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Company LLC
Established in 1920

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WHAT HAS WORKED IN INVESTING

Studies of Investment Approaches and Characteristics Associated with Exceptional Returns

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The investment returns presented in the studies herein represent past performance of stocks and indices as outlined in the respective studies and should not be considered indicative or representative of the past or future performance of any managed account of Tweedy, Browne Company LLC, nor should it be inferred that future performance will equal or exceed the performance set forth in the studies. Although we are not aware of their existence, there may be studies that exist that contradict the conclusions of the studies presented herein. Information contained herein is derived from various sources as set out in the narrative. Although we believe the information provided by the sources to be accurate, we have not independently verified the information.

Dear Investor:

What Has Worked in Investing is an attempt to share with you our knowledge of historically successful investment characteristics and approaches. Included in this booklet are descriptions of over 50 studies, approximately half of which relate to non-U.S. stocks. Our choice of studies has not been selective; we merely included most of the major studies we have seen through the years. Interestingly, geography had no influence on the basic conclusion that stocks possessing the characteristics described in this booklet provided the best returns over long periods of time. While this conclusion comes as no surprise to us, it does provide empirical evidence that Benjamin Graham's principles of investing, first described in 1934 in his book, ***Security Analysis,*** continue to serve investors well. A knowledge of the recurring and often interrelated patterns of investment success over long periods has not only enhanced our investment process, but has also provided long-term perspective and, occasionally, patience and perseverance. We hope this knowledge will also serve you well.

The basic investment selection criteria described in ***What Has Worked in Investing*** have been incorporated in Tweedy, Browne's investment screening and decision making process since at least 1958, when Tom Knapp, a retired partner, joined Tweedy, Browne from Benjamin Graham's investment management firm, Graham-Newman Corporation. Most of Tweedy, Browne's investments have had at least one, and, more frequently, several of the investment characteristics which are described in this booklet.

The criteria and characteristics have been utilized by Tweedy, Browne because they pointed, like clues, in the direction of truly undervalued companies; appealed to common sense; and because the managing directors have always believed that undervaluation, which is associated with low risk, would also be associated with satisfactory returns. In addition to the confirmation provided by our own historical investment results spanning nearly 50 years, the extensive studies described in this booklet, in our judgment, have empirically confirmed that the fundamental approach to security analysis developed by Benjamin Graham, and long practiced by Tweedy, Browne, produces attractive long-term rates of return. Most investments in Tweedy, Browne portfolios have had, and continue to have, at the time of purchase one or more of the following characteristics:

1. **Low Price in Relation to Asset Value** Stocks priced at less than book value are purchased on the assumption that, in time, their market price will reflect at least their stated book value; i.e., what the company itself has paid for its own assets. From time to time, we also have been able to find stocks selling at discounts to **net current assets** (i.e., cash and other assets which can be turned into cash within one year, such as accounts receivable and inventory, less all liabilities), a measure of the estimated liquidation value of the business. This was a stock selection technique successfully employed by Benjamin Graham.

2. **Low Price in Relation to Earnings** Stocks bought at low price/earnings ratios afford higher earnings yields than stocks bought at higher ratios of price-to-earnings. The earnings yield is the yield which shareholders would receive if all the earnings were paid out as a dividend. Benjamin Graham recommended investing in companies whose earnings yield was 200% of the yield on AAA bonds. Investing in stocks that are priced low in relation to earnings does not preclude investments in companies whose earnings are expected to grow in the future. To paraphrase Warren Buffett, "value" and "growth" are joined at the hip. A company priced low in relation to earnings, whose earnings are expected to grow, is preferable to a similarly priced company whose earnings are not expected to grow. Price is the key. Included within this broad low price in relation to earnings category are **high dividend** yields and **low prices in relation to cash flow** (earnings plus depreciation expense).

3. **A Significant Pattern of Purchases by One or More Insiders (Officers and Directors)** Officers, directors and large shareholders often buy their own company's stock when it is depressed in relation to the current value which would be ascribable to the company's assets or its ongoing business in a corporate acquisition, or to the likely value of the company in the near to intermediate future. Insiders often have "insight information" — knowledge about new marketing programs, product price increases, cost cuts, increased order rates, changes in industry conditions, etc., which they believe will result in an increase in the true underlying value of the company. Other examples of insider insights are: knowledge of the true value of "hidden assets," such as the value of a money-losing subsidiary which a competitor may have offered to buy, or the value of excess real estate not required in a company's operation, or knowledge of the likely earning power of the company once heavy non-recurring new product development costs stop. It is not uncommon to see significant insider buying in companies selling in the stock market at

low price/earnings ratios or at low prices in relation to book value. Frequently, companies in which we have invested have also purchased their own shares in the open market.

4. **A Significant Decline in a Stock's Price** A decline in price is often accompanied by a decline in earnings or an earnings disappointment. Reversion to the mean is almost a law of nature with respect to company performance. We have found that, more often than not, companies whose recent performance has been poor tend to perk up and improve.

5. **Small Market Capitalization** Since our investment process at Tweedy, Browne incorporates the entire universe of publicly traded companies, it is not surprising that our portfolios have held, and continue to have exposure to, smaller capitalization companies. Most publicly traded companies are small in terms of their market capitalization. Furthermore, these companies are often associated with higher rates of growth and may, due to their size, be more easily acquired by other corporations.

It has not been uncommon for the investments in our portfolios to simultaneously possess many of the above characteristics. For instance, companies selling at low prices in relation to net current assets, book value and/or earnings are frequently priced low in relation to cash flow, have a high dividend yield and are smaller in terms of their market capitalization. More often than not, the stock price has declined significantly from prior levels; corporate officers and directors have been accumulating the company's stock, and the company itself is engaged in a share repurchase program. Furthermore, these companies are often priced in the stock market at discounts to real world estimates of the value shareholders would receive in a sale or liquidation of the entire company. Each characteristic seems somewhat analogous to one piece of a mosaic. When several of the pieces are arranged together, the picture can be clearly seen: an undervalued stock.

Dr. Josef Lakonishok (University of Illinois), Dr. Robert W. Vishny (University of Chicago) and Dr. Andrei Shleifer (Harvard University) presented a paper funded by the National Bureau of Economic Research entitled, "Contrarian Investment, Extrapolation and Risk," May 1993, which examined investment returns from all companies listed on the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) in relation to ratios of price-to-book value, price-to-earnings and price-to-cash flow between 1968 and 1990. In their abstract, the authors state, "This paper provides evidence that value strategies yield higher returns because these strategies exploit the mistakes of the typical investor and not because these strategies are fundamentally riskier."

A subsequent paper, interestingly co-authored by Burton G. Malkiel, the Princeton Professor and author of ***A Random Walk Down Wall Street,*** which argues against the efficacy of actively managed investment strategies in favor of index funds, investigated whether the predictable return advantages associated with contrarian strategies set forth in previous empirical studies was persistent and exploitable by investment managers. In this study published in ***The Journal of Economics and Statistics*** (May 1997) entitled, "The Predictability of Stock Returns: A Cross-Sectional Simulation," Zsuzsanna Fluck (New York University), Burton G. Malkiel (Princeton) and Richard E. Quandt (Princeton) examined the performance of 1,000 large-company stocks ranked by price/earnings ratios and price-to-book value ratios from 1979 through 1995, and confirmed the findings of the previous Lakonishok, Shleifer and Vishny study, "Contrarian Investment, Extrapolation and Risk," finding that,

> On a sample of large companies that is free from selection bias, we have concluded that the superior performance of contrarian strategies, documented by earlier studies is not simply an artifact of selection bias. We have also found that the result is robust with respect to transaction costs.

The papers by Fluck, Malkiel and Quandt, and by Lakonishok, Shliefer and Vishny, together with similar studies described in the "Assets Bought Cheap" and "Earnings Bought Cheap" sections of ***What Has Worked In Investing*** demonstrate that, at the extreme, investors overvalue and undervalue individual stocks, and that the best returns come from buying stocks at the extreme end of the value spectrum.

Sincerely,

TWEEDY, BROWNE COMPANY LLC
Christopher H. Browne
William H. Browne
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John D. Spears
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ASSETS BOUGHT CHEAP

Benjamin Graham's Net Current Asset Value Stock Selection Criterion

The net current asset value approach is the oldest approach to investment in groups of securities with common selection characteristics of which we are aware. Benjamin Graham developed and tested this criterion between 1930 and 1932. The net current assets investment selection criterion calls for the purchase of stocks which are priced at 66% or less of a company's underlying current assets (cash, receivables and inventory) net of all liabilities and claims senior to a company's common stock (current liabilities, long-term debt, preferred stock, unfunded pension liabilities). For example, if a company's current assets are $100 per share and the sum of current liabilities, long-term debt, preferred stock, and unfunded pension liabilities is $40 per share, then net current assets would be $60 per share, and Graham would pay no more than 66% of $60, or $40, for this stock. Graham used the net current asset investment selection technique extensively in the operations of his investment management business, Graham-Newman Corporation, through 1956. Graham reported that the average return, over a 30-year period, on diversified portfolios of net current asset stocks was about 20% per year.

In the 1973 edition of ***The Intelligent Investor***, Benjamin Graham commented on the technique:

> "It always seemed, and still seems, ridiculously simple to say that if one can acquire a diversified group of common stocks at a price less than the applicable net current assets alone — after deducting all prior claims, and counting as zero the fixed and other assets — the results should be quite satisfactory."

In an article in the November/December 1986 issue of ***Financial Analysts Journal***, "Ben Graham's Net Current Asset Values: A Performance Update," Henry Oppenheimer, an Associate Professor of Finance at the State University of New York at Binghamton, examined the investment results of stocks selling at or below 66% of net current asset value during the 13-year period from December 31, 1970 through December 31, 1983.

The study assumed that all stocks meeting the investment criterion were purchased on December 31 of each year, held for one year, and replaced on December 31 of the subsequent year by stocks meeting the same criterion on that date. To create the annual net current asset portfolios, Oppenheimer screened the entire Standard & Poor's ***Security Owners Guide***. The entire 13-year study sample size was 645 net current asset selections from the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) and the over-the-counter securities market. The minimum December 31 sample was 18 companies and the maximum December 31 sample was 89 companies.

The mean return from net current asset stocks for the 13-year period was 29.4% per year versus 11.5% per year for the NYSE-AMEX Index. One million dollars invested in the net current asset portfolio on December 31, 1970 would have increased to $25,497,300 by December 31, 1983. By comparison, $1,000,000 invested in the NYSE-AMEX Index would have increased to $3,729,600 on December 31, 1983. The net current asset portfolio's exceptional performance over the entire 13 years was not consistent over smaller subsets of time within the 13-year period. For the three-year period, December 31, 1970 through December 31, 1973, which represents 23% of the 13-year study period, the mean annual return from the net current asset portfolio was .6% per year as compared to 4.6% per year for the NYSE-AMEX Index.

The study also examined the investment results from the net current asset companies which operated at a loss (about one-third of the entire sample of companies) as compared to the investment results of the net current asset companies which operated profitably. The companies operating at a loss had slightly higher investment returns than the companies with positive earnings: 31.3% per year for the unprofitable companies versus 28.9% per year for the profitable companies.

Further research by Tweedy, Browne has indicated that companies satisfying the net current asset criterion have not only enjoyed good common stock performance over time but also have often been priced at significant discounts to "real world" estimates of the specific value that stockholders would probably receive in an actual sale or liquidation of the entire corporation. Net current asset value ascribes no value to a company's real estate and equipment, nor is any going concern value ascribed to prospective earning power from a company's sales base. When liquidation value appraisals are made, the estimated "haircut" on accounts receivable and inventory is often recouped or exceeded by the estimated value of a company's real estate and equipment. It is not uncommon to see informed investors, such as a company's own officers and directors or other corporations, accumulate the shares of a company priced in the stock market at less than 66% of net current asset value. The company itself is frequently a buyer of its own shares.

Common characteristics associated with stocks selling at less than 66% of net current asset value are low price/earnings ratios, low price/sales ratios and low price in relation to "normal" earnings; i.e., what the company would earn if it earned the average return on equity for a given industry or the average net income margin on sales for such industry. Current earnings are often depressed in relation to prior earnings. The stock price has often declined significantly from prior price levels, causing a shrinkage in a company's market capitalization.

Note: Investors should bear in mind that Ben Graham's "66% of net current asset" criterion, which is discussed in several places in this paper, is a rather extreme quantitative value-based methodology that should not be confused with Tweedy, Browne's current criteria of investing in businesses trading in the stock market at approximately 2/3rds or less of

estimated intrinsic value. In general, "net current assets" is a quick approximation of the value of a company's assets in liquidation, with no value ascribed to the company's property, plant, equipment or its sales base. For most companies, estimate of intrinsic value will be significantly in excess of net current asset value. Ben Graham's well known "66% of net current assets" formula has been of limited practical utility to value investors such as ourselves in recent years. Stocks trading at 66% of net current assets or less have been few and far between in the stock market, and when we do uncover them, they are often micro-capitalization companies that can accommodate only modest levels of investment. That said, they do turn up from time to time, and when they do, we study them as prospective investment candidates.

Low Price in Relation to Book Value

Roger Ibbotson, Professor in the Practice of Finance at Yale School of Management and President of Ibbotson Associates, Inc., a consulting firm specializing in economics, investments and finance, in "Decile Portfolios of the New York Stock Exchange, 1967 - 1984," Working Paper, Yale School of Management, 1986, studied the relationship between stock price as a percentage of book value and investment returns. To test this relationship, all stocks listed on the NYSE were ranked on December 31 of each year, according to stock price as a percentage of book value, and sorted into deciles. (A decile is 10% of the stocks listed on the NYSE.) The compound average annual returns were measured for each decile for the 18-year period, December 31, 1966 through December 31, 1984.

As shown in Table 1, stocks with a low price-to-book value ratio had significantly better investment returns over the 18-year period than stocks priced high as a percentage of book value.

Table 1: Stock Price as a Percentage of Book Value, 1967 – 1984

Decile	Compound Annual Return	Value of $1.00 invested on 12/31/66 at 12/31/84
1 (Lowest price as % of book value)	14.36%	$12.80
2	14.40	12.88
3	14.39	12.87
4	12.43	9.26
5	8.82	4.98
6	8.36	4.60
7	7.69	4.09
8	5.63	2.83
9	5.26	2.65
10 (Highest price as % of book value)	6.06	3.06

During the period December 31, 1966 through December 31, 1984 covered in Table 1, the compound annual return for the market capitalization weighted NYSE Index was 8.6%.

Werner F.M. DeBondt and Richard H. Thaler, Finance Professors at University of Wisconsin and Cornell University, respectively, examined stock price in relation to book value in "Further Evidence on Investor Overreaction and Stock Market Seasonality," ***The Journal of Finance***, July 1987. All companies listed on the NYSE and AMEX, except companies that were part of the S&P 40 Financial Index, were ranked according to stock price in relation to book value and sorted into quintiles, five groups of equal number, on December 31 in each of 1969, 1971, 1973, 1975, 1977 and 1979. The total number of companies in the entire sample ranged between 1,015 and 1,339 on each of the six portfolio formation dates.

The investment return in excess of or (less than) the equal weighted NYSE Index was computed over the subsequent four years for all of the stocks in each selection period. The four-year returns in excess of or (less than) the market index were averaged. The study results and additional descriptive information are presented below in Table 2.

Table 2: Market Price in Relation to Book Value for Companies Listed on the New York and American Stock Exchanges

Rank	Cumulative Average Return in excess of or (less than) Market Index 4 Years after Portfolio Formation	Cumulative Average Return in excess of or (less than) Market Index 4 Years prior to Portfolio Formation	Average Market Price/ Book Value at Portfolio Formation Date	Average Earnings Yield at Portfolio Formation Date	Market Capitalization at Portfolio Formation Date (Millions)
1 (Lowest price/ book value)	40.7%	(25.8%)	0.36	.100	$106
2	22.6	(3.0)	0.76	.149	330
3	9.5	16.3	1.02	.169	424
4	5.0	37.6	1.43	.180	594
5 (Highest price/ book value)	(1.3)	76.2	3.42	.147	1,030

The compound annual return ***in excess of*** the market index from the lowest 20% of the stocks, in terms of price/book value, was 8.91%. For each $1,000,000 invested, the low price/book value stocks returned $407,000 more on average than the market index in each four-year period.

The authors point out the investment return reversion which occurred in the periods examined in their study. The average cumulative return for lowest price/book value stocks in the four years prior to portfolio formation was 25.8 percentage points less than the market index. This group of companies, which had performed so poorly in the stock market, subsequently increased 40.7 percentage points more than the market index in the

four years after portfolio formation. The highest price/book value stocks, which had excellent investment results in the four years prior to portfolio formation (76.2 percentage points in excess of the market index), subsequently returned 1.3 percentage points less than the market index in the four years after portfolio formation.

Another intriguing aspect of the study was the contrast between the earnings pattern of the companies in the lowest quintile of price/book value companies (average price/book value equaled .36) and in the highest quintile of price/book value companies (average price/book value equaled 3.42). (A quintile is 20% of the companies listed on the NYSE and AMEX.) Table 3 describes the average earnings per share for companies in the lowest and highest quintile of price/book value in the three years prior to selection and the four years subsequent to selection.

Table 3: Average Earnings per Share for Companies in the Lowest and Highest Price/Book Value Quintiles

	3 Years Prior to Selection	2 Years Prior to Selection	1 Year Prior to Selection	Selection Date	1 Year After Selection	2 Years After Selection	3 Years After Selection	4 Years After Selection
Lowest price/book value companies	142.1	128.0	104.2	100	104.4	119.2	112.8	124.4
Highest price/book value companies	69.8	83.5	89.3	100	110.1	111.4	111.4	108.2

In the three years prior to the selection date, companies in the lowest quintile of price/book value experienced a significant decline in earnings, and companies in the highest quintile of price/book value experienced a significant increase in earnings. In the fourth year after the date of selection, the companies with the lowest price/book value experienced a larger percentage increase in earnings, +24.4%, than the companies with the highest price/book value, whose earnings increased 8.2%. The authors suggest that earnings are "mean reverting" at the extremes; i.e., that significant declines in earnings are followed by significant earnings increases, and that significant earnings increases are followed by slower rates of increase or declines.

Tweedy, Browne examined the historical returns from stocks which were priced low in relation to book value and from stocks which were selling at 66% or less of net current asset value. All 7,000 public companies in the Compustat database, including the Research File of companies which had been acquired, merged or declared bankrupt subsequent to an assumed historical selection date, were screened to identify those companies with a market capitalization of at least $1 million and a stock market price of no more than 140% of book value on April 30 in each of 1970 through 1981. For each of these twelve portfolio formation dates, the investment returns for all stocks were computed for 6 months, 1 year,

2 years and 3 years after each selection date. These stocks were ranked according to price in relation to book value and sorted into nine price/book value groups and one group comprised of stocks selling at less than 66% of net current asset value. The average results for all stocks in each of the ten groups were compared to the results of the Standard & Poor's 500 Stock Index (S&P 500) over each of the holding periods. A total of 1,820 companies were culled from the Compustat database. The results of this price/book value and net current asset value study are presented in Table 4.

Table 4: Price in Relation to Book Value, and Stocks Selling at 66% or Less of Net Current Asset Value, April 1970 – April 1981

	Holding Period							
	6 months		1 Year		2 Years		3 Years	
Stock Selection Criteria	Average Return	S&P 500	Average Return	S&P 500	Average Return	S&P 500	Average Return	S&P 500
140% - 120% of book value	0.6%	1.1%	15.7%	8.5%	34.1%	18.2%	48.9%	27.7%
120% - 100% of book value	(0.3)	1.1	14.9	8.5	31.0	18.2	45.3	27.7
100% - 80% of book value	(0.3)	1.1	15.3	8.5	34.5	18.2	51.5	27.7
80% - 70% of book value	0.1	1.1	18.5	8.5	39.6	18.2	57.9	27.7
70% - 60% of book value	(0.8)	1.1	18.9	8.5	41.1	18.2	62.1	27.7
60% - 50% of book value	(0.2)	1.1	19.6	8.5	45.9	18.2	72.6	27.7
50% - 40% of book value	(0.4)	1.1	20.9	8.5	53.8	18.2	77.9	27.7
40% - 30% of book value	1.3	1.1	25.7	8.5	50.1	18.2	73.5	27.7
30% - 0% of book value	2.3	1.1	30.0	8.5	53.5	18.2	88.0	27.7
66% of net current asset value	3.4	0.7	28.8	9.1	53.5	20.8	87.6	31.5

One million dollars invested on April 30, 1970 and rolled over at each subsequent April 30 into the stocks selling at less than 30% of book value would have increased to $23,298,000 on April 30, 1982. One million dollars invested in the S&P 500 on April 30, 1970 would have been worth $2,662,000 on April 30, 1982.

Tweedy, Browne, using the same methodology over the same period, examined the historical returns of the stocks of (i) unleveraged companies which were priced low in relation to book value and (ii) unleveraged companies selling at 66% or less of net current asset value in the stock market. The sample included only those companies priced at no more than 140% of book value, or no more than 66% of net current asset value in which the debt-to-equity ratio was 20% or less. The results of this study of unleveraged companies which were priced low in relation to book value and net current asset value are presented on the following page in Table 5.

Table 5: Unleveraged Companies: Price in Relation to Book Value, and Stocks Priced at 66% or Less of Net Current Asset Value, April 1970 – April 1981

	Holding Period							
	6 months		1 Year		2 Years		3 Years	
Stock Selection Criteria	Average Return	S&P 500	Average Return	S&P 500	Average Return	S&P 500	Average Return	S&P 500
140% - 120% of book value	1.6%	1.1%	15.8%	8.5%	36.5%	18.2%	53.8%	27.7%
120% - 100% of book value	0.2	1.1	18.0	8.5	36.7	18.2	56.4	27.7
100% - 80% of book value	0.8	1.1	19.4	8.5	39.4	18.2	56.8	27.7
80% - 70% of book value	2.0	1.1	24.3	8.5	45.5	18.2	63.1	27.7
70% - 60% of book value	1.0	1.1	19.8	8.5	42.1	18.2	68.4	27.7
60% - 50% of book value	1.0	1.1	19.8	8.5	49.7	18.2	73.8	27.7
50% - 40% of book value	1.4	1.1	23.7	8.5	53.7	18.2	83.0	27.7
40% - 30% of book value	6.7	1.1	18.2	8.5	52.1	18.2	70.1	27.7
30% - 0% of book value	8.6	0.7	32.8	6.8	60.2	20.8	113.7	31.5
66% of net current asset value	7.5	0.7	34.9	9.1	63.5	20.8	98.8	31.5

The results for the unleveraged companies were somewhat better than the investment results for the companies in which debt-to-equity exceeded 20%.

Similar to net current asset stocks, other characteristics frequently associated with stocks selling at low ratios of price-to-book value are: (i) low price-to-earnings ratios, (ii) low price-to-sales ratios, and (iii) low price in relation to "normal" earnings, assuming a company earns the average return on equity for a given industry or the average net income margin on sales for such industry. Current earnings are often depressed in relation to prior levels of earnings. The stock price has often declined significantly from prior levels. The companies with the lowest ratios of price-to-book value are generally smaller market capitalization companies. Corporate officers and directors often buy such stock because they believe it is depressed relative to its true value. The companies also frequently repurchase their own stock.

In Tweedy, Browne's experience, stocks selling at low prices in relation to book value are often priced at significant discounts to "real world" estimates of the value that shareholders would receive in a sale of the entire company. By real world estimates, we mean estimates made by individuals familiar with corporate valuation in the company's field of business.

Small Market Capitalization Low Price-to-Book Value Companies as Compared to Large Capitalization Low Price-to-Book Value Companies

Eugene L. Fama and Kenneth R. French examined the effects of market capitalization and price as a percentage of book value on investment returns in "The Cross-Section of Expected Stock Returns," Working Paper 333, Graduate School of Business, University of Chicago, January 1992. All non-financial NYSE, AMEX and NASDAQ companies included in the Center for Research in Security Prices file for which data was also available in the Compustat database were ranked according to stock price as a percentage of book value and sorted into deciles. Then, each price/book value decile was ranked according to market capitalization and sorted into deciles. The study examined investment returns from July 1963 to December 1990. Average annual equal-weighted investment returns for each of the ten market capitalization deciles which comprised each of the ten price/book value deciles are presented below in Table 6.

Table 6: July 1963 – December 1990 Annual Investment Returns for Low Versus High Price/Book Value Stocks According to Market Capitalization within Each Price/Book Value Category for New York Stock Exchange, American Stock Exchange and NASDAQ Listed Stocks

	Ratio of Price to Book Value Decile									
	(Highest Price/Book Value)									(Lowest Price/Book Value)
Market Capitalization Decile	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1 (Smallest market capitalzation)	8.4%	13.7%	14.4%	17.2%	18.7%	18.1%	20.4%	20.5%	21.8%	23.0%
2	5.2	12.6	11.5	14.3	16.0	14.3	19.0	15.4	17.2	21.5
3	6.7	10.6	14.8	11.4	16.3	15.6	15.6	16.8	18.5	19.2
4	4.7	8.6	12.7	16.3	13.6	14.5	16.1	19.1	18.1	17.6
5	10.6	7.8	13.0	17.6	13.6	17.2	17.3	15.1	18.2	17.9
6	8.4	11.8	13.7	14.8	11.3	15.2	14.3	14.3	14.9	18.0
7	11.4	12.0	11.9	10.0	11.9	13.6	11.9	13.9	13.2	17.6
8	7.9	13.6	10.9	11.4	11.9	12.1	13.8	12.6	15.5	18.6
9	5.3	10.7	11.0	12.0	12.6	11.2	9.8	13.3	12.5	14.6
10 (Largest market capitalzation)	11.2	10.6	10.1	8.5	9.5	10.0	9.7	11.5	11.6	14.2
All companies in each price/book value decile	7.7	11.8	12.7	14.0	14.9	15.1	16.7	16.8	18.0	19.6

As Table 6 indicates, smaller market capitalization companies at the lowest prices in relation to book value provided the best returns. Table 6 also shows that within every market capitalization category, the best returns were produced by stocks with low prices in relation to book value.

In addition, the authors, through a regression analysis, examined the power of the following characteristics to predict future investment returns: market beta, market capitalization, price/earnings ratio, leverage and price-to-book value percentage. Their conclusion: price-to-book value "is consistently the most powerful for explaining the cross-section of average stock returns."

Five-Year Holding Period Year-by-Year Investment Returns for Low Price-to-Book Value Companies as Compared to High Price-to-Book Value Companies

Josef Lakonishok, Robert W. Vishny and Andrei Shleifer examined the effect of price as a percentage of book value on investment returns in "Contrarian Investment, Extrapolation and Risk," Working Paper No. 4360, National Bureau of Economic Research, May 1993. The professors ranked all companies listed on the NYSE and the AMEX according to stock price as a percentage of book value and sorted the companies into deciles. Portfolios were initially formed on April 30, 1968, and new portfolios were formed on each subsequent April 30. The study period ended on April 30, 1990. The decile portfolios were held for five years, and the average annual year-by-year investment returns, the average annual five-year returns and the average cumulative total five-year returns were calculated. The investment returns were equal-weighted. The following Table 7 shows the results of the study.

Table 7: Investment Returns in Relation to Stock Price as a Percentage of Book Value for all New York Stock Exchange and American Stock Exchange Listed Companies, April 1968 – April 1990

	Stock Price as a Percentage of Book Value Decile									
	(Highest Price/Book Value)									(Lowest Price/Book Value)
Holding Period Following Portfolio Formation	1	2	3	4	5	6	7	8	9	10
1st year	11.0%	11.7%	13.5%	12.3%	13.1%	15.4%	15.4%	17.0%	18.3%	17.3%
2nd year	7.9	10.7	14.0	14.5	15.3	15.6	16.9	16.4	18.2	18.8
3rd year	10.7	13.2	15.5	16.7	16.5	17.2	19.1	20.7	19.6	20.4
4th year	8.1	13.3	13.6	16.0	17.0	16.9	18.8	20.4	21.3	20.7
5th year	8.8	13.7	16.3	17.5	17.1	17.6	21.6	20.1	20.6	21.5
Average annual return over the 5-year period	9.3	12.5	14.6	15.4	15.8	16.6	18.4	18.9	19.6	19.8
Cumulative 5-year total return	56.0	80.2	97.3	104.5	108.2	115.2	132.0	137.5	144.9	146.2

The Consistency of Returns for Low Price-to-Book Value Companies as Compared to High Price-to-Book Value Companies

The study which was described in the preceding section, "Contrarian Investment, Extrapolation and Risk," also examined the consistency of investment returns for low price-to-book value companies as compared to high price-to-book value companies over l-year, 3-year and 5-year holding periods from April 30, 1968 through April 30, 1990. The investment returns for the companies in the high price-to-book value category, which comprised the returns for the companies in the highest two deciles of companies which had been ranked on price-to-book value, were subtracted from the investment returns of the low price-to-book value companies, which comprised the bottom two deciles of the price-to-book value ranking. The following Table 8 shows the results of the study.

Table 8: The Consistency of Investment Returns for Low Price-to-Book Value Companies as Compared to High Price-to-Book Value Companies for l-Year, 3-Year and 5-Year Holding Periods, April 1968 – April 1990

	Holding Period		
Year of Portfolio Formation	1 Year % Better (Worse)	3 Years % Better (Worse)	5 Years % Better (Worse)
1968	9.8%	20.1%	34.4%
1969	7.4	7.0	30.3
1970	2.3	3.2	27.9
1971	(10.8)	15.6	46.3
1972	9.8	32.8	78.4
1973	4.2	45.0	92.5
1974	5.0	64.2	172.6
1975	41.8	103.4	118.2
1976	13.2	72.7	99.3
1977	19.5	18.1	61.4
1978	3.7	(26.4)	28.6
1979	(20.7)	(12.3)	56.9
1980	(3.4)	106.6	167.6
1981	18.5	81.0	195.5
1982	24.0	58.9	147.7
1983	22.1	25.6	64.8
1984	4.3	32.4	64.0
1985	(0.7)	23.7	29.9
1986	5.1	14.9	
1987	7.8	1.5	
1988	(3.7)		
1989	(20.7)		

As Table 8 indicates, the low price-to-book value stocks outperformed the high price-to-book value stocks in 16 of the 22 years, or 73% of the time. For three-year holding periods, the low price-to-book companies beat high price-to-book companies in 18 out of the 20 three-year periods. For five-year holding periods, the low price-to-book value companies were a better choice than the high price-to-book value companies every time.

Are Low Price-to-Book Value Stocks' Higher Returns, as Compared to High Price-to-Book Value Stocks, due to Higher Risk?

In an attempt to examine whether the higher returns of low price-to-book value stocks were due to greater risk, Professors Lakonishok, Vishny and Shleifer measured monthly investment returns in relation to price as a percentage of book value between April 30, 1968 and April 30, 1990 in the 25 worst months for the stock market, and the remaining 88 months in which the stock market declined. In addition, monthly returns were examined in the 25 best months for the stock market and the 122 remaining months in which the stock market increased. The results of this study are shown below in Table 9.

Table 9: Average One-Month Investment Returns in Relation to Price as a Percentage of Book Value in the Worst and Best Stock Market Months, April 1968 – April 1990

	Price as a Percentage of Book Value Decile									
	(Highest Price as a Percentage of Book Value)					(Lowest Price as a Percentage of Book Value)				
	1	2	3	4	5	6	7	8	9	10
Worst 25 months in the stock market	(11.2%)	(11.0%)	(10.4%)	(10.0%)	(9.7%)	(9.1%)	(9.3%)	(9.2%)	(9.8%)	(10.2%)
Next worst 88 months in the stock market when the stock market declined	(2.9)	(2.8)	(2.6)	(2.5)	(2.3)	(2.0)	(2.1)	(2.0)	(1.8)	(2.2)
Best 25 months in the stock market	11.4	11.4	11.9	11.3	11.2	11.3	11.8	12.6	13.3	14.8
Next best 122 months in the stock market when the stock market increased	3.8	4.0	3.9	3.7	3.6	3.7	3.8	3.7	3.8	3.9

As Table 9 indicates, the low price-to-book value stocks outperformed the high price-to-book value stocks in the market's worst 25 months, and in the other 88 months when the market declined. In the best 25 months for the market, the low price-to-book value stocks also beat the high price-to-book value stocks. The monthly results were similar for both high and low price-to-book value stocks in the remaining 122 months when the stock market increased.

The professors conclude,

> Overall, the value strategy [low price-to-book value] appears to do somewhat better than the glamour strategy [high price-to-book value] in all states and significantly

better in some states. If anything, the superior performance of the value strategy is skewed toward negative return months rather than positive return months. The evidence [in Table 9] thus shows that the value strategy does not expose investors to greater downside risk.

Low Price-to-Book Value Stocks Yield Sizeable Excess Returns Net of Transaction Expenses

In a study published in ***The Journal of Economics and Statistics*** (May 1997) entitled, "The Predictability of Stock Returns: A Cross-Sectional Simulation," Zsuzsanna Fluck (New York University), Burton G. Malkiel (Princeton) and Richard E. Quandt (Princeton) examined the performance of 1,000 large-company stocks ranked by price/earnings and price-to-book value ratios from 1979 through 1995, and confirmed the findings of the previous Lakonishok, Shleifer and Vishny study, "Contrarian Investment, Extrapolation and Risk," finding that low price/earnings and low price-to-book value strategies yield sizeable excess returns net of transaction costs and after adjusting for risk.

In Table 10, Fluck, Malkiel and Quandt constructed a data sample from Compustat for the period January 1989 through mid-1995 consisting of the 1,000 largest U.S. companies as of 1988, sorted and ranked into deciles based on their prices in relation to book value. They found that the lowest price-to-book value decile, which was rebalanced quarterly, produced 1.89% of excess return quarterly, or 7.56% annualized, over the average return produced by the entire data sample. This translated into an average annual return for the low price-to-book value decile of 23.96% versus a 16.40% average annual return for the entire Compustat sample. In addition, they found that the excess return persisted even after performing portfolio simulations which took into consideration transaction expenses associated with purchases and sales. The low price-to-book value decile produced returns annually that were 5.2% better than the sample and 8.0% better than the S&P 500 net of transaction expenses.

Table 10*a*: Mean Return by Decile Sorted by Price-to-Book Value Ratios (1/1989–6/1995)

	(Low Price/Book)		← Deciles →					(High Price/Book)			
Survivorship Bias-Free Sample	1	2	3	4	5	6	7	8	9	10	Sample Avg.
Average quarterly return	5.99%	6.29%	5.45%	4.25%	3.95%	3.01%	2.77%	2.98%	3.65%	1.88%	4.1%
*Q**	14	18	13	14	10	6	5	6	9	8	

* *Q* is the number of quarters in which the decile return exceeds the sample average.

Table 10*b*: Returns Net of 25 Cents Trading Costs (1/1989–6/1995)

	Average Quarterly Return	S&P 500	Sample of 1,000 Companies
Low price/book ratio	5.4%	3.4%	4.1%

Companies Throughout the World: Low Price in Relation to Book Value

In "Ben Graham Would be Proud," a Morgan Stanley & Co. Inc. research report dated April 8, 1991, Barton M. Biggs, then a managing director of Morgan Stanley, described a study which examined the returns from investing in the stocks of non-U.S. and U.S. companies trading at low prices in relation to book value. In the study, all stocks in the Morgan Stanley Capital International database were ranked according to stock price in relation to book value and sorted into deciles each year from 1981 through 1990, a total of ten years. Approximately 80% of the companies in the Morgan Stanley Capital International database were non-U.S. companies. The number of companies in the analysis increased from 1,178 to 2,349 over the period. The average investment return for the companies included in each price/book value group was compared to the return for the Morgan Stanley Capital International global equity index. The investment returns were equally weighted and expressed in U.S. dollars. Table 11 shows the results by year.

Table 11: Worldwide Low Price/Book Value Investment Returns

Price-to-Book Value Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	Cumulative Compounded Annual Return	Return in Excess of Market Index
1 (Lowest price/book value)	3.4%	11.2%	50.4%	14.8%	68.9%	39.9%	15.9%	37.1%	27.2%	-16.1%	23.0%	5.1%
2	2.9	12.2	37.4	7.3	58.1	26.7	15.4	28.6	27.6	-13.2	18.8	0.9
3	3.4	15.9	30.1	6.1	53.6	37.5	15.4	21.0	27.8	-11.4	18.6	0.7
4	5.6	10.1	32.0	0.6	50.3	44.0	15.0	16.5	33.5	-9.5	18.4	0.5
5	-5.1	10.8	28.6	-0.4	48.9	40.0	12.7	19.7	28.2	-7.9	16.2	-1.8
6	1.8	7.9	22.1	12.0	55.0	53.1	19.9	21.7	28.3	-12.3	19.3	1.4
7	2.3	6.4	22.5	2.3	60.0	58.7	12.7	21.6	29.0	-13.1	18.2	0.3
8	1.1	6.1	20.8	3.3	54.2	54.0	18.3	15.8	25.7	-17.2	16.3	-1.6
9	-4.9	3.7	20.7	3.5	57.6	59.3	22.5	19.4	27.7	-25.5	15.7	-2.2
10 (Highest price/book value)	-8.5	-3.0	21.6	-4.2	53.5	66.0	24.0	19.8	21.7	-23.3	13.8	-4.1

One million dollars invested in the lowest price-to-book value category starting in 1981 would have increased to $7,953,000 at the end of 1990. One million dollars invested in the highest price-to-book value companies would have increased to $3,651,000 over the same period.

Companies in the United Kingdom, France, Germany and Japan Trading at Low Prices in Relation to Book Value

John R. Chisholm examined price-to-book value and investment results for companies in the United Kingdom, France, Germany and Japan in "Quantitative Applications for Research Analysts," ***Investing Worldwide II***, Association for Investment Management and Research, 1991. Companies in each country were ranked according to the ratio of price-to-book value at the end of each year and sorted into five equal number groups (quintiles). The study period was December 31, 1974 through December 31, 1989 (15 years). Equal investments were assumed to have been made in each stock, and the stocks were assumed to have been sold after one year. The results were U.S. dollar results. Table 12 below shows the annual compound returns for the top and bottom quintiles.

Table 12: Investment Results According to Price in Relation to Book Value in the United Kingdom, France, Germany and Japan, December 1974 – December 1989

	Annual Compound Returns			
Price-to-Book Value Category	**United Kingdom**	**France**	**Germany**	**Japan**
Lowest price-to-book value quintile	32.7%	28.2%	22.5%	30.9%
Highest price-to-book value quintile	24.4	17.0	20.1	19.4

Low Price-to-Book Value Stocks Compared to High Price-to-Book Value Stocks in France, Germany, Switzerland, the United Kingdom, Japan, and the United States

William F. Sharpe, a Nobel Prize winner in economics, and Carlo Capaul and Ian Rowley, from Union Bank of Switzerland, examined the comparative investment returns of low price-to-book value stocks ("value" stocks) and high price-to-book value stocks ("growth" stocks) in France, Germany, Switzerland, the United Kingdom, Japan, and the United States in "International Value and Growth Stock Returns," ***Financial Analysts Journal***, January/February 1993. Each six months, the stocks, which comprised a major index in each country, were ranked on the ratio of price-to-book value. The S&P 500 was used for the United States, and Morgan Stanley Capital International indexes were used for the other countries. Within each country, the highest price-to-book value stocks, whose total market capitalizations accounted for 50% of the entire market capitalization of the particular country's index, were defined as the growth stock portfolio. The lower price-to-book value stocks which, in aggregate, accounted for the remaining 50% of the entire market capitalization of the index were defined as the value portfolio. The monthly return for each

of the two portfolios was the market capitalization weighted average of the total returns on the underlying stocks. The cumulative difference between the investment returns of the value stocks and the growth stocks in each country over the 11½-year period, January 1981 through June 1992, are shown in Table 13.

Table 13: The Extra Investment Returns from Value Stocks as Compared to Growth Stocks in France, Germany, Switzerland, the United Kingdom, Japan, and the United States, January 1981 – June 1992

Country	Cumulative Extra Investment Return from Value Stocks vs. Growth Stocks over 11½-Year Period January 1981 through June 1982
France	73.7%
Germany	17.7
Switzerland	42.7
United Kingdom	31.5
Japan	69.5
United States	15.6
Global (i.e., all of the above countries)	39.5
Europe	31.9

The study's authors concluded "Value stocks outperformed growth stocks on average in each country during the period studied, both absolutely and after adjustment for risk."

EARNINGS BOUGHT CHEAP

Low Price in Relation to Earnings

Sanjoy Basu, Professor of Finance at McMaster University, examined price/earnings ratios and investment results in "Investment Performance of Common Stocks in Relation to Their Price/Earnings Ratios: A Test of the Efficient Market Hypothesis," ***Journal of Finance***, June 1977. His study covered NYSE listed companies, about 500 stocks annually, over a 14-year period, from 1957 through 1971. The price/earnings ratios for all the stocks were calculated at year end, ranked from highest to lowest price/earnings ratios, and sorted into quintiles. The study assumed that equal investments were made in each stock, and that the stocks were sold after one year. The results are shown on the following page in Table 14. Portfolio 1, the highest price/earnings ratio group, includes all companies with losses. Portfolio 2 is the same group of stocks as Portfolio 1, except the companies with losses have been excluded.

Table 14: Investment Results of New York Stock Exchange Industrial Companies According to Price/Earnings Ratios, April 1957 – March 1971

Portfolio	1 (Highest P/E)	2 (Highest P/E without loss companies)	3	4	5	6 (Lowest P/E)
Median price/ earnings ratio	35.8x	30.5x	19.1x	15.0x	12.8x	9.8x
Average annual rate of return	9.3%	9.5%	9.3%	11.7%	13.6%	16.3%
Market risk (beta)	1.11	1.06	1.04	.97	.94	.99

One million dollars invested in the lowest price/earnings ratio group over the 14-year study period would have increased to $8,282,000. One million dollars invested in the highest price/earnings ratio group would have increased to $3,473,000 over the same period.

Roger Ibbotson, in his "Decile Portfolios of the NYSE, 1967 – 1984," Working Paper, Yale School of Management, 1986, ranked all stocks listed on the NYSE according to price/earnings ratios on each December 31 from 1966 through 1983, and sorted the stocks into deciles. The investment returns were measured for each year from December 31, 1966 through December 31, 1984, an 18-year period. The results are shown below in Table 15.

Table 15: Investment Results of New York Stock Exchange Companies According to Price/Earnings Ratios, December 1966 – December 1984

Decile	Compound Annual Return	Ending Value on 12/31/84 of $1.00 Invested on 12/31/66
1 (Lowest P/E ratio)	14.08%	$12.22
2	13.81	11.67
3	10.95	7.21
4	10.29	6.43
5	9.20	5.32
6	6.43	3.27
7	7.00	3.62
8	5.57	2.80
9	5.50	2.77
10 (Highest P/E ratio)	5.58	2.81

During the 18-year period shown in Table 15, the compound annual returns for the market capitalization weighted NYSE and U.S. Treasury bills were 8.6% and 7.4%, respectively.

In Tweedy, Browne's experience, stocks selling at low prices in relation to earnings are also often significantly undervalued in relation to specific appraisals of the value that shareholders would receive in a sale of the entire company, based upon valuations of similar businesses in corporate transactions. Companies with low price/earnings ratios are also frequently priced at low price-to-book value ratios relative to other companies in the same industry.

Stocks of companies selling at low price/earnings ratios often have above-average cash dividend yields. Additionally, the remaining part of earnings after the payment of cash dividends, i.e., retained earnings, are reinvested in the business for the benefit of the shareholders. Retained earnings increase the net assets, or stockholders' equity, of a company. The increase in stockholders' equity from retained earnings often equates to a specific increase in the true corporate value of a company, especially when the retained earnings result in a similar increase in a company's cash or a decrease in its debt. Reinvestment of retained earnings in business assets and projects which earn high returns can increase true corporate value by amounts exceeding the actual retained earnings. A company with a low price/earnings ratio, by definition, must provide the investor with either an above-average cash dividend yield, or an above-average retained earnings yield, or both. Similar to stocks selling at low prices in relation to net current asset value and book value, the shares of a company with a low price/earnings ratio are often accumulated by the officers and directors, or by the company itself. The company's stock price has frequently declined significantly.

Benjamin Graham's Low Price/Earnings Ratio Stock Selection Criteria

Henry Oppenheimer, in "A Test of Ben Graham's Stock Selection Criteria," ***Financial Analysts Journal***, September/October 1984, examined the investment performance of the low price/earnings ratio stock selection criteria developed by Benjamin Graham. Benjamin Graham's stock selection criteria called for the purchase of securities of companies in which the earnings yield (i.e., the reciprocal of the price/earnings ratio) was at least twice the AAA bond yield, and the company's total debt (i.e., current liabilities and long-term debt) was less than its book value. Graham also advised that each security which met the selection criteria be held for either two years, or until 50% price appreciation occurred, whichever came first.

Henry Oppenheimer screened securities listed on the New York and AMEX to select those issues that met Graham's criteria on each March 31 from 1974 through 1980. An investor who had employed Graham's criteria during this period achieved a mean annual return of 38% as compared to 14% per year, including dividends, from the market index (Center for Research in Securities Prices' (CRSP) index of NYSE-AMEX securities). Table 16 shows the study results by holding period.

Table 16: Benjamin Graham's Price/Earnings Ratio Criteria

Holding Period	Ben Graham Low P/E Annualized Return	NYSE – AMEX Annualized Return	Mean Firm Size (Millions)	Median Firm Size (Millions)
4/74 - 3/76	26.16%	11.28%	$178.8	$27.8
4/75 - 3/77	38.40	14.76	368.9	40.4
4/76 - 3/78	25.56	0.60	175.0	38.8
4/77 - 3/79	29.64	9.96	62.3	33.1
4/78 - 3/80	29.16	14.88	460.6	46.5
4/79 - 3/81	32.28	23.04	183.9	61.5
4/80 - 12/81	46.68	18.00	573.1	131.0

Small Market Capitalization Low Price/Earnings Ratio Companies as Compared to Large Market Capitalization Low Price/Earnings Ratio Companies

Sanjoy Basu examined the effects of market capitalization and price/earnings ratios on investment returns in "The Relationship Between Earnings Yield, Market Value and Return for NYSE Common Stocks," ***Journal of Financial Economics***, December 1983. Professor Basu ranked all companies listed on the NYSE according to price/earnings ratios and sorted the companies into quintiles. Then, each quintile was ranked according to market capitalization and sorted into sub-quintiles within each of the price/earnings ratio groups. This process occurred as of each April 30 from 1963 through 1980 (a 17-year period ended April 30, 1980) and the annual investment returns were computed. Table 17, on the following page, shows the results of this study.

Table 17: 1963 through 1980 Annual Investment Returns for Low versus High Price/Earnings Ratio Stocks According to Market Capitalization within Each Price/Earnings Ratio Category for New York Stock Exchange Listed Companies

Market Capitalization Category	Price/Earnings Ratio Category				
	(Lowest P/E) 1	2	3	4	(Highest P/E) 5
1 (Smallest)	19.1%	16.3%	14.8%	11.6%	14.4%
2	18.1	14.5	9.5	8.2	9.8
3	17.2	13.2	9.6	7.6	6.1
4	15.5	13.3	10.3	7.8	6.6
5 (Largest)	13.1	10.8	7.9	6.6	6.4

One million dollars invested in the smallest fifth of the companies listed on the NYSE, which were priced in the bottom fifth in terms of price/earnings ratios, would have increased to $19,500,000 over the 17-year study period. By comparison, $1,000,000 invested in the largest market capitalization stocks with the lowest price/earnings ratios would have increased to $8,107,000 over the same period. During the period, the annual investment returns for the market capitalization weighted and equal weighted NYSE indexes were 7.68% and 12.12%, respectively. One million dollars invested in the market capitalization weighted and equal weighted NYSE indexes would have increased to $3,518,000 and $6,992,000, respectively.

Dreman Value Management, L.P., in conjunction with Professor Michael Berry of James Madison University, examined the relationship between market capitalizations, price/earnings ratios and annual investment returns over a 20½-year period ended October 31, 1989. Each year, all companies in the Compustat database (approximately 6,000 companies during this period) were ranked according to market capitalization and sorted into quintiles. Then, the stocks within each market capitalization quintile were ranked according to price/earnings ratios and sorted into sub-quintiles. The investment return over the following year was calculated for each stock. The average annual investment returns are presented on the following page in Table 18.

Table 18: Small is Better: Annual Investment Returns for Low Versus High Price/Earnings Ratio Stocks within Market Capitalization Categories for the 20½-Year Period Ended October 31, 1989

Market Capitalization Category	Average Market Cap October 31, 1989 (Millions)	Price/Earnings Ratio Category				
		(Lowest P/E) 1	2	3	4	(Highest P/E) 5
1 (Smallest)	$46	18.0%	15.3%	10.2%	7.0%	4.1%
2	127	15.7	13.7	10.0	6.5	7.4
3	360	17.0	15.1	10.6	7.4	8.2
4	1,031	13.8	12.9	10.3	8.5	7.1
5 (Largest)	5,974	13.0	12.4	9.1	10.5	8.7

One million dollars invested in the lowest price/earnings ratio companies within the lowest market capitalization group in 1969 would have increased to $29,756,500 on October 31, 1989. By comparison, $1,000,000 invested in the highest price/earnings ratio companies within the smallest market capitalization group would have increased to $2,279,000 over this 20½-year period. One million dollars invested in the largest market capitalization, lowest price/earnings ratio group over this period would have increased to $12,272,000.

Five-Year Holding Period Year-by-Year Investment Returns for Low Price-to-Earnings Companies as Compared to High Price-to-Earnings Companies

Josef Lakonishok, Robert W. Vishny and Andrei Shleifer examined the effect of price/earnings ratios on investment returns in "Contrarian Investment, Extrapolation and Risk," Working Paper No. 4360, National Bureau of Economic Research, May 1993. The professors ranked all companies listed on the NYSE and the AMEX according to stock price/earnings ratios and sorted the companies into deciles. Portfolios were initially formed on April 30, 1968, and new portfolios were formed on each subsequent April 30. The study period ended on April 30, 1990. The decile portfolios were held for five years, and the average annual year-by-year investment returns, the average annual five-year returns and the average cumulative total five-year returns were calculated. The investment returns were equal-weighted. Table 19, on the following page, shows the results of the study.

Table 19: Investment Returns in Relation to Price/Earnings Ratios for All New York Stock Exchange and American Stock Exchange Listed Companies, April 1968 – April 1990

Holding Period Following Portfolio Formation	Price/Earnings Ratio Decile (Highest Price/Earnings Ratio) 1	2	3	4	5	6	7	8	9	(Lowest Price/Earnings Ratio) 10
1st Year	12.3%	12.5%	14.0%	13.0%	13.5%	15.6%	17.0%	18.0%	19.3%	16.2%
2nd Year	10.1	11.3	12.4	14.3	16.7	16.4	18.0	18.5	18. 3	17.4
3rd Year	11.8	13.8	15.7	17.1	17.1	19.1	19.8	18.8	18.8	19.5
4th Year	11.1	12.4	14.5	15.1	15.7	15.9	19.8	19.9	20.5	21.4
5th Year	11.9	12.9	15.1	16.7	17.1	16.8	19.6	20.1	21.1	20.7
Average annual return over the 5-year period	11.4	12.6	14.3	15.2	16.0	16.7	18.8	19.1	19.6	19.0
Cumulative 5-year total return	71.7	80.8	95.3	103.1	110.2	116.8	137.0	139.3	144.6	138.8

Low Price/Earnings Ratio Stocks Yield Sizeable Excess Returns Net of Transaction Expenses

In a study published in ***The Journal of Economics and Statistics*** (May 1997) entitled, "The Predictability of Stock Returns: A Cross-Sectional Simulation," Zsuzsanna Fluck (New York University), Burton G. Malkiel (Princeton) and Richard E. Quandt (Princeton) examined the performance of 1,000 large-company stocks ranked by price/earnings and price-to-book value ratios from 1979 through 1995, and confirmed the findings of the previous Lakonishok, Shleifer and Vishny study, "Contrarian Investment, Extrapolation and Risk," finding that low price/earnings and low price-to-book value strategies yield sizeable excess returns net of transaction costs and after adjusting for risk.

As shown in Table 20, Fluck, Malkiel and Quandt constructed a data sample from Compustat for the period mid-1979 through 1988 and for the period between 1989 through mid-1995 consisting of the 1,000 largest U.S. companies sorted and ranked into deciles based on their prices in relation to earnings. They found for the period mid-1979 through 1988 that the lowest price/earnings ratio decile, which was rebalanced quarterly, produced 1.82% of excess return quarterly, or 7.28% annualized, over the average return of the entire data sample. This translated into an annual return for the low price/earnings ratio decile of 25.28% versus 18.00% for the Compustat sample. Conducting the same study for the period 1989 through mid-1995 produced similar results with the low price/earnings ratio decile producing returns that were 1% better than the sample per quarter, or 4% annualized, for an annual return of

20.4% for the low price/earnings ratio decile versus 16.4% for the sample. In addition, they found that the excess return persisted even after performing portfolio simulations which took into consideration transaction expenses associated with purchases and sales. The low price/earnings ratio decile for the periods 6/1979 – 12/1988 and 1/1989 – 6/1995 produced returns annually that were 5.6% and 1.6% better, respectively, than the sample and 8.4% and 4.4% better, respectively, than the S&P 500, net of transaction expenses.

Table 20*a*: Mean Return by Decile Sorted by Price/Earnings Ratios (6/1979 – 6/1995)

	(Low P/E Ratio)		← Deciles →					High P/E Ratio			
	1	2	3	4	5	6	7	8	9	10	Sample Avg.
(6/1979 – 12/1988)											
Average quarterly return	6.32%	6.05%	5.24%	4.88%	4.75%	3.89%	3.99%	3.06%	3.29%	3.11%	4.5%
*Q**	26	28	25	24	23	13	16	10	12	15	
(1/1989 – 6/1995)†											
Average quarterly return	5.1%	6.48%	5.52%	5.04%	3.33%	3.1%	3.89%	4.07%	2.12%	1.9%	4.1%
*Q**	14	17	18	13	8	9	11	12	6	5	

* *Q* is the number of quarters in which the decile return exceeds the sample average.
† Survivorship bias-free Sample

Table 20*b*: Returns Net of 25 Cents Trading Costs (6/1979 – 6/1995)

Low P/E Ratio	Average Quarterly Return	S&P 500	Sample of 1,000 Companies
Low P/E ratio (6/1979 – 12/1988)	5.9%	3.8%	4.5%
Low P/E ratio (1/1989 – 6/1995)	4.5	3.4	4.1

Companies in the United Kingdom, France, Germany, and Japan Trading at Low Prices in Relation to Earnings

John R. Chisholm examined price in relation to earnings and investment results for companies in the United Kingdom, France, Germany and Japan in "Quantitative Applications for Research Analysts," ***Investing Worldwide II***, Association for Investment Management and Research, 1991. A data set, which was described as being comprised of fairly liquid, buyable companies, was ranked at the end of each year according to price/earnings ratios and sorted into quintiles. The study period was December 31, 1974 through December 31, 1989 (15 years). Equal investments were assumed to have been made in each stock, and the stocks were assumed to have been sold after one year. The results were U.S. dollar results. Table 21, on the following page, shows the annual compound returns for the top and bottom quintiles.

Table 21: Investment Results According to Price in Relation to Earnings in the United Kingdom, France, Germany, and Japan, December 1974 – December 1989

	Annual Compound Returns			
Price-to-Earnings Category	United Kingdom	France	Germany	Japan
Lowest price/earnings quintile	33.0%	29.6%	22.0%	27.8%
Highest price/earnings quintile	24.5	23.1	18.9	21.8

United Kingdom Companies Trading at Low Prices in Relation to Earnings

Mario Levis, Professor at the School of Management, University of Bath, United Kingdom, examined the association between price in relation to earnings, and investment returns from April 1961 through March 1985 in "Market Size, PE Ratios, Dividend Yield and Share Prices: The UK Evidence." Using the London Share Price Database, the companies for which earnings information was available were ranked according to price/earnings ratios on each April 1 from 1961 through 1985 and sorted into quintiles. The annual investment returns and the cumulative value of £1 million invested throughout the 24-year period in each of the five groups is shown below in Table 22.

Table 22: Investment Results of U.K. Companies According to Price/Earnings Ratios, April 1961 – March 1985

Price/Earnings Ratio Group	Annual Investment Return	Cumulative Value of £1 Million invested in April 1961 at March 1985 (Millions)
1 (Lowest price/earnings ratio)	17.76%	£50.6
2	14.28	24.6
3	12.60	17.3
4	11.40	13.3
5 (Highest price/earnings ratio)	10.80	11.7
Market Index: Financial Times – Actuaries All Share Index – Value Weighted	12.48%	£16.8

David A. Goodman and John W. Peavy III, Finance Professors at Southern Methodist University, described their analysis of investment returns from stocks ranked according to price/earnings ratios within each stock's respective industry in their book, ***Hyper-Profits***, Doubleday & Company, 1985. The authors ranked the stocks in each of more than one hundred industries according to price/earnings ratios within the particular industry itself, and sorted these companies within each industry into five quintiles based on price/earnings ratios. At the end of each year, this procedure was repeated. The test period was 1962 through 1980, and 2,600 companies were examined in each of the years. Table 23 on the following page shows the annual investment returns for the five groups, and the cumulative return from this approach.

Table 23: Annual Investment Return of Companies Priced Low in Relation to Earnings Relative to Other Companies in the Same Industry, 1962 – 1980

Valuation Company	Annual Investment Return	Cumulative Value of $1 Million Invested 1962 - 1980 (Millions)
1 (Lowest price/earnings ratio relative to other companies in the industry)	23.61%	$45.3
2	18.26	20.5
3	15.34	13.1
4	11.87	7.5
5 (Highest price/earnings ratio relative to other companies in the industry)	5.42	2.6

One million dollars invested over the 18-year period, from 1962 through 1980, in companies with the lowest price/earnings ratios relative to the price/earnings ratios of other companies in the same industry, would have increased to $45,390,000. Over the same period, $1,000,000 invested in companies with the highest price/earnings ratios relative to the other companies in the same industry would have increased to $2,600,000.

Companies Throughout the World: Low Price in Relation to Cash Flow

A. Michael Keppler examined the relationship between price-to-cash flow ratios and investment returns for companies throughout the world in "Further Evidence on the Predictability of International Equity Returns: The Importance of Cash Flow in Country Selection," ***Journal of Portfolio Management***, Fall, 1991. Mr. Keppler's study assumed an equal weighted investment each quarter in each of the following eighteen Morgan Stanley Capital International national equity indexes over the nineteen years and eleven months period from January 31, 1970 through December 31, 1989: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, The Netherlands, Norway, Singapore/Malaysia, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Each quarter, the country indexes were ranked according to the ratio of price-to-cash flow and sorted into four quartiles (a quartile is 25% of the country indexes). The total investment return was measured for each of the four quartile groups over the subsequent three months. Cash flow was defined as net earnings after tax, minority interests, dividends on preferred stock, and distributions to employees, plus reported depreciation on fixed assets for the latest available twelve-month period.

The study indicated that the most profitable strategy was investment in the lowest price-to-cash flow quartile. This strategy produced a 19.17% compound annual return in local currencies (and 20.32% in U.S. dollars) over the January 31, 1970 through December 31, 1989 period. The least profitable strategy was investment in the highest price-to-cash flow

quartile, which produced a 4.37% compound annual return in local currencies (and 5.63% in U.S. dollars). The comparable return over the January 31, 1970 through December 31, 1989 period for the Morgan Stanley Capital International World Index (MSCI World Index) was 12.45% in local currencies (and 13.58% in U.S. dollars).

In Tweedy, Browne's experience, stocks selling at low prices in relation to cash flow are also often priced low in relation to book value and earnings, and often have high dividend yields. Business people in certain fields, such as the newspaper, cable television, broadcasting, and book and magazine publishing fields, frequently describe valuations of debt-free businesses in these fields in terms of multiples of pre-tax operating cash flow (pre-tax income from the business itself before the deduction of depreciation). Stocks selling at low prices in relation to cash flow, especially in comparison to other companies in the same industry, are frequently undervalued relative to the price which shareholders would receive if the entire company were sold.

For companies domiciled outside the United States, Tweedy, Browne has frequently observed depreciation policies that result in larger depreciation expenses, and lower earnings, than would be the case if the same company prepared its financial statements in accordance with U.S. generally accepted accounting principles. The Swiss company, Nestle, for example, reports as an asset on its balance sheet the estimated current cost to replace its property, plant and equipment. This is a significantly larger figure than the historical cost figure which would be required under U.S. generally accepted accounting principles ("GAAP"), and results in higher depreciation charges versus U.S. GAAP.

Cash flow analysis and comparison to companies in the same industry will frequently suggest "hidden value" in the form of understated earnings and/or assets that have been written off to amounts which are significantly less than true realizable values.

Five-Year Holding Period Year-by-Year Investment Returns for Low Price-to-Cash Flow Companies as Compared to High Price-to-Cash Flow Companies

Josef Lakonishok, Robert W. Vishny and Andrei Shleifer examined the effect of price/cash flow ratios on investment returns in "Contrarian Investment, Extrapolation and Risk," Working Paper No. 4360, National Bureau of Economic Research, May 1993. The professors ranked all companies listed on the NYSE and the AMEX according to price/cash flow of ratios and sorted the companies into deciles. Portfolios were initially formed on April 30, 1968, and new portfolios were formed on each subsequent April 30. The study period ended on April 30, 1990. The decile portfolios were held for five years, and the average annual year-by-year investment returns, the average annual five-year returns and the average cumulative total five-year returns were calculated. The investment returns were equal-weighted. Table 24 on the following page shows the results of the study.

Table 24: Investment Returns in Relation to Price/Cash Flow Ratios for all New York Stock Exchange and American Stock Exchange Listed Companies, April 1968 – April 1990

Holding Period Following Portfolio Formation	Price/Cash Flow Ratio Decile									
	(High Price/Cash Flow Ratio)									(Low Price/Cash Flow Ratio)
	1	2	3	4	5	6	7	8	9	10
1st Year	8.4%	12.4%	14.0%	14.0%	15.3%	14.8%	15.7%	17.8%	18.3%	18.3%
2nd Year	6.7	10.8	12.6	15.3	15.6	17.0	17.7	18.0	18.3	19.0
3rd Year	9.6	13.3	15.3	17.2	17.0	19.1	19.1	20.2	19.3	20.4
4th Year	9.8	11.1	14.6	15.9	16.6	17.2	18.2	19.2	22.3	21.8
5th Year	10.8	13.4	16.1	16.2	18.7	17.7	19.1	20.9	21.2	20.8
Average annual return over the 5-year period	9.1	12.2	14.5	15.7	16.6	17.1	18.0	19.2	19.9	20.1
Cumulative 5-year total return	54.3	77.9	96.9	107.4	115.8	120.6	128.3	140.6	147.6	149.4

The Consistency of Returns for Low Price-to-Cash Flow Companies as Compared to High Price-to-Cash Flow Companies

The study which was described in the preceding section, "Contrarian Investment, Extrapolation and Risk," also examined the consistency of investment returns for low price-to-cash flow companies as compared to high price-to-cash flow companies over l-year, 3-year and 5-year holding periods from April 30, 1968 through April 30, 1990. The investment returns for the companies in the high price-to-cash flow category, which comprised the returns for the companies in the highest two deciles of companies that had been ranked on price-to-cash flow, were subtracted from the investment returns of the low price-to-cash flow companies, which comprised the bottom two deciles of the price-to-cash flow ranking. Table 25 on the following page shows the results of the study.

Table 25: The Consistency of Investment Returns for Low Price-to-Cash Flow Companies as Compared to High Price-to-Cash Flow Companies for 1-Year, 3-Year and 5-Year Holding Periods, April 1968 – April 1990

	Holding Period		
Year of Portfolio Formation	1 Year % Better (Worse)	3 Years % Better (Worse)	5 Years % Better (Worse)
1968	2.2%	28.7%	47.4%
1969	12.3	19.5	41.0
1970	13.5	24.6	42.8
1971	(7.8)	23.1	47.8
1972	15.5	31.9	69.3
1973	2.1	38.2	84.6
1974	(0.7)	49.6	134.3
1975	26.2	81.6	131.0
1976	17.4	67.3	146.8
1977	19.3	24.7	76.4
1978	4.8	(10.6)	27.2
1979	(16.8)	(10.2)	27.4
1980	3.9	74.6	122.5
1981	20.3	65.0	158.4
1982	(3.2)	33.8	125.3
1983	20.4	33.2	85.1
1984	19.2	55.2	88.8
1985	1.4	32.2	57.6
1986	10.8	33.9	
1987	9.3	17.0	
1988	9.2		
1989	(6.3)		

As Table 25 indicates, the low price-to-cash flow stocks outperformed the high price-to-cash flow stocks in 17 of the 22 years, or 77% of the time. For three-year holding periods, the low price-to-cash flow companies beat high price-to-cash flow companies in 18 out of the 20 three-year periods. For five-year holding periods, the low price-to-cash flow companies were a better choice than the high price-to-cash flow companies every time.

Are Higher Returns of Low Price-to-Cash Flow Stocks, as Compared to High Price-to-Cash Flow Stocks, Due to Higher Risk?

In an attempt to examine whether the higher returns of low price-to-cash flow stocks were due to greater risk, Professors Lakonishok, Vishny and Shleifer measured monthly investment returns in relation to price-to-cash flow between April 30, 1968 and April 30, 1990 in the 25 worst months for the stock market, and the remaining 88 months in which the stock market declined. In addition, monthly returns were examined in the 25 best months for the stock market and the 122 remaining months in which the stock market increased. The results of this study are shown below in Table 26.

Table 26: Average One-Month Investment Returns in Relation to Price-to-Cash Flow in the Worst and Best Stock Market Months, April 1968 – April 1990

	Price/Cash Flow Ratio Decile									
	(Highest Price/Cash Flow Ratio)									(Lowest Price/Cash Flow Ratio)
Holding Period Following Portfolio Formation	1	2	3	4	5	6	7	8	9	10
Worst 25 months in the stock market	(11.8%)	(11.1%)	(10.6%)	(10.3%)	(9.7%)	(9.5%)	(9.0%)	(8.7%)	(8.8%)	(9.8%)
Next worst 88 months in the stock market when the stock market declined	(3.0)	(2.8)	(2.7)	(2.4)	(2.3)	(2.1)	(2.0)	(1.9)	(1.6)	(2.0)
Best 25 months in the stock market	12.1	12.5	12.2	11.9	11.6	10.9	11.2	11.5	11.9	13.6
Next best 122 months in the stock market when the stock market declined	3.7	3.9	4.0	3.8	3.9	3.8	3.8	3.8	3.7	3.8

As Table 26 indicates, the low price-to-cash flow stocks outperformed the high price-to-cash flow stocks in the market's worst 25 months, and in the other 88 months when the market declined. In the best 25 months for the market, the low price-to-cash flow stocks also beat the high price-to-cash flow stocks. The monthly results were similar for both high and low price-to-cash flow stocks in the remaining 122 months when the stock market increased.

The professors conclude,

> Overall, the value strategy [low price-to-cash flow] appears to do somewhat better than the glamour strategy [high price-to-cash flow] in all states and significantly better in some states. If anything, the superior performance of the value strategy is skewed toward negative return months rather than positive return months. The evidence [in Table 26] thus shows that the value strategy does not expose investors to greater downside risk.

The Performance of Value Portfolios Versus Growth Portfolios Revisited through 2001

In their article entitled, "Value and Growth Investing: Review and Update," ***Financial Analysts Journal***, Vol. 60, No. 1, pp. 71-86, January/February 2004, Louis K.C. Chan and Josef Lakonishok reviewed and updated the literature regarding the performance of value versus growth strategies through 2001 and provided some new results based on an updated and expanded sample. They found that even after taking into account the experience of the technology led stock markets of the late 1990s, value stocks generated superior returns. They further concluded that common measures of risk do not support the argument that the return differential is a result of the higher riskiness of value stocks, but rather, in their opinion, is due to behavioral considerations and the agency costs of delegated investment management.

In their paper, Chan and Lakonishok constructed large cap and small cap portfolios, based on NYSE breakpoints, at every calendar year-end between 1969 and 2001, by sorting stocks on a composite value indicator and placing them in 1 of 10 deciles. The composite indicator pooled information from several valuation measures, including book value-to-price, cash flow-to-price, earnings-to-price and sales-to-price ratios in an effort to improve identification of stocks that were undervalued relative to their fundamentals. As shown in Table 27, buy and hold returns for the year following portfolio formation were reported for the top two deciles - glamour (growth) portfolios - and for the bottom two deciles (value portfolios).

Table 27: Yearly and Geometric Mean Returns to Value and Growth Strategies with Refined Definitions, 1969 – 2001

A. Large-Cap Stocks

	Portfolio						
Year	1 (Glamour)	2	9	10 (Value)	Russell 1000 Value Return	S&P 500 Return	(Deciles 9,10) - (Deciles 1,2)
1969-2001	4.5%	6.7%	15.6%	16.4%	N/A	11.4%	10.4pps
1979-2001	7.9	10.4	18.6	20.4	15.4%	15.1	10.4
1990-2001	3.8	6.0	16.1	18.0	12.9	12.9	12.2

B. Small-Cap Stocks

	Portfolio						
Year	1 (Glamour)	2	9	10 (Value)	Russell 2000 Value Return	Russell 2000 Return	(Deciles 9,10) - (Deciles 1,2)
1969-2001	-2.8%	4.8%	16.6%	18.3%	N/A	N/A	16.5pps
1979-2001	-1.8	7.8	20.8	22.8	16.0	13.8	18.8
1990-2001	-6.2	3.6	18.4	17.7	13.4	11.0	19.4

From 1979 through 2001, the geometric mean return on the value portfolio (decile 10) for large cap stocks exceeded the Russell 1000 Value Index over the same period by 500 basis points annualized. In the small cap study, the deep value portfolio outperformed the Russell 2000 Value Index by 680 basis points annualized.

In the large cap study, the return differential between the average returns for the top two deciles (growth) and the bottom two deciles (value) was 1,004 basis points in favor of the value portfolio. It was even more pronounced in the small cap study where the value deciles outperformed the growth deciles by 1,880 basis points annualized over the full 22-year period.

In the following Table 28, using a sample consisting of the largest cap stocks in the Morgan Stanley Country Index - Europe, Australasia, Far East (MSCI EAFE) of developed non-U.S. countries, Chan and Lakonishok used this same composite value indicator methodology to see whether these findings would hold for developed markets outside the U.S. during the period 1989 through 2001. In parallel with the U.S. experience, the value deciles significantly outperformed both the MSCI EAFE Index and the growth deciles.

Table 28: Yearly and Geometric Mean Returns to Value and Growth Strategies with Refined Definitions in EAFE Markets, 1989 – 2001

	Portfolio					
Year	1 (Glamour)	2	9	10 (Value)	EAFE Free Return	(Deciles 9, 10) - (Deciles 1, 2)
1989	35.6%	33.5%	48.9%	53.2%	21.5%	16.5pps
1990	-35.4	-33.6	-24.8	-23.6	-29.9	10.3
1991	-5.5	0.6	8.2	15.8	8.6	14.5
1992	-18.4	-15.5	-4.6	2.0	-6.3	15.7
1993	13.7	17.5	41.5	49.3	29.3	29.8
1994	-4.8	-1.7	0.3	3.2	-2.1	5.0
1995	1.5	1.1	1.4	5.8	9.6	2.3
1996	0.9	10.2	10.3	12.4	11.4	5.8
1997	-3.3	-4.5	3.5	3.2	13.2	7.3
1998	12.9	8.9	6.3	-5.9	12.4	-4.8
1999	84.7	46.7	26.9	26.5	33.2	-39.0
2000	-27.8	-21.3	8.1	15.8	-7.3	36.5
2001	-49.5	-34.2	0.7	11.5	-16.3	47.9
Period mean	-4.5	-2.0	8.2	12.3	4.5	13.5

STOCKS WITH HIGH DIVIDEND YIELDS

High Dividend Yield in the United Kingdom

Mario Levis, Professor at The School of Management, University of Bath, United Kingdom, examined the association between dividend yield and investment returns from January 1955 through December 1988 in "Stock Market Anomalies: A Reassessment based on the U .K. Evidence," ***Journal of Banking and Finance***, December 1989. Professors Levis, using a sample of 4,413 companies which were listed on the London Stock Exchange during

January 1955 through December 1988, ranked all listed companies each year according to dividend yield and sorted the companies into deciles. The annual investment returns and the cumulative value of £1 million invested throughout the 34-year period in each of the ten groups is shown in Table 29, along with descriptive information concerning each group's average dividend yield and market capitalization.

Table 29: Investment Results of U.K. Companies According to Dividend Yields, January 1955 – December 1988

Dividend Yield Group	Yield	Annual Investment Return	Cumulative Value of £1 Million invested January 1955 at December 1988	Average Market Cap (£ million)
1	13.6%	19.3%	£403.4	£283.4
2	10.9	17.7	254.9	278.5
3	8.7	16.8	196.4	337.2
4	7.4	16.0	155.4	266.4
5	6.4	15.4	130.3	223.1
6	5.5	14.1	88.7	206.5
7	4.7	12.4	53.2	112.1
8	4.0	11.9	45.7	95.4
9	3.1	11.5	40.5	94.4
10	1.4	13.8	81.1	74.6
Financial Times–Actuaries All Share Index	5.3%	13.0%	£63.8	£503.5

A report which describes Professor Levis' dividend yield study, "Market Anomalies: Are They a Mirage Or a Bona Fide Way to Enhance Portfolio Returns?" by Michael Lenhoff, January 19, 1990, notes that,

> there is a near perfect inverse correlation between the ratio of price to net asset value [i.e., book value] for the U.K. equity market and yield. When price stands significantly at a discount [premium] to the net asset value, the yield available from U.K. plc is significantly above [below] the long run range.

Mr. Lenhoff also notes that the price/earnings ratio of high dividend yield companies are usually low in relation to the price/earnings ratio of the entire stock market and that the high yield companies are often takeover candidates.

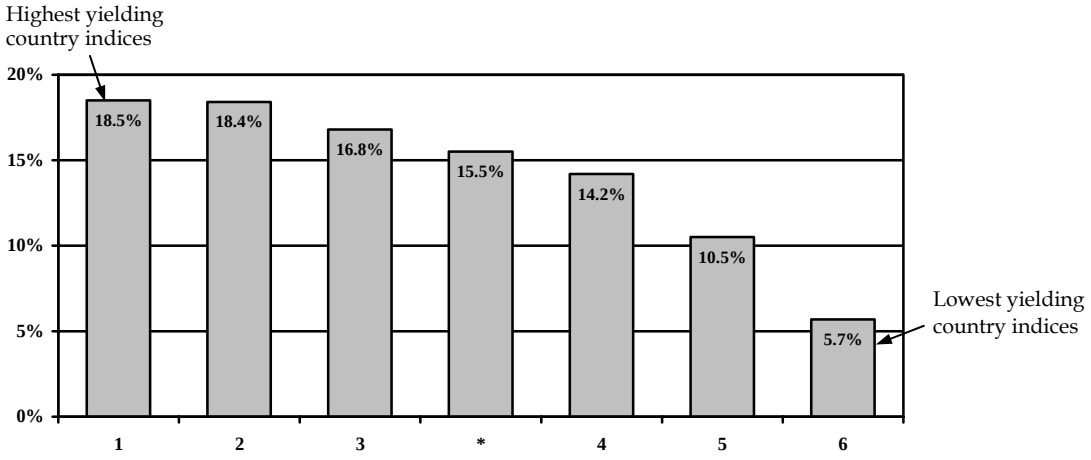
In Tweedy, Browne's experience, high dividend yield on stocks in the U.K. and throughout the world is often associated with stocks selling at low prices in relation to earnings, book value and specific appraisals of the value that shareholders would receive in a sale of the entire company based upon valuations of similar businesses in corporate transactions.

Companies Throughout the World: High Dividend Yield

In "The Importance of Dividend Yields in Country Selection," ***The Journal of Portfolio Management***, Winter 1991, A. Michael Keppler examined the relationship between dividend yield and investment returns for companies throughout the world. Mr. Keppler's study assumed an equal-weighted investment each quarter in each of the following eighteen Morgan Stanley Capital International equity indexes over the 20-year period, December 31, 1969 through December 31, 1989: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, The Netherlands, Norway, Singapore/Malaysia, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Each quarter, the country indexes were ranked according to dividend yield and sorted into four quartiles. The total investment return was measured for each of the four quartile groups over the subsequent three months.

The study indicated that the most profitable strategy was investment in the highest yield quartile. The compound annual investment return for the countries with the highest yielding stocks was 18.49% in local currencies (and 19.08% in U.S. dollars) over the 20-year period, December 31, 1969 through December 31, 1989. The least profitable strategy was investment in the lowest yield quartile, which produced a 5.74% compound annual return in local currency (and 10.31% in U.S. dollars). The MSCI World Index return over the same period was 12.14% in local currency (and 13.26% in U.S. dollars). On an equal-weighted basis, the MSCI World Index was up 15.5% for the period in local currency.

Compound Annual Returns (in local currencies) based on various dividend yield strategies and the MSCI World Index December 1969 – December 1989



Source: *The Importance of Dividend Yields in Country Selection,* A. Michael Keppler, **The Journal of Portfolio Management,** Winter 1991

* MSCI World Index (equally weighted) in local currency; on a capitalization-weighted basis, the MSCI World Index returned 12.14% in local currency.

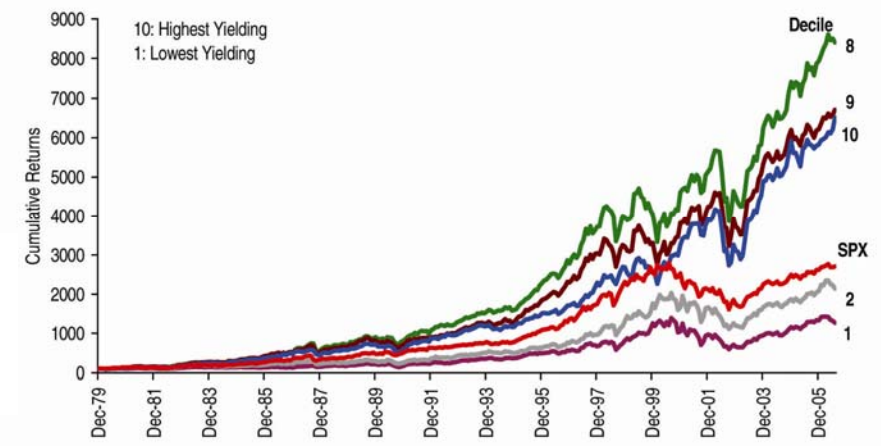
• Strategies based on yield:
(1) Invest in only top quartile yielding country indices
(2) Invest in the top two quartiles based on yield
(3) Invest in the top three highest yielding quartiles
(4) Invest in the bottom three quartiles based on yield
(5) Invest in the bottom two quartiles based on yield
(6) Invest in only the lowest yielding quartile.

High Dividend Yield Stocks Generally Outperform Those with Lower Yields, However, the Best Returns Have Not Come from those with the Highest Yields. Higher Yields Coupled with Low Payout Ratios Have Produced the Best Returns.

In their equity research paper, entitled "High Yield, Low Payout," ***Credit Suisse Quantitative Equity Research***, August 15, 2006, Credit Suisse analysts Pankaj N. Patel, Souheang Yao and Heath Barefoot found that while high dividend yield stocks did indeed outperform their lower yield counterparts, the highest yield stocks were not the overall leaders in terms of return. They ran a simulation of a dividend strategy from January 1980 to June 2006, limiting their universe to stocks within the S&P 500. They created equal-weighted decile baskets based on dividend yields as of each month-end. Over the 26-year period, they found that stocks with higher dividend yields generally outperformed those with low dividend yields, but the highest yield decile did not produce the best overall return. As their chart below indicates, deciles 8 and 9 outperformed decile 10, the highest yield decile.

Exhibit 7: **Dividend Yield Strategy**

Equal-weighted decile performance from January 1980 to July 2006 (universe: S&P 500)



Source: Credit Suisse Quantitative Equity Research.

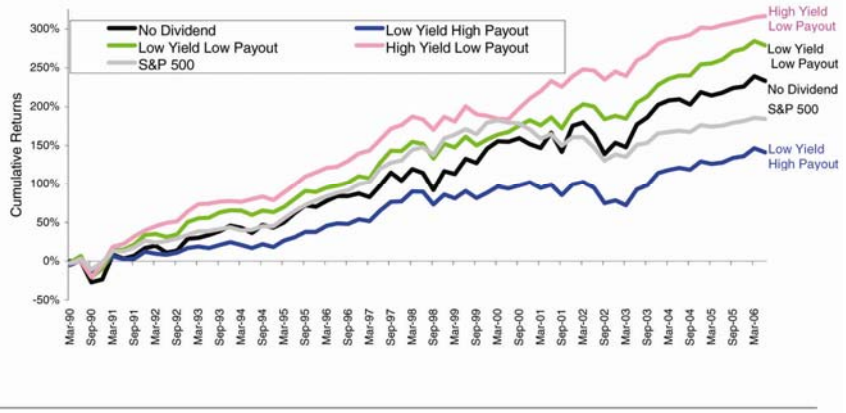
Source: *High Yield, Low Payout* by Credit Suisse Quantitative Equity Research, August 15, 2006, p. 5

In addition, they found within the higher dividend yield universe a direct correlation between low payout ratios and higher returns. Specifically, they created three dividend yield baskets ranked by yield; i.e., high yield, low yield and no yield. Then, within each of these baskets they categorized stocks based on payout ratio; i.e., high, medium and low. Equal-weighted portfolios of these baskets were created based on dividend yields and payout ratios as of each quarter end for the period January 1990 to June 2006; i.e., high yield, low payout; low yield, low payout; low yield, high payout, etc. … The stocks used

were those of the S&P 500. As you can see from the chart that follows, the basket with the highest yields combined with low payout ratios produced the best returns. The high yield, low payout portfolio bucket generated an annualized return for the period of 19.2% versus 11.16% for the S&P 500. Arithmetically, the lower the payout ratio associated with a given level of dividend yield, the higher the earnings yield for the company, and the cheaper the stock based on price-to-earnings multiples. The high yield, low payout stocks that produced the better returns were priced at low ratios of price-to-earnings, and as a corollary, at high ratios of earnings-to-price; i.e., earnings yield.

Exhibit 2: Dividend Yield and Payout Ratio

Equal-weighted performance from January 1990 to June 2006, quarterly rebalance



Source: Credit Suisse Quantitative Equity Research.

Source: *High Yield, Low Payout,* Credit Suisse Quantitative Equity Research, Aug. 15, 2006, pp. 2-3

Exhibit 3: Portfolio Buckets

Dividend Yield	Payout Ratio: High/Negative	Payout Ratio: Low	Payout Ratio: Low
Low	Low Yield High Payout	Low Yield Medium Payout	Low Yield Low Payout
	Medium Yield High Payout	Medium Yield Medium Payout	Medium Yield Low Payout
High	High Yield High Payout	High Yield Medium Payout	High Yield Low Payout

Source: Credit Suisse Quantitative Equity Research.

Exhibit 4: Annualized Returns

From January 1990 to June 2006

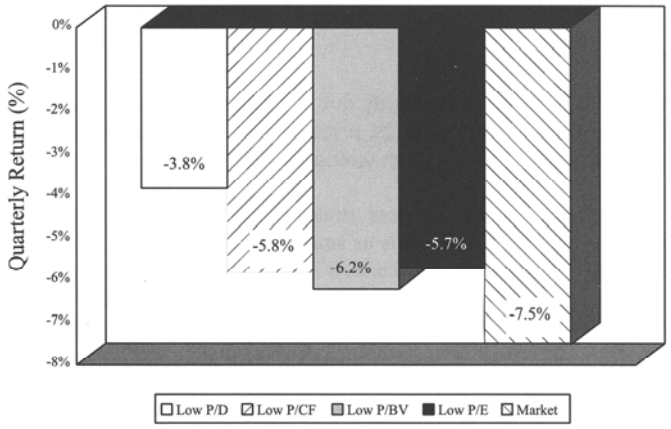
Dividend Yield	Payout Ratio: High/Negative	Payout Ratio: Low	Payout Ratio: Low
Low	8.6%	14.7%	16.9%
	11.2%	13.1%	17.6%
High	11.0%	13.5%	19.2%

Source: Credit Suisse Quantitative Equity Research.

The Defensive Nature of High Dividend Yields During Market Declines: High Dividend Yield Stocks Outperformed other Value Strategies and the Market on Average in Down Market Quarters from 1970 – 1996

In another study, entitled "When The Bear Growls: Bear Market Returns 1970-1996," contained in ***Contrarian Investment Strategies: The Next Generation***, David Dreman, in collaboration with Eric Lufkin, examined the effectiveness of contrarian value strategies in down market quarters for the 27 years ended December 31, 1996. The Compustat 1500 database (1500 largest publicly traded stocks) was used, and the performance of four value strategies — low price-to-earnings, low price-to-book value, low price-to-cash flow, and high dividend yields — were measured and averaged for all down quarters and then compared to the index itself for the 27-year period. All of the value strategies outperformed the market, with the high dividend strategy (low price-to-dividend) performing the best of all the value strategies, declining on average only 3.8%, or roughly one-half as much as the market.

Figure 7-5
When the Bear Growls
Bear Market Returns 1970 - 1996



Source: *Contrarian Investment Strategies: The Next Generation,* David Dreman, Simon & Schuster, 1998, p. 157

When both the up and down quarters were considered over the full 27 years, again, all of the value strategies outperformed the market, but the price-to-dividend strategy trailed the other strategies somewhat. For the full 27-year period, through both up and down quarters, the price-to-dividend strategy produced an annualized return of 16.1% versus 14.9% for the market.

INVESTING WITH THE INNER CIRCLE: BUYING STOCKS WHERE THE INSIDERS (OFFICERS, DIRECTORS OR THE COMPANY ITSELF) ARE BUYING

The Impact of Insider Accumulation

Investment returns associated with purchases of shares by corporate insiders (officers, directors or very large shareholders) have been examined in several studies by academicians. All of the studies assume that investments were made in the shares of companies in which (i) more than one insider had purchased a company's shares, and (ii) the number of insider purchases had significantly exceeded the number of insider sales during the same period. The studies also assumed that investments were made in the stocks that insiders had purchased shortly after it was public information that the insider transactions had occurred. The studies which are referred to in Table 30 are:

(1) Donald T. Rogoff, "The Forecasting Properties of Insider Transactions," Diss., Michigan State University, 1964;

(2) Gary S. Glass, "Extensive Insider Accumulation as an Indicator of Near Term Stock Price Performance," Diss., Ohio State University, 1966;

(3) Charles W. Devere, Jr., "Relationship Between Insider Trading and Future Performance of NYSE Common Stocks 1960 - 1965," Diss., Portland State College, 1968;

(4) Jeffrey F. Jaffe, "Special Information and Insider Trading," ***Journal of Business***, July 1974; and

(5) Martin E. Zweig, "Canny Insiders: Their Transactions Give a Clue to Market Performance," ***Barron's***, July 21, 1976.

Table 30 shows the investment returns on the stocks of companies purchased shortly after insiders' purchases.

Table 30: Investment Returns on Stocks Purchased after Insiders' Purchases

		Annualized Investment Return	
Study Author	**Study Period**	**Insider Stocks**	**Market Index**
Rogoff	1958	49.6%	29.7%
Glass	1961-1965	21.2	9.5
Devere	1960-1965	24.3	6.1
Jaffe	1962-1965	14.7	7.3
Zweig	1974-1976	45.8	15.3

In Tweedy, Browne's experience, officers, directors and large shareholders often buy their own company's stock when it is depressed in relation to the current value which would be ascribable to the company's assets or its ongoing business in a corporate acquisition, or to the likely value of the company in the near to intermediate future. Insiders often have "insight information" — knowledge about new marketing programs, product price increases, cost cuts, increased order rates, changes in industry conditions, etc. which they believe will result in an increase in the true underlying value of the company. Other examples of insider insights are: knowledge of the true value of "hidden assets," such as the value of a money-losing subsidiary that a competitor may have offered to buy; or the value of excess real estate not required in a company's operation; or knowledge of the likely earning power of the company once heavy non-recurring new product development costs stop. It is not uncommon to see significant insider buying in companies selling in the stock market at low price/earnings ratios or at low prices in relation to book value.

United Kingdom: The Impact of Insider Accumulation

Mervyn King and Aisla Roell from the London School of Economics examined the relationship between overall market returns and returns on U.K. stocks that had been purchased by a company's own officers and directors. The study sample consisted of companies reported in the weekly "Shares Stakes" section of ***The Financial Times*** between January 1986 and August 1987 in which an open market purchase had been made by a company insider. The study assumed that the same number of shares that had been purchased by an insider were acquired for the "Buy" portfolio at the stock price on the day of publication. The investment returns in excess of The Financial Times-Actuaries All Share Index were computed over periods of one month, three months and one year following the publication date. Table 31 shows the results.

Table 31: Investment Returns above the Market Index on United Kingdom Stocks Purchased by Insiders, January 1986 – August 1987

Companies in Buy Group	Weeks in Sample	Time Span from Publication Date	Return in Excess of Market Index
109	46	1 month	2.47%
103	43	3 months	6.10
52	22	1 year	53.05

Canada: The Impact of Insider Accumulation

Jerome Baesel and Garry Stein from the University of California, Irvine and Canadian Bank of Commerce, respectively, examined the relationship between Canadian stocks listed on the Toronto Stock Exchange and purchased by insiders, and investment returns in "The Value of Information: Inferences from the Profitability of Insider Trading", ***Journal of Financial and Quantitative Analysis***, September 1979. The authors examined insider transactions pertaining to 111 large Toronto Stock Exchange listed industrial firms between January 1968 and December 1972. The sample consisted of 403 trades by all officers or directors who were also directors of a Canadian bank and 580 trades by officers and directors who were not directors of a Canadian bank. The study did not examine, as a separate category, the investment results from insider purchases of stocks in which the insider buying intensity was greatest, (e.g., companies in which three or more insiders had purchased shares, or companies in which the insider purchases significantly increased the insiders' holdings and represented a large amount of money).

The authors found that insiders who were also directors of a Canadian bank had an average excess return above a risk adjusted market index of 7.8% per year. The excess return for officers and directors who were not also directors of a Canadian bank was 3.8% per year.

Companies that Buy Their Own Stock

Fortune Magazine, in "Beating the Market by Buying Back Stock," by Carol Loomis, April 29, 1985, examined the investment returns from a strategy of buying the stock of companies which have repurchased significant amounts of their own common stock. ***Fortune*** screened the 1,660 stocks in the Value Line Investment Survey and selected all companies which had purchased significant amounts of their own shares in the 10-year period from 1974 through 1983. (Companies which had purchased a large quantity of stock to eliminate a shareholder who had threatened a takeover were deleted from the sample.) Investments were assumed to have been made on the approximate date of each stock repurchase. The total investment return was measured from each of these dates to the end of 1984, producing a 22.6% average compounded rate of return. The comparable return earned on the S&P 500 was 14.1%.

It has been Tweedy, Browne's experience that a company will often repurchase its own shares when its management believes that the shares are worth significantly more than the stock price. Share repurchases at discounts to underlying value will increase the per share value of the company for the remaining shareholders. When officers and directors are significant shareholders, the money which the company uses to buy back its own stock is, to a significant extent, the officers' and directors' own money. In this circumstance, the repurchase of stock by the company is similar to insider purchases.

Companies selling in the stock market at low price/earnings ratios or low prices in relation to book value frequently repurchase their own shares. Share repurchases at a pre-tax earnings yield which exceeds what the company earns on its cash or what it pays on debt incurred to fund the share repurchase will result in an increase in earnings per share. Share repurchases at less than book value increase the per share book value of the remaining shares.

STOCKS THAT HAVE DECLINED IN PRICE

Stocks with the Worst Prior Investment Results

Werner F.M. DeBondt and Richard Thaler, Professors at the University of Wisconsin and Cornell University, respectively, examined the investment performance of stocks with the worst and best prior investment results in "Does the Stock Market Overreact?," ***The Journal of Finance***, July 1985.

On December 31, 1932, and on each December 31 thereafter through 1977, DeBondt and Thaler selected from all stocks listed on the NYSE, a total of 46 separate experiments, the 35 worst performing and 35 best performing stocks over the preceding five years. For the worst performing stocks the average price decline was 45%. The investment results of the worst performing and best performing stocks were compared to a market index, the equal weighted investment results of all stocks listed on the NYSE. The worst performing stocks over the preceding five-year period produced average cumulative returns of 18% in excess of the market index 17 months after portfolio formation, a compound annual return in excess of the market index of 12.2%. The best performing stocks over the preceding five years produced average cumulative returns of about 6% less than the market index after 17 months, a compounded annual negative return of -4.3% versus the market index.

DeBondt and Thaler also tested portfolios of worst and best performing stocks based on investment returns over the prior three years and found similar significant excess positive returns for the worst performing stocks and similar below market returns for the best performing stocks.

Stocks with the Worst Prior Investment Results Throughout the World

James M. Poterba and Lawrence H. Summers, Professors at Massachusetts Institute of Technology and Harvard University, respectively, examined in their study, "Mean Reversion in Stock Prices, Evidence and Implications," March 1988, whether investment results throughout the world tend to move toward an average return, with large increases in prices and returns followed by lower or negative returns, and large declines in prices and returns followed by positive investment returns. The authors analyzed monthly NYSE

returns from 1926 through 1985, annual NYSE returns from 1981 to 1985, and monthly returns for 17 stock markets outside the U.S. from 1957 through 1986. The following stock markets outside the U.S. were examined:

Austria	France	Netherlands	Spain
Belgium	Germany	Norway	Sweden
Canada	India	Philippines	Switzerland
Colombia	Japan	South Africa	United Kingdom
Finland			

The Canadian data consisted of monthly capital gains on the Toronto Stock Exchange. Monthly returns, including dividends, on the Financial Times-Actuaries Share Price Index were used for the U.K. For the 15 other stock markets, monthly returns from the International Monetary Fund's International Statistics were examined.

The authors concluded that stock returns throughout the world tend to revert toward a mean average return over longer periods of time, i.e., more than one year. Current high investment returns tend to be associated with lower investment returns in the future. Current low investment returns tend to be associated with higher investment returns in the future. The authors suggest the desirability throughout the world of investment strategies involving the purchase of shares whose prices have declined significantly.

Stocks with the Worst Prior Investment Results in the United Kingdom

In ***The Over-Reaction Effect — Some U.K. Evidence***, by D. M. Power and A. A. Lonie, Professors at University of Dundee and R. Lonie of Grove Academy, Dundee, the 1983 - 1987 five-year investment results of the thirty stocks with the worst investment results from the beginning of 1973 through 1982 (about 10 years total) were compared to the thirty stocks with the best investment results over the same period and to the overall stock market. The thirty worst and best performing stocks over the period 1973 through 1982 were from a list of the top 200 U.K. companies in ***Management Today***, June 1982. The results are presented below:

	Average Annual Returns 1973 - 1977	1978 – 1982	1983 - 1987
30 Worst performing stocks, 1973-1982	(9.96)%	7.92%	30.84%
30 Best performing stocks, 1973-1982	12.72	15.96	13.32
Market index	5.64	17.40	20.76

STOCKS WITH SMALLER MARKET CAPITALIZATIONS

Larger Returns from Small Capitalization Stocks

Rolf Banz ranked all NYSE listed companies according to market capitalization each year from 1926 through 1980, sorted the companies into quintiles, and measured the annual investment returns, on a market capitalization weighted basis, of each quintile. The results are shown below in Table 32.

Table 32: Total Annual Returns on NYSE Stocks Sorted into Quintiles According to Market Capitalization, 1926 – 1980

	Quintile				
	1 (largest)	2	3	4	5 (smallest)
Compound annual return	8.9%	10.1%	11.1%	11.7%	12.1%
Value of $1 invested on 12/31/25 at end of 1980	$108.67	$200.22	$333.76	$443.69	$524.00

Marc Reinganum, in "Portfolio Strategies Based on Market Capitalization," ***The Journal of Portfolio Management***, Winter 1983, studied the investment returns of all stocks listed on the NYSE and AMEX from 1963 through 1980. All companies listed on the two stock exchanges were ranked according to market capitalization and sorted into deciles at the beginning of each year from 1963 through 1980. Table 33, on the next page, shows the mean average annual returns, not the compound rates of return, for each of the ten market capitalization groups, as well as the cumulative value of $1 invested in each group from 1963 through 1980, and descriptive information concerning each decile.

Table 33: Investment Returns by Market Capitalization Decile for All Stocks Listed on New York and American Stock Exchanges, 1963 – 1980

Decile	Average Annual Return	Cumulative Value in 1980 of $1 Invested in 1963	Average Market Capitalization of Each Decile (Millions)	Median Share Price	Average % Listed on AMEX in Each Decile
1 (Smallest market cap companies)	32.8%	$46.28	$4.6	$5.24	92%
2	23.5	19.50	10.8	9.52	77
3	23.0	21.16	19.3	12.89	52
4	20.2	14.95	30.7	16.19	34
5	19.1	12.79	47.2	19.22	21
6	18.3	12.68	74.2	22.59	13
7	15.6	8.82	119.1	26.44	8
8	14.2	7.50	209.7	30.83	5
9	13.0	6.70	434.6	34.43	3
10 (Largest market cap companies)	9.5	4.12	1102.6	44.92	2

Small Capitalization Stocks in the United Kingdom, France, Germany and Japan, December 1974 – December 1989

John R. Chisholm examined the relationship between market capitalization and investment results for companies in the United Kingdom, France, Germany and Japan in "Quantitative Applications for Research Analysts," ***Investing Worldwide II***, Association for Investment Management and Research, 1991. Companies in each country were ranked according to market capitalization at the end of each year and sorted into quintiles. The study period was 15 years, from December 31, 1974 through December 31, 1989. Equal investments were assumed to have been made in each stock, and the stocks were assumed to have been sold after one year. The results were U.S. dollar results. Table 34 below shows the annual compound returns for the top and bottom quintiles.

Table 34: Investment Results According to Market Capitalization in the United Kingdom, France, Germany and Japan, December 1974 – December 1989

Market Capitalization Category	United Kingdom	France	Germany	Japan
Smallest market capitalization quintile	33.7%	29.5%	21.6%	32.1%
Largest market capitalization quintile	24.3	21.4	20.2	23.6

Small Capitalization Stocks in the United Kingdom

Mario Levis, Professor at The School of Management, University of Bath, United Kingdom and John Moxon examined the association between market capitalization and investment returns in the United Kingdom for the period 1956 through 1987. Each year, all companies registered on the London Stock Exchange were ranked according to market capitalization and sorted into deciles. The average annual investment returns are presented in Table 35.

Table 35: Investment Returns by Market Capitalization Decile for All Stocks Registered on the London Stock Exchange, 1956 – 1987

Decile	Average Annual Return	Maximum Market Capitalization of Company in each Group (£ Million)
1 (Smallest market cap companies)	21.58%	£3.8
2	17.75	7.1
3	16.97	11.1
4	15.62	16.9
5	14.71	25.8
6	13.69	42.6
7	13.07	67.1
8	13.19	136.9
9	13.31	370.5
10 (Largest market cap companies)	11.40	13,282.5

Small Capitalization Stocks in Canada

Angel Berges from Universidad de Madrid and John J. McConnell and Gary G. Schlarbaum from Purdue University examined the relationship between market capitalization and investment returns in Canada in "The Turn-of-the-Year in Canada," ***Journal of Finance***, March 1984. Over the 1951 through 1980 period, 391 companies listed on the Toronto Stock Exchange or the Montreal Stock Exchange were ranked each year according to market capitalization and sorted into five equal number groups (quintiles) shown on the next page in Table 36.

Table 36: Investment Returns by Market Capitalization Quintile for Canadian Stocks, 1951 – 1980

	Annual Return		Average Market Value (Millions of Canadian Dollars)	
Quintile	1951 – 1972	1973 – 1980	1951 – 1972	1973 - 1980
1 (Smallest market cap companies)	24.24%	20.04%	$4.9	$9.8
2	17.76	19.92	17.2	60.2
3	13.68	16.92	37.8	60.2
4	11.88	16.68	86.0	141.7
5 (Largest market cap companies)	10.80	14.76	365.1	672.3

Small Capitalization Stocks in Australia

In "Stock Return Seasonalities and the Tax-Loss Selling Hypothesis," by Philip Brown, University of Western Australia, Donald B. Klein, University of Pennsylvania, Allan W. Kleidon, Stanford University and Terry A. Marsh, Massachusetts Institute of Technology, ***Journal of Financial Economics***, 1983, the relationship between market capitalization and investment returns is examined for Australian stocks. All industrial, mining and oil stocks in Australia were ranked each year according to market capitalization and sorted into deciles. The study period was 1958 through 1981. Table 37 presents the average annual returns for each market capitalization group of stocks.

Table 37: Investment Returns by Market Capitalization Decile for Australian Stocks, 1958 – 1981

Decile	Annual Return
1 (Smallest market cap companies)	81.05%
2	26.77
3	20.92
4	15.82
5	17.71
6	15.20
7	13.80
8	14.65
9	14.17
10 (Largest market cap companies)	12.88
Index	12.28

Small Capitalization Stocks in Japan

T. Nakamura and N. Terada examined the relationship between market capitalization and investment returns in "The Size Effect and Seasonality in Japanese Stock Returns," Nomura Research Institute, 1984. Japanese stocks were ranked according to market capitalization and sorted into quintiles. The study period was 1966 through 1983. Table 38 shows the annual returns.

Table 38: Investment Returns by Market Capitalization Quintile for Stocks in Japan, 1966 – 1983

Quintile	Annual Return
1 (Smallest market cap companies)	24.36%
2	18.00
3	16.56
4	14.04
5 (Largest market cap companies)	13.68

INTERRELATED INVESTMENT CHARACTERISTICS

Donald Keim, Professor of Finance at the Wharton School, University of Pennsylvania, examined the interrelationship among price/book value, market capitalization, price/earnings ratio and average stock price for all NYSE listed companies from 1964 through 1982 in ***Stock Market Anomalies***, edited by Elroy Dimson, Cambridge University Press, 1988. Each March 31 from 1964 through 1982, all NYSE listed companies were ranked according to price in relation to book value and sorted into deciles. The average price/book value ratio, average market capitalization, average price/earnings ratio and average price per share were computed for each of the ten groups of companies. The information is shown in Table 39.

Table 39: Average Values of Price-to-Book Value, Price/Earnings Ratio and Stock Price for Ten Equal-Number Groups of New York Stock Exchange Listed Firms Constructed on the Basis of Increasing Price-to-Book Values, 1964 – 1982

Price/Book Value Group	Average Price/Book Value Ratio	Average Price/Earnings Ratio	Market Capitalization (Millions)	Average Stock Price
1 (Lowest)	0.52	16.7x	$217.1	$20.09
2	0.83	9.1	402.5	22.97
3	1.00	9.1	498.6	25.08
4	1.14	9.1	604.7	27.79
5	1.29	10.0	680.2	28.97
6	1.47	10.0	695.6	31.55
7	1.71	11.1	888.9	36.07
8	2.07	11.1	872.6	37.84
9	2.80	14.3	1099.2	44.80
10 (Highest)	7.01	20.0	1964.3	60.09

As Table 39 indicates, lower price-to-book value ratios were associated with lower price/earnings ratios, smaller market capitalizations and lower stock prices.

Donald Keim, in "Earnings Yield and Size Effects: Unconditional and Conditional Estimates," examined price/earnings ratio and market capitalization for the period from March 31, 1951 to December 31, 1986 for all New York and AMEX listed companies with a December 31 fiscal year, including all such companies which had been sold, merged or declared bankrupt. Each March 31, all of the culled companies were ranked according to price/earnings ratio and sorted into deciles. The annual investment return, average price/earnings ratio and average market capitalization for each of the ten groups are presented in Table 40.

Table 40: Investment Returns and Characteristics for Ten Price/Earnings Ratio Groups of NYSE and AMEX Stocks, March 1951 – December 1986

Price/Earnings Ratio Groups	Annual Investment Return	Average Price/Earnings Ratio	Average Market Capitalization (Millions)
1 (Lowest)	19.08%	5.6x	$365.6
2	19.08	7.6	428.0
3	18.00	8.6	557.0
4	16.32	9.6	474.5
5	14.04	10.6	582.0
6	13.68	11.7	705.4
7	12.60	13.1	679.7
8	13.20	15.2	669.6
9	13.32	18.8	792.2
10 (Highest)	14.28	31.5	874.8

As Table 40 indicates, lower price/earnings ratios were associated with smaller market capitalization over this period of 35 years and nine months.

CONCLUSION

Most studies which have examined the relationship between investment returns and investment characteristics such as price-to-book value, price-to-earnings, price-to-cash flow, dividend yield, market capitalization, insider purchases, or company share repurchases have compared the relationship between only one investment characteristic and subsequent returns. Occasionally, two investment characteristics, such as price-to-book value and market capitalization, or price-to-earnings and market capitalization have been examined in relation to returns.

In more than one study, we noted that investments screened for one of the characteristics had several of the others, which corresponded to Tweedy, Browne's own investment experience. Companies selling at low prices in relation to net current assets, book value and/or earnings often have many of the other characteristics associated with excess return. Current earnings are often depressed in relation to prior levels of earnings, especially for companies priced below book value. The price is frequently low relative to cash flow, and the dividend yield is often high. More often than not the stock price has declined significantly from prior levels. The market capitalization of the company may be relatively small. Corporate officers, directors and other insiders often have been accumulating the company's stock. Frequently, the company itself has been repurchasing its shares in the open market. Furthermore, these companies are often priced in the stock market at discounts to real world estimates of the value that shareholders would receive in a sale or liquidation of the entire company. Each characteristic seems somewhat analogous to one piece of a mosaic. When several of the pieces are arranged together, the picture can be clearly seen: an undervalued stock.

In all of the preceding studies, there was a correlation between the investment criterion or characteristic and excess return. In most of the studies, the return information presented was a single average annual percentage return figure which summarized the investment results over a very long measurement period (54 years in the case of Rolf Banz's study of small capitalization stocks). This summary average annual return figure encompassed, and was mathematically determined by, the separate investment returns of the many smaller periods of time which comprised the entire length of time of each study. The studies, with one exception, did not present information or conclusions concerning the pattern, sequence or consistency of investment returns over the shorter subset periods of time which comprised the entire measurement period. Questions such as whether the excess returns were generated in 50% of the years, or 30% of the years, or in a seven year "run" of outperformance followed by seven "dry years" of underperformance, or whether the excess returns were produced primarily in advancing or declining stock markets were only addressed in one study, "Contrarian Investment, Extrapolation and Risk," by Professors Lakonishok, Vishny and Shleifer. Their study, over the 1968 through 1990 period,

indicated fairly consistent results over 1-year holding periods, and increasingly consistent results over 3-year and 5-year holding periods for low price-to-book value and low price-to-cash flow stocks, as their performance edge accumulated with the passage of time. This performance edge was attained through outperformance in the months when the stock market was declining, which was 43% of the 22-year period, and in the months when the stock market had its largest percentage advances, which was 10% of the entire period.

In Tweedy, Browne's experience, contrary to some proponents of the efficient market theory, it is possible to invest in publicly traded companies at prices which are significantly less than the underlying value of the companies' assets or business. Two very plain examples of undervaluation are: a closed-end mutual fund whose share price is significantly less than the underlying market value of its investment portfolio, or a company whose shares are priced at a large discount to the company's cash after the deduction of all liabilities. These types of easy-to-understand bargains do appear in the stock market recurrently. However, it cannot be said with certainty that a clear-cut bargain investment will produce excess investment returns, and it is impossible to predict the pattern, sequence or consistency of investment returns for a particular bargain investment. It can only be stated with certainty that many studies have repeatedly shown investment in numerous groups of bargain securities over very long multi-year periods *has* produced excess returns.

The managing directors of Tweedy, Browne have always been fascinated by studies which have examined the correlation between securities possessing a common characteristic, or combination of characteristics, and investment returns. Unlike science, where two parts hydrogen and one part oxygen always produce water, the managing directors do not believe there is an investment formula that ***always*** produces an exceptional return over every period of time. Investment returns, and likely favorable or unfavorable perceptions of progress on the part of many investors, have tended to vary greatly over periods of time that are quite long by human standards, but probably too short in terms of statistical measurement validity. However, as this paper has indicated, there have been recurring and often interrelated patterns of investment success ***over very long periods of time***, and we believe that helpful perspective and, occasionally, patience and perseverance, are provided by an awareness of these patterns.

Tweedy, Browne believes it is likely that many of the investments which will generate exceptional rates of return in the future, over long measurement periods, will possess one or several of the characteristics which have previously been associated with exceptional returns. Tweedy, Browne intends to continue to do its best to keep its clients' portfolios and the managing directors' own portfolios "well stocked" with investments possessing these characteristics.

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