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CONTRARIAN INVESTMENT STRATEGIES IN A EUROPEAN CONTEXT

by

Iwan Brouwer,

Department of Business Administration and CentER

Tilburg University

P.O. Box 90153, 5000 LE TILBURG

The Netherlands

Jeroen van der Put

Institute for Research and Investment Services (IRIS)

Coolsingel 120

P.O. Box 1296

3000 BG ROTTERDAM

and

Chris Veld[*]

Department of Business Administration and CentER

Tilburg University

P.O. Box 90153, 5000 LE TILBURG

The Netherlands

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Abstract

In this paper we study value strategies for four European countries (France, Germany, the Netherlands and the United Kingdom). We find an outperformance for all four value variables which are investigated: the earnings-to-price (E/P) ratio, the cash-flow-to-price (CF/P) ratio, the book-to-market (B/M) ratio and the dividend yield. This outperformance is especially remarkable for the CF/P ratio, which amounts to 20.8% between the top and bottom quintiles in an univariate model. In a regression analysis, in which all four value variables as well as a correction for the size effect are taken into account, we find a difference of 11.8% for the CF/P ratio. We demonstrate that this result can not be explained by risk differences alone. Our findings confirm the outperformance of value strategies as found earlier by Chan, Hamao and Lakonishok (1991) and Lakonishok, Shleifer and Vishny (1994) for Japan and the United States respectively.

1. Introduction

In finance literature, a number of stock market anomalies have been documented. Banz (1981) found that smaller firms produce higher stock returns than can be expected from the Capital Asset Pricing Model (CAPM). Basu (1977, 1983) and Reinganum (1981) documented a negative relation between price/earnings (P/E) ratios and CAPM predicted returns. Another well-known stock market anomaly is the overreaction effect found by De Bondt and Thaler (1985, 1987). Besides that, also seasonal effects have been found in stock market returns. Keim (1988) gives an extensive overview of these anomalies. One particular stock market anomaly that has received much recent academic attention is the outperformance of value strategies. These strategies, which were already advocated by Graham and Dodd in 1934, call for buying stocks with low prices relative to value measures such as earnings, cash flows, book values or dividend yields. Studies for the United States and Japan have shown that value strategies produce superior returns. In this paper we will show that this is also the case for four European countries, i.e. France, Germany, the Netherlands and the United Kingdom.

One of the possible reasons for the outperformance of value strategies is that stocks that have done very good in the past (*glamour* stocks) are overpriced because some investors are too optimistic about these stocks. The same type of investors are too pessimistic about stocks that have done very bad in the past (*value* stocks). These stocks are underpriced. Lakonishok et al. (1994) refer to these investors as naive investors. They argue that value (glamour) stocks are characterized by low (high) past growth and expected low (high) future growth in sales, earnings and cash flows. Value (glamour) stocks can be identified by high (low) earnings-to-price (E/P) and high (low) cash-flow-to-price (CF/P) ratios. Lakonishok et al. (1994) demonstrate this with the well-known formula of Gordon and Shapiro (1956). This formula states that the price of a share of common stock (S) is the ratio of the next period's dividend ($D_{t,t+1}$) and the difference between the required rate of return on the stock (r) and the expected growth of dividends (g): $S = D_{t,t+1}/(r-g)$. Holding discount rates and pay out ratios constant, a high CF/P firm has a low expected growth of cash flow, while a low CF/P firm has a high expected growth of cash flow. A similar type of reasoning applies to the E/P ratio. Another value measure is the book-to-market (B/M) ratio. However, Lakonishok et al. (1994) argue that the B/M ratio may capture other factors than the difference between value and glamour stocks alone. For example, a low B/M ratio may also describe a company with many intangible assets (e.g. research and development), which are not reflected in the book value. A low B/M ratio may also describe a company whose risk is low and which has therefore future cash flows which are discounted at a low rate. Therefore, we should be careful in using the B/M ratio as a value ratio.

Chan et al. (1991), Fama and French (1992) and Lakonishok et al. (1994) have shown that portfolios of value stocks constructed on the basis of the above three mentioned ratios have led to superior returns for both portfolios of U.S. and Japanese stocks. Table 1 summarizes the most important findings of these studies.

[Insert Table 1]

Table 1 shows that value portfolios lead to higher returns than glamour portfolios. These higher returns may possibly be explained by a higher (systematic) risk (see e.g. Fama and French, 1992). In their study for the United States, Lakonishok et al. (1994) therefore explicitly take the risk involved in the value strategies into account. They look at the frequency of superior and inferior performance of value strategies, the performance of value strategies in bad states of the world (extreme down markets and economic recessions) and the betas and standard deviations of value and glamour strategies. They conclude (page 1543): *We find little, if any, support for the view that value strategies are fundamentally riskier.*

Until now, research on European value strategies is limited. Tse and Rijken (1995) studied B/M strategies for the Netherlands. They found that value strategies outperform glamour strategies. This turned out to be especially the case in bullish periods. Capaul et al. (1993) studied B/M strategies for the United States, Japan and four European countries (France, Germany, Switzerland and the United Kingdom). They found higher returns for value stocks in relation to glamour stocks for all six countries. However, the difference in returns turned out to be only significant on a global level. An important result of their study is that in most cases, the value stocks had lower betas than the glamour stocks. Capaul et al. (1993) conclude that value strategies outperform glamour strategies for the stocks in their study. However, we have already seen above that the B/M ratio is not a very good value ratio. In this study we will investigate value strategies for four European countries, i.e. France, Germany, the Netherlands and the United Kingdom. We construct five portfolios for four variables: the E/P ratio, the CF/P ratio, the B/M ratio and the dividend yield (Yld). Our dataset consists of hedged returns for the period of June 1982 to June 1993. First, returns for the value portfolios are compared to returns for the glamour portfolios. This leads to an outperformance of the value strategy in all four variables. The difference in return is especially remarkable for the CF/P ratio (20.8%). In a regression analysis, in which the value variables are taken into account, as well as a correction for the size effect, we find a difference of 11.8% for the CF/P ratio. We demonstrate that this result can not be explained by risk differences alone. One reason for this is that the value strategy does *not* lead to an underperformance in bad years (1987 and 1990). Besides that, differences in standard deviations of the stock returns only

explain a small part of the return differences. Therefore we are able to confirm the results that Lakonishok et al. (1994) have found for the United States.

The remainder of this paper is organized as follows. In section 2 the data description and the methodology are discussed. Section 3 contains the results. In section 4 we discuss the risk considerations of the value and glamour strategies. A summary and conclusions are presented in section 5.

2. Data description and Methodology

2.1 Data description

In this study we use data from June 30, 1982 to June 30, 1993. This research period both covers periods of high economic activity, as measured by the growth in industrial production (e.g. the period until September 1987), and periods of recession (e.g. the period 1992/1993). We study the yearly performance of different value portfolios which are formed each year on the last trading day of June. The portfolios consist of all large European stocks with a large trading volume which are listed at the stock exchanges of Paris (France), Frankfurt (Germany), Amsterdam (The Netherlands) and London (the United Kingdom)[1]. Most companies in our dataset have fiscal years that end on December 31. A small number of companies have fiscal years that end on the last day of March. Forming portfolios at the end of June therefore ensures that our tests are predictive in nature, both for companies with December and March fiscal year ends, and that we do not use information that is not actually available to the investor at the time of portfolio formation. Thereby we avoid a possible look-ahead bias (Banz and Breen (1986)). The study also takes into account companies, that have become delisted. In this way we avoid that the database suffers from survivorship bias which, as Banz and Breen (1986) find, might lead to distorted results. Non-industrial companies are also included in the study. Most studies exclude this type of company because the fundamental variables are difficult to compare with those of

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[1] The stocks were selected according to two criteria regarding trading volume and size. The selected stocks have a market capitalization of at least 200 million guilders (the Netherlands), 300 million guilders (France and Germany) or 400 million guilders (the United Kingdom). Besides that, they have a minimum daily trading volume of respectively 0.1 million guilders (the Netherlands), 0.15 million guilders (France and Germany) or 0.2 million guilders (the United Kingdom). The selection criteria are different per country in order to take account of the differences in average market value and trading volume between the countries.

industrial companies. However, this study corrects for structural differences in the fundamental variables between countries and industries which makes it possible to include all kinds of companies[2]. The data for this study are derived from Datastream.

2.2 Methodology

We use four popular value ratios to sort individual stocks into portfolios: the earnings-to-price ratio (E/P ratio), the cash-flow-to-price ratio (CF/P ratio), the book-to-market[3] ratio (B/M ratio) and the dividend yield (Yld). In order to be able to compare our results with those in other papers, we use the same cash-flow definition (earnings plus depreciation) as in most other papers on this subject. The stock price in the denominator of the E/P and CF/P ratios is the price that prevails on the last day of June.

As firms from the same branch of industry and/or the same country tend to have clustered relative value rankings, return differences between different value portfolios may be attributable to differences in country and/or industry performance. For example Dutch firms have historically the highest average E/P ratios. This also holds for firms from the energy industry. Electronics stocks have historically low E/P ratios. Thus any non-corrected type of grouping would include proportionately more stocks from low ratio industries and/or low ratio countries in the 20% lowest ratio stock portfolio. Consequently, any detected difference in portfolio returns may both be caused by differences in industry and/or country performance, as by differences in the levels of the fundamental variables. We correct for these possible industry and country biases by sorting stocks by relative ratios. These are expressed as follows:

$$\tilde{X}_i = (\frac{X_i}{X_c}).(\frac{X_i}{X_I}) \tag{1}$$

where:

$\tilde{X}_i$	=	the corrected value ratio for stock i;
X_i	=	the uncorrected value ratio for stock i;
X_c	=	the cross-sectional mean value ratio for the related country and
X_I	=	the cross-sectional mean value ratio for the related industry.

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[2] We emphasize that non-industrial companies are an important industry: as of June 1993, they formed 20% of the total market capitalization.

[3] This is the ratio of the book value of equity and the market value of equity.

In this way stocks are taken into account on the basis of their industrial and domestic average.

Each year at the last trading day of June all the stocks in the sample are ranked by the relative value ratios. Based on this ranking, portfolios are formed. Each portfolio contains 20 % of the stocks. The portfolios are rebalanced each year to reflect changes in the relative ratios. For each portfolio we then compute a (guilder) hedged return:

$$1 + R_t^P = \frac{\sum_{i=1}^{n}(1 + R_t^i)}{n}, \text{ with } 1 + R_t^i = \frac{f_t^1}{S_t}(\frac{P_{t+1} + D_{t,t+1}}{P_t}) \tag{2}$$

where P=1,...,5; t= 1,...,11 and i= the number of stocks in the portfolio. R_t^P is the hedged return on portfolio P, R_t^i is the hedged return on stock i, f_t^1 is the one year forward rate, S_t is the spot rate, P_t is the stock price and $D_{t,t+1}$ is the dividend paid out during year t, t+1. By concentrating on fully hedged returns, the stock selection is carried out irrespective of the forecasts of currency returns. A comparison of the hedged portfolio returns approximately comes down to the same as a comparison of the average portfolio risk premia. The reason for this is that forward markets are largely driven by differences in national risk free interest rates. By comparing the portfolio returns we investigate whether value strategies produce higher returns.

Finally we will use a multiple regression model at the individual stock level to find out which of the value ratios are significant in a multiple context. Recall that we have 11 portfolio formation periods. This allows us to perform 11 cross-sectional regressions of the following form:

$$R_{i,t} = \alpha_{0,t} + \alpha_{1,t}(\overline{E}/P_{i,t}) + \alpha_{2,t}(\overline{CF}/P_{i,t}) + \alpha_{3,t}(\overline{B}/M_{i,t}) + \alpha_{4,t}(\overline{Yld_{i,t}}) + \alpha_{5,t}\ln(ME_{i,t}) +$$

$$\tag{3}$$

with:

$R_{i,t}$	=	the one year hedged return on stock i starting at the last trading day of June;
$C/P_{i,t}$	=	the corrected CF/P ratio;
$/P_{i,t}$	=	the corrected E/P ratio;
$/M_{i,t}$	=	the corrected B/M ratio;
$Yd_{i,t}$	=	the corrected dividend yield;
$\ln(ME)_{i,t}$	=	the natural logarithm of the market value of stock i;
$\varepsilon_{i,t}$	=	the error term;

t   =   [1...11].

This analysis will be sorted out at the individual stock level because of the difficulties that arise with statistical tests based on data grouped by fundamental attributes, such as E/P ratios (Lo and MacKinlay (1990)).

3. Results

3.1 The average annual returns

In table 2 the average annual hedged returns for the portfolios that are formed by each of the four corrected value ratios are presented.

[Insert Table 2]

In each row the stocks are grouped by a different value ratio. The mean returns are averages over the eleven post-formation periods in the sample. From table 2, it becomes clear that high E/P stocks outperform low E/P stocks by a difference of 5.0% between the top and bottom quintiles. Stocks with high CF/P ratios have an average return of 29.4% whereas the low CF/P stocks earn on average only 8.6%. This is an outperformance of 20.8%. Firms with large B/M ratios earn on average a premium of 10.0% over the firms with low B/M ratios. The difference in returns between portfolios formed according to the Yld amounts to 5.2%. These results are consistent with findings for the U.S. (see Lakonishok et al., 1994) and the Japanese market (see Chan et al., 1991) as can be seen from table 1. So, on average the portfolios with high value ratios earn a premium over the portfolios with low value ratios. This is regardless of the choice of the value ratio. In order to get an idea of the consistency of the outperformance of the value portfolios over time we have calculated a success-ratio, which is defined as the percentage of years with actual outperformance of the value portfolio. For the E/P ratio, the CF/P ratio, the B/M ratio and the dividend yield these success-ratios are respectively 72%, 100%, 64% and 91%. These results show that value strategies outperform glamour strategies consistently. This is consistent with the U.S. findings of Lakonishok et al. (1994). This leads to the conclusion that for Europe, simple value strategies, based on classification of stocks by a single value ratio, have lead to very large returns over the 11-year period from 1982 to 1993. The value portfolio based on the CF/P ratio did not underperform the low CF/P ratio portfolio during any of the eleven years. If we combine the latter result with the average outperformance of 20.8 %, we have a strong case to base an European value strategy on the CF/P ratio. We also examined the other characteristics of the different portfolios,

which made clear that, not surprisingly given the common denominator, the value ratios are correlated. For example, stocks with high E/P ratios also tend to have high ratios of book value to market value. Another finding is that the firms in the most extreme portfolio (high value stocks) tend to be somewhat smaller.

3.2 Regression Analysis

In the previous analysis we have seen that value portfolios can be defined by all four value ratios. It has also become clear that there is a correlation between the four value ratios. To get an idea of the magnitude of this correlation, table 3 presents the average correlations between the four ratios, as well as the natural logarithm of the market value of the firm.

[Insert Table 3]

From table 3 it becomes clear that the correlations between the variables is in fact moderate. Therefore it is possible to include all variables simultaneously in a multiple regression model. The correlations are roughly comparable with those reported by Chan et al. (1991), except for the correlation between the E/P ratio and the CF/P ratio which was 0.76 in their dataset. The correlation between the natural logarithm of the market value and the four value ratios is negative. Smaller firms tend to have somewhat higher value ratios. The size-effect, reported by Banz (1981), may therefore explain part of the superior performance of the high value ratio portfolio. In order to investigate which value ratios stand out in a multiple setting we perform yearly cross-sectional OLS regression analysis at the individual stock level. In order to derive at one coefficient we employ the Fama-MacBeth (1973) procedure to average the yearly cross-sectional coefficients and compute t-statistics. Estimates of the yearly cross-sectional regressions by ordinary least squares are likely to be inefficient, since the residuals are likely to be correlated. The yearly t-ratios are therefore probably exaggerated. For the time-series t-ratios, which are presented here, this is however less of a problem. Besides that, the Fama-MacBeth (1973) procedure of calculating averages assumes that the yearly parameters are drawn from a stationary distribution. As growth in the level of an explanatory variable affects the magnitude of the coefficient, this may invalidate the assumption. However, given the fact that our value ratios are divided by cross-sectional sector and national averages, this is less of a problem in our study. A more serious problem is the fact that the coefficients and the t-ratios are based on eleven observations. This bases the interpretations of the coefficients on the small-sample properties of the time-series t-ratio. Table 4 presents the results of this analysis.

[Insert Table 4]

From the univariate analysis in table 4 it becomes clear that, although economic significant results have been found for the univariate portfolios, only the CF/P ratio and the dividend yield have a statistical reliable positive influence on future stock returns. This is the result of the consistency, earlier captured in a success-ratio, with which high value portfolios based on the CF/P ratio and the Yld outperform the low value alternatives. The natural logarithm of market value ln(ME) has a significant negative effect on future returns, meaning that small firms tend to do better in the forthcoming year. The CF/P ratio is definitely more informative than the E/P ratio, which can be interpreted as consistent with the "quality of earnings" explanation of Bernard and Stober (1989). These authors state that earnings per share can more easily be manipulated than the cash-flow per share. Therefore the information content of the E/P ratio is less clear than that of the CF/P ratio. When the CF/P ratio is simultaneously included with market value or all other explanatory variables, it keeps its significant positive relationship with the future annual hedged return. The coefficient of the E/P ratio decreases and eventually changes its sign when more explanatory variables are included. This phenomenon is also reported by Chan et al. (1991) in their study for Japan. The coefficient of the CF/P ratio shows the economic significance of the results: given the difference in average CF/P ratio of 4.2 between the two most extreme portfolios in our study, this leads to an expected difference in annual return of 4.2 times 0.028 or 11.8 %. Therefore the regression analysis confirms the supremacy of the CF/P ratio as the most important value ratio.

4. Risk considerations

Until sofar we have seen that value-strategies earn above-average returns. This can potentially however be perfectly rationalized by risk considerations. These higher returns may only be rational compensations for a higher (systematic) risk. In order to make it plausible that the previously documented results can not fully be explained by risk alone, we follow a non-parametric reasoning. Given the consistency of the outperformance of the high CF/P stocks, a potentially higher risk never leads to a situation of actual underperformance. This is not even the case in years with negative market returns such as 1987 (-15.8 % return on the Morgan Stanley Capital International total return index) and 1990 (the year of the invasion of Iraq in Kuwait with a negative return of -2.3%). A higher risk, in terms of a higher covariance with the market return, should lead, ceteris paribus, to an underperformance situation for the value portfolio. However this does not occur for the CF/P ratio. The down-side risk of a value strategy based on the CF/P ratio turns out to be low and can hardly be explained by a formal risk model. In order to get an impression of the risk-differences we have

examined the volatility of the portfolio returns. For this purpose we have calculated the standard deviations of the yearly portfolio returns. These are presented in table 5.

[Insert Table 5]

From table 5 we conclude that value portfolios exhibit a larger variability in annual portfolio returns than the low value portfolios. This is especially strong for the CF/P ratio. The portfolio of low CF/P stocks has a standard deviation of 0.160, whereas the standard deviation of the high CF/P stocks is 0.252. As we have seen earlier, this higher variability never leads to a situation of underperformance of the high CF/P stocks, given its large difference in mean returns. Besides that, the on average 1.6 times higher standard deviation for the high CF/P portfolio is relatively low given the 3.4 times higher mean return on that portfolio. In other words, the Sharpe ratio[4] for the value portfolio is high. Investors in the value portfolio are highly compensated for the higher variability of the investment. These results are also in line with Lakonishok et al. (1994) who have also compared the returns of the value and the glamour portfolios with the standard deviations of the returns on these portfolios. They found that the value portfolio had on average a higher standard deviation of returns in relation to the glamour portfolios, but they also found that the large return differences could not be fully explained by these risk differences[5].

5. Summary and conclusions

In this paper we have studied value strategies for four European countries, i.e. France, Germany, the Netherlands and the United Kingdom. We have constructed five portfolios for four variables, i.e. the E/P ratio, the CF/P ratio, the B/M ratio and the dividend yield (Yld), using data from June 1982 to June 1993. We have found that the hedged returns for the value portfolios outperfomed the hedged returns for the glamour portfolios. This difference turned out to be especially remarkable for the CF/P ratio (20.8%). In a regression analysis, in which all four value variables were taken into account, as well as a correction for the size effect, we find a difference of 11.8% for the CF/P ratio. We have also shown that

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[4] The Sharpe (1966) ratio is the quotient of the average portfolio excess return and the standard deviation of the portfolios return. The excess return is defined as the difference between the average portfolio return and the average risk free rate.

[5] An alternative would have been to compare betas between the two portfolios. However, we note that Lakonishok et al. (1994) did not find different results between comparisons of betas and standard deviations. Given the large differences between the returns and the (relatively) small differences between the standard deviations of the returns, we do not expect such a difference either.

this result can not be explained by risk differences alone. Reasons for this are that the value strategies did not lead to an underperformance in bad years and that the differences in standard deviations of the stock could only explain a small part of the return differences. These results confirm the results earlier found by Chan et al. (1991) for Japan and by Lakonishok et al. (1994) for the United States.

The explanations that can be given for the outperformance are likely to be the same as the explanations given by Shefrin and Statman (1995) and Lakonishok et al. (1994) for the outperformance of contrarian investment strategies in the United States. Shefrin and Statman (1995) demonstrate that good companies are companies with low B/M ratios. They argue that, according to the behavioral asset pricing theory (see Shefrin and Statman, 1994), noise traders make cognitive errors that lead to the belief that good stocks are stocks of good companies. Therefore, these investors prefer glamour strategies over value strategies. Information traders, such as money managers of investment or pension funds, do not nullify this effect through arbitrage. The reason for this is that they also have a preference for glamour strategies, because their clients are more forgiving of losses on stocks of good companies than of losses on stocks of bad companies (see Shefrin and Statman, 1995). Lakonishok et al. (1994) present a similar explanation. They argue that institutional investors may prefer glamour stocks because "they appear to be "prudent" investments, and hence are easy to justify to sponsors". This last argument may especially be relevant for one of the countries in our research, i.e. the Netherlands. In this country a great deal of savings is in the hands of very large pension funds. These pension funds have difficulties in persuading supervisors to give them permission to increase their investments in shares. Therefore these pension funds will be motivated to show that they are "prudent" investors.

Lakonishok et al. (1994) mention that they will focus their future research on the question whether there is a relation between the inferior performance of pension funds relative to the market and the outperformance of value strategies in relation to glamour strategies. We argue that such an investigation may be particularly interesting for a country such as the Netherlands, where large investments are inthe hands of pension funds, which have difficulties in convincing supervisors to let them increase their investments in stocks.

References:

R.W. Banz, "The Relationship between Returns and Market Value of Common Stocks", *Journal of Financial Economics* 9, 1981, 3-18

R.W. Banz and W. Breen, "Sample-Dependent Results Using Accounting and Market Data: Some Evidence", *The Journal of Finance* 41, 1986, 779-793

S. Basu, "Investment Performance of Common Stocks in Relation to their Price-Earnings Ratios: a test of the Efficient Market Hypothesis", *The Journal of Finance* 32, 1977, 663-682

S. Basu, "The Relationship between Earnings Yield, Market Value and Return for NYSE Common Stocks: Further Evidence", *Journal of Financial Economics* 12, 1983, 129-156

V. Bernard and T. Stober, "The Nature and Amount of Information in Cash Flows and Accruals", 1989, *Accounting Review* 64, 624-652

L.K.C. Chan, Y. Hamao and J. Lakonishok, "Fundamentals and Stock Returns in Japan", *The Journal of Finance* 46, 1991, 1739-1764

W.F.M. De Bondt and R.H. Thaler, "Does the Stock Market overreact", *The Journal of Finance* 40, 1985, 793-805

W.F.M. De Bondt and R.H. Thaler, "Further Evidence on Investor Overreaction and Stock Market Seasonality", *The Journal of Finance* 42, 1987, 557-581

C.I. Capaul, I. Rowley and W.F. Sharpe, "International Value and Growth Stock Returns", *Financial Analysts Journal*, January/February 1993, 27-36

E.F. Fama and K.R. French, "The Cross-Section of Expected Stock Returns", *The Journal of Finance* 46, 1992, 427-465

E.F. Fama and J. MacBeth, "Risk, Return and Equilibrium: Empirical Tests", *Journal of Political Economy* 81, 1973, 607-636

M. Gordon and E. Shapiro, "Capital Equipment Analysis: the Required Rate of Profit", *Management Science* 3, 1956, 102-110

B. Graham and D. Dodd, *Security analysis*, 1934, McGraw-Hill, New York

D.B. Keim, "Stock Market Regularities: a Synthesis of the Evidence and Explanations", In: *Stock Market Anomalies*, Elroy Dimson (ed.), Cambridge University Press, Cambridge United Kingdom, 1988, 16-39

J. Lakonishok, A. Shleifer and R.W. Vishny, "Contrarian Investment, Extrapolation, and Risk", *The Journal of Finance* 49, 1994, 1541-1578

A. Lo and A.C. MacKinlay, "Data-Snooping Biases in Tests of Financial Asset Pricing Models", *Review of Financial Studies* 3, 1990, 431-467

M. Reinganum, "Mis-specification of Capital Asset Pricing: Empirical Anomalies based on Earnings Yield, and Market Values", *Journal of Financial Economics* 9, 1981, 19-46

W.F. Sharpe, "Mutual Fund Performance", *Journal of Business* 39, January 1966, 119-138

H. Shefrin and M. Statman, "Behavioral Capital Asset Pricing Theory", *Journal of Financial and Quantitative Analysis* 29, 1994, 323-349.

H. Shefrin and M. Statman, "Making Sense of Beta, Size, and Book-to-Market", *The Journal of Portfolio Management*, Winter 1995, 26-34.

K.L. Tse and H.A. Rijken, "Does the Book-to-Market Equity Ratio Measure Risk? Some Evidence from the Dutch Stock Market", *Working Paper, Nijenrode University (the Netherlands)*, June 1995.

Table 1

Summary of the most important findings on value strategies

Below the results are presented for the outperformances found in three different studies. E/P refers to the earnings-to-price ratio, CF/P refers to the cash-flow-to-price-ratio and B/M refers to the ratio of the book value to the market value. In this table the outperformance between the lowest and highest (positive) ratio portfolio is presented. Note that the studies of Fama and French (1992) and Lakonishok et al. (1994) both apply to the United States for the period 1963-1990. However there is a large difference between the reported outperformances. A possible reason for this phenomenon may be the difference in the sample composition. Contrary to Lakonishok et al. (1994), Fama en French (1992) also include the (relatively small) NASDAQ firms in their study. Given the reported negative correlation between size and value ratios this may lead to relatively more small firms in the high value ratio portfolio. This, in combination with the size effect reported by Banz (1981), may explain the better results of Fama en French (1992).

	Chan, Hamao en Lakonishok (1991)	Fama en French (1992)	Lakonishok, Shleifer en Vishny (1994)
	Japan	United States	United States
	1971-1988	1963-1990	1963-1990
E/P	4.9 %	9.4 %	3.9 %
CF/P	9.9 %	--	9.9 %
B/M	14.0 %	18.0 %	6.3 %

Table 2

Average annual returns for portfolios sorted by value ratios

(Cross-sectional standard deviations in parentheses)

Each year at the last trading day of June five portfolios are formed in ascending order, based on the E/P ratio, the CF/P ratio, the B/M ratio and the Yld. The E/P ratio is the earnings to price ratio or earnings yield, the CF/P ratio is the cash-flow yield. The B/M ratio is the ratio of the book value and the market value. The returns presented in the table are the average returns in the year after formation. The value portfolio refers to the portfolio containing the stocks with the highest ratios.

Value Ratio	Portfolio					
	Low	2	3	4	High	High -/- Low
E/P	0.168	0.172	0.171	0.157	0.218	5.0
	(0.403)	(0.339)	(0.332)	(0.346)	(0.449)	
CF/P	0.086	0.143	0.170	0.197	0.294	20.8
	(0.341)	(0.341)	(0.338)	(0.335)	(0.482)	
B/M	0.139	0.161	0.150	0.199	0.239	10.0
	(0.348)	(0.357)	(0.319)	(0.378)	(0.463)	
Yld	0.165	0.154	0.177	0.174	0.217	5.2
	(0.427)	(0.344)	(0.356)	(0.339)	(0.412)	

Table 3

Average Correlation between the Four Value Ratios and Market Value

The correlations presented in the table are averages over the eleven years. The correlations refer to the, according to equation (1), corrected value ratios. ln(ME) refers to the natural logarithm of the market value of equity. The E/P ratio is the earnings to price ratio or earnings yield, the CF/P ratio is the cash-flow yield. The B/M ratio is the ratio of the book value and the market value.

	CF/P	E/P	B/M	Yld	ln(ME)
CF/P	1	0.43	0.39	0.18	-0.14
E/P		1	0.39	0.31	-0.03
B/M			1	0.31	-0.11
Yld				1	-0.02
ln(ME)					1

Table 4

Regression of hedged returns on value ratios and market value

Each year at the end of June between 1982 and 1993, for each firm in the study the 1-year holding period return is calculated starting at the end of June. Then each year a cross-sectional regression is run with these returns as dependent variable. The independent variables are the four value ratios and the natural logarithm of the market value of equity (in millions). The E/P ratio is the earnings to price ratio or earnings yield, the CF/P ratio is the cash-flow yield. The B/M ratio is the ratio of the book value and the market value. The reported coefficients are averages over the 11 formation periods. The calculated t-ratios are based on the time-variation of the 11 coefficients

CF/P	E/P	B/M	Yld	ln(ME)
0.029 $(3.31)^{1*}$				
	0.021 (1.61)			
		0.014 (1.70)		
			0.015 $(1.98)^{***}$	
				-0.045 $(-3.30)^{*}$
0.025 $(3.37)^{*}$				-0.038 $(-3.09)^{**}$
0.028 $(3.20)^{*}$	-0.019 (-0.98)	0.001 (0.24)	0.005 (0.84)	-0.037 $(-3.09)^{**}$

[1] time-series t-ratio in parentheses: * significant at the 1 % level

** significant at the 5 % level

*** significant at the 10 % level.

Table 5

Standard deviations of the yearly portfolio returns

The standard deviations reported in the table are calculated using the eleven portfolio returns. The portfolios are formed every year at the last trading day of June. The one year holding period return starting at the end of June is used in the calculation of portfolio variability. The E/P ratio is the earnings to price ratio or earnings yield, the CF/P ratio is the cash-flow yield. The B/M ratio is the ratio of the book value and the market value. Yld refers to the dividend yield.

Value ratio	Low	2	3	4	High
CF/P	0.160	0.190	0.193	0.203	0.252
E/P	0.206	0.170	0.183	0.192	0.231
B/M	0.176	0.194	0.156	0.213	0.232
Yld	0.208	0.184	0.182	0.181	0.204