# VALUE STOCKS VERSES GROWTH STOCKS PERFROMANCE IN EMERGING MARKETS

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Dissertation submitted in fulfilment of the requirements for the degree in Masters in Management Finance and Investment.

**Acknowledgements**

I would like to thank Professor Christopher Malikane for his support, guidance and input into my research. The constructive feedback and time spent guiding me is appreciated.

I would also like to express acknowledgement and appreciation to both my late parents Ntombinkulu and Bhekimuzi Ngcongo for all the motivation, love and constant support they had given me to pursuit my dreams from day one. Your belief in me still keeps me going till this day.

Thank you to Wits Business School for giving me the opportunity and the career changing experience. This master's qualification has been a dream of mine for a long time now.

**Abstract**

This thesis examines the performance of value and growth stocks during the ten year period June 2006 to 2016 within five emerging markets countries namely South Africa, Nigeria, Brazil, India and Argentina. Value stocks are those stocks that trade at low prices in comparison to its fundaments value of the company and growth stocks are those stocks that trade at high prices compared to the company’s fundaments.
The portfolios of value and growth stocks are created in the five abovementioned countries. The performance of value and growth stocks are studied by constructing portfolios on the basis of price-to-earnings, price-to-book, price-to-cash flow and price-earnings-growth. The data to calculate these price-multiples are derived from the audited statement of comprehensive income, statement of financial position and statement of cash flow of the companies. Trade data on listed stock, listed indices, cash dividends and risk-free rates are derived from mainly from Bloomberg.com and Morningstar.com. To classify stocks to be included in value or growth portfolios, a 30 percent cut-off is used. The portfolio returns and risk, price-multiples are studied as well to research whether one price-multiple provide higher return than others. Total return and risk-adjusted measures are studied by means of average daily returns to scrutinize which class of stocks, value or growth, provided the highest return.

A regression analysis is performed to study if the Capital Asset Pricing model and a two-factor model can elaborate on the excess returns yield by value and growth portfolios. The findings are that value stock portfolio provide a higher total return than growth stocks portfolio. The value stocks as compared to growth stocks, also provide a fraction of higher return per unit of risk, as measured by Jensen’s Alpha and Treynor. The study also shows that value portfolios classified on price-to-book yield higher returns than portfolios constructed on other price multipliers. The regression analyses show that the CAPM two-factor model is able to explain the excess returns on value and growth portfolios. The beta coefficients of value stocks are higher than growth stocks, which is consistent with the general theory that higher betas found in stocks should, by definition, produce higher returns, this also suggest that the reason behind the of outperformance by value stocks over growth stocks is a compensation

of risk. While value and growth stocks are studied over a period of 10 years on five emerging markets there is some limitations and implications for future research exist. One major limitation concern is the sample size of 5 emerging markets out of 152 emerging and developing countries as listed by the International Monetary Fund. Therefore reaching statistical conclusion makes it difficult to generalize towards other countries.

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# Chapter 1: Introduction

## 1.1 Background

Investors have been trying to beat the market since the inception of the stock markets in order obtain superior returns. Investors were already characterised as value-driven in which risk and rewards were calculated unconsciously and implicitly (Sarna & Malik, 2010). In recent years 1900's and 2000's the concept of value investing has gained examination, but it is still not a popular strategy for many stock investors compared to growth stock investing. Lakonishok et al. (1994), Fama & French (1998; 2007), Bauman & Miller (1997) and Black & McMillian (2004; 2006), documented and researched the value and growth stocks in relation to reward, risk, and general performance. The results show that value stocks yield higher total return and higher results on risk-adjusted measures than growth stocks both in international and local markets. The reason behind this will be discussed in the section below and in the literature review.

It is a much discussed question whether value or growth stocks provide superior returns. It is widely accepted in recent times that value stocks generate higher returns than growth stocks (Graham & Zweig, 2006). Value stocks are characterised by low market prices in relation to (i) earnings per stock, (ii) market to book value, (iii) cash flow per stock, and (iv) price earnings growth. Growth stocks have the opposite characteristics such as having high multipliers in relation to the same metrics (Bauman, Conover, & Miller, 1998). There are numerous circumstances under which a stocks can be lower than its fundamental value (Schatzberg & Vora, 2008), for example (i) investors may not realise the growth potential of a share; (ii) the share has been unfairly punished due to recent negative events; (iii) the environment might be dominated by momentum investors while the stock is in an industry which is currently underperforming.

## 1.2 Problem statement

There are several literature that exist regarding the value stock verses growth stock performance, however the research that has been performed is mainly on the US and European stock markets (Bauman, Conover, & Miller, 1998; Fama & French, 1998) and did not assess portfolio performance based on the price-earnings-growth multiple. This then creates a literature ‘gap’ from an emerging markets perspective specifically emerging markets that includes African countries.

Most scholars suggest that portfolios containing value stocks have the tendency to outperform portfolios containing growth stocks over extended periods of time. This is usually during a minimum 10-year time-frame (Bauman et al. 1998; Fama & French, 1998). When value stocks provide higher total return than growth stocks, it gives allowance to the existence of a positive value premium, which actually is the difference between the returns on value and growth stocks. Thus, whenever a positive value premium arises, it basically refers that the total return of value stocks are higher than the total return on growth stocks (Fama & French, 1998; Chan & Lakonishok, 2004; Cahine, 2008). Scholars, such as Fama & French (1998) and Cahine (2008), suggest that a global value premium exists through time.

Yen et al. (2004) oppose that a value premium only exist for a concise period of time. One of the foundations of investment theory is the relationship between risk and return. Investors continuously ask the question; how could returns be optimised while, at the same time, limiting the exposure to risk. However, the reasons behind the existence of a value premium remain a puzzle. While scholars, as Fama & French (1993), oppose that value premiums are generated by the level of risk, other scholars, such as Lakonishok et al. (1994), argue that value premiums are generated by investor bias. However, is the existence of a value premium due to long-term studies?

## 1.3 Research questions

### *1.3.1 Do Value stock outperform Growth stock?*

Petkova & Zhang (2005) argues that betas for value stocks have a positive covariance with the anticipated market-risk premium while the betas for growth stocks tend to perform inversely. Fama & French (1998) studied the betas of value and growth stock much earlier. These scholars oppose that the betas of growth stocks are not negative but these should be systematically lower for growth stocks. These results were obtained by running regression based on one-factor and multi-factor models. However, from a logical point of view, high beta stocks should also generate higher returns. Furthermore, in many studies covering the subject of value and growth stocks in relation with risk, the most prominent type of risk used is systematic risk. Many scholars scrutinise value and growth stocks on the basis of portfolios. O'Shaugnessy (2005), Hillier et al. (2010) and Pinto et al. (2010) argue that when stocks are added to a portfolio, the unsystematic risk inherited within individual stocks will be diminished until the part of risk that remains is the systematic risk. Therefore, it can be assumed that scholars studying value and growth stocks use systematic risk.

Capaul et al. (1993) and Yen et al. (2004) do not accept that value stocks yield higher returns per unit of systematic risk than growth stocks. Yen et al. (2004) argue that this result arises due to the distress characteristics within value stocks. This section leads to the following sub-question:

*1.3.2 Do value stocks outperform growth stock and yield higher return per unit of systematic risk?*

Some scholars studying value and growth stocks by means of price multiples argue that classification by one price multiple provide higher return for value and growth portfolios than other price multiples (Fama & French, 1998; Bauman et al., 1998; Davis & Lee, 2008; Athanassakos, 2009). Athanassakos (2009) oppose, when studying value and growth stocks in the Canadian market, that using price-to-earnings as a classification tool to compose portfolios of value and growth stocks provide higher return than price-to-book. However, Fama & French (1998) oppose differently. These scholars argue that using price-to-book as a classification tool provide an investor higher return than classifying portfolios by other multiples. This has been recognised by Bauman et al. (1998). Fama & French (1998) and O'Shaugnessy (2005) argue that portfolios classified by way of price-to-book yield a higher return than other multiples due to the level of volatility.

Book value is, according to these scholars, less volatile than earnings or cash flows, which gives a mode of certainty towards investors. Davis & Lee (2008) argue differently. These scholars oppose that book value signifies the accumulation of incomes over the entire history of the firm and are therefore less volatile than other price-multiples, which are only incorporated for a particular fiscal year such as earnings. This section leads to the following sub-question:

*1.3.3 Whether value and growth portfolios created by way of price-to-book yield higher return than value and growth portfolios created by way of other the price-multiples*

While the outcome between value and growth stocks are often studied and researched by examining total return and return per unit of systematic risk, Fama & French (1998), Gonenc & Karan (2003) and Cahine (2008) also study whether asset pricing models can explain the returns yield by portfolios composed of value and growth stocks. For the Capital Asset Pricing Model (CAPM) to explain the excess returns in both national and international value and growth portfolios, the regression's intercept (alpha) of a portfolio's abnormal return on the market return should be indifferent from zero. If the intercept is significantly larger or smaller than zero, than it can be assumed that the CAPM fails to explain some part excess return on portfolios composed of either value or growth stocks.

In the study of Fama & French (1998) the CAPM model is unable to elaborate on the excess return. Fama & French (1998) oppose that the failure of the CAPM to elaborate on the excess returns and the underlying value premium due to the intercept and in the market slope of the model. While Gonenc & Karan (2003) and Cahine (2008) concluded the same results on the intercepts, the slopes were normal. By using a multi-factor model, Fama & French (1998) document that value (growth) portfolios have an average intercept of 4.5 (-8.5) basis points (BPS), meaning that a multi-factor model is more appropriate to explain the returns. The reason, as Fama & French (1998) contribute to these results lies in the slopes of HML (VMG), which satisfy the argument that slopes of value (growth) portfolios must be large (small). Gonenc & Karan (2003) and Cahine (2008) oppose that while a multi-factor model provides a more appropriate description of returns on value and growth portfolios, the regression produces similar results on variation (R2), which indicates consistency among both models.

While the intercept shows improvements concerning the results obtained from the multi-factor models, the values are still significantly distinguishable from zero (Fama

& French, 1998; Gonenc & Karan, 2003; Cahine, 2008). To determine if the intercept would be indifferent from zero when the market is not the only independent variable, many scholars added different factors into a multi-factor model. The multi-factor model also imposes that the intercept or alpha is indistinguishable from 0 (Fama & French 1993, 1998; Gonenc & Karan, 2003; Cahine, 2008).

This means the multi-factor model assumes that it would be difficult to obtain excess returns on a stock or portfolio when there has been no excess return on the market and no statistical difference between returns on the value and growth stocks. Fama & French (1998), Gonenc & Karan (2003) and Cahine (2008) find improvements in the intercept within the multi-factor models. The intercept declined considerably by more than 10 basis points. Fama & French (1998) find that the intercept declined, on average, by 28.50 basis points under the multi-factor model. Equal results were found by Gonenc & Karan (2003) and Cahine (2008). The scholars argue that the diminution in the intercept is the result of adding the value premium as an additional factor. This section leads to the development of the final sub-question:

*1.3.4 Is the Capital Asset Pricing model (CAPM) and a multi-factor model able to elaborate on the excess returns yield by the portfolios composed of value and growth stocks?*

## 1.4 Developing the hypothesis

It is widely accepted that portfolios of value stocks tends to yield higher returns than portfolios of growth stocks both in national and international markets furthermore, numerous scholars argue that value stocks have low multiples because of poor performances (Graham & Dodd, 1934), show distress characteristics (Fama & French, 1998) expressed in high financial leverages, overcapacity, and unknown amount in future earnings or show parts of these characteristics (Chen & Zhang, 1998; Athanassakos, 2009) as opposed to growth stocks. Therefore, Fama & French (1993; 1998) take the rational approach to suggest that value stocks yield higher returns as reward for risk the stock investors have to cope with. This was later acknowledged by Chen & Zhang (1998), Black & McMillian (2006) and Bartram & Bodnar (2009). Opponents of this rationality state that value stocks are more likely to produce higher returns than growth stocks due to investor biases as explained in extrapolation and overreaction errors (Lakonishok et al., 1994; Bauman & Miller, 1997; Yen et al., 2004).

Furthermore, numerous scholars also argue that investing in value stocks yield higher returns per unit of risk because a company with unstable features, which are riskier, should, by definition, produce higher returns (Fama & French, 1998; Doukas et al., 2004; Yen et al., 2004). In addition, De Bondt & Thaler (1985), argue that the betas for growth portfolios are, on average, significantly greater than betas for value portfolios. This was also acknowledged by Harris & Marston (1994), Rozeff & Zaman (1998), and Athanassakos (2009). Due to the arguments given that value stocks have the tendency to beat growth stocks in both total return and return per unit of risk in many economic settings and conditions, I will test whether this outperformance exist in the emerging markets countries selected for testing.

**Hypothesis 1:** *Portfolios composed of value stocks yield higher returns than portfolios composed of growth stocks over a long term period.*

Numerous scholars contend that portfolios categorised on one specific multiple yield higher and more consistent returns than portfolios categorised on other multiples. While Athanassakos (2009) find that portfolios classified on price-to-earnings (P/E) yield higher results than price-to-book (P/B), many researchers contend to the contrary. Fama & French (1998; 2007) oppose that portfolios categorised on book-to-market (B/M, as an equivalent to P/B) yield significantly higher and more steady returns than portfolios categorised on other multiples. This was also recognised by Bauman et al. (1998) & Davis & Lee (2008). Davis & Lee (2008) contend that the results of book-to-price showing higher and more consistent returns results from the book value of a company signifies the increase of incomes over the history of the company. The cumulative sum of those earnings embodied within book value will therefore be likely to show lower volatility than the earnings within a particular fiscal year .Therefore, these scholars argue that P/B is less subject to the management of earnings than, for example, P/E. Fama & French (1998) & O'Shaughnessy (2005) argue that the reason that a multiple enfolding book value produces higher and more consistent return is due to the volatility of multiples.

The scholars argue that book value is less volatile than earnings and cash flows, which gives investors a particular certainty on the company’s fundaments he or she invests in. In other words, while earnings and cash flow can rise and fall significantly from year to year when incorporated with stock price, book value remains, to some degree, equal in which investors can expect, to some degree, what the book value will be for the upcoming year(s). Due to these arguments I will research if portfolios categorised on P/B yield higher returns than P/E, P/C and PEG. To test this, the following hypotheses are developed.

**Hypothesis 2:** *value and growth portfolios categorised on P/B yield higher return than value and growth portfolios categorised on P/E and P/C and PEG.*

## 1.5 Structure

The background, problem statement, research questions, hypothesis of this thesis have been discussed above. To make an ordered elaboration the thesis will be structured as follows:

### *1.5.1 Literature review*

The literature review begins by explaining the possible existence of value premium on a stock markets. I will also discuss the reasons behind the value premium, which describes the difference in return between value and growth stocks through theories including the Efficient Market Hypothesis, the Capital Asset Pricing Model and the Market Behaviours in order to establish the existence of the value premium. The classification of stocks and the definition of value and growth stocks according to theories. Moreover, the performance of value and growth stocks in different settings will be discussed. The performance is reviewed in the domestic countries of the emerging markets to identify whether value and growth stocks perform differently.

### *1.5.2 Methodology*

The chapter will detail the research design and method to be applied in order to test the hypotheses. The separation of value and growth stocks, the construction of portfolios, and the calculation of portfolio return and statistical testing of these portfolios will be discussed.

### *1.5.3 Empirical results*

The chapter will discuss the most important findings of the study on value and growth stocks during the 10 year period in the selected five emerging markets countries. Additionally, a link will be created towards previous studies and theories in order to verify whether arguments still holds strong during the period of 2006 to 2016.

### *1.5.4 Conclusions and Implications*

The final chapter of this thesis describes the most important findings of this thesis. It also provides answers to questions raised in the introduction section as well as the acceptance or rejection of the hypotheses. Additionally, the implications for future research as well as the limitations of this study will be discussed.

# Chapter 2: Literature Review

## 2.1 Introduction

It is a much discussed question whether value or growth stocks provide superior returns. It is widely accepted in recent times that value stocks generate higher returns than growth stocks (Graham & Zweig, 2006). Value stocks are characterised by low market prices in relation to (i) earnings per stock, (ii) market to book value, (iii) cash flow per stock, and (iv) price earnings growth. Growth stocks have the opposite characteristics such as having high multipliers in relation to the same metrics (Bauman, Conover, & Miller, 1998). There are numerous circumstances under which a stocks can be lower than its fundamental value (Schatzberg &Vora, 2008), for example (i) investors may not realise the growth potential of a share; (ii) the share has been unfairly punished due to recent negative events; (iii) the environment might be dominated by momentum investors while the stock is in an industry which is currently underperforming. Based on theory of market efficiency, obtaining high returns would be impossible systematically due to information reflecting immediately into share prices Fama (1970). This then makes it difficult for investors to gain from purchasing and selling the shares regardless of stock selection techniques or investment strategies that the investors applies. How is it possible, taking the argument of Fama into account, that some specific stocks seem to outperform other stocks and the market in systematically? Number of researchers have documented opposing results on the Efficient Market Theory (Basu, 1977; Lakonishok et al., 1994, La Porta et al., 1997; Best et al., 2002; Chan & Lakonishok, 2004; Athanassakos, 2009) in which it would offer investors the possibility to obtain higher capital returns and to obtain abnormal returns. Many techniques and strategies are applied by investors to achieve this superior returns (Chan & Lakonishok, 2004).

Value stocks can generally be defined as companies that have low performance and are expected to have below-average performance in the future, contrary to growth stocks which have above-average performance and are expected to continue this trend in the future (Bauman & Miller, 1997). The term ‘value’ refers to the actual worth of an investment, which is a listed stock. This implies that stocks are often traded at values that are different from their fundamental values (Graham & Zweig, 2006).Researchers in the field of behavioural finance have found that investors tend

to count on the predictors of limited validity, such as short-term earnings, but pay little attention to more valid numbers, such as increasing dividend payments or increasing earnings over a period of at least 10 years (Bauman & Miller, 1997). The investors tend to project recent performance of firms too far into the future than can be reliably predicted from the given data. Consequently, investor expectations raise the price of growth stocks and push down the price of the value stocks. As soon as the market recognises that value stocks earnings perform better than expected and growth stocks worse than expected, the value premium becomes evident (Porta, Lakonishok, Shleifer, & Vushny, 1997). The superior return earned on value stocks, commonly referred to as 'value premium".
The fundamental idea behind the value approach is to sell overvalued stocks and purchase undervalued stocks (Graham & Zweig, 2006).

### 2.2 Value Premium

In this section I discuss the various theories that would elaborate on the possible existence of a value premium in the market. When value stocks outperform growth stock, this is regarded as value premium as Capaul et al. (1993) defines it. The value premium refers to the positive variance between the returns yield from portfolios composed of value stocks and growth stocks (Capaul et al., 1993; Bauman & Miller, 1997; Fama & French, 1998; Bauman et al., 1998; Yen et al., 2004; Cahine, 2008). The premium is key as the results refers to whether investors are more satisfied in acquiring value stocks or growth stocks (Capaul et al., 1993; Fama & French, 2007).

When the value premium is higher than it is more likely it is that investors give preference to value stocks due to the providence of higher returns compared to growth stocks (Bird & Casavvechia, 2007). When this figure lies around zero, it would indicate the indifference on the purchase of value or growth stocks (Capaul et al., 1993; Bourguignon & De Jong, 2003). When this figure lies below zero it would indicate, as Brown et al. (2008) acknowledge, the presence of a value discount which results from growth stocks providing higher reward than value stocks. When the value premium is significantly and substantially larger than the returns from the market i.e. double the market return than a potential bubble is formed (Fama & French, 2007). It is rational to assume that beta is responsible for the variance in returns between value and growth stocks. For a beta premium to exist, a higher level of beta premiums in bull-markets and a lower level of beta premiums in bear-markets for value stocks is desirable. However, most scholars study the value premium only by the difference in returns (by means of a t-test). Moreover, Petkova & Zhang (2005) also studied whether there is a beta premium observed within value stocks. These scholars found that the covariance between the beta and value premium is too small in order to explain the magnitude of the variance in the return between value and growth stocks. The value premiums discussed in the next section will be for large-cap stocks and on average annualized bases.

The value stock significantly beat growth stocks on average (Capaul et al., 1993; Harris et al., 1994; Fama & French, 1998; Lee et al., 2009). Over the decades there has been much debate about how the value premium can exist and new theories contest the traditional finance theories based on argument of Efficient Market and Risk and Return. The financial theories seems rather restricted and therefore we should also consider behavioural finance in order to find possible reasons.

### 2.3 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) is a popular and highly respected and acknowledged theory. Fama (1970) defined the efficient market as the price of security fully reflect available information. Investor buying securities in an efficient market should expect to obtain an equilibrium rate of return.

There are 3 forms of EMH:

i. Weak: which would reflect on the historic information in the stock price;
ii. Semi-strong: which assume the stock price reflects publically available information and;
iii. Strong: which reflects all relevant information including insider information.

EMH has 3 argument as its foundation:

i. Majority of investors are rational and therefore price the fundamental amount;
ii. There are some irrational investors, however their actions will be unsystematic and will cancel each other out in the long run;

iii. Assuming there are irrational investors that exist and they lead to arbitrage opportunities since mispricing would occur, therefore use arbitrage opportunities and as a result the price would come to equilibrium. So even if unexplained behaviour is present, markets can still be efficient (Shleifer, 2000).

## 2.4 Capital Asset Pricing Model

According to Capital Asset Pricing Model (CAPM) the premium associated with value stock over growth stock would be explained by the riskier characteristic of the stock. The CAPM model is widely used to explain the returns of an asset through the risk free rate of return, market returns and unsystematic risk.

$$R_i = R_f + \beta_i(R_m - R_f) \quad (1)$$

$R_f$ Is the yield of risk free debt such as the treasury bonds, the $\beta_i$ is the risk measure of the stock and the $R_m$ is the market returns.

There are empirical nonconformities from the CAPM. Some of the significant were emphasised by Fama & French (1992). They conclude that beta appears to be an inadequate measure of explaining returns and that CAPM is not good at explaining returns of stocks with certain characteristics such as the ones with specific size of the company i.e. market capitalisation.

*CAPM has the following assumptions:*

i. There are no transaction costs. There is no cost (friction) of buying or selling any asset. If transaction costs were present, the return from any asset would be a function of whether the investor owned it before the decision period. Therefore to include transaction costs in the model adds a great deal of complexity. Whether it is worthwhile introducing this complexity depends on the importance of transaction costs to investors' decisions. Given the size of transaction costs, they are probably of minor importance.

ii. The assets are infinitely divisible. This means that investors could take any position in an investment, regardless of the size of their wealth.

iii. The absence of personal income tax. The individual is indifferent to the form (dividends or capital returns) in which the return on the investment is received.

iv. The assumption is that an individual cannot affect the price of a stock by his/her buying or selling action. This is analogous to the assumption of perfect competition. Although no single investor can affect prices by an individual action, investors in total determine prices by their actions.

v. The investors are expected to make decisions solely in terms of expected values and standard deviations of the returns on their portfolios.

vi. There is unlimited short sales allowed. The individual investor can sell short any number of any shares.

vii. There is unlimited lending and borrowing at the riskless rate. The investor can lend or borrow any amount of funds desired at a rate of interest equal to the rate for riskless securities.

viii. There is homogeneity of expectations. First, investors are assumed to be concerned with the mean and variance of returns (or prices over a single period), and all investors are assumed to define the relevant period in exactly the same manner. Second, all investors are assumed to have identical expectations with respect to the necessary inputs to the portfolio decision. These inputs are expected returns, the variance of returns, and the correlation matrix representing the correlation structure between all pairs of stocks.

ix. All assets are marketable. All assets can be sold and bought on the market.

As these assumptions depart from reality Fama & French (1992) proved that size of a company, the Market to book value (MTBV) and market risk variable also commonly referred to as the Fama-French three-factor model was superior at explaining risk than the CAPM as there is correlation between these two factors and return. The beta is not the perfect measure of risk, Fama & French (1992) say that the abnormally high return on value stocks occur due to the additional risk not captured by beta such as the risk associated to holding the value stocks as opposed to holding growth stock. The ease reception of the CAPM and its prevalent use among investors can probably be an issue since the model cannot explain all risk related with an investment. Therefore, using the CAPM model will result in unexpected risk and more uncertainty of the possible outcomes of a specific investment. As a result a significant amount of research has been done in the financial field due to CAPM's failure to elaborate discrepancies in risk and return trend.

Scholars have been looking for methods to more accurately analyse the relationship between risk and return. One of these discrepancies is the premium related with value stocks. Harris & Marston (1994) proved that beta and the MTBV variable had a significant relationship due to the fact that higher risk is expected to yield higher return for investors. Therefore, beta can still be used as a variable in the pricing an asset and that the higher return of value stock does indicate higher risk. This means that beta might be a variable that could still be used to price assets and the idea should not be overlooked. Bernstein (2002) documented that value stocks yield a higher return and they were also riskier than growth stocks. So, this is in line with the theory of the value premium being obtained from higher risk.
The general anticipation is that in period with positive stock returns growth stocks will yield higher returns than value stocks. This results from investors tend to forecast future growth and returns based on previous growth trends and simply use extrapolation of the current trend of a stock price. This has been a usual way of forecasting returns during periods such as during the bubble around the year 2000 related to dot com (Chan et al., 2004). When the bubble bursts, and stock prices starts to dropping, growth stocks will have a speedier drop in prices than value stocks (Bernstein, 2002). This is also in line with Lee et al. (2009) where he states that new information relating to growth stock creates a much bigger reaction than

information relating to value stocks. Considering all the above it would appear that CAPM is not best model when attempting to explain the existence of a value premium from the value stock investment strategy.

### 2.5 Market Behaviour- irrational investors

Lakonishok et al. (1994) & Haugen (1995) wrote that the value premium exist because the market prices value stock lower and price of growth stock higher due to irrational behaviour. The value premium related with value stock can result from growth stock being overvalued. The overvaluation can result from past growth of stocks which is then advanced by investors foresting the same growth too far into the future periods which is may differ from reality. When the appropriate value of the growth stock realises the price of growth stock returns towards its fundamental value. This would also apply to value stock. Lakonishok et al. (1994) argues that the value stock yield greater returns compared to growth stock and that the premium does not come with added risk which goes against the theories that returns is indirectly proportion to risk (Bernstein ,2002). This can be explained by agency issues and behavioural patterns of the investor (Chan et al., 2004).

*Behavioural characteristics of investors:*

The disposition effect fundamentally contends that investors are inclined to hold on to badly performing stocks far too long and at the same time sell off good performing stocks too soon (Odean, 1998a). Shefrin & Statman (1985) the utility marginally decreases the higher or lower the returns or losses are. The investor would gain more utility by selling off the stocks more early and reinvest the proceeds in another stock.

There are a number of reasons that explaining the effect & Odean (1998a):

i. The investors have a reference point of the price and from this point they want to increase their returns. The point will change over time as a result of the price changes and previous performance of the stock. Also if the expected returns are not realized the investors will tend to hold on to the stock for too long expecting that the price will go above their initial point. Yet the price goes above the initial point the stock is typically sold off too soon even if there is more momentum remaining;

ii. Buying or selling at an inefficient stage can be driven by portfolio rebalancing;

iii. The investors may be unwilling to sell a stock with negative returns as a result to the increase of transaction costs.

Odean (1998b) argues that the decisions taken by investors often stray from equilibrium to some extent. Investors are in most cases bullish and sometimes under-confident when it comes to stock prices. The investment decisions is sometimes influenced by the state of confidence of the individual investor the world financial markets. This effect creates inefficient variations in the market as a whole. Reactions to new information on the market and consequently the inefficient variations are caused by a mixture of the investors individual utility function and how that investors values new information.

A good understanding of underlying dynamics of investor confidence is crucial for investment funds or other investors to reduce these inefficient fluctuations created by the players in the market. This can lead to knowledge about how to get the yield higher than market returns by using a superior investment strategy. Therefore, examining the choices of the individual investment managers or investors will be important (Odean, 1998b). Hirshleifer et al. (1998) have in their study provided examples of evidence that suggests overconfident investor behaviour. This occurrence is apparent in many industries and in many different types of decision processes, not only in the financial field. The investors seem to overreact to private information and under-react to public information. Investors seem to be confident about their ability to make good decisions, whilst they think that other investors are worse at this compared to themselves. This is irrational but it means that the investor themselves seem to think they are smarter than any other investor. This occurrence of overconfidence makes the investors misjudge the variability in the forecasts made and rely heavily on their own forecasts compared to other forecasts available. Finally when the asset reflects the correct price the investor takes credit for a good outcome and blame an unfavourable outcome on others and external influences that the investor cannot impact.

There appear to be strong evidence towards irrational confidence concerning investors. The irrational behaviour of this nature results in even larger variation in the stock price and thus the price departs even more from the fundamental price. The public information available makes the prices revert back therefore the short-term momentum of the prices is the main factor but in the long-term prices revert back to their fundamental value. Griffin & Tversky (1992) showed in their study that professional institutional investors are far more self-confident than the individual investors. This would imply that professional investors would yield worse returns than individual investors. Hirshleifer et al. (1998) conclude that the occurrence of efficiency might not be as high in small cap stock as in large cap stock. This is due to small cap stocks having fairly higher costs when it comes to information gathering. As a consequences of overconfidence can be more evident on small cap stocks. This is due to the fact that inefficiencies of pricing will exist longer because of weaker and lower occurrence of public information associated with small cap stocks. Thus, relatively lower information gathering costs can lead to higher efficiency in the market. The observed higher risks for small cap stocks may be caused by this effect.

Statman et al. (2006) separates investor overconfidence and the disposition effect. They say that overconfidence is a behavioural characteristic affecting investors in general however the disposition effect is more as a result of an attitude towards specific stocks. The distinction was done since the two concepts cannot easily be combined into each other. The disposition effect suggests that investors wants to realise positive returns when stock price goes up while investors tend to not realise a negative return if the stock price decline. Investor overconfidence says that the drive in stock price increases due to an initial increase. Also the disposition effect contends that investors sell their good performing stocks too soon which actually negate the increase in momentum relatively fast.

The band wagon effect or lemming effect is initially a concept derived from the supply and demand function within micro economics (Leibenstein, 1950). The theory contends that the more people that start to buy a certain product more people will follow and so increasing the demand for this product. The expression “hop on the band wagon” is used when this happens. Even if it seems irrational to hop on the band wagon it can still be rational to do so as long as the theory applied to the financial market could well explain the presence of a value premium. When investors start to buy a particular stock more and more investors will follow. This would go on until some investors would query the rationality of continuing investing in this popular stock and therefore they will start to dispose of it before everybody else does. When this occurs a trend in the opposite direction will start and thus the price of the popular stock will start to decline again. The theory would explain why the performance of value and growth stocks eventually go towards its fundamental prices.

Value stocks would initially be low priced as no one is getting on their band wagon whereas the growth stocks would be highly priced since the investors are getting on that band wagon instead. Eventually the rational investors begins to get sell and buy the value stocks instead. The rest of the investors follows suit then prices of the value stocks will increase while the prices of the growth stocks decline. The total cost of holding a portfolio of stocks is somewhat affected by the total cost of transactions which is affected by the frequency of these transactions. It is important to keep in mind that constant portfolio rebalancing increases the transaction cost.

In closing after consideration of the various theories there is reasoning of why a value premium can exist in the market:

i. The markets may not be entirely efficient since the argument put forward by EMH depends on very strong assumptions. The markets is unable to be efficient since it costs time and money to search for information. If all information is included in the price then there is no need to go looking for information. If nobody is searching for information, prices would not include the information and therefore the markets would not be efficient. Also, even if markets were efficient, a value premium would still exist due to the fact that growth stocks performance would erode due to increased competition while the value stocks would have the ability to turn around their company in order to increase growth.

ii. CAPM fails to explain the entire risk since it relies exclusively on beta as a determinate for the risk. This is further highlighted by the fact that value stocks does not have a greater risk than growth stocks and the former also tend to outperform the latter both in boom and bust periods.

iii. The statistical concept of mean reversion might explain the presence of the value premium since the low performing stocks are anticipated to return back to the long term trend by improving their performance. Consequently, growth stocks would have weaken in performance in order to reach their long-term trend. This theory aligns with the value premium.

iv. Irrational investor behaviour such as extrapolation and various agency problems can be a reasonable account for the existence of a value premium. The extrapolation is an incorrect indication of the stocks future performance and this is after a while corrected so the prices moves towards their fundamental values. The investors may be short-sighted and look for quick return and therefore they invest significantly in growth stocks. The investors may select growth stock in favour of value stocks in order to satisfy a superior or a customer. This choice of growth stock generally increase the prices and then reduce the prices of value stocks since they get ignored. However the price would return back to its fundamental value over time just as in the case of extrapolation.

v. The disposition effect tied with overconfident investors may explain why a value premium would exist. The investors constantly wants to yield positive returns when stock price increase while investors tend to acknowledge a negative return if the stock price goes down. The idea of investor overconfidence states that the momentum in stock price increases due to an initial increase. Also the disposition effect contends that investors sell their performing stocks far too soon which actually causes a decline in the increase in momentum. Further overconfidence is in line with the disposition effect when stock prices decline since the investors tend to hold on to badly performing stocks far too long because they expect the price to increase again.

vi. The band wagon effect is also in line with a value premium as even a rational investor become inclined to follow the actions of the majority. Once the majority feel that a stock is over-priced or under-priced they will all start to reverse back to their trading pattern and begin to purchase value stocks and sell growth stocks and start bringing the prices closer to their fundamental values.

All in all, the traditional financial theories do not oppose the existence of value premium and most of the behavioural finance theories deal with the fact that not all, or any, investors are rational. This can possibly explain why such an inefficient phenomenon such as a value premium may be exist in stock markets.

### 2.6 Investment Strategy

Under this session I look at the different strategies available to try beat the market whether investing in value stock or growth stock.

*Contrarian investment strategies*

An investor applying contrarian strategy is an investor with an inclination for taking a position that is contrast of the positions which is held by the majority in the market. However, contrarian strategies do not always mean strictly ‘do the opposite’. It is correct that investors selecting a contrarian strategy purchase or sell their assets when the other investors generally do the opposite, but this is always done relative to the price of the asset. For an example when the stock price is very high a contrarian investor would still sell the asset therefore following the rest of the players in the market. Keynes (1936) argued that the contrarian investor should be odd, unconventional and rash in the eyes of the average opinion.

Lakonishok et al. (1994) discuss what they refer to as a conforming strategy or a native strategy. This is when investors depend too much on historical data or performance of a particular stock. The conforming investors then tend to project the performance of a particular stock too far into the future. The alternative to the conforming strategy would then be the value strategy as argued by Lakonishok et al. (1994). The value strategy is supposed to produce superior returns compared to the conforming strategy. One assumption that is needed to get this theory to work is that investors make large errors and rely heavily on extrapolation.

In order for the contrarian strategy to be successful there needs to be a clear classification of the different asset classes the investor is investing in. However the investor must be aware of fundamental drivers that determine the classification. A popular way of classifying stocks is to sort them into value or growth categories. In 1994 Lakonishok et al. tested the US market in order to investigate whether they could find a dominant strategy. There was strong sign of greater returns when investments were done in value stocks compared to growth stocks.

### 2.7 Value verses Growth stock

While many investment style approaches exists within the financial market, Bourguignon & De Jong (2003) and Bird & Casavvechia (2007) label the value and growth investing philosophies as the utmost unanimously trailed schools in the stock market. In these value and growth investing philosophies, a classification arises. Stocks in these philosophies can be classified as either value or growth stocks. Bourguignon & De Jong (2003) and Bird & Casavvechia (2007) oppose that value and growth stocks are significant as result of the effects they have on investors. Bourguignon & De Jong (2003) contend that investment managers select one of these classes of stocks. This propensity is so extreme that genuine style indexes were devised to satisfy investors. However, value and growth stocks are, according to Chan & Lakonishok (2004), each other’s opponents which was recognised by Graham & Dodd (1934). The classifications raised by Graham & Dodd (1934) were prominent that the classifications behind value and growth stocks haven’t transform since.

*Value stock:*

Value stocks are, according to Graham & Dodd (1934), stocks whose price-to-earnings ratio, price-to-book ratio, and/or price-to-cash flow ratio is/are low compared to the market. This definition is shared by multiple scholars (Capaul et al., 1993; Lakonishok et al., 1994; Fama & French, 1998; Leladakis & Davidson, 2001; Bourguignon & De Jong, 2003; Chan & Lakonishok, 2004; Cahine, 2008; Athanassakos, 2009). Graham & Dodd (1934) detailed that this is as a result of bad performance in the past in which the expectation arises that this performance will continue in the future. However, bad performance does not have to refer in particular towards default, this could be an indication that the company is at its maturity in which the company's growth becomes stable and does not give any indication anymore of excessive growth that investors expect or do not have (profitable) investment opportunities within a particular year (as compared to competitors). These value stocks are, as Hillier et al. (2010) defines it, 'out of favour' with investors. This is also acknowledged by De Bondt & Thaler (1985) and Athanassakos (2009). While Graham & Dodd (1934) argue that stocks become value stocks due to poor performance or maturity and stability, Fama & French (1998) assume that value companies are in distress and this results in them trading at lower prices. The assumption of distress was also acknowledged by Chen & Zhang (1998) and Athanassakos (2009). These scholars suggest that, besides distress, other factors such as high financial leverages, overcapacity, and uncertainty in future earnings make them out of favour with a large group of investors.

*Growth Stock:*

Growth stocks are generally defined as those stocks that are trading at high prices when compared to the stocks fundaments i.e. earnings, book value, cash flow and dividends (Graham & Dodd, 1934; Capaul et al., 1993; Bauman et al.1998; Fama & French, 1998; Leladakis & Davidson, 2001; Bourguignon & De Jong, 2003; Yen et al., 2004). Growth stocks are classified as those stocks whose earnings are anticipated to be substantially larger than the market averages and continue to rise (Babson, 1951; La Porta, et al., 1997; Leladakis & Davidson, 2001; Bourguignon & De Jong, 2003). These stocks, in which investors believe in a continuous rise, are referred to as growth (also called glamour) stocks (La Porta, et al., 1997). Recently, Beneda (2002) defines growth stocks as those stocks from which companies have future capital appreciation that are above the market averages. Investors pursuing this type of stock are defined as growth investors. These growth stocks have the tendency to be extremely popular in the market due to the (potential) creation of innovative products and grasping market opportunities. Investors expect that returns of growth stocks can be obtained when the market value of those companies rise further (Babson, 1951; Bourguignon & De Jong, 2003). According to Bourguignon & De Jong (2003), growth investors are selecting companies for the long-term based on the expectation that companies are likely to change structurally while value investors are selecting companies for the short-term in order to benefit from possible price momentums. This assumption contradicts the arguments as proposed by Graham & Dodd (1934).

While many scholars define value growth stocks as stocks that are associated with low price-multiples, and growth stock being the inverse of value stock Bourguignon & De Jong (2003) oppose towards an ambiguity in the value and growth stock definition. These scholars oppose that investors investing in growth stocks have no expectance of short-term returns. These investors are aiming towards value creation towards a future point in time by investing in companies that have aspiring market- or investment opportunities planned at acquiring significant part of the market share at the disbursement of revenue and, in association, reducing the current return on equity. Furthermore, Capaul et al. (1993) argue that growth in earnings and/or market share does not create added value unless the expectation arises that this growth result from abnormal gainful investment opportunities. For investors to select value and growth stocks in this kind of manner, Pinto et al. (2010) refers towards the usage of a valuation model based on the value of a company’s assets plus the net present value of its growth opportunities (PVGO). However, the low outcome on earnings per share divided by the rate of return is not particularly a characteristic in growth stocks but could also occur within value stocks. This occurs when the rate of return is high.

Moreover, this concept leans on the work of Modigliani & Miller (1961). This notion basically means that growth in and of itself is only value-creating if the company's future project generates positive NPV's (Brealey et al., 2007; Bodie et al., 2009), which refers to the classification of growth stocks. When these growth opportunities are non-existent the value of a firm's stock is equal by the dividends paid on earnings divided by its cost of equity (Pinto et al., 2010), which refers to the classification of value stocks. The importance of the PVGO lies within EPS and r, which refers to the earnings per share and the rate of return, since this quotation refers to whether the price of a stock becomes higher or lower after investing in growth opportunities. It is logical to assume that defining and classifying stocks as either value or growth by taking into account the PV of growth opportunities. However, when the probability arises that the range concerning the rate of return is small, the outcome of in association with PVGO is virtually equal to the outcomes obtained from the price-multiple(s).

Nevertheless, the majority of scholars defines and classifies stocks as either value or growth by using price-multiples instead of the inclusion of PVGO. By meaning of scholars it is usual and considered to make sense to use price-multiples as a classification tool to separate stocks into value and growth.

### 2.8 Classification of Value and Growth stock

Many scholars acknowledge that value and growth stocks drive on different measures of financial performances to make this classification (Fama & French, 1993; Barberis & Shleifer, 2003; Bourguignon & De Jong, 2003; Bird & Casavvechia, 2007).The typical characteristic of value (growth) stocks is that market prices are relatively low (high) compared towards the fundamental value of a company (Capaul et al., 1993; Bauman et al. 1998; Fama & French, 1998, 2007; Yen et al., 2004). The motive behind the usage of multiples to classify stocks is, according to Capaul et al. (1993), not extraordinary since a company's stock price reflects the investor's valuations regarding how a company will perform in the future. This is also acknowledged by Penman (1996), Leledakis & Davidson (2001), O'Shaughnessy (2005) and Davis & Lee (2008).

While many multiples exist that could be used to classify stocks as either value or growth, three multiples are most frequently used by scholars. These multiples are price-to-earnings ratio (P/E), price-to-book ratio (P/B), and price-to-cash flow ratio (P/C) or equivalents of these multiples, such as market-to-book, book-to-market, earnings-to-price, and cash flow-to-price. According to Fama & French (1998), these multiples are normally used since they yield steady results in returns. These scholars also applied the dividend-to-price (D/P) multiple. However, D/P did not provide adequate reliability in relation towards return as compared to the other multiples. This was also acknowledged by Lakonishok et al. (1994), Bauman et al. (1998) and Davis & Lee (2008). Conversely, Jeong et al. (2009) document that D/P provided sufficient consistency in relation towards returns. But this was only for one of the three sample periods. These scholars argue that in this sample period, more companies paid dividends than in the sample periods before and after, which indicates the reasoning behind the consistency in D/P in Jeong et al. (2009) study. However, in general, Fama & French (2007) and Davis & Lee (2008) argue that using D/P as a classification multiple does not only produces insufficient consistency in return, it also limits the number of stocks that can be added to a portfolio since the amount of companies paying dividend is significantly reduced compared to, for example, ten years ago. Additionally, Bourguignon & De Jong (2003) oppose that multiples are used for the following reasons: stocks having exceptional growth potential, earnings are relatively not high when compared to the probable upcoming stages.

For this reason the multiple, for example, P/E, at that particular moment is higher. The same counts, as Bourguignon & De Jong (2003) argue, for stocks that have low multiples. It is often assumed and expected that low P/E stocks will rebound and become value-added (De Bondt & Thaler, 1985). This argument assumes that investors tend to give preference towards either value or growth stocks (Bourguignon & De Jong, 2003). Cahine (2008) argues that using only one multiple, to classify stocks, would not generate appropriate results. Classifying stocks using many multiples would give more applicable results since multiples are, when comparing many countries, analysed from different perspectives (Cahine, 2008). Many scholars adopt that multiples are calculated for a particular time-frame in which negative and positive outliers are advocated to be neglected (Fama & French, 2007; Leladakis &

Davidson, 2001; Cahine, 2008). Huang & Yang (2008) argue that negative multiples causes noise to the sample. Leladakis & Davidson (2001) argue that negative and extremely positive multiples are entirely meaningless since the suspicion arises that it does not capture the real value within multiples and is just demarcated as a one-time event. Cahine (2008) opposes that a (positive) outlier can be noticed when a company has a multiple that exists three standard deviations from the mean. It can be assumed that numerous multiples can be used to classify stocks as value or growth. The reason behind the importance and its constitution will be discussed in the following subsections.

### *2.8.1 PE (Price-to-Earnings)*

The price-to-earnings ratio is a multiple that is determined by the company's stock price with the company's earnings per share. The P/E ratio is important since the comparison of earnings and stock price gives, according to Bragg (2007), universal representation of investor's perceptions towards the eminence of a firm's earnings. Lower ratio of P/E give the view that the anticipated future earnings will also be lower (Bodie et al., 2009). Consequently, stocks with a low P/E ratio are characterised as value stocks and stocks with a high P/E ratio are characterised as growth stocks. According to O'Shaughnessy (2005) and Pinto et al. (2010), a lower indication on the P/E ratio gives investors the intention that they are paying less for earnings and could therefore be a sign how expensive or cheap a firm's stock is compared to other stocks. A stock with a high P/E may indicate that investors believe and expect that the company's future earnings are decent and acceptable (O'Shaugnessy, 2005; Pinto et al., 2010). Athanassakos (2009) found that value portfolios classified on P/E have the tendency to perform superior and more consistently regarding the identification of value stocks and derive more consistent value premiums than value portfolios classified on P/B.
Formula to derive PE ratio is:

$$\frac{P}{E}\ Ratio = \frac{P_y}{EPS_f} \qquad (2)$$

Where $P_y$ is the company closing share price, $EPS_f$ is the earnings per share calculated dividing the company yearly net profit over the weighted average number of shares outstanding.

### *2.8.2 MTBV (Market-to-Book)*

While P/E was the most appropriate measure to separate stocks, the P/B became popular after a study of Fama & French in the early 1990's (Penman, 1996). While Graham & Dodd (1934) explained this multiple as a determinate of anticipated return on the equity, Fama & French have used it as a multiple to separate value and growth stocks. The price-to-book ratio is often used as an equivalent towards the market-to-book ratio and book-to-market ratio (Fama & French, 1998; Leladakis & Davidson, 2001).This P/B ratio is important since this multiple is assessed by investors to analyse whether the market price of a stock is in excess/lower than a company's book value (Bragg, 2007). A higher market price of a stock gives an indication that investors have assigned additional value to a company (Bodie et al., 2009). The stocks that have a low P/B ratio are characterised as value stocks and stocks that have a high P/B are characterised as growth stocks. A low P/B ratio may indicate that the company experiences problems concerning the fundamentals of the company whereas a high P/B ratio may indicate that investors have high expectations regarding the future performance of the company (Bragg, 2007; Pinto et al., 2010). Fama & French (1998; 2007) document that value portfolios classified on book-to-market (as an equivalent to P/B ratio) provides considerably larger and more stable returns than portfolios categorised on other multiples.

The scholars also argue that P/B is one of the most predominant explanatory variables towards cross-sectional returns as was performed in the United States. Davis & Lee (2008) entirely devoted their research of value and growth stocks on the performance of multiples. The scholars oppose that the best choice of classifying portfolios of value and growth stocks is by the usage of B/P (as an equivalent of P/B) compared to E/P and C/P (as equivalents to P/E and P/C).

Formula to derive P/B ratio is:

$$\frac{P}{B}ratio = \frac{P_y}{\sqrt{[TA_f - (IA_f \ + TL_f)]/NSO_f}} \qquad (3)$$

Where $P_y$ is the company closing share price. $TA_f$ Is the total assets, $AI_f$ is the intangible assets, $TL_f$ total liabilities reflected in the audited financial statements for the period. $NSO_f$ is the weighted average number of shares outstanding.Yen et al. (2004) defines book value as total assets minus liabilities whereas Chan & Lakonishok (2004) and Fama & French (2007) define book value as total assets minus intangible assets and liabilities.

### *2.8.3 P/C (Price-to-Cash Flow)*

Considering the amount of cash flow a particular company generates is another multiple that investors employ to value the performance of a firm. According to Bauman et al. (1998), P/C is not much used in previous studies to classify value and growth stocks. Chan & Lakonishok (2004) argue that the P/C has become extremely popular to classify value and growth stocks since it views the company's performance from a different point of cash in and outflows as compared to earnings. The price-to-cash flow ratio is a multiple that measures the prospects of the market regarding a company's future health from a financial point of view (Bragg, 2007). Therefore, stocks with a small P/C ratio are characterised as value stocks and stocks with a large P/C ratio are characterised as growth stocks. The P/C ratio is considered as an additional multiple of the P/E since both ratios give indications regarding firms' current and future performances (Yen et al., 2004). This ratio is important since this multiple is used in the financial market to define a particular stock price that a company is expected to attain when it generates a certain cash flow level (Bodie et al., 2009).

$$\frac{P}{C}\ ratio = \frac{P_y}{\sqrt{NOCF_f/NSO_f}} \qquad (4)$$

Where $P_y$ is the company closing share price, $NOCF_f$ is the cash flow from operations as reflected in the audited financial statements, $NSO_f$ is the weighted average number of shares outstanding. Yen et al. (2004) defines cash flow as earnings plus depreciation whereas Bird & Casavecchia (2007) defines cash flow as net cash from operations (operating cash flow).

### *2.8.4 PEG (Price-Earnings-Growth)*

This ratio is related to the P/E ratio but it also incorporates the rate of growth in the stock or how quick the P/E ratio is changing. In 1989 the PEG ratio was made famous by Peter Lynch (Lynch, 1989), the famous Wall Street fund manager. He employed a strategy known as growth at a reasonable price (GARP), of which the PEG ratio is a key metric. This strategy was focussed on growth stocks which were relatively inexpensive. Schatzberg & Vora (2008), however, found that PEG is a profitable investment strategy which extends its reach beyond the domain of growth stocks. Thus low P/E stocks with good growth prospects were found to perform better than expected, and when compared to P/E effects the PEG effects were found to be separable (Schatzberg & Vora, 2008). It was concluded that the interaction of price to earnings and growth provides an advantage that is not available for these separately. As articulated by Bodie et al. (2005). P/E ratios are commonly taken as proxies for the expected growth in dividends or earnings. Lynch (1989) suggested that a stock with a PEG ratio below 1 was undervalued, and over 1 was overvalued.

$$PEG\ ratio = \frac{\frac{P_y}{EPS}}{G\%} \tag{5}$$

Where $P_y$ is the company closing share price, EPS is the earnings per share, G% is the earnings growth.

In summary the difference between value and growth stock:

| **VALUE STOCK** | **GROWTH STOCK** |
|---|---|
| 1. Low PE | High PE |
| 2. Low PCF | High PCF |
| 3. Low MTBV | High MTBV |
| 4. PEG less than 1 | PEG greater than 1 |

## 2.9 Performance of Value and Growth stock in different markets.

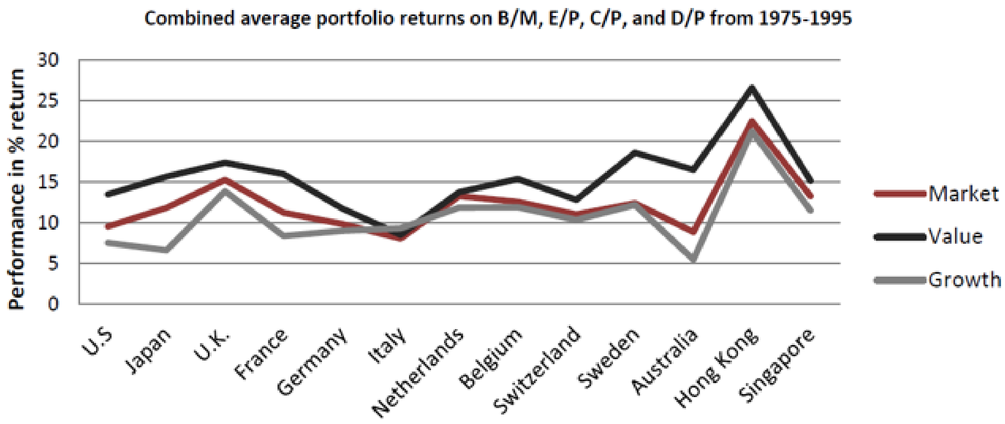
### *2.9.1 International Markets*

Prior empirical studies suggest that value stocks by the use of one or many multiples outperform growth stocks. Fama & French (1998) demonstrate that, on average, value stocks outperformed growth stocks in 12 of 13 markets, providing evidence towards the existence of a value premium (5.56 to 7.65 percent) (See figure 1). Capaul et al. (1993) documents that global value stocks tend to outperform global growth stocks in Japan, U.S. and Europe. This was also acknowledged by Harris & Marston (1994) when examining the influence of beta on returns. Interestingly, in the study of Fama & French (1998), 75 percent of the value premium was generated by the U.S. and Japan while in the study of Capaul et al. (1993), the U.S. contributed the least.

However, Capaul et al. (1993) did only focus on four markets, which could explain this difference. Moreover, the difference could also be assignable towards the amount of multiples used. While Capaul et al. (1993) used only one multiple, Fama & French (1998) used many multiples to clarify returns. Black & Fraser (2004) argue that the standard deviations, as a measure of volatility, are significantly lower in the United States than compared to other countries such as Japan, Norway, and Spain. Although a value premium was not observed within each of the countries being analysed, Bauman et al. (1998) document comparable results when studying countries between 1985 and 1996. However, the value premiums were not as high as compared to previous studies.

In more recent study, performed by Cahine (2008), also shows that value stocks are likely to generate higher returns than growth stocks in the Euro-markets. Remarkably, undervalued value stocks, which are value stocks with high growth rates in earnings, provided higher value premiums than normal value stocks (.618 over .324 percent). The studies suggest that value stocks, including undervalued value stocks, have the tendency to outperform growth stocks in international markets. According to Capaul et al. (1993), investors are likely to obtain higher total returns when investing in international portfolios as opposed to investing in national portfolios.

Figure 1



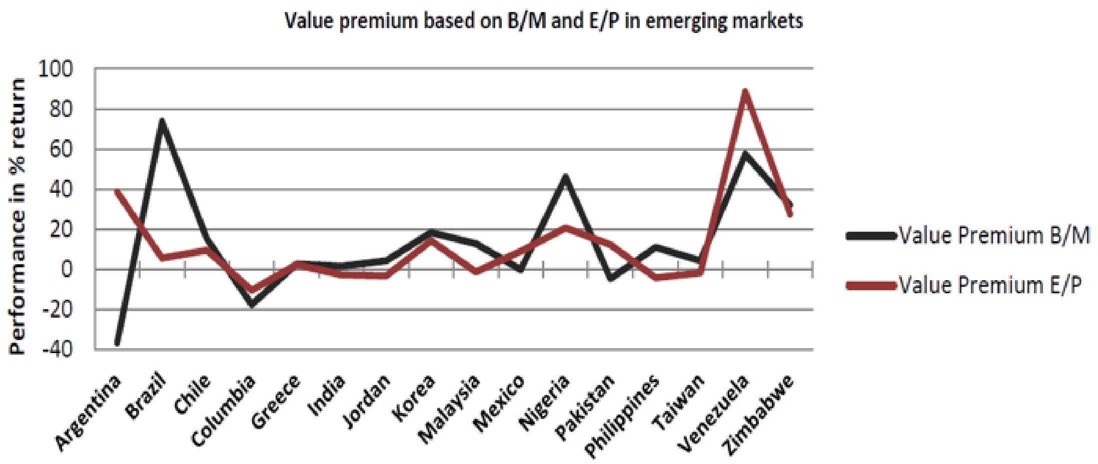

Combined average portfolio returns per country| Source: Fama & French (1998)

Can this result be an indication of international diversification? Meaning that idiosyncratic risk of stocks in international portfolios is diversified away as stocks of different countries are added to a portfolio?

### *2.9.2 Emerging Markets*

Fama & French (1998) also studied probable value premiums in the emerging markets. There were 16 emerging markets studied (see figure 2), Fama & French (1998) they found indication of a value premium that was abnormally high (14.13 percent) compared to advanced markets. Chen & Zhang (1998) reached the same conclusion when markets in Asia that are emerging were studied. This result could be attributable to volatility since emerging markets tend to be more volatile than developed markets (Chen & Zhang, 1998; Fama & French, 1998).

Figure 2




Value premiums in emerging markets| Source: Fama & French (1998)

However, while value premiums were significantly high, the correlations on returns were small (Fama & French, 1998) to negative (Chen & Zhang, 1998). It can be assumed that developed markets are, as Black & McMillian (2004) oppose, interlinked (e.g. stocks and exchange rates) and are therefore more likely to be (higher) correlated compared to emerging markets. A more recent study performed by Huang & Yang (2008) also observed stable positive value premiums in the Chine stock market from 1998 to 2008. However, the value premiums declined when the holding period extended from 13 percent in year one to 7 percent in year 5. However, the average value premium observed by Huang & Yang (2008) over the 5 year holding period was 11 percent. Another recent study, performed by Gonenc & Karan (2003), did not observe value premiums in Turkey. While growth stocks had the tendency to outperform value stocks by .38 to 4.87 percent return, the performance was not significant.

The study focusing on the emerging market of Singapore was examined by Yen et al. (2004). Although value stocks have the tendency to outperform growth stocks in Singapore between 1975 and 1997, the value premium was only significant for the first two years (Yen et al., 2004). Chen & Zhang (1998) oppose that significant market growth can possibly be an indicator of missing value premiums in emerging markets. The higher the market growth, the lower the value premium will be. Huang & Yang (2008) argue that the Chinese market comprises, compared to the U.S. market, an enormous segment of individual investors. These individual investors causes that the speculation in these markets are higher than in markets with large segments of institutional investors. Additionally, in order to research value and growth stocks, Gonenc & Karan (2003) argue that the stock exchange of Turkey functioned as a laboratory. Another assumption that can be made regarding the inexistence of a value premium results from the impossibility to isolate stock markets from external influences. Brown et al. (2008) examined the Asian emerging markets and documented the existence of a value premium in Hong Kong (0.72 percent), Korea (0.42 percent), and Singapore (0.42 percent) but a value discount in Taiwan of 1.26 percent.

### *2.9.3 Risk verses reward for Growth and Value stock*

The performances of value and growth stocks detailed in the above covers the total return. The enquiry remains whether value stocks still have the ability to yield higher returns per unit of risk than growth stocks. Risk is referred to as the systematic which is the risk within securities. Hillier et al (2010) defines systematic risk as the risk inherent in the market, which is also known as market risk. Basu (1977), Sharpe et al. (1999), and Collison et al. (2008) contend that three of the highly accepted measures to apply are the Sharpe ratio, Treynor, and Jensen’s Alpha. Basu (1977) determine, based on these measures that value stock yield 2-4 % larger rewards per unit of risk than growth stocks.

This was also recognised by Capaul et al. (1993) and Harris & Marston (1994). Value stocks carry larger Sharpe ratios than growth stocks and the market, which shows according to Yen et al. (2004), that value stocks are able to yield larger returns for the amount of risk that a stock. This was also recognised by Jeong et al. (2009). The scholars document that the Sharpe ratios on value stocks were, on average, 31.3 percent higher than the Sharpe ratios on growth stocks. However, based on E/P, the Sharpe ratios were 19- to 59 percent higher compared to growth stocks, which suggest that growth stocks, classified by E/P, provide higher returns per unit of risk. Although return to variability of value stocks were not superior over growth stocks in every market, Bauman et al. (1998) argue that, on average, value stocks have the tendency to yield higher returns for the amount of accepting risk. On a risk-adjusted basis, growth portfolios generated higher returns temporarily in Switzerland and the Netherlands but not in the majority of cases, like, Australia, Germany, France, Japan, and Hong Kong. Yen et al. (2004) also advocate that value stocks have the inclination to yield higher risk-adjusted returns than growth stocks. However, these returns were, as the value premium, only significant for the first two years. The risk-adjusted measures produced higher outcomes for value stocks than growth stocks on all multiples used. It can be assumed that the results discussed in this subsection indicates that value stocks provide higher returns for the amount of risk associated in stocks or portfolios. While the reason behind the return to variability or reward per unit of risk is not delicately explained within articles, it is likely to assume that the instigator lies within the securities' beta. The study of Fama & French (1998) implies that multiples containing prices have information regarding returns overlooked by the beta coefficients. As discussed in the previous section, value stocks are more likely to have lower betas in bear-markets as compared to its counterpart. It is therefore likely to assume that due to the argumentation that value stocks shows less sensitivity to the market it also shows higher outcomes regarding the returns per unit of risk calculated by different risk-adjusted measures.

#### *2.9.4 Value Premium*

Many scholars, suggest that value stocks have the tendency to outperform growth stock in terms of total return and return per unit of risk, which allows the possibility for value premium to exist. But what is the reason that value stocks documents higher returns than growth stocks or, in other words, what is the reason behind the existence of the value premium? In most scientific topics there is conclusion but rather various theories proposing various reactions and creating various supporters and challengers. In the subject of value and growth stocks, the occurrence of the value premium could be interpreted from a rational and behavioural perspective.

The most important purpose behind the value premium is reward for accepting higher risk (Fama & French, 1993). The arguments towards higher risk stem from the notion that value stocks trade at low multiples whereas those stocks are expected to recover in order to become value-added. In this manner, the probability arises that the companies will be involved in some sort of financial distress. Therefore, these stocks are riskier for investors to purchase due to the likelihood that investors will not receive any payments when the company defaults (Fama & French, 1993). This argumentation was also documented at later points in time when Fama & French (1998) found that value stocks generate higher returns than growth stocks and as a result value premiums exist.The argument that the value premium serves as a reward for risk is also shared by Chen & Zhang (1998) and Black & McMillian (2006). Doukas et al. (2004) only found partial support for this argument. These scholars studied whether investors' and analysts' opinions could explain the discrepancies between returns on value and growth stocks. These scholars found that the earnings forecast by analysts were dispersed since forecasts were significantly lower for growth stocks, as compared to value stocks. These findings suggest that value stocks bear higher risk than growth stocks for some part of the return (Doukas et al., 2004). Black & McMillian (2006) share the rational explanation of Fama & French (1993). After examining the value premium under several changes in economic conditions they document that value premium bear higher volatility after negative macro-economic shocks, as opposed to positive shocks, and therefore contribute to the compensation for risk. It is logical to assume that stocks offering higher returns are more likely to bear higher risks. However, if this compensation for risk stems from the notion of financial distress. When a company is likely to be involved in financial distress, it can be assumed that investors would sell the stocks massively since these investors do not want to make losses when the company actually goes insolvent. The result of this dumping is the creation of negative returns and investors would not be rewarded for accepting the company's risk. For example, before Lehman Brothers filled its Chapter 11 at the Securities and Exchange Commission (SEC) (Bartram & Bodnar, 2009), investors pulled away since they were aware that the company was involved in some sort of financial distress.

The advocates of the behavioural explanation suggest that value premiums occurs due to anticipation and overreaction errors in returns made by investors and do not function as a compensation or proxy for risk. De Bondt & Thaler (1985) argue that higher returns of value stocks are the result of the notion that investors have the

tendency to overreact towards past events, such as earnings announcements. These scholars found that value stocks get far low-priced and recovered, whereas growth stocks experienced the inverse. This was also acknowledged by Lakonishok et al. (1994), Rozeff & Zaman (1998), Bauman et al. (1998), and Yen et al. (2004). Lakonishok et al. (1994), Chan & Lakonishok (2004) and Huang & Yang (2008) suggest that the value premium is owed to mispricing of stocks and does not serve as a substitute for related risk. In addition to this overreaction, these scholars assume that investors have the tendency to extrapolate past earnings, meaning that past earnings are elaborated too far in the future.
This extrapolation is assumed to result in the underestimation of value stocks and overestimation of growth stocks, meaning that value stocks have the inclination to yield higher returns than growth stocks when rebounding takes place. Lakonishok et al. (1994)oppose that psychological studies suggest that individuals have the tendency to apply simple ‘heuristics’ in the process of decision making, which causes the probability that condemnatory biases in investment decisions and behaviours can occur. This was later acknowledged by La Porta et al. (1997) and Chan & Lakonishok (2004). In addition towards the expectation errors of overreaction, Bauman & Miller (1997) found evidence that the EPS growth rate have the tendency to become mean-reversed over the long-term. These scholars observed that high growth rates, as accompanied within growth stocks, have the tendency to decline while stocks with low growth rates, as supplemented within value stocks, have the tendency to increase.

These findings suggest systematically overestimation by analysts regarding the future EPS in value and growth stocks. Consequently, growth stocks give the impression to experience lower stock returns especially when the ultimate EPS growth rates are lower than expected by investors and analysts. This was also acknowledged by La Porta et al. (1997). Bauman and Miller (1997) and La Porta et al. (1997) assume that stocks fail the recognition that corporate trends, such as EPS and EPS growth rates, have the tendency to act as a random walk resulting that value stocks are therefore producing higher returns. Chan & Lakonishok (2004) also acknowledge the investor biases within returns. These scholars argue that in recent markets (to 2001/2002) investors have the tendency to extrapolate historical performances and are extremely agitated about new technologies.

Therefore, investors are more likely to overreact excessively on growth stocks (such as internet and technological stocks). From the viewpoint of the efficient market hypothesis (EMH), the rational explanation of the value premium does not refer that markets are inefficient. In essence, the EMH implies that investors cannot obtain superior returns systematically. But, once risk is taken into account, this superior performance would be possible since EMH also implies that receiving higher returns are related with higher risk. Since advocates of the rational explanation argue that value portfolios are associated with higher risk compared to growth portfolios and, in some degree, the market, the anomaly dissolves. From the viewpoint of EMH, the behavioural explanation of the value premium refers, as opposed to the rational explanation, towards inefficiency. The behaviourists argue that the errors in behaviour and extrapolation of investors are biased systematically, which contradicts EMH, because EMH argue that errors are unbiased since the theory implies that stocks fully reflect available information. However, when investors' behaviour and extrapolation arises one can earn superior returns since the information is not reflected into the market systematically.

## Chapter 3: Methodology

In literature, two methods exist to perform research. The first method is the qualitative research method. This method is dealing with measurements on the nonnumeric level to give an understanding of human experiences and thoughts for exploring the meaning behind a particular phenomenon (Babbie, 2010). The second method is the quantitative research method. The quantitative method allow to statistically testing hypothesis of a sample in order to make generalisations to the population as a whole (Babbie, 2010).The research method is the quantitative method since the research in this thesis is based on examining returns on both value and growth stock portfolios.

### 3.1 Method

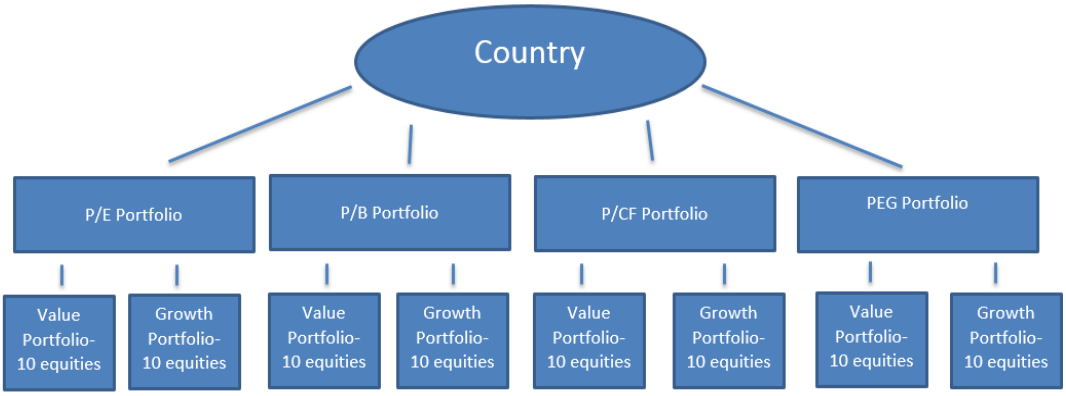
To test the different hypotheses and to give answer to the main research question and different sub-questions, a research method established are:

i. Group the stock as value or growth stocks;
ii. Create portfolios into the various price multiple;
iii. Calculate returns on the portfolios ;
iv. Risk-adjusted measures is developed in order to test the hypotheses that integrate risk.

The research will be based on quantitative empirical data. The research approach that a hypothesis is developed - that value stocks outperform growth stocks, which we will subsequently confirm or reject by designing a research construct.
A commonly used method to measure the performance of an investment strategy is the concept of back-testing. To test our hypothesis, daily historical stock data over a 10 year period has been collected.

### 3.2 Portfolio construction of value and growth stocks

Five emerging markets countries i.e. South Africa, Nigeria, Brazil, India and Argentina are selected and for each country and the portfolio will be constructed as follows:




The investor construct portfolios by analysing and valuing companies in order to select those securities that will be included within a portfolio (Bourguignon & De Jong, 2003). In academic research, this portfolio construction is different since the research is most often grounded on analysing historical returns and risk since it is not the intention of scholars to invest and forecast returns but to analyse them.

In order to rank stocks as either value or growth, many scholars use country index cut-offs. The most widely used cut-offs are 25 percent (Capaul et al., 1993, Athanassakos, 2009) and 30 percent (Fama & French, 1998; Bird & Casavecchia, 2007). This means that an index, the 25% of stocks with the lowest multiples are characterised as value stock. Due to academic justification, a 30 percent cut-off is used in this thesis for each country index under consideration since it can be assumed that more stocks added to a portfolio will be beneficial to the results.

The weight of stocks within portfolios can be applied in two ways (Fama & French, 1998). These are the equal-weighted and value-weighted approach. However, the disadvantage of the value-weighted approach is that portfolios could be dominated by, for example, blue-chips, which could give wrong indications of results (Black & McMillian, 2004). Fama & French (1993) earlier discovered that the value-weighted approach has an inverse association with size, which could impact the stock returns negatively. The equal-weighted approach stems that each stock has an equivalent chance to impact the portfolio positively or negatively, which is considered as a fair approach (Black & McMillian, 2004). Most scholars (De Bondt & Thaler, 1985; Fama & French, 1998; Black & McMillian, 2004; Doukas et al., 2004; Yen et al., 2004; Bird & Casavecchia, 2007; Athanassakos, 2009) use the equal-weighted approach. As a result of these opinions, the portfolios in this research are created applying the equal-weighted approach.

### 3.3 Portfolio returns

After portfolio construction, portfolio returns need to be calculated. According to Bourguignon & De Jong (2003) and Yen et al. (2004), an investor values performance both in total return and in risk since investors observe how a stock portfolio has performed. Therefore, hypothesis 1, I observe the total return and the return per unit of risk. The methods assessed to examine return and risk will be discussed in the following sub-sections. The term 'total return' is one of the most important information of an investor since it defines how much the investor has earned on his/her investment (which commonly means a portfolio of stocks when investing in the equity market) over a certain period of time, including capital returns and dividends (Pinto et al., 2010). As written above, hypothesis 1 will be tested for total return and return per unit of risk. This total return can be daily, monthly, quarterly or annually. However, scholars researching value and growth stocks apply total returns to measure which portfolio performs better than the other (Fama & French, 1998, Leledaksis & Davidson, 2001; Chan & Lakonishok, 2004). There are methods one can be used to calculate total portfolio returns. The popular and used methods are the geometric average of the holding-period-return (HPR) and the average logarithmic return (Log) of stocks within a particular portfolio. Stock prices are commonly adjusted for stock dividends and stock splits (Fama & French, 1998, Chan & Lakonishok, 2004; Black & McMillian, 2006). However, the HPR has disadvantages when equated to the logarithmic return (Campbell, 1997). The HPR does not take into account the effect of (continuous) compounding (Campbell et al., 1997). Another drawback is that it reveals that there is limited liability, therefore the total cost an investor can make on a stock is -1. This limited liability is, according to Campbell et al. (1997), contradictory to normal distribution since the domain as explicated within the normal distribution suggests that -1 noticeably disrupts normality. Basu (1977) & Yen et al. (2004) used the method of continuously compounding (log). As a result to this disadvantage, the average logarithmic portfolio return is used to establish the returns.

Some scholars also study the performance of portfolios composed of value and growth stocks for numerous years, that normally extent to ten years, subsequent to portfolio formation in order to capture the essential value premium over the long-term (Lakonishok et al., 1994; Fama & French, 1998; Chan & Lakonishok, 2004; Yen et al., 2004). In earlier studies, portfolios composed of value and growth stocks are not only observed on total return but also on the related risk. The risk in equity portfolios can usually be separated between systematic and unsystematic risk. Most frequently, unsystematic risk of assets can be obliterated within a portfolio when more securities are included since not every company or industry is affected by this risk. Therefore, studies on value and growth stocks usually use the term 'risk' to define the 'systematic' risk included within value and growth portfolios. Academics studying value and growth stocks usually inspect the amount of return a portfolio yield per unit of risk associated within that portfolio. To examine this, many measures could be used. The outcomes of these measurements are called the risk-adjusted outcomes (Capaul et al., 1993; Yen et al. (2004) or risk-reward ratios Bodie et al., (2009). Basu (1977), Sharpe et al. (1999), and Collison et al. (2008) contend there are measures to be used are the Sharpe ratio, Treynor measure, and Jensen's Alpha. Capaul et al. (1993), O'Shaugnessy (2005) and Collison et al. (2008) contend that negative Sharpe ratios are not useful as no analysis can be concluded on negative results which is somewhat not seen in the Treynor measure and Jensen's alpha. The measure as risk-adjusted is determined by the Treynor measure and the Jensen's alpha.

$$Treynor = T_p = \frac{R_p - R_f}{\beta_p} \tag{6}$$

Where $R_p$ is the portfolio returns, $R_f$ is the risk- free rate and $\beta_p$ is the beta of the portfolio related to the market index, which is the weighted-average of the betas of individual securities combined within that portfolio.

$$Jensen's\ alpha = \alpha_p = R_p - [R_f + \beta_p(R_m - R_f)] \tag{7}$$

Where $R_p$ is the return on the portfolio, $R_f$ is the risk free rate, the measure $(R_m - R_f)$is the market risk premium, $\beta_p$ is the betas of the induvial securities within that portfolio.

The rates on Treasury bills and other governmental bills are often used as estimates of the risk-free rate. Yen et al. (2004) contend that the average portfolio alpha $\alpha_p$ and the portfolio beta $\beta_p$ can be derived from the intercept and the slope of the CAPM regression model.

## 3.4 Statistical testing

The hypotheses developed in 1.4 to examine value and growth stocks from different viewpoints of incidence. In order to examine value and growth stocks, each hypothesis will be repeated for each portfolio of the ten year period for each country under consideration, and for each multiple on which portfolios are classified.

### *3.5 T-Test*

Many researcher measured a t-test to determine statistical variances in both return and risk between portfolios containing value and growth stocks (Capaul et al., 1993; Fama & French, 1998; Yen et al., 2004; Cahine, 2008).Dougherty (2006) and De Veaux et al. (2008), a two sample t-test is a statistical method that gives allowance to state assumptions regarding the variance between means of two independent portfolios, which makes it the most regularly used method when comparing two independent groups. In this thesis, the two independent groups are portfolios composed of value stocks and portfolios composed of growth stocks. The difference in the total return will be tested are the average daily returns yield by these portfolios. If the difference in returns, as explained by the value premium, on portfolios composed of value stocks is significantly positive than value stocks have the tendency to outperform growth stocks. The difference in the return per unit of risk that is tested are the outcomes of the Treynor measure and Jensen's alpha generated by these independent portfolios. For each multiple, for each country and its totality, this t-test will be assessed. If the difference of outcomes generated by these risk-adjusted measures is significantly positive, than value stocks provide higher returns per unit of risk than growth stocks, and vice versa. The difference in the price-multiple base portfolio comparison that will be tested are the returns generated by P/B, P/E, P/C and PEG based value and growth portfolios.

### 3.6 Analysis of Variance (ANOVA)

Many scholars contend that one multiple provide higher return and more reliably than other multiples (Fama & French, 1998; Bauman et al., 1998; Davis & Lee, 2008; Athanassakos, 2009). However, the scholar's studied the results derived from total returns and observed whether one multiple provided higher returns and lower standard deviations than others. These findings are not based on statistical testing whether there is non-equivalence across different multiples. These scholars did not use any statistical test to conclude whether one price multiple yield a higher return than other multiples throughout the years and/or sample (these scholars only looked at the tables of portfolio returns that are classified by different price-multiples). It needs to be tested whether there actually is a statistical difference to be found across returns generated by different multiples on which portfolios are classified.

### 3.7 Regression

The most frequently used regression analysis in studies covering value and growth stocks is the CAPM and a multi-factor model (Fama & French, 1998; Chan & Lakonishok, 2004; Huang & Yang, 2008). These models are most frequently used since the CAPM elaborates on the excess return founded on market risk premium whilst a multi-factor model integrates more factors in order to research whether excess returns can be elaborated when more factors are included. Due to the wide usage of these asset pricing models in studies on value and growth stocks, these asset pricing models is used in this thesis as well.

To statistically test whether the Capital Asset Pricing Model (CAPM) and a multi-factor model can explain the yield of excess return on portfolios of value and growth stocks, many scholars used regression (Fama & French, Bauman et al., 1998; Chan & Lakonishok, 2004; Yen et al., 2004). According to Dougherty (2006) and De Vaux et al. (2008), regression analysis is the popular statistical method for analysing (several) independent variable(s) and its relations towards the dependent variable. In this thesis, the CAPM and two-factor model is used to study the portfolio returns composed of value and growth stocks to determine whether the models can explain the excess returns. In the CAPM regression, the excess returns on a value and growth portfolios are regressed returns the excess return on the market. The CAPM imposes that the intercept or alpha is indistinguishable from 0 (Fama & French 1993, 1998; Gonenc & Karan, 2003; Cahine, 2008). This means that the CAPM accepts that excess returns on a stock or portfolio cannot be received when there is no excess return on the market refer to equation 8. To test whether the CAPM can explain the excess return produced by portfolios composed of value and growth stocks. The regression analysis is performed the dependent variable is the return yield by value and growth portfolios above the risk-free rate. The independent variable is the return on the market in excess of the risk-free rate which is the market risk premium.

$$CAPM = R_{pt} - R_{ft} = \alpha_p + \ \beta_p\left(R_{mt} - R_{ft}\right) + \varepsilon_p \qquad (8)$$

While researchers oppose that a CAPM model cannot elaborate the returns on value and growth stocks, a multi-factor model is often added (Fama & French, 1998; Gonenc & Karan, 2003; Cahine, 2008). The most frequently added are SMB (small market capitalisation).These factors were invented from the study of Fama & French (1993, 1998). The SMB was added since it is presumed that small-capitalisation stocks provide higher returns than large-capitalisation stocks. The Value minus Growth (VMG) was established since high book-to-market stocks/portfolios (value) have the inclination to provide higher returns than low book-to-market stocks/portfolios (growth) (Fama & French, 1993, 1998; Bauman et al., 1998; Gonenc & Karan, 2003; Cahine, 2008). In this thesis only the factor 'VMG' will be added to CAPM. The factor 'SMB' is not added to the multi-factor model since this thesis concentrates on the value premium and not on size premium.

Many scholars who only study the value premium only use VMG as an additional factor (Bauman & Miller, 1997; Fama & French, 1998; Chan & Lakonishok, 2004; Yen et al., 2004). Some other scholars studied the performance of value and growth stocks against small and large cap stocks (Lakonishok et al., 1994; Bauman et al., 1998; Gonenc & Karan, 2003; Brown et al., 2008), which makes it reasonable to include SMB in regression. Furthermore, Banz (1981), Fama & French (1998) and Yen et al. (2004) contend that including SMB as an added factor when researching value premiums within large-capitalisation indexes does not give meaningful results. Since this thesis only focuses towards value premium and not towards size premium, VMG will be applied as the only additional factor to determine whether the CAPM or two-factor model could elaborate the excess returns on portfolios of value and or growth stocks see equation 9. To test whether a two-factor model can elaborate the excess return yield by portfolios composed of value and growth stocks.

In this regression, the dependent variable is also the return from value and growth portfolios in excess of the risk-free rate whereas the independent variables are the market risk premium and the difference in returns yield by portfolios comprised of value and growth stocks (VMG). Fama & French (1993) and Cahine (2008) equate this model as follows.

$$Two\ factor\ model = R_{pt} - R_{ft} = \alpha_p + \beta_p\left(R_{mt} - R_{ft}\right) + \delta_p(VMG) + \varepsilon_p \qquad (9)$$

If the intercept is significantly larger or smaller than 0, than it can be presumed that the CAPM and/or the two-factor model fails to elaborate the excess return on portfolios composed of either value or growth stocks. If the intercept is large larger than 0 in the CAPM and/or the two-factor model, than it can be presumed that some stocks within the portfolio are mispriced as a result of excess return on the portfolio are, on average, too large. In statistical terms, if the p-value of the intercept is lower than five percent, which rejects the null hypothesis, referring that alpha might not be equal to zero. This means that part of the average portfolio return of value or growth stocks is not be justified by the CAPM and/or two-factor model.

### 3.8 Data

In the field of research, data can be distinguished in primary and secondary data. Primary data is, according to Saunders et al. (2009), specific data that is collected by the person(s) assessing research whereby the person can tailor the data towards the specific needs of the research and provides accurateness. Secondary data is, according to Saunders et al. (2009), data that is already collected by individual(s) and/or organizations. The type of data used within this thesis is secondary data. It involves the gathering of quoted stock prices, audited annual financial results, and risk-free rates, which are already documented and processed by others. The empirical analysis is based on data gathering of financial data and quotes of stocks and the risk-free rates.

### *3.8.1 Financial Data*

Audited annual financial statements reports of all companies included in the sample are referred to in order to determine the following variables to calculate the multiples: net profit, total assets, intangible assets, total liabilities, number of shares outstanding, and net cash flow from operations. The annual financial statements of the companies are obtained from the investors' relation link on corporate websites. In some cases, financial data is stated in a currency different from the country's original currency. In that case, financial data are converted from the financial reporting currency to the currency of that country. The quotes on exchange rates are obtained from the note section of the financial statements and or from oanda.com.

### *3.8.2 Stock price, Index Prices and Risk free Rate*

Stock prices and Index prices for the selected countries for the period 2006 and 2016 has been downloaded from Bloomberg.com. The information is used to calculate the ratios in order to create portfolios consisting of 10 companies for each of the value and growth classes in each country. The ratios calculated are Price-to-Earnings, Price-to-Cash flow, Price to Book and Price-Earnings-Growth. Bloomberg is a reputable and reliable source to obtain market data. Risk free Rate has been obtained from the respective countries Reserve Bank website i.e.in South Africa the R186 rates was obtained from the South African Reserve Bank website.

### *3.8.3 Exclusions*

The data to classify value and growth stocks are derived from audited annual financial statements for the respective companies. The financial statements will be downloaded manually from the company websites. Therefore the accounting information on a fiscal year end prior to the year of examination needs to be available. When that accounting information is not available, that company is excluded from the sample. Additionally, companies with extreme price-multiples either negative or positive will also be excluded from the sample since extreme multiples will signal possible liquidation or large growth which could have a negative impact on portfolio returns. The transaction cost and taxes are also critical parts of an investor's return. However, Best et al. (2000) determined that the inclusion of transaction costs or taxes do not create different results when those costs and taxes are not taken into consideration. Therefore transaction cost and taxes are not taken into account.

List of exclusion from the selection base

| **Country** | **No accounting information** | **Extreme multiplier** |
|---|---|---|
| South Africa | 2 | 4 |
| India | 5 | 3 |
| Brazil | 3 | 6 |
| Argentina | 9 | 5 |
| Nigeria | 12 | 6 |

## Chapter 4: Empirical Results and Analysis

In this chapter I highlight the important findings of the study on value and growth stocks during the 10 year period in the selected five emerging markets countries. Table 1 details the characteristic of the various portfolios created for each country, the remainder of the tables details the result of various analysis performed in order to reject or fail to reject the two hypothesis being tested.

**Table 1** Characteristic of the sample data examined for the five emerging markets countries.

The table reflects the number of companies examined, the average price-multiple within the each portfolio, the average observation per portfolio.

**Table 1**

| | Characteristic of the sample data | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | P/E | | P/B | | P/CF | | PEG | |
| | Value | Growth | Value | Growth | Value | Growth | Value | Growth |
| **South Africa** | | | | | | | | |
| Number of companies | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average ratio | 6,73 | 56,35 | 1,91 | 75,71 | 0,60 | 33,14 | 0,56 | 4,41 |
| Average observation | 2 480 | 2 480 | 2 480 | 2 480 | 2 480 | 2 480 | 2 480 | 2 480 |
| Market Index | ALL Share | | | | | | | |
| **India** | | | | | | | | |
| Number of companies | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average ratio | 15,52 | 40,54 | 11,54 | 209,04 | 12,21 | 65,68 | 0,24 | 5,56 |
| Average observation | 2 459 | 2 459 | 2 459 | 2 459 | 2 459 | 2 459 | 2 459 | 2 459 |
| Market Index | SENSEX | | | | | | | |
| **Brazil** | | | | | | | | |
| Number of companies | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average ratio | 11,23 | 141,85 | 2,68 | 56,11 | 0,45 | 21,20 | 0,27 | 65,29 |
| Average observation | 2 450 | 2 450 | 2 450 | 2 450 | 2 450 | 2 450 | 2 450 | 2 450 |
| Market Index | IBOV Index | | | | | | | |
| **Argentina** | | | | | | | | |
| Number of companies | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average ratio | 6,34 | 25,11 | 1,82 | 21,91 | 0,43 | 30,24 | 0,15 | 1,01 |
| Average observation | 2 525 | 2 525 | 2 525 | 2 525 | 2 525 | 2 525 | 2 525 | 2 525 |
| Market Index | MXAR Index | | | | | | | |
| **Nigeria** | | | | | | | | |
| Number of companies | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average ratio | 0,13 | 15,10 | 2,26 | 13,38 | 1,13 | 7,66 | 0,12 | 16,72 |
| Average observation | 2 431 | 2 431 | 2 431 | 2 431 | 2 431 | 2 431 | 2 431 | 2 431 |
| Market Index | NGSEINDX Index | | | | | | | |

### 4.1 Differences in the total returns and risk adjusted measure

Assessing Hypothesis 1**:** *Portfolios composed of value stocks yield higher returns than portfolios composed of growth stocks.*

As detailed in table 2, in all the 5 emerging markets examined the value stock portfolio have outperformed growth stocks in total per selected country. The mean differences and (p-values) for South Africa, India, Brazil, Argentina and Nigeria are 150% ,(<0.00001); 57%,(<0.00001); 41%,(<0.00001); 141%,(<0.00001); and 19%,(0.00013) respectively over the period of 10 years. These differences are statistically significant for all the emerging markets examined based on total country returns. The price-to-book, price-to-cash flow and price-earnings-growth multiplier in all the five emerging market countries yield higher portfolio returns for value stock as oppose to growth stock portfolio. The price-to-book portfolio mean differences in South Africa, India, Brazil, Argentina and Nigeria were 42%, 33%, 12%, 29% and 25% respectively, the p-value for all the countries are significant as they less than the 0.05 with exception of Brazil with a p-value of 0.22. The price-to-cash flow portfolio mean difference in South Africa, India, Brazil, Argentina and Nigeria were 61%, 27%, 13%, 63% and 0% respectively, the p-value for all the countries are significant as they less than the 0.05 with exception of Brazil and Nigeria with p-values of 0.22 and 0.99 respectively. The price-to-earnings growth portfolio mean differences in South Africa, India, Brazil, Argentina and Nigeria were 43%, 15%, 6%, 41% and 7% respectively, however all portfolios are insignificant as the p-values are greater than 0.05 with exception to South Africa and Argentina that had p-values less than 0.05. The price-to-earnings value stock portfolio did not reflect material mean differences and the p-values were not significant, this however does not have a significant influence on each countries total returns as overall performance by country is significant as previously discussed.

The outperformance of value stock over growth stock portfolio is consistent with Bauman et al, 1998; Fama & French, 1998; Bird & Casavecchia, 2007; Cahine, 2008 findings that portfolios containing value stocks have the tendency to outperform portfolios containing growth stocks over extended periods of time. Fama & French (1998) and Bourguignon & De Jong (2003), contend that the outperformance of value stocks upon growth stocks only exists for longer periods of time. This is usually during a minimum 10 year time-frame. Table 2 reflects strong suggestion of occurrence of a value premium in the five emerging market countries examined.

Although a sceptic can argue that the correlation of the returns across the markets can result similar chance patterns in average portfolio returns to show up in many markets, Foster, Smith & Whaley (1997). As can be seen in table 2 the correlation of value premium typically low. The simulations of Foster et al. (1997) then suggest that the outcome is rather good out of sample evidence for a value premium.

The average standard deviation for the value stock and growth stock portfolio are 0, 23 and 0, 21 respectively. The difference in standard deviations between value and growth portfolios is on average higher for value portfolios, when compared to growth portfolios. This theory was earlier acknowledged by Bartram & Bodnar (2009) and Allen et al (2009). According to Fama & French (1993) and Lakonishok et al., (1994), value portfolios experience larger variations in monthly returns than growth portfolios. The higher percentage volatility level occurring within value portfolios is also found by Black & McMillian (2004; 2006). Fama & French (1998) acknowledged that the difference in standard deviations between value and growth portfolios can be subject towards the investors' expectations for growth potentials in earnings, market and investment opportunities within growth stocks as well as the expectation of poor outlooks in performances within value stocks.

The value stock portfolio have on average much higher alpha then growth stock. In practical terms these outcomes suggest that value portfolios produce higher excess returns than the theoretical return estimated by the CAPM (Pinto et al, 2010). La Porta et al. (1997) and Fabozzi (2004) argue that investor's sentiments of pessimism and optimism are important factors within the financial markets since these factors trigger stock prices to rise or fall, which is assignable towards the buying and selling of securities. These scholars contend that when the risk premium interchange fluctuations between phases of optimism and pessimism arises, which could result that value stocks are likely to have the tendency to show higher sensitivity as compared to growth stocks. Therefore, to reward the purchasing and holding of these stocks should and will be rewarded in the form of higher returns and thus a value premium or positive value-growth spread (Fama & French, 1998).

## **Table 2** Average return differences on portfolios composed of value and growth stocks

Table details the results of each of the five emerging markets. The table includes the mean returns, standard deviation, beta, Jensen alpha by portfolio, Treynor ratios , t-test and the p-value of each value and growth portfolio based on the price-multiples.

**Table 2** **Table of Results by country**

| | | **P/E** | | | **P/B** | | | **P/CF** | | | **PEG** | | | **Total Porfolio** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Market | Value | Growth | Mean diff | Value | Growth | Mean diff | Value | Growth | Mean diff | Value | Growth | Mean diff | Value | Growth | Mean diff |
| **South Africa** | | | | | | | | | | | | | | | | |
| Mean Returns | 3,70% | 26% | 22% | **4%** | 59% | 17% | **42%** | 45% | -16% | **61%** | 51% | 8% | **43%** | 181% | 31% | **150%** |
| Std. Dev | 0,02 | 0,23 | 0,23 | | 0,21 | 0,24 | | 0,22 | 0,26 | | 0,00 | 0,14 | | 0,17 | 0,22 | |
| Beta | | 0,77 | 0,48 | | 0,81 | 0,51 | | 0,86 | 0,51 | | 0,79 | 0,10 | | 0,81 | 0,40 | |
| Jensen's Alpha | | 0,08 | -0,06 | | 0,40 | -0,13 | | 0,26 | -0,48 | | 0,28 | -0,12 | | | | |
| Treynor ratio | | 0,22 | 0,28 | | 0,62 | 0,16 | | 0,42 | -0,49 | | 0,53 | -0,12 | | | | |
| t test | | 0,34 | | | 4,19 | | | 5,65 | | | 9,88 | | | 34,62 | | |
| p value | | 0,74 | | | 0,00 | | | 0,00 | | | <0,00001 | | | <0,00001 | | |
| **India** | | | | | | | | | | | | | | | | |
| Mean Returns | 3,75% | 42% | 61% | **-19%** | 77% | 44% | **33%** | 69% | 41% | **27%** | 51% | 35,69% | **15%** | 239% | 182% | **57%** |
| Std. Dev | 0,02 | 0,23 | 0,24 | | 0,25 | 0,25 | | 0,24 | 0,23 | | 0,21 | 0,15 | | 0,23 | 0,22 | |
| Beta | | 0,77 | 0,51 | | 0,85 | 0,68 | | 0,76 | 0,68 | | 0,87 | 0,52 | | 0,81 | 0,60 | |
| Jensen's Alpha | | 0,12 | 0,42 | | 0,51 | 0,12 | | 0,43 | 0,25 | | 0,12 | 0,22 | | | | |
| Treynor ratio | | 0,46 | 1,05 | | 0,81 | 0,54 | | 0,81 | 0,50 | | 0,50 | 0,55 | | | | |
| t test | | -1,79 | | | 3,01 | | | 2,57 | | | 1,90 | | | 11,35 | | |
| p value | | 0,09 | | | 0,01 | | | 0,02 | | | 0,07 | | | <0,00001 | | |
| **Brazil** | | | | | | | | | | | | | | | | |
| Mean Returns | 1,34% | 25% | 15% | **10%** | 30% | 17% | **12%** | 28% | 15% | **13%** | 19% | 13% | **6%** | 101% | 61% | **41%** |
| Std. Dev | 0,02 | 0,21 | 0,23 | | 0,22 | 0,21 | | 0,24 | 0,21 | | 0,15 | 0,07 | | 0,21 | 0,18 | |
| Beta | | 0,74 | 0,73 | | 0,77 | 0,70 | | 0,77 | 0,70 | | 0,71 | 0,65 | | 0,75 | 0,69 | |
| Jensen's Alpha | | 0,16 | 0,06 | | 0,19 | 0,09 | | 0,43 | 0,07 | | 0,12 | 0,10 | | 0,12 | 0,10 | |
| Treynor ratio | | 0,14 | 0,05 | | 0,20 | 0,05 | | 0,19 | 0,02 | | 0,19 | 0,02 | | 0,07 | -0,02 | |
| t test | | 0,99 | | | 1,28 | | | 1,26 | | | 1,10 | | | 9,41 | | |
| p value | | 0,34 | | | 0,22 | | | 0,22 | | | 0,29 | | | <0,00001 | | |
| **Argentina** | | | | | | | | | | | | | | | | |
| Mean Returns | 7,06% | 100% | 93% | **7%** | 97% | 68% | **29%** | 121% | 58% | **63%** | 54% | 12% | **41%** | 371% | 231% | **141%** |
| Std. Dev | 0,02 | 0,28 | 0,26 | | 0,29 | 0,29 | | 0,28 | 0,44 | | 0,19 | 0,09 | | 0,26 | 0,27 | |
| Beta | | 0,42 | 0,41 | | 0,50 | 0,41 | | 0,46 | 0,44 | | 0,48 | 0,56 | | 0,46 | 0,46 | |
| Jensen's Alpha | | 0,70 | 0,64 | | 0,62 | 0,45 | | 0,89 | 0,28 | | 0,33 | 0,01 | | | | |
| Treynor ratio | | 2,33 | 2,20 | | 1,92 | 1,61 | | 2,62 | 1,27 | | 1,09 | 0,20 | | | | |
| t test | | 0,59 | | | 2,26 | | | 3,81 | | | 6,26 | | | 23,71 | | |
| p value | | 0,56 | | | 0,04 | | | 0,00 | | | < 0,00001 | | | <0,00001 | | |
| **Nigeria** | | | | | | | | | | | | | | | | |
| Mean Returns | 0,24% | 29% | 42% | **-13%** | 41% | 16% | **25%** | 41% | 41% | **0%** | 21% | 14% | **7%** | 132% | 113% | **19%** |
| Std. Dev | 0,01 | 0,25 | 0,20 | | 0,25 | 0,23 | | 0,25 | 0,24 | | 0,22 | 0,09 | | 0,24 | 0,19 | |
| Beta | | 0,66 | 0,20 | | 0,45 | 0,39 | | 0,37 | 0,64 | | 0,31 | 0,35 | | 0,45 | 0,40 | |
| Jensen's Alpha | | 0,27 | 0,41 | | 0,34 | 0,24 | | 0,40 | 0,24 | | 0,09 | 0,14 | | | | |
| Treynor ratio | | 0,26 | 1,50 | | 0,65 | 0,10 | | 0,78 | 0,45 | | 0,28 | 0,06 | | | | |
| t test | | -2,91 | | | 2,30 | | | 0,01 | | | 0,86 | | | 3,82 | | |
| p value | | 0,01 | | | 0,03 | | | 0,99 | | | 0,40 | | | 0,00013 | | |

The outcomes in table 2 indicate that value portfolios do provide higher Treynors than growth portfolios. These results are consistent with the results obtained by Yen et al (2004). Despite the fact that Yen et al. (2004) only find statistical significance of Alpha and Treynor Yen et al.(2004) still documented that value stocks are more likely to yield higher return per unit of risk than growth stocks.

Higher betas exist on average for value portfolios as detailed in table 2, in association with higher standard deviations and positive value-growth spreads, indicate that value stocks are, according to theory, riskier than growth stocks.

According to Hillier et al (2010), riskier stocks should, by definition, provide higher return. This assumes that value stocks provide a fraction of higher return because of a compensation for risk.

### 4.2 Asset pricing model to explain the returns on value and growth stock

The results on the CAPM and the two-factor model are reviewed in order to identify whether these asset pricing models can explain the risk-adjusted returns on the value portfolios and growth portfolio. For an asset pricing model to explain the risk-adjusted returns on portfolios composed of value and growth stocks, the regression's intercept α of a portfolio's abnormal return on the market return should be indifferent from 0. If alpha might not be equal to 0 this means that part of the average portfolio return of value or growth stocks in excess of the risk-free rate is not explained by the CAPM and/or multi-factor model. Table 2 details the alpha by each emerging market examined and on average the intercept is 33 basis points above zero and for value stock and 15 basis points below zero for growth stocks. Further in table 3 the regression in CAPM in Panel A reflect there is no significant correlation. Therefore CAPM is unable to explain the risk-adjusted returns on value and growth stock. The outcomes on the intercept obtained from value portfolios conform to the findings of Fama & French (1998), Gonenc & Karan (2003), Petkova & Zhang (2005) & Cahine (2008). These scholars find that the CAPM is unable to explain the excess returns on value and growth portfolios.

*Two factor regression*

In order for the two-factor model to explain the risk-adjusted returns on value and growth portfolios, the intercept of the regression must be equal to 0. According to Fama & French (1993, 1998), Petkova & Zhang (2005) & Cahine (2008), the CAPM does not take into account the risk factors other than the excess return on the market. Therefore, a two-factor model is added towards this research. In order for the two-factor model to explain the risk-adjusted returns on value and growth portfolios, the intercept of the regression must be equal to 0. In previous studies, a multi-factor model showed improved capability in explaining risk-adjusted returns on value and growth portfolios while the CAPM failed both in individual countries and globally (Fama & French, 1998; Gonenc & Karan, 2003; Cahine, 2008). The estimates on equation 9 in table 3 shows that a two-factor model, with 'value minus growth' (VMG) as an additional factor, can explain the excess returns within value and growth portfolios as well. The two-factor model produces higher coefficient of determination $R^2$ than the CAPM. By adding the factor 'VMG', in the portfolios varies from significantly for value portfolios and for growth portfolios. According to Dougherty (2006) the coefficient of determination, or goodness of fit, should be at least 0.70 for the asset pricing model to be useful. In table 3 this is reflective where the outcome for two factor is greater than 0, 70 on all regressions performed. The intercept of the regression is 0 therefore the two factor model is able to substantiate the risk-adjusted returns as detailed in table 3.Further the regression analysis of the two-factor model illustrates a high correlation when the VMG factor is included in the regression analysis.

## **Table 3** CAPM and two factor regression models explaining risk-adjusted return on value and growth stock by country

Table details the results of the CAPM and multiple factor model for each of the value and growth portfolios of the five emerging market countries. α is the alpha; β is the beta; t(a) is the t statistic intercept; t(B=1) is the t statistic of the market less risk free; R2 is the R squared; s(e') is the standard error ;t(c) is the t statistic VMG.

| | Panel A :Capital asset pricing model | | | | | | Panel B :Two-factor model (VMG added as additonal factor) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | α | β | t(a) | t(B=1) | **R 2** | s(e') | α | β | t(a) | t(B=1) | t(c') | **R 2** | s(e') |
| **South Africa** | | | | | | | | | | | | | |
| **Value Portfolio** | | | | | | | | | | | | | |
| PE | 0,089 | 0,001 | 0,812 | 27,599 | **0,235** | 0,002 | 0,007 | -0,092 | -446,933 | 45,411 | 616,938 | **0,995** | 0,002 |
| CF | 0,081 | 0,003 | 2,053 | 32,336 | **0,297** | 0,002 | 0,007 | -0,110 | -459,174 | 48,979 | 573,359 | **0,995** | 0,002 |
| PB | 0,084 | 0,005 | 2,796 | 31,291 | **0,283** | 0,002 | 0,007 | -0,090 | -430,482 | 48,675 | 595,751 | **0,995** | 0,002 |
| PEG | 0,090 | 0,004 | 2,061 | 34,542 | **0,325** | 0,002 | 0,997 | -0,086 | -459,895 | 53,153 | 662,699 | **0,997** | 0,010 |
| **Growth Portfolio** | | | | | | | | | | | | | |
| PE | 0,092 | 0,000 | 0,248 | 42,427 | **0,421** | 0,002 | 0,006 | -0,110 | -574,167 | 62,055 | 734,725 | **0,998** | 0,010 |
| CF | 0,105 | -0,004 | -1,715 | 42,714 | **0,424** | 0,002 | 0,006 | -0,086 | -545,233 | 58,825 | 820,712 | **0,998** | 0,001 |
| PB | 0,094 | -0,000 | -0,058 | 43,625 | **0,434** | 0,002 | 0,006 | -0,073 | -490,146 | 65,114 | 769,953 | **0,998** | 0,001 |
| PEG | 0,068 | -0,000 | -0,246 | 36,405 | **0,349** | 0,001 | 0,007 | -0,148 | -450,391 | 52,092 | 489,405 | **0,994** | 0,002 |
| **India** | | | | | | | | | | | | | |
| **Value Portfolio** | | | | | | | | | | | | | |
| PE | 0,123 | 0,003 | 1,325 | 30,461 | **0,274** | 0,002 | 0,007 | -0,067 | -388,944 | 117,368 | 770,488 | **0,997** | 0,001 |
| CF | 0,112 | 0,006 | 2,671 | 28,666 | **0,251** | 0,002 | 0,008 | -0,019 | -109,620 | 99,564 | 617,020 | **0,996** | 0,001 |
| PB | 0,112 | 0,007 | 3,042 | 28,797 | **0,252** | 0,002 | 0,008 | -0,076 | -355,581 | 100,342 | 617,645 | **0,996** | 0,001 |
| PEG | 0,111 | 0,003 | 1,347 | 29,509 | **0,262** | 0,002 | 0,008 | 0,814 | 639,750 | 106,359 | 642,615 | **0,996** | 0,001 |
| **Growth Portfolio** | | | | | | | | | | | | | |
| PE | 0,042 | -0,063 | -62,097 | -123,276 | **0,861** | 0,001 | 0,010 | -0,069 | -174,598 | -20,385 | -205,215 | **0,990** | 0,005 |
| CF | 0,115 | 0,005 | 1,937 | 30,505 | **0,275** | 0,002 | 0,007 | 0,655 | 714,197 | 116,833 | 718,919 | **0,997** | 0,001 |
| PB | 0,024 | 0,909 | 314,882 | -317,942 | **0,976** | 0,003 | 0,009 | 0,803 | 121,675 | -2,441 | -130,830 | **0,996** | 0,007 |
| PEG | 0,070 | 0,003 | 2,228 | 23,874 | **0,188** | 0,001 | 0,009 | -0,066 | -236,723 | 86,667 | 334,547 | **0,986** | 0,003 |
| **Brazil** | | | | | | | | | | | | | |
| **Value Portfolio** | | | | | | | | | | | | | |
| PE | 0,109 | 0,002 | 1,032 | 38,442 | **0,377** | 0,002 | 0,008 | -0,083 | -398,969 | 107,881 | 627,354 | **0,997** | 0,001 |
| CF | 0,113 | 0,003 | 1,151 | 38,187 | **0,373** | 0,002 | 0,008 | -0,006 | -38,598 | 109,844 | 656,988 | **0,997** | 0,000 |
| PB | 0,127 | 0,003 | 1,066 | 38,384 | **0,373** | 0,003 | 0,008 | -0,073 | -387,967 | 108,066 | 745,370 | **0,998** | 0,001 |
| PEG | 0,083 | 0,002 | 1,052 | 37,940 | **0,370** | 0,002 | 0,008 | -0,011 | -63,995 | 103,558 | 0,002 | **0,994** | 0,000 |
| **Growth Portfolio** | | | | | | | | | | | | | |
| PE | 0,115 | 0,001 | 0,568 | 35,336 | **0,338** | 0,002 | 0,009 | -0,166 | -515,471 | 97,312 | 614,614 | **0,996** | 0,000 |
| CF | 0,104 | 0,001 | 0,640 | 38,055 | **0,369** | 0,002 | 0,008 | -0,230 | -543,059 | 105,851 | 589,373 | **0,996** | 0,002 |
| PB | 0,106 | 0,002 | 0,725 | 37,191 | **0,361** | 0,002 | 0,008 | -0,146 | -483,652 | 101,710 | 582,739 | **0,996** | 0,002 |
| PEG | 0,045 | 0,001 | 1,342 | 26,109 | **0,218** | 0,001 | 0,011 | -0,111 | -167,613 | 72,735 | 178,866 | **0,963** | 0,001 |
| **Argentina** | | | | | | | | | | | | | |
| **Value Portfolio** | | | | | | | | | | | | | |
| PE | 0,164 | 0,010 | 3,068 | 6,405 | **0,017** | 0,003 | 0,019 | 0,020 | 52,684 | 373,581 | 384,135 | **0,993** | 0,002 |
| CF | 0,174 | 0,012 | 3,458 | 5,208 | **0,011** | 0,012 | 0,019 | -0,081 | -182,703 | 378,284 | 414,745 | **0,993** | 0,002 |
| PB | 0,178 | 0,010 | 2,754 | 6,293 | **0,016** | 0,004 | 0,018 | -0,063 | -159,298 | 399,553 | 444,491 | **0,994** | 0,002 |
| PEG | 0,087 | 0,004 | 2,379 | 37,350 | **0,367** | 0,002 | 0,019 | -0,039 | -94,517 | 384,274 | 248,175 | **0,990** | 0,003 |
| **Growth Portfolio** | | | | | | | | | | | | | |
| PE | 0,147 | 0,009 | 3,167 | 6,235 | **0,016** | | 0,018 | -0,072 | -169,430 | 401,787 | 361,811 | **0,993** | 0,002 |
| CF | 0,156 | 0,006 | 1,893 | 6,790 | **0,019** | 0,003 | 0,018 | 0,038 | 102,879 | 401,409 | 386,511 | **0,993** | 0,002 |
| PB | 0,154 | 0,008 | 2,427 | 6,353 | **0,016** | 0,003 | 0,018 | 0,014 | 36,889 | 386,299 | 368,498 | **0,993** | 0,002 |
| PEG | 0,068 | 0,001 | 0,902 | 5,865 | **0,014** | 0,001 | 0,019 | -0,012 | -29,784 | 368,852 | 136,574 | **0,986** | 0,006 |
| **Nigeria** | | | | | | | | | | | | | |
| **Value Portfolio** | | | | | | | | | | | | | |
| PE | 0,107 | 0,003 | 1,404 | 17,106 | **0,107** | 0,002 | 0,008 | 0,089 | 419,608 | 132,512 | 620,474 | **0,995** | 0,002 |
| CF | 0,100 | 0,004 | 2,080 | 10,543 | **0,043** | 0,002 | 0,010 | 0,107 | 373,062 | 107,027 | 490,220 | **0,992** | 0,002 |
| PB | 0,105 | 0,004 | 1,731 | 14,136 | **0,076** | 0,002 | 0,009 | 0,122 | 441,094 | 119,493 | 559,256 | **0,994** | 0,002 |
| PEG | 0,082 | 0,001 | 0,616 | 9,194 | **0,033** | 0,002 | 0,010 | 0,012 | 60,700 | 105,184 | 397,967 | **0,987** | 0,002 |
| **Growth Portfolio** | | | | | | | | | | | | | |
| PE | 0,072 | 0,004 | 2,916 | 7,701 | **0,024** | 0,001 | 0,010 | 0,153 | 317,242 | 102,441 | 340,014 | **0,983** | 0,003 |
| CF | 0,102 | 0,004 | 2,052 | 16,478 | **0,100** | 0,002 | 0,008 | 0,103 | 450,078 | 136,542 | 598,731 | **0,995** | 0,002 |
| PB | 0,085 | 0,003 | 1,496 | 12,497 | **0,060** | 0,002 | 0,009 | 0,078 | 307,541 | 113,998 | 433,356 | **0,990** | 0,002 |
| PEG | 0,046 | 0,001 | 1,531 | 8,194 | **0,027** | 0,001 | 0,010 | 0,094 | 198,410 | 103,528 | 215,573 | **0,964** | 0,004 |

### 4.3 Difference in returns between the prices multiples

*Assessing* **Hypothesis 2:** *value and growth portfolios categorised on P/B yield higher return than value and growth portfolios categorised on P/E and P/C and PEG.*

Table 4 details results of value and growth stocks portfolios performance from 2006 to 2016, classified on P/E, P/B, P/C and PEG. Value portfolios are composed on the lowest 30 percent of all companies within each of the five countries whereby growth portfolios are composed on the highest 30 percent. The portfolios are also classified on the price-multiples. Panel A (B) shows the average portfolio return of P/B based portfolios and the difference between average return between P/E, P/C and PEG based portfolios for value (growth) portfolios as well as the difference in standard deviations. The t-statistics (p-value) are derived from a two-sample.

Fama & French (1998) contend that using price-to-book as a classification tool provide an investor higher return than classifying portfolios by other multiples. This was also acknowledged by Bauman et al. (1998) and Davis & Lee (2008). Fama & French (1998) and O'Shaugnessy (2005) argue that portfolios classified by means of price-to-book yield a higher return than other multiples due to the level of volatility. Book value is, according to these scholars is less volatile than earnings or cash flows, which gives a mode of certainty towards investors. Fama & French (1998; 2007) document that value portfolios grouped on book-to-market (as an equivalent to P/B) provides significantly higher and more consistent returns than portfolios grouped on other multiples. This result was also found by Bauman et al. (1998). These scholars also argue that P/B is one of the most predominant explanatory variables towards cross-sectional returns as was performed in the United States. Davis & Lee (2008) entirely devoted their research of value and growth stocks on the performance of multiples. These scholars contend that the best choice of grouping portfolios of value and growth stocks is by the usage of B/P (as an equivalent of P/B) compared to E/P and C/P (as equivalents to P/E and P/C).

**Table 4** Difference in value and growth portfolio returns of P/B when compared to P/E, P/C and PEG based portfolios.

Portfolios of value and growth stocks returns of P/B compared to portfolio classified on P/E, P/C and PEG. Panel A (B) shows the mean returns, mean differences, t test and p-value, the F-statistic and significance between groups are derived from ANOVA. The t-statistics (p-value) are derived from a t-test.

| | Panel A- Value | | | | | | Panel B- Growth | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean returns | Mean Diff | t-test | p-value | Std. Dev | Diff | Mean returns | T-tesst | t-test | p-value | Std. Dev | Diff |
| **South Africa** | | | | | | | | | | | | |
| P/B | 59% | | | | 0,21 | | 17% | | | | 0,24 | |
| P/E | 26% | 33% | 6,94 | <0,00001 | 0,23 | -0,02 | 22% | -5% | -0,94 | 0,176577 | 0,23 | 0,00 |
| P/CF | 45% | 14% | 2,98 | 0,002502 | 0,22 | -0,01 | -16% | 33% | 6,14 | <0,00001 | 0,26 | -0,02 |
| PEG | 51% | 8% | 2,47 | 0,009058 | 0,00 | 0,21 | 8% | 10% | 2,26 | 0,014818 | 0,14 | 0,10 |
| **India** | | | | | | | | | | | | |
| P/B | 77% | | | | 0,25 | | 44% | | | | 0,25 | |
| P/E | 42% | 35% | 6,66 | <0,00001 | 0,23 | 0,02 | 61% | -17% | -3,29 | 0,001084 | 0,24 | 0,00 |
| P/CF | 69% | 8% | 1,52 | 0,068394 | 0,24 | 0,00 | 41% | 2% | 0,46 | 0,324069 | 0,23 | 0,02 |
| PEG | 51% | 26% | 5,15 | <0,00001 | 0,21 | 0,04 | 36% | 8% | 1,79 | 0,40712 | 0,15 | 0,09 |
| **Brazil** | | | | | | | | | | | | |
| P/B | 30% | | | | 0,22 | | 17% | | | | 0,21 | |
| P/E | 25% | 5% | 1,07 | 0,145684 | 0,21 | 0,01 | 15% | 2% | 0,49 | 0,313476 | 0,23 | -0,02 |
| P/CF | 28% | -3% | -0,32 | 0,375361 | 0,24 | -0,02 | 15% | 2% | 0,45 | 0,327634 | 0,21 | 0,00 |
| PEG | 19% | 9% | 2,64 | 0,00598 | 0,15 | 0,07 | 13% | 4% | 1,32 | 0,097366 | 0,07 | 0,14 |
| **Argentina** | | | | | | | | | | | | |
| P/B | 97% | | | | 0,29 | | 68% | | | | 0,29 | |
| P/E | 100% | -3% | -0,47 | 0,320521 | 0,28 | 0,00 | 93% | -25% | -4,13 | 0,000096 | 0,26 | 0,03 |
| P/CF | 121% | -24% | -3,85 | 0,00022 | 0,28 | 0,01 | 58% | 10% | 1,87 | 0,034601 | 0,44 | -0,15 |
| PEG | 54% | 43% | 8,26 | <0,00001 | 0,19 | 0,10 | 12% | 56% | 11,95 | <0,00001 | 0,09 | 0,20 |
| **Nigeria** | | | | | | | | | | | | |
| P/B | 41% | | | | 0,25 | | 16% | | | | 0,23 | |
| P/E | 29% | 12% | 2,16 | 0,018573 | 0,25 | -0,00 | 42% | -26% | -5,44 | <0,00001 | 0,23 | - |
| P/CF | 41% | 0% | -0,02 | 0,492074 | 0,25 | 0,01 | 41% | -25% | -4,82 | 0,000012 | 0,24 | -0,01 |
| PEG | 21% | 20% | 3,93 | 0,000174 | 0,22 | 0,03 | 14% | 2% | 0,58 | 0,282669 | 0,09 | 0,14 |

Panel A reflects that mean differences for South Africa, India and Nigeria value portfolios categorised on price-to-book value have outperformed the price-to-earnings, price-to-cash flow and price-to-earnings growth . There is significance for price-to-earnings for South Africa, India and Nigeria as the t test values and (p-values) are 6.94 (<0.00001); 6.66 (<0.00001) and 2.16 (0.018573) respectively. There is significance for price-to-earnings growth for South Africa, India and Nigeria as the t test values and (p-values) are 2.47 (<0.009058); 5.15 (<0.00001) and 3.93 (0.000174) respectively. The price-to-cash flow is only significant in South Africa as the t-test value and (p-values) of 2.98 (0.002502).In Brazil and Argentina the price-to-book only outperformed the price-to-earnings growth as the t-test of 2.64 and 8.26 respectively and a p-value of <0.00001 for both countries respectively.

There are no significant difference in the standard deviation of price-to-book when compared to the other price-multiple.

Table 4 Panel B reflects the t-test on growth stock when comparing price-to-book to the other price multiples did not outperform over the 10 year period with exception of price-to-cash flow in South Africa and Argentina with t-test and (p-value) of 6.14 (<0.00001) and 11.95 (<0.00001) respectively. From the viewpoint of Lakonishok et al. (1994) and Chan & Lakonishok (2004) this is logical. These scholars contend that companies categorised as growth stocks might have intangible assets that are not reflected in the annual audited reports because most of these assets are expensed. However, another possible reason, as Lakonishok et al. (1994) and Chan & Lakonishok (2004) contend, is that those companies might also have attractive growth opportunities that have its influence on the market price immediately, which can occur on a yearly base or are established on the long-term. Since the possibility arises that a stock is classified as value in year 2007 and as growth in 2008. From the viewpoint of Lakonishok et al. (1994) and Chan & Lakonishok (2004), this means that when, for example, a company, which is marked as a value stock in year x, creates a growth opportunity that has its direct effect on the market price in year y. When other companies do not create equal growth opportunities, this value company becomes, as compared to the market, a growth company in year y. Cahine (2008) argue that using several price-multiples when analysing portfolio returns in different countries would provide more applicable results since portfolios are classified from different perspectives.

## Chapter 5: Conclusion

The amount of research done on value and growth stocks is wide-spread and mainly examines the US and European markets. Various scholars studied value and growth stocks in different settings. However, there are always some gaps to be discovered in order to contribute and extend the research on this matter. This research specifically examines the value and growth stock portfolios in emerging markets setting and I have also added to the price-earnings-growth analysis where in previous research mainly analysed the performance of the price-to-book ratio, price-to-cash flow ratio and price-to-earnings ratio. The price to earnings growth has been proven by Peter Lynch to be a profitable investment strategy.

### 5.1 Conclusion

Previous studies documented that value stock portfolios yield superior returns as compared to portfolios composed of growth stocks in various settings and through time. My research on value and growth stocks although in the emerging market setting does conform towards previous empirical evidence. The outcomes (t-statistics and p-values) of the two-sample t-test are statistically significant to provide support for a statistical difference. Therefore, hypothesis 1, which stated that value stock portfolio outperform growth stock portfolio is rejected. From the outcomes obtained, I conclude that, statistically, portfolios composed of value stocks do outperform portfolios composed of growth stocks during a long term period in emerging markets.

The results obtained from regression on asset pricing models indicate that CAPM cannot explain the excess returns as the intercept is not zero however the two-factor model can explain the return in excess of the risk-free rate for value and growth portfolios. From a statistical and practical point of view the two-factor model can explain these excess.

Previous research indicates that value and growth portfolios categorised on price-to-book yield higher returns than value and growth portfolios categorised on other price multiples. These scholars support the argument that book value remains, to some degree, equal while the earnings and cash flow rise and fall on a yearly base. This is consistent for value stock portfolio with the results from ANOVA on the average returns of the price-multiples show that portfolios classified on P/B does provide higher average monthly return. This conclusion cannot however be applied to growth stocks as I fail to reject the hypothesis. I have rejected the null-hypothesis and conclude that P/B based value portfolios does provide statistically higher returns than P/E, P/C, and PEG based portfolios during the long term period. However do note that this hypotheses I failed to reject for portfolio created for growth stock. This conclusion provides an answer to the second sub-question however only limited to value stock, whether value and growth portfolios classified by P/B provide a higher return than value and growth portfolios classified by other multiples.

### 5.2 Limitation and Implications for future research

One of the significant limitations concerning the research within this thesis is the sample size used where only 5 emerging markets of the 152 countries listed by the International Monetary Fund and in each country a sample of 80 companies were examined. Therefore reaching statistical conclusion makes it difficult to generalize towards other countries.

The outcomes on the return produced by value and growth portfolios yield another limitation, the transaction costs are not included within returns. According to Harris & Marston (1994), this results in a limitation since the outcomes of the statistical test on whether value stocks yield higher return than growth stocks during the long term give suggestions regarding market opportunities. These scholars contend that it does not provide overwhelming evidence whether a particular trading strategy could have been profitable over another. While the stock quotes of companies included within value or growth portfolios are collected from free available databases there exists a survivorship bias. The stock quotes could not be found in case of delisting where excluded however, according to Fama & French (1998) and Black & McMillian (2004, 2006), the level of survivorship bias is reduced when the historical data of delisted firms are taken into account on the month or year of delisting while the historical data of newly added firms are not included. Bird & Casavecchia (2007) contend that studying indices that include international companies reduced the amount of survivorship bias since it can be assumed that large international companies are not often delisted as compared to small companies in small indices. Therefore, it can be assumed that a degree of survivorship bias exist within this thesis due to databases used, however, the level of survivorship bias is reduced due to the methods proposed by various scholars. As written in the theoretical framework, Graham & Dodd (1934) were one of the first to accept the separation of value and growth stocks. While Graham & Dodd (1934) define value and growth stocks from the viewpoint of performance and market average, they also contend that value stocks are undervalued because the market misprices the company's intrinsic or fundamental value. However, it is challenging to contend whether value and growth stocks are under and overvalued based on price-multiples used to classify value and growth stocks. Pinto et al. (2010) argue that affirming a stock as under or overvalued incorporates a valuation model based on the value of a company's assets plus the net present value of its growth opportunities (PVGO). This then means that growth in and of itself is only value-creating if the company's future project generates positive NPV's (Brealey et al., 2007; Bodie et al., 2009). When these growth opportunities are non-existent or the outcome is equal to 0, the value of a firm's stock is equal by the dividends paid on earnings divided by its cost of equity (Pinto et al., 2010). Therefore, to study whether value stocks are undervalued and growth stocks are overvalued during the long term period of 10 years, research should be performed in reference with the value of the firm and its associated growth opportunities.

In this thesis, I used the equal-weighted approach to construct portfolios of value and growth stocks based on different price-multiples. While the value-weighted approach to construct portfolios has the drawback by means of domination of blue-chips, some scholars used this type of portfolio construction in order to scrutinize the difference between value and growth stocks based on the value- and equal-weighted approach. Fama & French (1998) find that the value premium based on value-weighted portfolios provide, on a yearly average, 2.78 percent higher value premiums than equal-weighted portfolios. Black & McMillian (2004) find contradictory results. They contend that value-weighted portfolios are too dominated by blue-chips, which result that the performance of value-weighted portfolios is decline when the performance of blue-chips value and growth stocks declines. Brown et al. (2008) found equal results when studying the Asian market. Brown et al. (2008) contend that equal-weighted portfolios provide, on an average one-year holding period, 1.593 percent higher value premium than value-weighted portfolios. An implication for future research on this matter enfolds in studying portfolios comprise of value and growth stocks based on the value-weighted approach in order to examine which approach provide investors the highest total return and return per unit of risk.

Another implication for future research refers towards the under and overreaction in value and growth stocks made by investors. In the behavioural explanation of the value premium, I discussed that various scholars accept that the value premium arises due to the extrapolation and biases that investors make on past earnings and growth rates (see e.g., Lakonishok et al., 1994), Chan & Lakonishok; 2004) and Huang & Yang; 2008). According to Lakonishok (1994), individuals and investors leaning towards the application of unpretentious in the decision making practices. This could lead towards the existence of denouncing partialities in both the investor's decision making and behaviour.

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