

Evidence of a value-growth phenomenon on the Johannesburg Stock Exchange

1. INTRODUCTION

1.1 Background

Early empirical evidence (see for example; Black, Jensen and Scholes, 1972; Fama, 1970; Fama and Macbeth, 1973) provided support for the bases of finance theory, the Capital Asset Pricing Model (CAPM) and the Efficient Market Hypothesis (EMH), in terms of which investors cannot consistently earn above average risk-adjusted returns. Nonetheless, equity investment managers and analysts have pursued various investment strategies which, they believe, can outperform the market. This suggests that the two theories of finance must exhibit exploitable anomalies.

Recent testing of the CAPM and the EMH suggests that share returns can be predicted by factors which are inconsistent with the CAPM and that anomalies in the theoretical model may allow for strategies which provide above average returns (see for example; Fama and French, 1992; Haugen, 1996). One of these strategies is value investing, a strategy that buys shares that appear to be inexpensive relative to some fundamental current measure (i.e. value shares). The opposite of value investing is growth investing, a strategy of investing in shares which appear to have substantial growth prospects (i.e. growth shares). Growth shares may appear expensive as their price is high relative to historic performance, and a relatively large portion of their value is the expectation of improved returns in the future.

1.2 Statement of the problem and research objective

New evidence suggests that share returns are cross-sectionally predictable insofar as value shares outperform growth shares (see for example; Capaul, Rowley and Sharpe, 1993; Fama and French, 1992; Haugen, 1996). However traditional risk adjustments do not explain the entire premium, which suggests that either returns are induced by factors other than risk, or that current measures of risk are inadequate. These findings cast doubt on the validity of the CAPM and the EMH. Furthermore investors would be able to select

an investment approach based on classifying shares as either value or growth and consistently outperform the market. Consequently evidence of a value-growth phenomenon has both theoretical and practical implications.

Limited empirical testing has been conducted in South Africa specifically to determine whether or not there is any evidence of a value-growth phenomenon on the Johannesburg Stock Exchange (JSE). In a study on value and momentum strategies Fraser and Page (1999) found that value based portfolios offer higher returns. Although the value-growth phenomenon has been observed on various international markets (Capaul et al., 1993), further confirmation is warranted for the South African market as certain distinguishing characteristics exist which are not found in most first world economies. Some have arisen as a result of a historical socio-political situation and concentration of ownership and others as a result of the country's natural resources.

Any evidence of the relative performance of value versus growth shares in South Africa would contribute to the debate on the value-growth phenomenon due to the unique aspects of its capital market. The objective of this study is therefore to determine whether or not the value-growth phenomenon is evident in South Africa and to compare the findings with international studies.

The study is contained in the next four sections. In Section 2 the paradigms of modern finance are discussed, the concept of the value-growth phenomenon is expanded upon and the results of the literature review are outlined. Section 3 reviews the methodologies used in two similar value-growth studies (one US and one global) and discusses the various measures of value and growth that can be used. In addition the data coverage, portfolio construction and specific methodologies used in this study are reviewed. Section 4 reports the results of the study, compares them to the two international studies and discusses the implications. In Section 5, conclusions are drawn and areas for possible further research are suggested.

2. LITERATURE REVIEW

The debate between value and growth is not new. As long ago as 1934 Graham and Dodd in their book, *Security Analysis*, argued that growth was largely unpredictable and that investment should only be related to demonstrated performance (Haugen, 1995:38). Investors should therefore only acquire

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shares that are underpriced in terms of their cost.¹ Value investing was the predominant investment method throughout the 1950's but during the 1960's growth share investing emerged with the belief that the future rate of growth of earnings and dividends could be predicted.

Given the CAPM and the EMH, value investing should not be able to produce above average returns as there should be no fundamental variables other than risk which determine the cross-section of average returns.

2.1 Anomalies of the CAPM

Much evidence suggests that share returns can be predicted by factors that are inconsistent with the CAPM and the EMH. Variables which have been shown empirically to have explanatory power in predicting the cross-section of share market returns include: size measured by market equity (ME) (Banz, 1981); earnings-price ratio (E/P) (Ball, 1978; Reinganum, 1981; Basu, 1983; Jaffe, Keim and Westerfield, 1989); the ratio of book-market equity (BE/ME) (Rosenberg, Reid and Lanstein, 1985); Leverage (Bhandari, 1988); Dividend yield (Litzenberger and Ramaswamy, 1979); cash-flow-to-price (Lakonishok, Schleifer and Vishny, 1994).

Whilst many of the studies do not specifically refer to the value-growth concept, any evidence that there are alternative predictors of risk-adjusted returns would allow for the existence of a value-growth phenomenon. The variables which can be specifically regarded as indicating either value or growth are E/P and BE/ME. Both these variables relate the accounting or book value of a share to its market value and thereby indicate its relative attractiveness in value investing terms.

Fama and French (1992)² studied the joint effects of market β , size (ME), E/P ratio, leverage, and the BE/ME ratio on the cross-section of average returns on the NYSE, AMEX, and NASDAQ shares over the period 1963-1990. Their tests do not find that average share returns are positively related to market β and therefore do not find any support for the most basic tenet of the CAPM. They did find however, that the univariate relationships between average return and size, leverage, E/P and BE/ME are strong. Furthermore, when doing multivariate tests, they find that BE/ME are both robust to the inclusion of other variables, but that BE/ME plays the stronger role in the prediction of the cross-section of average returns.

¹Klerck and Maritz (1997) tested certain combinations of Graham's share selection criteria on the JSE. Their results indicated that these selection criteria would have produced portfolios with superior returns relative to the industrial index during the period 1977 to 1994.

²This study was voted the best article in the Journal of Finance in 1992 by the widest margin in history.

Thus, Fama and French, previous champions of the CAPM, conclude that in the period 1963-1990 the two variables, size and BE/ME, "provide a simple and powerful characterisation of the cross-section of returns" (Fama and French, 1992:429).

While Fama and French (1992) make no specific mention of the value-growth phenomenon, their findings that size and book to market equity together explain the cross-section of average share returns over the period 1963-1990 clearly indicates a value-growth factor in the USA over this period. Their portfolio based on shares with the highest book to market ratio (i.e. most value-orientated) showed an average monthly return over the 27 year period of 1,63% and that with the lowest book to market ratio (i.e. most growth-orientated) a return of 0,64%. Furthermore, returns increase across the ten deciles representing low book to market through to high book to market portfolios.³

Some testing has been conducted on share markets situated outside of the US. Capaul, et al. (1993) specifically tested for the value-growth factor in the US and five other countries. They examined the returns obtained from portfolios of high ME/BE ratios and those obtained from portfolios of shares with low ME/BE ratios for France, Germany, Switzerland, the UK, Japan, and the US over the period 1981-1992.

Capaul, et al. (1993) ranked all the shares in the Standard and Poor's 500 by the ratio of their most recent price to the most recently released book value per share. The ranked shares are divided into two groups, with equal total market capitalisation, thereby forming value and growth portfolios. The monthly return for each portfolio is calculated by taking the total of the capitalisation weighted returns on each of the underlying shares.

Their findings are presented in the form of value-growth spreads, which are calculated by subtracting the return on the growth index from the corresponding return on the value index. The results, presented together with the results of this study in Table 4, show that value shares outperformed growth shares on a global basis and in each of the six countries analysed. The magnitude of the spreads are however quite different in each of the three regions (Japan, US and Europe) with the US showing the smallest spread of 15,6%. The results were significant for the global spread, less significant for France, Switzerland, Japan and Europe and insignificant for Germany, the UK and the US. In every case the Sharpe ratio (a measure of return per unit of risk) indicated that the value index provided superior results to both the growth index and the corresponding market index.

³In an extension of this study Haugen and Baker (1996) found that the shares in the high return decile have an unambiguously low-risk profile.

Haugen and Baker (1996), found a commonality and stability in the variables which influence the cross-section of average returns in the US, the UK, Germany, France and Japan. Furthermore shares which had the highest returns exhibited lower risk than those with the lowest returns and they therefore concluded that the results seemed to reveal a major failure in the CAPM.

The South African economy and its capital markets are relatively small compared to other countries. Bradfield (1989(b)) calculated that at least 20% of JSE shares can be categorised as being infrequently traded and that the effect of thin trading on the JSE is fairly severe. Consequently problems with beta estimation are experienced which may affect the use of Capital Market Theory in South Africa.

Reviews of findings on the JSE conclude that the JSE is operationally efficient (Bradfield, 1989(a); Bhana, 1994). However, Bhana (p.95) highlights the exception of the over-reaction hypothesis. This is worth noting, as the over-reaction hypothesis is one of the suggestions as to why the value-growth factor may exist. In the main however, the JSE evidence seems to contradict the US findings and that those market anomalies found on the NYSE are not transferable to the JSE (Bradfield, 1989(a):6), (Page, 1996:30).

It is thus becoming increasingly accepted globally, albeit not yet on the JSE, that share returns are predictable by using variables other than β . Therefore, investment strategies such as value investing, which are in conflict with the CAPM and the EMH, may well be in line with the emerging empirical evidence that anomalies do exist in the pricing of shares.

2.2 Possible causes of the value-growth factor

While evidence of a value-growth factor is strong, what is not yet clear, and indeed is more controversial, is the nature of the excess returns. Two possible explanations have emerged in the literature. Firstly, that the high returns on value shares compensate for high fundamental risk, or secondly, that the high returns indicate incorrect pricing.

Fama and French (1992), argue that size and BE/ME are proxies for hidden risk factors and that the observed high returns are a result of a risk premium which is not correctly measured by the CAPM. Fama and French consequently continue to search for a more complicated asset pricing model to explain these high returns (Haugen, 1996:86).

Another widely held belief is that of an 'errors in expectations hypothesis', that these returns are the result of investors systematically misperceiving the future direction of share price movements. This view is held by Lakonishok, Schleifer and Vishny, (1994), who

argue that value strategies work because value shares have been underpriced in relation to their risk and return characteristics for behavioural and institutional reasons. A specific behavioural explanation (Lakonishok, et al., 1994) is that the majority of investors typically make two types of errors in pricing shares, which consequently give rise to the value phenomenon. Firstly, they consider value shares to be more risky because they do not differentiate between systematic risk and idiosyncratic risk and secondly they become pessimistic after a series of bad earnings announcements. These errors result in value shares being underpriced, resulting in high BE/ME ratios. Subsequently, value shares outperform growth shares because the market slowly realises that earnings growth rates for value shares are higher than expected at first, and vice-versa for growth shares.

La Porta (1996) tests for the existence of the systematic errors suggested by Lakonishok, et al. (1994), by using survey data on forecasts by share market analysts. He finds support for the errors in expectations hypothesis in that contrarian strategies that attempt to exploit errors in analysts' forecasts earn superior returns because expectations about future growth are too extreme. Specific findings were that the market is overly pessimistic about low expected earnings growth shares (i.e. value shares) and that these shares outperformed those with high expected growth by twenty percent in the observed period 1982-1990.

La Porta, Lakonishok, Schleifer and Vishny, (1997) studied the reaction of share prices to earnings announcements for value and growth shares over a five year period after portfolio formation. They found that a significant portion of the difference in returns between value and growth shares was attributable to earnings surprises that were systematically more positive for value shares. They believe that the superior return to value shares is a result of behavioural factors, particularly expectational errors, and not risk.

3. RESEARCH METHODOLOGY

The hypothesis to be tested is;

$$\begin{aligned} H_0: \mu R_v &= \mu R_g \\ H_1: \mu R_v &\neq \mu R_g \end{aligned}$$

where:

$$\begin{aligned} \mu R_v &= \text{Mean excess returns of value shares;} \\ \mu R_g &= \text{Mean excess returns of growth shares.} \end{aligned}$$

3.1 Research method

This study mainly follows the methodology used in two previous value-growth studies, Fama and French

(1992) of US stock markets, and Capaul, et al. (1993) of international stock markets. The South African and international findings can thus be compared.

This study uses the ratio of a company's market value (measured as its share price on the JSE) to its book value of ordinary shares (measured as its book value per share) to distinguish between value and growth shares. This measure allows the results of this study to be internationally comparable as it was used by Capaul, et al. (1993). Moreover it was identified by Fama and French (1992) as being one of the two measures that explained the cross-section of average returns in the United States over the period 1963 to 1990.

3.2 Data coverage

The study examined monthly excess returns on value and growth portfolios selected from the industrial companies listed on the Johannesburg Stock Exchange over the ten year period January 1987 to December 1996. This time frame does not correspond exactly to Capaul, et al. (1993) (which was January 1981 to June 1992) but has the advantage of using more recent data and including a period (post 1992) which includes South Africa's re-acceptance into the international community. Nevertheless, there is an overlap of five and a half years (January 1987 to June 1992) during which the results are comparable.

The mining and financial sectors were not included, since companies within these sectors conduct specialised activities, use different methods of accounting and in the case of the mining sector are subject to the effects of fluctuating international commodity prices. In both these sectors the ratio of share price to book value will potentially not have the same meaning for value and growth as for companies in the industrial sector.

The initial sample included all 165 industrial companies with June and December year-ends, listed in McGregor (1997). June and December account for about 50% of financial year-ends of all companies on the JSE, providing a sufficiently large sample size for analysis while minimising the variation in the gap between the accounting data and the returns they explained. Thus the gap between the date of portfolio construction and the beginning of the period during which returns were measured was either six months for June year-end companies or twelve months for December year-end companies.

From the initial sample, 107 companies were eliminated for the following reasons; did not have a full data history, had changed year-ends, had undergone major structural change, were holding companies in a pyramid structure or reported financial information in foreign currencies during the period under review. After these eliminations, the final sample contained 58

companies, 35 with a June year-end and 23 with a December year-end.

3.3 Data sources

Data was obtained from the following sources. Monthly closing share prices were obtained from the Deutsche Morgan Grenfell Research Network. Book values per share at the financial reporting date were obtained from the JSE Handbook. The book value per share in the JSE Handbook shows net worth per ordinary share based on a company's share capital and reserves adjusted for; rights attached to preference shareholders, market value of investments and certain intangible assets (JSE Handbook, 1996, p.4). The number of ordinary shares issued at financial year-end was obtained from the JSE Bulletin. Finally, data on the Industrial Index and the 90 day Bankers' Acceptance rate was obtained from the I-Net, the Ivor Jones & Company database.

3.4 Portfolio construction

At 30 June of year t , each company in the sample was ranked according to the ratio of its share price at 30 June of year t to its book value per share at 30 June of year t for June year-end, or 31 December of year $t-1$ for December year-end companies respectively. The top 50% formed the portfolio of growth shares (high price/book ratio) and the bottom 50% formed the value portfolio (low price/book ratio). This approach does not bias between larger and smaller companies and has been widely used in similar studies (see for example; French and Fama (1992)). Portfolios were reformed in this manner each year for the ten year period 1986 to 1995.

Portfolios of growth and value shares were also formed by drawing the dividing line so that the market capitalisation of shares in the growth portfolio was similar to that of the value portfolio. This approach was used by Capaul, et al. (1993:28) and facilitates comparison of the results. Market capitalisations used for the weighting were calculated at 31 December each year by multiplying the share price at 31 December by the number of outstanding ordinary shares at that date.

3.5 Returns and excess returns

The monthly returns for all companies in the growth and value portfolios for calendar year t (1987 – 1996) formed at year $t-1$ were calculated using the formula:

$$R_m = (P_m - P_{m-1}) / P_{m-1} \quad (1)$$

where:

$$\begin{aligned} R_m &= \text{return on share in month } m \\ P_m &= \text{share price at end of month } m \\ P_{m-1} &= \text{share price at end of month } m - 1 \end{aligned}$$

All returns were adjusted for share splits, capitalisation issues, etc. Dividends were ignored in line with several prior South African studies (see for example; Page and Palmer, 1991) as their effect has been shown to be minimal.

The excess monthly return for each company was calculated using the formula:

$$U_{i,m} = R_{i,m} - RFR_m$$

where:

- $U_{i,m}$ = excess monthly return on share i
- $R_{i,m}$ = actual return on share i in month m
- RFR_m = the risk free rate in month m .

In comparative overseas studies, for example Capaul, et al. (1993), the Treasury Bill rate is used as a proxy for the risk free rate. In South Africa the 90 day Bankers' Acceptance rate is considered to be a better proxy, due to greater liquidity (Ross, Westerfield, Jordan and Firer, 1996:279). This approach is consistent with several prior South African studies (see for example, Page and Palmer, 1991).

The mean monthly excess return on each of the growth and value portfolios for each of the years 1987 to 1996 was calculated for both the equal weighted portfolios and the capitalisation weighted portfolios. The monthly excess return for the capitalisation weighted portfolios was calculated by taking a weighted average (based on market capitalisation) of the returns on the underlying securities. The t -statistic and the associated p value was calculated for each of the years observed to test the null hypothesis that the mean average monthly returns on the growth and value portfolios are equal. The two sets of results are shown in Tables 1 and 2.

3.6 Value-growth spreads

A value-growth spread was computed by subtracting the mean cumulative excess return on the growth shares from the corresponding value share mean cumulative excess return. The results, presented in Table 3 can be considered to be the advantage from holding value shares rather than growth shares.

3.7 Period returns

Further tests were conducted to establish whether excess returns on equal weighted value and growth portfolios were significantly different when portfolios were reformed less often than annually. This would indicate the extent to which a lag may exist between the time a share is classified as being either value or growth and the period in which excess returns become apparent. Excess returns were calculated using three separate portfolio reconstruction timeframes. These were:

- a ten year period with value and growth portfolios being formed in 1986 and the cumulative excess returns on these portfolios being measured over the period 1987 to 1996;
- two five-year periods with portfolios formed in 1986 and 1990 and the results measured over the periods 1987 to 1991 and 1991 to 1996 respectively; and
- three three-year periods with portfolios formed in 1986, 1989 and 1992 and the results measured over the periods 1987 to 1989, 1990 to 1992 and 1993 to 1996 respectively.

The results of the three sets of period returns are shown in Table 5.

The methodology outlined so far measures the returns on the value and growth portfolio without taking risk into account. The following section discusses the manner in which this study combines risk and reward into a single measure.

3.8 Sharpe ratios

This study uses the measure developed by Sharpe (1966) to combine risk and return into a single composite measure of performance. The Sharpe ratio measures the reward obtained per unit of risk. Reward is measured as the mean excess return calculated as the mean return on the portfolio minus the return on the 90 day Bankers Acceptance rate. The risk measured by the standard deviation of excess returns calculates the total risk of the portfolio and does not assume that the portfolio has been diversified. As this study makes no attempt to select diversified portfolios, a measure of total risk is appropriate.

The Sharpe portfolio performance measure is stated as follows:

$$S_i = (R_i - RFR) / SD_i \quad \dots (3)$$

where:

- S_i = Sharpe portfolio performance measure for portfolio i
- R_i = the average rate of return for portfolio i during a specified period
- RFR = the average rate of return on risk-free assets during a specified period
- SD_i = the standard deviation of the rate of return for portfolio i during the time period

The Sharpe ratios for all equal weighted portfolios are shown in Table 1, Panel B and Table 5, Panel B.

3.9 Limitations

This study has been unable to address all the issues that have been raised by researchers in this field. For example the role of firm size as identified by Banz (1981), as well as the other variables which have been shown to have predictive power to influence returns have not been examined. Furthermore, this study makes no attempt to investigate the possible interaction between the BE/ME ratio and these other variables.

Two potential sources of bias were identified in this study; look-ahead bias, which occurs when accounting data is used for a data sample prior to that data being available to the public; and ex-post selection bias which occurs when the database used does not include firms which have ceased trading. Look-ahead bias has been minimised by matching accounting data (i.e. book value per share) for financial year-ends in year t for June year-end companies and $t-1$ for December year-end companies to returns in the calendar year $t+1$. In South Africa, public companies are required to issue annual financial statements or to issue provisional annual financial statements within three months of their financial year end (The Companies Act 1973, s 304). Thus in all cases, accounting data should have been available for at least three months before the returns they are used to explain. The data is clearly subject to ex-post selection bias as only shares that were listed for the entire period June 1986 to December 1996 were selected for the sample. No adjustments have been made for this bias as the number of insolvencies of listed companies in South Africa over this period is minimal⁴.

This study is also limited by sample size. Comparative studies utilise databases which contain significantly more data observations than this study which observes 58 companies over 120 months. Thus this study is more susceptible to the influence of outliers.

Finally, the sample was split into two portfolios rather than taking the top and bottom, say 20% of the whole sample in order to make the study comparable to that of Capaul (1993) and also because of limitations imposed by the small sample size referred to above.

4. ANALYSIS OF FINDINGS

4.1 Mean excess monthly returns (equal weighted portfolios)

The results (Table 1, Panel A) show that the value portfolio outperformed the growth portfolio in the period 1993 to 1996 and in 1987, whilst the growth portfolio showed superior performance in the earlier 1988 to

⁴ On average there were 3.2 liquidations per year in the period 1987 to 1996 (Extracted from Mc Gregors' annual publication, Who owns whom).

1992 period. The superior returns were statistically significant in only four of the ten years. These results do not suggest any outright significant evidence of a value-growth phenomenon in South Africa similar to that found by the two non-South African studies of Fama and French (1992) and Capaul et al. (1993). Two separate distinct periods emerge, however, one in which growth outperforms value, being the period up to 1992 and a period post-1992 in which value outperforms growth.

Panel B of Table 1 shows the Sharpe ratios for the equal weighted growth and value portfolios, and indicates that the risk adjusted returns follow the same pattern of superior portfolios as the unadjusted returns. In 1987 the value portfolio provided the best result, from 1988 to 1993 growth outperformed value and post-1993 the value portfolio provided superior risk adjusted results. The only difference in the pattern is in 1993 when a marginally superior value portfolio became marginally inferior when adjusted for risk. The Sharpe ratios support the evidence presented in Panel A that growth outperformed value up to 1992 and that value outperformed growth in the post-1992 period even when adjusted for risk.

4.2 Mean excess monthly returns (capitalisation weighted portfolios)

The year by year mean excess monthly portfolio returns on the equal capitalisation weighted portfolios presented in Table 2 show a similar pattern of relative performance with respect to value and growth as the equal weighted portfolios. Once again the value portfolio produced superior returns in 1987. Growth outperformed value in the period 1988 to 1992, with the exception of 1989, and post-1992 value portfolios showed the superior performance, with the exception of 1995.⁵ Thus the results of both the equal weighted and capitalisation weighted portfolio studies show a period up to 1992 when portfolios comprising growth shares outperformed portfolios of value shares. Post-1992 this trend is reversed and value share portfolios outperform the growth portfolios as with the international findings discussed in Section 2.

4.3 Cumulative mean excess monthly returns

Table 3, Panels A and B show the cumulative values of the value-growth spreads for each of the two methods of portfolio construction. The value-growth spread is the difference between the cumulative mean excess monthly returns on the value and growth portfolios. The results are similar for equal weighted portfolios (Panel A) and equal capitalisation weighted portfolios (Panel B). In both cases the cumulative mean excess monthly return over the ten year period 1987 to 1996 is higher on the value portfolios.

⁵ Excluding Sasol Ltd, because of its large market capitalisation, had no effect on the results.

Table 1: Equal weighted portfolios (reformed annually)

Panel A: Mean excess monthly returns						
Year	Growth	Value	Return difference	Superior portfolio	t-stat	p-value
1987	0,74%	3,62%	2,88%	V	-2,19	0,030
1988	3,86%	0,26%	-3,60%	G	1,36	0,170
1989	2,16%	0,70%	-1,46%	G	1,72	0,090
1990	-0,47%	-1,13%	-0,66%	G	1,14	0,000
1991	1,93%	0,81%	-1,12%	G	1,13	0,250
1992	-0,23%	-2,13%	-1,90%	G	2,18	0,030
1993	1,04%	1,15%	0,11%	V	0,14	0,890
1994	2,02%	5,75%	3,73%	V	-3,15	0,002
1995	-0,46%	1,52%	1,98%	V	-2,98	0,003
1996	-2,20%	-1,62%	0,58%	V	-0,64	0,500

Panel B: Sharpe ratios (equal weighted portfolios)			
Year	Growth	Value	Superior risk adj. return
1987	0,05	0,18	V
1988	0,08	0,02	G
1989	0,19	0,06	G
1990	-0,05	-0,13	G
1991	0,18	0,05	G
1992	-0,02	-0,16	G
1993	0,12	0,10	G
1994	0,20	0,29	V
1995	-0,06	0,16	V
1996	-0,23	-0,12	V

Significant statistics: t-crit = 1.96 t-STATS in **bold** = significant

Table 2: Equal market capitalisation weighted portfolios (reformed annually)

Mean excess monthly returns						
Year	Growth	Value	Return difference	Superior portfolio	t-stat	p-value
1987	-0,28%	-0,16%	0,12%	V	-0,12	0,906
1988	1,48%	0,86%	-0,62%	G	0,64	0,522
1989	1,74%	2,12%	0,38%	V	1,63	0,105
1990	-0,14%	-1,24%	-1,10%	G	0,29	0,772
1991	1,80%	1,34%	-0,46%	G	1,35	0,178
1992	-0,26%	-2,14%	-1,88%	G	0,81	0,421
1993	0,02%	2,12%	2,10%	V	0,75	0,227
1994	1,42%	4,26%	2,84%	V	0,18	0,850
1995	-0,32%	-1,32%	-1,00%	G	0,24	0,810
1996	-2,70%	0,00%	2,70%	V	-3,07	0,003

Table 3: Cumulative mean excess monthly returns (reformed annually)

Panel A: Equal weighted portfolios			
Year	Cum growth	Cum value	Value-growth spread
1987	8,9%	43,4%	34,5%
1988	55,2%	46,5%	-8,7%
1989	81,1%	54,9%	-26,2%
1990	75,5%	41,4%	-34,1%
1991	98,7%	51,1%	-47,6%
1992	95,9%	25,5%	-70,4%
1993	108,4%	39,3%	-69,1%
1994	132,6%	108,3%	-24,3%
1995	127,1%	126,6%	-0,5%
1996	100,7%	107,1%	6,4%

Panel B: Capitalisation weighted portfolios			
Year	Cum growth	Cum value	Cumulative value-growth spread
1987	-3,4%	-1,9%	1,4%
1988	14,4%	8,4%	-6,0%
1989	35,3%	33,8%	-1,4%
1990	33,6%	19,0%	-14,6%
1991	55,2%	35,0%	-20,2%
1992	52,1%	9,4%	-42,7%
1993	52,3%	34,8%	-17,5%
1994	69,4%	85,9%	16,6%
1995	65,5%	70,1%	4,6%
1996	33,1%	70,1%	37,0%

Of the two sets of cumulative results, those presented in Panel A representing equal weighted portfolios, show the lower cumulative spread between value and growth over the ten year period. Over this period, the value portfolio cumulatively outperformed the growth portfolio by 6,4% with a turnaround favouring value only occurring in 1996. This is as a result of the five years up to 1992 where the yearly growth returns were of a higher magnitude than the value returns in the four years post-1992.

The cumulative value-growth spread on the equal capitalisation weighted portfolio presented in Table 3, Panel B, shows a much larger but more sporadic outperformance by the value portfolio. The results show that by 1994 the value portfolio has caught up to the earlier strong growth portfolio performance and by 1996 value has cumulatively outperformed growth by 37,0% in the case of the equal capitalisation weighted portfolios. These portfolios formed in the same manner as the international portfolios of Capaul, et al. (1993), present a similar result to the international results presented in Table 4. Thus it seems that value investors had to be prepared to wait out these periods to achieve their cumulative excess return advantage.

Table 4: cumulative value-growth spreads

Country	Cumulative spread (%)
France*	73,7
Germany*	17,7
Switzerland*	42,7
U.K.*	31,5
Japan*	69,5
U.S.*	15,6
Europe*	31,9
Global*	39,5
South Africa	37,0

*Source: Capaul, Rowley and Sharpe (1993)

4.4 Period returns

The results of the tests where equal weighted portfolios are not reformed each year are presented in Table 5. Panel A, shows the results of value and growth portfolios formed in 1986 and not reformed during the period 1987 to 1996. Over this ten year period the growth portfolio outperformed the value portfolio by 17,2%. However, this result was not statistically significant and furthermore, the Sharpe ratio of these portfolios (see Panel B) shows that the value portfolio achieved a superior risk adjusted return, indicating greater risk on the growth portfolio.

Table 5: Period returns on equal weighted portfolios (not reformed annually)

Panel A: Returns						
Periods	Growth	Value	Return difference	Superior portfolio	T-stat	P-value
10 Year period						
1987-1996	112,5%	95,3%	-17,2%	G	-0,37	0,714
5 Year period						
1987-1991	28,5%	56,7%	28,3%	V	1,38	0,166
1992-1996	-15,3%	21,8%	37,2%	V	-1,18	0,236
3 Year period						
1987-1989	81,9%	54,2%	-27,8%	G	0,752	0,452
1990-1992	-4,8%	-9,9%	-5,1%	G	0,284	0,776
1993-1995	33,7%	98,5%	64,8%	V	-3,415	0,001

Panel B: Sharpe ratios			
Periods	Growth	Value	Superior risk adj. return
10 year period			
1987-1996	0,51	0,57	v
5 year period			
1987-1991	0,07	0,05	g
1992-1996	0,03	0,05	v
3 year period			
1987-1989	0,08	0,10	v
1990-1992	-0,01	-0,02	g
1993-1995	0,10	0,19	v

Significant statistics: t-crit = 1.96 t-STATS in **bold** = significant

The five year returns on value and growth portfolios formed in 1986 and again in 1990, are also presented in Panel A. In both of the five year periods value outperformed growth by a relatively large margin (although not statistically significant), 28,3% in the period 1987 to 1991 and 37,2% in the period 1992 to 1996. The Sharpe ratio however, indicates that after adjusting for risk, the growth portfolio showed the superior return in the first period. In the second period, 1992 to 1996 the value portfolio outperformed the growth portfolio both on an unadjusted and a risk adjusted basis, supporting the superior returns of value shares after 1992.

The results for the equal weighted portfolios formed in 1986, 1989 and 1992 and the returns over the subsequent three year holding periods are also shown in Panel A. In the first two periods, 1987 to 1989 and

1990 to 1992, the growth portfolios showed superior returns. The Sharpe ratios for these two periods show superior risk adjusted returns for value in the first period and for growth in the second. There is therefore, no agreement between the two measures in the first two periods while in the third period, 1993 to 1995, the value portfolio significantly ($p=0,001$) outperforms the growth portfolio by a relatively large 64,8%. This is corroborated by the Sharpe ratio which, shows that the value portfolio also exhibited a higher risk adjusted return.

The period returns indicate that the returns on portfolios formed less often than each year show no clear evidence of superior value performance over the ten year or the early five or three year periods. However, periods beginning on or after 1992 indicate a clear superior performance by the value portfolio.

4.5 Discussion of results

The results show a period up to, and including 1992 where portfolios of growth shares outperform portfolios of value shares. Conversely Capaul, et al. (1993) show value portfolios as superior portfolios for the entire period 1981 to 1992. Post-1992, however, the trend reverses in South Africa and value portfolios show superior returns in line with the international studies.

A possible explanation is the fundamental changes, both political and economic, which occurred in the South African in the early 1990's. A combination of the world's re-acceptance of South Africa, and South Africa's acceptance of the world as a business partner resulted in the country becoming, for the first time in several decades, a member of the international community. Re-acceptance also affected the financial markets, which experienced increased investment by foreigners in South Africa.⁶ Given freer economic activity it would be reasonable to expect that international financial trends, such as those that exist with regard to the relative returns on value and growth portfolios, should become apparent in South Africa. This is consistent with the observed data, a clear outperformance by the value portfolio, in line with international trends, beginning after 1992.

Another possible explanation is the inflation rate. In the period observed, South Africa had two distinct periods with regard to inflation. In the period 1987 to 1992, the country experienced double-digit rates of inflation with an average annual inflation rate of 14,5%. From 1993 to 1996, the rate of inflation slowed down and the annual average dropped to 8,7%. This pattern of inflation corresponds to the pattern of superior return on the portfolios of value and growth shares in South Africa as observed in this study. During the period up to 1992, during a time of high inflation, growth portfolios outperformed value portfolios, whilst post-1992, when inflation was low, value portfolios showed superior returns.

During the period of the studies in the US by Fama and French (1992) and Capaul, et al. (1993), being 1963 to 1990 and 1981 to 1993 respectively, the US rate of inflation rose above 10% only in the few years prior to 1981. Post-1981, the rate of inflation was, in all but one year, below 5%. Thus their studies, which indicated superior performance for value portfolios, were largely conducted in an economy with a low rate of inflation.

When South African rates of inflation were relatively low and more in line with US rates, the results present a similar picture of superior portfolio returns to the US

⁶Net foreign purchases of securities listed on the JSE were R548 million in 1989, negative in the period 1990 to 1992, R2 888 million in 1993 and had increased to R5 186 million by 1995 (South African Quarterly Bulletin, September 1997)

studies. High inflation, such as that experienced in South Africa up to 1992 may therefore, distort the results of this type of value-growth study. The distortion may result from market conditions and an investor psychology which exists in an inflationary environment and which may cause growth companies to thrive.

5. CONCLUSION

The results of this study indicate that post-1992 value shares outperformed growth shares. These findings are partially consistent with the findings of the two international studies on which this study is based. In the earlier years covered by the study, 1987 to 1992, growth portfolios largely outperformed value portfolios contrary to the international evidence. Whilst in the period post-1992, value portfolios outperform growth portfolios in line with internationally observed trends.

Whilst this study does not specifically attempt to explain the reasons for the observed turnaround from growth to value around 1992 it suggests that fundamental political and economic factors which occurred around this time in South Africa may have played some part in the observed results. These factors include South Africa's return to the international financial arena and significant changes in macro-economic factors such as a decrease in the rate of inflation.

This study has gone some way in addressing the neglected status of the value-growth phenomenon in South Africa. It has empirical findings which can be compared to those found internationally and has raised some doubts about the validity of the two major paradigms of modern finance, the CAPM and the EMH.

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