1***	7.1
Standard deviation		59.3	56.3			Standard deviation		46.9	45.2		
<i>Portfolio performance, 6/86-6/96</i>											
Mean P/B	0.72	4.12					1.17	4.79			
Geometric mean return	15.3	12.6	2.7	8.6			16.9	7.6	9.3	7.1	
Arithmetic mean return	17.1	13.4	3.7	9.9			20.0	10.7	9.3**	8.8	
Standard deviation	22.3	14.0	—	18.7			29.8	26.9	—	19.8	
Return-to-risk ratio	0.77	0.96	—	0.53			0.67	0.40	—	0.44	

**Significant at the 5 percent level.

***Significant at the 1 percent level.

Table 5. Average Annual Returns for Value-Stock Portfolios and Growth-Stock Portfolios Based on Selection Criteria Characteristics, 1986-96

Selection Criterion	Time Period	Value-Stock Portfolio				Growth-Stock Portfolio				EAFE Mean Return	
		Mean Return		Standard Deviation	Return-to-Risk Ratio	Mean Return		Standard Deviation	Return-to-Risk Ratio		Spread between Value and Growth Returns
		Geometric	Arithmetic			Geometric	Arithmetic				
<i>December FYE companies</i>											
P/E	6/86-6/96	14.1%	15.3%	17.7%	0.86	11.1%	12.4%	18.4%	0.68	3.0%	8.6%
P/CF	6/86-6/96	14.1	15.8	20.9	0.75	11.9	12.9	15.9	0.81	2.2	8.6
P/B	6/86-6/96	15.3	17.1	22.3	0.77	12.6	13.4	14.0	0.96	2.7	8.6
Dividend yield	6/86-6/96	13.4	14.5	16.7	0.86	11.7	12.7	15.9	0.80	1.7	8.6
<i>March FYE companies</i>											
P/E	9/86-9/96	13.3	16.0	27.9	0.57	6.8	10.2	27.8	0.37	6.5	7.1
P/CF	9/86-9/96	14.9	17.2	55.0	0.69	7.1	10.5	28.4	0.37	7.8*	7.1
P/B	9/86-9/96	16.9	20.0	29.8	0.67	7.5	10.7	26.9	0.40	9.4**	7.1
Dividend yield	9/86-9/96	14.2	16.5	25.8	0.64	4.3	7.3	26.5	0.27	9.9**	7.1

* Significant at the 10 percent level.

** Significant at the 5 percent level.

Table 6. Average Annual Performance by Country of Value- and Growth-Stock Portfolios Based on P/Bs

Market	Total Observations	Value-Stock Portfolio						Growth-Stock Portfolio						Country Index Return	Time Period
		Mean Return			Standard Deviation	Return-to-Risk Ratio	Mean Return			Standard Deviation	Return-to-Risk Ratio	Geometric Return Spread between Value and Growth			
		Geometric	Arithmetic	Geometric			Arithmetic								
Australia	730	28.9%	42.2%	68.2%	61.9	13.2%	15.3%	24.0%	63.9	+15.6%	9.4%	12/86-6/96			
Austria	48	-1.9	-8.9	5.5	-160.2	-3.2	-15.1	1.1	-140.8	+1.4	-1.4	6/94-6/96			
Belgium	75	5.8	21.1	11.1	190.4	4.9	17.5	8.5	205.9	+0.9	2.6	6/93-6/96			
Canada	1,250	16.7	19.9	29.6	67.4	15.5	19.8	37.1	53.3	+1.2	5.4	6/86-6/96			
Denmark	244	8.0	14.0	23.5	59.5	4.4	24.8	19.1	130.1	-4.2	1.1	6/94-6/96			
Finland	21	0.0	0.0	NA	NA	0.9	9.2	NA	NA	-0.9	3.0	6/94-6/95			
France	924	18.7	21.1	24.6	85.6	9.4	11.0	19.1	57.5	+9.3	6.6	6/86-6/96			
Germany	744	14.8	17.0	23.4	72.5	6.9	8.5	20.0	42.6	+7.8	3.7	6/86-6/96			
Hong Kong	158	9.8	22.2	22.3	99.6	9.8	22.5	25.7	87.8	0.0	10.7	6/91-6/96			
Italy	272	-8.3	-10.3	28.1	-36.6	-4.0	-5.6	15.9	-35.2	-4.3	0.4	6/90-6/96			
Japan	4,357	15.1	19.6	33.4	58.7	5.6	9.0	27.6	32.6	+9.5	1.1	9/86-6/96			
Malaysia	212	19.7	40.2	43.8	91.7	10.3	18.7	16.8	111.1	+9.4	6.8	6/90-6/96			
Netherlands	263	6.5	13.8	27.9	49.6	8.7	17.6	26.1	67.8	-2.2	6.8	6/90-6/96			
Norway	47	3.2	18.2	22.7	80	5.7	33.2	24.5	135.22	-2.5	2.4	6/94-6/96			
Singapore	195	7.9	15.2	23.7	64.2	4.8	8.7	13.1	66.5	+3.1	3.7	6/90-6/96			
Spain	215	3.5	8.5	30.4	28.1	-0.9	0.6	20.9	2.9	+4.4	2.5	6/89-6/96			
Sweden	114	7.0	21.4	29.8	71.9	6.4	19.0	25.5	74.7	+0.6	8.9	6/92-6/96			
Switzerland	244	8.0	14.0	23.5	59.5	8.0	13.5	20.7	65.2	0.0	8.6	6/89-6/96			
United Kingdom	1,581	12.5	14.2	21.9	64.8	14.1	15.6	19.3	80.6	-1.7	8.5	6/86-6/96			

Note: December FYEs except for Australia (June FYE) and Japan (March FYE).

returns for all markets were measured from June 30 to the subsequent June 30. The most popular fiscal year ends for companies in Australia and Japan are June and March, respectively. So, returns for Australian stocks with June FYEs were measured from December 31 to the subsequent December 31; returns for Japanese stocks with March FYEs were measured from September 30 to the subsequent September 30.¹¹

To compare the two strategies, we measured the average annual performance for the portfolios of each country over the study period. The annual returns of the stocks in each quartile portfolio were equally weighted, and the resulting portfolio annual returns were then accumulated for the total time period, as shown in Table 6.

When the compound (geometric) returns and their spreads are compared for the 19 markets shown in Table 6, in 11 markets, value portfolios had the highest returns, in 6 markets, growth portfolios had the highest returns, and 2 markets had ties. The value portfolios tended to have higher variability (standard deviation) of returns than the growth portfolios, so the rankings of performance on a risk-adjusted basis (the return-to-risk ratio) differed in a few instances from the rankings on a total-return basis. Among the six largest markets, value portfolios had the highest returns in five markets; in four of those markets (Australia, France, Germany, and Japan), the spread exceeded 700 bps. Growth stocks outperformed in the U.K. market but only by 170 bps.¹² Among the next four largest markets, the Hong Kong and Swiss portfolios had ties on a total-return basis but on a risk-adjusted basis, the value portfolio outperformed in Hong Kong and the growth portfolio outperformed moderately in Switzerland. In the Netherlands, the growth portfolio outperformed on a total-return basis as well as on a risk-adjusted basis. In the Italian market (reported for six years), returns to both portfolios were negative and presumably, therefore, not indicative of future expected returns.

Among the 19 country stock markets, value stocks tended to outperform growth stocks. Value stocks exhibited a less consistently favorable per-

formance over growth stocks, however, when the portfolios were formed separately in each country than when internationally diversified portfolios were compared. Therefore, a value-stock strategy appears more likely to be successful when portfolios are internationally diversified in comparison with country-specific portfolios. Nevertheless, the results in Table 6 indicate that value strategies outperform growth strategies in a majority of countries when stocks are separately classified in each individual country.

Note that for composing international portfolios, managers should first identify the value stocks and growth stocks by the application of the selection criteria uniformly to all country markets and then combine the stocks in internationally diversified portfolios.

Investment Results by Company Size

The stocks of smaller non-U.S. companies produced significantly higher returns than those of the larger companies over the 10-year study period. Table 7 reports the median stock capitalization sizes by quartiles formed from the sample based on size. The small-cap effect is quite evident: Quartile returns decrease as quartile size increases, resulting in a spread of 11.2 percent between the smallest-cap and largest-cap quartiles. The median capitalization of the stocks in Quartile A is quite small, however, and the median return of 22 percent has a sizable standard deviation (87.8 percent).

Because knowing how consistent the small-firm effect has been internationally from year to year would be useful for investors, we measured the annual portfolio performance by quartiles for companies with December FYEs (the largest group by fiscal year end). As can be seen in the bottom of Table 8, the portfolio with the smallest companies (Quartile A) outperformed the portfolio with the largest companies (Quartile D) in 9 out of 10 years, and the difference was statistically significant in 4

Table 7. Average Annual Returns of International Stocks Grouped by Capitalization, 1986-96

Selection Criterion	Quartile				Spread between Quartiles A and D
	A Small	B	C	D Large	
Median size (millions)	\$46.6	\$209.9	\$583.7	\$2,472.3	
Return	22.0%	13.6%	11.1%	10.8%	+11.2%***
Standard deviation	87.8	45.2	39.5	34.0	

Note: Total observations = 32,555.

***Significant at the 1 percent level.

Table 8. Portfolio Returns by Year Based on Firm Size of Companies with December FYEs

Time Period	Total Observations	Quartile				Spread between Quartiles A and D	EAFE Index Return
		A Small	B	C	D Large		
6/86–6/87	896						
Return		67.8%	48.3%	38.6%	37.1%	30.7%***	56.3%
Standard deviation		87.7	54.1	43.5	38.0		
6/87–6/88	988						
Return		7.3	7.9	1.1	-3.0	10.3***	2.8
Standard deviation		53.8	40.0	27.7	24.8		
6/88–6/89	1,093						
Return		14.7	16.1	16.3	12.3	2.4	8.2
Standard deviation		52.1	32.2	32.7	24.2		
6/89–6/90	1,419						
Return		27.6	24.8	27.5	25.9	1.7	1.9
Standard deviation		88.5	45.4	37.7	34.5		
6/90–6/91	1,619						
Return		-9.4	-14.0	-17.5	-12.9	3.5	-13.1
Standard deviation		39.6	26.7	21.6	20.0		
6/91–6/92	1,831						
Return		15.8	7.4	7.3	15.7	0.1	-2.5
Standard deviation		90.4	43.4	35.8	33.4		
6/92–6/93	1,914						
Return		27.8	5.4	-1.2	0.1	27.7***	18.1
Standard deviation		131.1	53.5	34.0	27.1		
6/93–6/94	1,948						
Return		41.2	27.9	23.7	18.7	22.5***	15.3
Standard deviation		73.6	46.5	34.3	26.4		
6/94–6/95	2,190						
Return		7.5	8.0	6.3	13.0	-5.5***	0.1
Standard deviation		40.0	33.8	28.0	26.8		
6/95–6/96	2,175						
Return		16.3	17.3	9.1	12.9	3.4	11.5
Standard deviation		89.4	48.7	32.2	27.1		
6/86–6/96	16,073						
Return		20.1	13.4	9.7	11.3	8.8***	8.6
Standard deviation		82.8	45.6	35.6	30.8		
<i>Portfolio performance, 6/86–6/96</i>							
Geometric mean return		20.1	13.9	10.1	11.1	9.0**	8.6
Arithmetic mean return		21.7	14.9	11.1	12.0	9.7**	9.9
Standard deviation of returns		21.3	16.6	16.0	14.4	—	18.7
Return-to-risk ratio		1.02	0.90	0.69	0.83	—	0.53
Median size (millions)		\$37.9	\$168.5	\$460.7	\$1,933.4	—	

**Significant at the 5 percent level.

***Significant at the 1 percent level.

years. In only one year (6/94–6/95) did the largest-cap stock group have the highest return. Consequently, the compound return for the portfolio with the smallest companies (20.1 percent) exceeded the compound return for the portfolio with the largest companies (11.1 percent) significantly—by 900 bps. (Although not shown here, the differences were similarly significant for companies with March FYEs.) The returns of the smaller companies had a wider dispersion in each year, however, and the annual returns on the smaller-stock portfolios (Quartiles A and B) had greater variability over the 10-year period than the portfolios of larger-cap companies. Nevertheless, because the returns on the smaller-stock portfolios were disproportionately greater than their standard deviations, the return-to-risk ratios for Quartiles A and B (1.02 and 0.90, respectively) are higher than the ratios for the two largest-cap portfolios.

Value versus Growth + Size

Because the apparent superiority of the value strategy in the international arena might be attributable

to the small-firm effect, we next set out to disentangle the two effects, as was done by Cook and Rozeff (1984) for U.S. stocks. To measure the two effects separately, we subdivided the stocks that were previously formed into quartiles on the basis of the four valuation ratios into four groups of approximately equal size on the basis of cap size (denominated in U.S. dollars). The result was 16 subgroups. We then averaged the annual returns of these 16 subgroups over the 10 years. The results are presented in Table 9.

A value-stock positive return effect and a separate small-firm positive return effect were clearly at work in international stocks in this period. As the valuation ratios in Table 9 decrease, returns tend to increase, and as cap size decreases, returns increase. Note that the value stocks tend to have the greatest positive spreads over the growth stocks as company size increases; so, the spread is greatest among valuation quartiles within Quartile D, decreases with Quartile C, and decreases again with Quartile B. In the case of the smallest size group (Quartile A), there is virtually no difference in returns between the value groups and the growth groups (except for the

Table 9. Annual Average Returns of Value and Growth Stocks Divided into Quartiles by Company Size, 1986–96

Valuation Criterion/Size	Median Size (millions)	Value-Growth Quartile				Average Return	Spread between Quartiles 1 and 4
		1 Value	2	3	4 Growth		
<i>P/B criterion</i>							
A Smallest	\$ 63	27.5%	17.8%	18.5%	22.1%	21.5%	+5.4%
B	230	16.6	14.5	10.5	11.7	13.3	+4.9
C	600	13.9	12.3	10.4	8.9	1.4	+5.0
D Largest	2,484	14.5	13.0	10.8	7.1	11.3	+7.4
Average		18.1	14.4	12.6	12.4		
<i>P/E criterion</i>							
A Smallest	79	17.7	17.2	18.4	17.8	17.8	-0.1
B	258	15.1	12.4	12.1	11.6	12.8	+3.5
C	756	12.4	13.4	11.6	7.5	11.2	+4.9
D Largest	2,665	14.9	11.6	11.9	5.5	11.0	+9.4
Average		15.0	13.7	13.5	10.6		
<i>P/CF criterion</i>							
A Smallest	77	18.5	17.4	17.9	18.6	18.1	-0.1
B	241	15.2	12.5	11.1	11.4	12.6	+3.8
C	627	14.0	13.2	11.5	8.9	11.9	+5.1
D Largest	2,583	14.3	11.6	11.3	6.1	10.8	+8.2
Average		15.5	13.7	12.9	11.2		
<i>Dividend yield criterion</i>							
A Smallest	104	15.3	16.0	14.6	15.2	15.3	+0.1
B	301	14.3	13.4	11.5	9.1	12.1	+5.2
C	760	12.6	14.1	11.3	5.8	11.0	+6.8
D Largest	3,023	13.7	12.2	11.8	6.1	10.9	+7.6
Average		14.0	13.9	12.3	9.0		

smallest group in the P/B quartiles).

In short, value stocks outperform growth stocks except when capitalizations are very small. The reason may be that market price, earnings, and dividends for the very small companies may be so unstable that the standard valuation ratios, which are based on past corporate financial performance, are poor indicators of the companies' true characteristics insofar as a value-stock versus growth-stock classification system is concerned.

Conclusions

Based on several different measures used to define value stocks and growth stocks in 21 international stock markets, with observations of more than 28,000 annual stock returns, value stocks generally outperformed growth stocks, on a total-return and a risk-adjusted basis, in the 10-year period from 1986 to 1996. Value portfolios did not outperform growth portfolios in every year, but when value portfolios had higher returns, they tended to outperform by a wide margin. Also, value portfolios outperformed growth portfolios in most countries, including a majority of the largest non-U.S. markets, and by a large margin. The preponderance of evidence suggests that value stocks offer investors

relatively more-favorable returns than growth stocks in the developed non-U.S. markets. Because value stocks as a group do not provide the best performance in every year and in every market, however, investors should carry out additional financial research of value stocks when making final international investment selections.

A small-company effect was observed in most years of the study, but the differences in performance between large value stocks and large growth stocks were greater than between small value stocks and small growth stocks. Among medium-size and large companies, value stocks appear to outperform growth stocks on a total-return basis.

The findings in this study of 21 international markets generally support the empirical findings for the U.S. stock market. Value stocks may outperform growth stocks internationally because investors and research analysts overreact to past corporate earnings trends of growth stocks and value stocks. This overreaction may occur systematically because investors fail to recognize that corporate growth trends have a mean-reversion tendency or behave as a random walk, as observed by Ball and Watts.

Notes

1. Stocks are retained in these files in the years they traded regardless of any subsequent delistings. Survivor bias was thus minimized. When a company was delisted during a holding period, the return was measured up to the month of delisting and the stock was assumed to be sold, with proceeds reinvested equally among the rest of the stocks in the value or growth portfolio. If the company failed financially and was considered bankrupt, with no price quoted, the return during that holding period was treated as a total loss.
2. All of the countries in the study require companies to release annual financial reports within three to six months after the fiscal year, except Belgium, where the requirement is within seven months, and Germany, where the requirement is nine months. Most Belgian and German companies, however, report much earlier than the legal deadlines. The research results were similar whether Belgium and Germany were or were not included in the total sample.
3. For EPS, we used net income per share exclusive of extraordinary items because this measure of earnings is more indicative of future recurring earnings than is including extraordinary items. This choice is consistent with the methodology of Jaffe, Keim, and Westerfield (1989) and others. We also excluded companies with (prior-fiscal-year) deficit earnings per share and deficit cash flows per share to avoid classifying stocks with negative ratio values. We examined these companies separately and found that the group with negative P/Es produced much higher returns than the groups with positive P/Es. These results are consistent with Jaffe et al., who examined U.S. stocks.
4. We used 12-month holding-period returns instead of cumulating monthly returns because Conrad and Kaul (1993) showed that cumulating monthly returns over an extended period results in an upward bias that is greater for low-priced than for high-priced stocks. When calculating the holding-period return, we assumed that dividends were held as cash until the end of the holding period.
5. Stocks with prior-fiscal-year deficit EPS, which amounted to 4,180 observations, were excluded as explained in Note 3.
6. 2,385 stocks with prior-fiscal-year deficit cash flows per share were excluded because of negative ratios.
7. 296 stocks with deficit book values at the end of the prior fiscal year were excluded because of negative ratios.
8. In most countries, the majority of companies have December FYEs. The major exceptions are Japan, which produced 8,668 observations of March FYEs out of a total of 9,898, and Australia, with 1,546 June FYEs out of 1,991. The United Kingdom had 1,789 observations with March FYEs out of a total of 6,353, but the majority of U.K. companies had December FYEs.
9. For the September FYE companies, Quartile 1, which consisted of 418 observations, had a moderately lower return than Quartile 4, which consisted of 426 observations; Quartile 3, with 418 observations, had the highest return. The growth-stock quartile included two Japanese outliers, with returns of 392.8 percent and 610.6 percent. If these returns are eliminated, the value-stock quartile return of 15.4 percent is 60 bps higher than the return of 14.8 percent on the growth-stock quartile.
10. We report only December and March FYE results because of space limitations and the fact that the companies with these two FYEs predominate in the full sample.

11. Because the database and our study period ended on June 30, 1996, the returns for the final year end on June 30, 1996.
12. When P/Es instead of P/Bs were used to form portfolios,

in the U.K. market, the value-stock portfolio geometric mean return was 13.1 percent, or 223 bps higher than the growth-stock portfolio, which had a return of 10.9 percent.

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