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Value vs. Growth Stocks

Do Value Stocks Outperform Growth Stocks? Stockholm Stock Markets, 1995-2009

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SAMMANFATTNING

Denna studie undersöker om en investering i värdeaktier kan generera en bättre avkastning jämfört med en investering i tillväxtaktier.

Historisk data för aktier som handlats på Stockholmsbörsen har sammanställts från diverse källor. Till exempel *Börsguide* och från databasen *Thomson Reuters Ecwin Pro*. Med hjälp av denna och övrig relevant historisk sekundärdata har aktier grupperats in i värde- och tillväxtportföljer beroende på deras P/E-tal i fem portföljer med olika köp- och innehavstider som sträcker sig från 12 upp till 60 månader mellan åren 1996 och 2009.

Inom varje innehavstid för de olika portföljerna har antalet av värde- och tillväxtaktier varierat. Från, till exempel, 11 aktier under period ett till 20 aktier under period fem. Aktier har ”köpts” och hållits kvar med en inledande investeringar på 20000 SEK i början av varje portföljs innehavstid med hänsyn till studiens syfte.

Avkastningen för dessa investeringar beräknas med tre olika genomsnittliga avkastningsberäkningar. *Årliga medelprisavkastningar, innehavsavkastningar och riskjusterade avkastningar*. Beräkningar har gjorts för årlig innehavsperiod, för hela innehavsperioden och för alla portföljers innehavsperioder tillsammans. Utifrån resultaten för dessa beräkningar har utvecklingen för värde- och tillväxtaktier analyserats.

När all fem portföljer jämförs tillsammans och den årliga medelvärdesavkastningen beräknats, så genererar värdeaktierna i genomsnitt 15,1 % högre avkastning än tillväxtaktier gällande en årlig genomsnittlig riskjusterad avkastning. Resultatet för innehavsavkastning är i genomsnitt 5,6 % högre än för tillväxtaktierna.

De här resultaten tyder på att en investering i värdeaktier, genom att använda historisk fundamental information, kan generera en bättre avkastning jämfört med tillväxtaktier. Följaktligen kan man försiktigt hävda att Stockholmsbörsen tycks uppvisa egenskaper gällande en semi-stark form av den effektiva marknadshypotesen.

ABSTRACT

This study tries to examine if investment in value stocks (poor performing stocks) can generate superior returns over investment in growth stocks.

Historical stock data for stocks traded in Stockholm stock markets are collected from various sources such as *Börsguide* and *Reuters Thomson Ecowin Pro* database. Using these and other relevant secondary historical data, stocks were grouped into value and growth portfolios depending on their P/E-multiples for five buy and hold periods which range from twelve months up to sixty months between investment periods 1996 and 2009.

In each portfolio holding period, different numbers of value and growth stocks, ranging from, for example eleven stocks in period one, to twenty stocks in period five are purchased and held for an initial investment of 20000 SEK at the beginning of each portfolio holding period for the purpose of the study.

The returns to these investments are computed for three different average return measurements. These are annual Mean Price Returns, Holding Period Returns and Risk-Adjusted Returns for each of the portfolio holding year, for the entire holding periods as well as for the entire portfolio holding periods combined together. Using the spread between these measures, the performances of both value and growth stocks are analyzed.

When all the five portfolios are combined together and the mean annual rate of returns are computed, value stocks outperform growth stocks by an average of 15.1 % mean annual Risk-Adjusted Return Rate. The result for Holding Period Return is an average of 5.6 % higher than the growth stocks.

These results indicate that investment made in value stocks identified using historical fundamental data can generate superior returns than growth stocks. Consequently, it can cautiously be argued that Stockholm stock markets appear to exhibit the characteristics of the semi-strong form of the Efficient Market Hypothesis.

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1. INTRODUCTION

This chapter gives an overview of the long-going debate as well as the main actors involved from different camps regarding the efficiency of capital markets in general and the issues revolving around the contentious topic of identifying underperforming stocks and earning superior returns (value premiums) than what other market participants could obtain.

1.1. Background

The desire to improve upon one's present condition and attain a better station seems a character shared by at least fairly ambitious human beings. That desire drives each individual at various directions in pursuit of what they might consider a better station in life in their particular ways.

Those who have a gift for enterprise and a taste for excellence in business endeavours purposefully search for opportunities that generate better rewards. One of those areas is investment. Individuals as well as companies engage in the production, distribution and consumption of goods and services in order to gain rewards for their endeavours.

Capital markets have for long been serving this purpose by being one of the major hubs that help pool resources from various corners and facilitate the smooth running of the overall economic activities. Actors in the capital market as much as they expect to get rewards from the normal business activities have also been actively trying to find ways that can help them go a mile a head of the crowd.

One of the techniques that are said to be used on capital markets by certain investors is value investing. Value investing is identifying securities, using fundamental variables, which are deemed underperforming by the market and investing in them and harvesting hefty rewards. Mr Warren Buffett, one of the foremost contemporary proponents of value investing, argues that:

The common intellectual theme of the investors from Graham- and –Doddsville is this: they search for discrepancies between the value of a business and the price of a small piece of that business in the market. Essentially, they exploit these discrepancies without the efficient market theorist's

concern as to whether the stocks are bought on Monday or Thursday, or whether it is January or July, etc.¹

This view, obviously, is not shared by all. There are those, supposedly dominated by academics, who strongly argue against the view that investors can beat the market. They attempt to show that in a market filled by rational and self-interest driven investors, it is impossible to predict the future price movement of securities significantly different from the others and earn hefty returns.

Researches have been conducted at different times and on various markets around the world to reinforce one school or disprove the models and hypothesis of the other. As might be expected in any similar intellectual engagements of merits, both schools seem to continue to thrive with their adherents diligently working to enrich their positions with new supporting evidences and further development of their models that expand the research frontier.

From the modest material search that we have conducted both in the library and online, it seems that there is very little material to indicate that extensive researches have been conducted on this topic on Stockholm stock markets.

This modest study, therefore, is an attempt to take up a few of these research topics and test them against Stockholm stock markets and try to observe how value stocks and growth stocks performed within the selected time period.

1.2. Problem Discussion

The existing economic system and most of the institutions functioning under it appear to get better organized and more complex from time to time. One of these institutions is capital markets.

Despite advances in technologies, accumulation of data and knowledge and countless theories and models that explain their characteristics and functioning, capital markets in particular and the overall economy in general have not yet escaped the tight grips of intermittent abnormal

¹ Warren E Buffet, 'The Super investors of Graham-and-Doddsville', Speech delivered in 1982 at Columbia University, commemorating the fiftieth anniversary of 'Security Analysis'. Presented as exhibit in Glen Arnold's Corporate Financial Management, 2nd edn (Harlow, England: Pearson Education Limited, 2002), pp 627-631.

tendencies and cyclical fluctuations. Such anomalies continue to guide researchers towards closer examinations and continuous formulation of hypothesis, theories, and models to fully explain the behaviours of both the capital markets as well as the human actors involved in those markets.

The study of the characteristics of the capital market has divided, roughly stating, the academic and investor communities into two schools. While the adherents of EMH strongly argue that the market is efficient, the other school stress that there are at least pockets of inefficiencies that can be identified and the behavioural dimensions of market actors that might lead to inefficiencies or superior returns on investments.²

Eugene Fama, one of the main proponents of the efficient market hypothesis, states that:

A market in which firms can make production-investment decisions, and investors can choose among securities that represent ownership of firms' activities under assumption that security prices at any time 'fully reflect' all available information. A market in which prices always 'fully reflect' available information is called efficient.³

This hypothesis lays the foundation for the general assertion that prices movements in the capital markets do not follow a given pattern that an investor can study through careful examination of historical data and then be able to predict future price movements. In short, this theory and its predecessor the theory of random walk in stock market prices explain that prices do not follow any pattern but instead make random walk that no one investor can use past prices as the basis to make future price predictions.

In situations where market participants make predictions of the future price movements, the hypothesis clarifies, it is not a single participant but all rational market participants that simultaneously arrive at similar forecasts and hence no one single investor is in a better position to beat the general market for a longer period of time.

This theory is augmented by another economic theory that presupposes market participants as rational agents who always try to maximize their utilities. Consequently, the moment the capital market exhibits a mismatch between prices of securities and incoming relevant information, these rational investors would immediately seize upon it and drive prices back to

² Chan, Louis, K.C. and Lakonishok, Josef, 'Value and Growth Investing: A review and Update', Financial Analysts Journal Vol. 60, No. 1 (Jan. - Feb., 2004), pp 71-86.

³ Eugene F. Fama, 'Efficient Capital Markets: A Review of Theory and Empirical Work', Journal of Finance, 25, Issue 2 (1969), 383-417.

their normal levels.⁴ This, according to the EMH makes it impossible to beat the market for a meaningful length of time and earn above normal or average rates of return on investments with similar levels of risks. Fama further explains the efficiency of capital markets and the behaviour of rational investors as follows:

If the discrepancies between actual prices and intrinsic values are systematic rather than random in nature, then knowledge of this should help intelligent market participants to better predict the path by which actual prices will move towards intrinsic values. When the many intelligent traders attempt to take advantage of this knowledge, however, they will tend to neutralize such systematic behavior in price series.⁵

Those levels of returns that appear to defy this theory or seen as anomalies, the proponents of EMH explain, are not outcomes of the inefficiency of markets but are results of one or some of the following conditions: sheer luck, the small-firm-in-January effect, the neglected-firm effect, post-earnings-announcement price drift and other related aspects.⁶

Despite the persuasiveness of the EMH, there is yet another model, which is said to be preferred by professors in universities, in finance that shows security analysis can lead to the identification of overvalued and/or undervalued assets. This model is commonly referred to as Fundamental Securities Analysis Model. It “uses earnings and dividend prospects of the firm, expectations of future interest rates, and risk evaluation of the firm to determine proper stock prices.”⁷

The categorization of stocks as value and growth is the result of the application of the Fundamental Analysis Model applied upon individual securities. Adherents of this model contend that with due diligence and the inclusion of proper parameters, securities undervalued by the market can be identified and invested in to earn above normal rate of return.

When discussing the efficiency of a capital market, the issue of the dominant firms in the market and their sensitivities to business cycle fluctuations is an aspect that might be considered as it might have a great impact on the results observed.

For example, among the stocks quoted on Nasdaq OMX Nordic, the three most traded large cap companies for trading years 2009 and 2010 were Nokia, Ericson and H&M. The first two

⁴ Eugene F. Fama, ‘Random Walks in Stock Market Prices’, *Financial Analysts Journal*, (September-October 1965), p. 56.

⁵ *Ibid.*, pp. 55-59.

⁶ Zvi Bodie et al., *Investments*, 7th edn (New York: McGraw-Hill, 2008), p. 363.

⁷ *Ibid.*

are technology companies while the third company belongs to retail industry.⁸ There are no sufficient previous studies that show the effects of the dominance of a given market by particular industry on the value-growth returns in global markets and it is difficult to find such material on Stockholm stock markets. Since the Stockholm stock market is dominated by technology stocks which are thought to be highly sensitive to business cycle fluctuation, the changes in GDP might have reflected in the performances of both value and growth stocks.

However, a recent study conducted on Canadian market for the period 1985-2005 managed to observe the prevalence of value stocks during both recessions and recoveries even though half the market capitalization was taken up by natural resources and financial services sectors which are assumed to be sensitive to business cycle fluctuations.⁹

1.3. Research Questions

The study concentrates on the following main questions.

- ❖ Does a portfolio of value stocks outperform a portfolio of growth stocks?
- ❖ Does a portfolio of value stocks outperform the market index?
- ❖ Do the relative performances of portfolios of both value and growth stocks remain the same when the GDP decreases and increases?

1.4. Purpose

The purpose of this study is to investigate if investments in value stocks can generate superior returns than investments in growth stocks in Stockholm stock markets. Parallel with that, a study of how portfolios of both value and growth stocks perform when compared to the performance of the OMXS 30 market index is made. Moreover, closer examination of the performances of both value and growth stocks under periods of both rising and falling GDP are conducted. Based on the results of the parameters mentioned above, the study will look at the characteristics of the Stockholm stock markets in the rigour of the Efficient Market Hypothesis and examine which market behaviour is dominantly exhibited.

⁸ Nasdaq OMX, Statistics 2010 the Nasdaq OMX Group (2011-01-04), http://nordic.nasdaqomxtrader.com/digitalAssets/73/73391_statistics_dec_2010_eur.pdf. (Accessed 2012-04-09)

⁹ George Athanassakos, Value versus Growth Stock Returns and the Value Premium: The Canadian Experience 1985–2005, *Canadian Journal of Administrative Sciences*, *Revue canadienne des sciences de l'administration* 26: 109–121 (2009)

1.5. Perspective

This study is conducted from the perspective of an investor, mainly an institutional investor that has the resources to leave significant mark on the market.

1.6. Delimiting

The study collects historical fundamental data for companies traded in Stockholm stock market from 1995 up to 2009. This is a period for which there is sufficient stock information easily accessible and assumed to be sufficient to make comparison of the performance of both value and growth stocks. Furthermore, the study concentrates on five portfolio holding periods, namely 1996 - 1999, 1999 - 2004, 2004 – 2005, 2005-2006 and 2006 – 2009. These are the periods that have shown significant change in annual GDP growth rate according to GDP data obtained from Statistiska Centralbyrån (Swedish Central Statistics Bureau).

2. THEORETICAL FRAMEWORK

This chapter introduces the relevant theories such as Efficient Market Hypothesis and Portfolio Theory and the main models used in this study such as Fundamental Valuation and Risk-Return calculations Models. Summarized introduction to each of the selected relevant previous studies and a brief overview of the research frontier are also provided.

2.1. Efficient Market Hypothesis (EMH)

This theory is selected because it is one of the basic theories in finance that stipulate that in ideal capital markets there is no way that an investor can identify value stocks that the other market participants have not identified. After additional researches in the field, the hypothesis is further expanded to include three characteristics that describe a capital market. In this study, the results and analysis shall be used to identify the characteristic of Stockholm stock markets according to the behaviours of a market that the EMH postulates.

EMH describes that prices of securities at any time fully reflect all available information. Depending on the nature of information asymmetry that market actors might face, it is divided into strong, semi-strong and weak forms of EMH. When explaining this sub-categorization of the hypothesis, Fama contends that it:

Will serve the useful purpose of allowing us to pinpoint the level of information at which the hypothesis breaks down. And we shall contend that there is no important evidence against the hypothesis in the weak and semi-strong form tests (i.e., prices seem to efficiently adjust to obviously publicly available information), and only limited evidence against the hypothesis in the strong form tests.¹⁰

The study tries to use this theory to understand and categorize the characteristics of the Stockholm stock markets. If the Stockholm stock markets are efficient then there would be no significant return on investments in value stocks that are above the market returns. If, however, value stocks outperform growth stocks it indicates that Stockholm stock markets are not efficient and thus which variants of EMH hypothesis is relevant shall be studied closely.

¹⁰ Eugene F. Fama, 'Efficient Capital Markets: A Review of Theory and Empirical Work', *Journal of Finance*, 25, Issue 2 (1969), 383-417.

The weak form:

Weak efficiency - The price follow a random walk. This means that the price reflects all historical information. Investors cannot predict the future price by historical information.¹¹ In other words, the weak form of EMH rejects the application of technical analysis.

The semi-strong form:

Semi-strong efficiency refers to the price reflected in all public information. Public information includes annual accounting reports, stock splits, new stock issues and the likes. One cannot predict a future price using all public information.¹²

The strong form:

Strong efficiency implies that the price is reflected in all public information and insider information. This means that investors cannot predict the future price of securities using all available information and insider information.¹³

2.2. Criticism Against EMH

Criticism has been raised against the EMH assertion that investors in the financial markets are rational. Behavioral Finance criticizes EMH by stating that it ignores the way investors make decisions which in turn affects the market. The basic assumption in Behavioral Finance is that people do not act rationally but rather irrationally when making complex decisions. It argues that people do not always interpret and perceive information correctly and therefore make miscalculations, regarding the future returns.¹⁴

In summary, there is a wealth of phenomena in Behavioral Finance that acts as counterarguments against the EMH, in terms of misinterpretation of information. It is said that people have too much confidence in their own abilities that makes them overestimate their knowledge. People make miscalculations because they take too much account of past experience and recent events to predict future occurrences.¹⁵ Furthermore, some believe that people are separating decisions that they rather should combine and that investors are too

¹¹ Hillier et al., *Corporate Finance*, European edn (Berkshire: McGraw-Hill, 2010,) pp.352-353.

¹² Ibid, pp.353-354.

¹³ Ibid, p.354.

¹⁴ Bodie et al. *Investments*, 6th edn (New York: McGraw-Hill, 2005), p.396.

¹⁵ Ibid, p.397.

slow to absorb new information, which can lead to a misleading price of a share.¹⁶

People's irrational behavior is the cornerstone of Behavioral Finance which is contrary to EMH argument. Despite the criticisms raised against EMH, the hypothesis remains as a basic assumption among economists and researchers that informs further studies.

2.3. Portfolio Theory

Though this study is based on a posteriori results (realized results), the theory is selected because it explains how investment decisions are made, in the first place. Portfolio theory explains how investors can construct portfolios of assets that meet the level of their risk sensitivities and earn them maximum returns.

It describes how risky securities are priced by relating risk, systematic risk, and the level of expected returns. The ground assumption is that investors calculate the payoffs according to the risk level they are willing to bear when constructing either value or growth stocks.

An important effect of this is that the portfolio total risk can be reduced without producing a lower return. According to Ridder, you must therefore not "put all your eggs in one basket." A portfolio should preferably consist of different securities to reduce risk.¹⁷

2.3.1. Portfolio Risk and Historical Rate of Return

Markowitz defines an investment risk in terms of the yield volatility, with the standard deviation as risk measure. The standard deviation calculated from the investment's average deviation from the mean and expressed as a percentage, the same unit for the return. If returns are normally distributed, it shows an indication of the actual return relative to expected returns.¹⁸ The standard deviation is also the most important risk measure of price changes for a security in the financial analysis.¹⁹

¹⁶ Bodie et al. *Investments*, 6th edn (New York: McGraw-Hill, 2005), p.398.

¹⁷ Adri De Ridder, *Företaget och de Finansiella Farknaderna*, 2nd edn (Stockholm: A. De Ridder, 1996), p.76.

¹⁸ Ibid, p.77.

¹⁹ Hans Byström, *Finance – Markets, Instruments & Investments*, (Lund: Studentlitteratur AB, 2011) p.47.

To study the behaviour of the return of the two categories of portfolios that have been selected and to compare them with each other as well as with the market index, it is essential to compute the historical rate of return for value and growth stocks, and the OMXS 30 market index.

When calculating the return of the stocks over time, the formula for Holding Period Return (HPR) is used. HPR takes into account any increase/decrease in stock price plus dividends, if any, where returns are reported in percent. HPR assume that dividends are paid at the end of the holding period.²⁰

$$\text{HPR} = \frac{\text{price}_{\text{ending}} - \text{price}_{\text{beginning}} + \text{dividend}}{\text{price}_{\text{beginning}}}$$

For further calculations of the portfolio return over time, the geometric average return is calculated. This return shows the average increase/decrease in returns over a specified period.²¹

$$\text{Geometric Mean Return} = \left[(1 + r_1) \times (1 + r_2) \times \dots \times (1 + r_n) \right]^{\left(\frac{1}{n}\right)} - 1$$

Risk-Free-Rate: the rate of return one gets by investing on short-term government securities. Due to assumed ability of the government to raise taxes and pay back its debt; these securities are treated as risk-free assets. The study takes historical data about *Statsskuldväxlar 3 mån* interest rates in computing the performances of the portfolios. Since the study calculates the rate of returns for all portfolios on yearly basis it would have been more appropriate to use the interest rate on government bond with one year maturity but it is not easily to find historical data on such Swedish government bonds.

Equity risk premium is the difference between the rate of return to risky stocks and the risk-free short-term government bonds. This is the reward that an investor gets by investing in risky stocks instead of investing in the risk free government bonds.

²⁰ Bodie et al., *Investments*, 7th edn (New York: McGraw-Hill, 2008), p.124.

²¹ Hillier et al., *Corporate Finance*, European edn (Berkshire: McGraw-Hill, 2010), p.247.

2.3.2. OMX Stockholm 30 Index (OMXS 30)

The study uses OMX Stockholm 30 Index. It is selected because it is made up of 30 most actively traded stocks in Stockholm Stock Exchange. Moreover, OMXS 30 is a market weighted index that is reviewed every two years.²² Historical data for OMXS 30 between 1996 and 2009 is collected and used to compare the performances of both value and growth portfolios against the Stockholm stock market during the study period.

2.3.3. Risk Adjustment

Sharpe measure: $\left(\frac{\bar{r} - r_f}{\sigma_p} \right)$ measures average portfolio excess return over the sample period divided by the standard deviation of returns over the period.

This financial calculation is the most popular model for measuring risk-adjusted returns. The return of various portfolios must be risk-adjusted before they can be compared, since different portfolios have varying risks. The Sharpe ratio is a ratio used to calculate the risk-adjusted return on an investment and shows how much return per unit of total risk as the portfolio manager has performed.²³

Since investors, according to portfolio theory, want to receive the highest return possible per measurement of risk, this method will be ideal for the purpose of this study.

If a portfolio shows a higher Sharpe ratio, it implies that it has attained a higher risk-adjusted return with a good balance between risk and return. This ratio is calculated by taking the portfolio's return, subtracted by the risk free rate (3 month T-bill) divided by the portfolio's standard deviation.²⁴

The core of this study is to find out if value stocks outperform growth stocks with in the selected study period. Since all investments entail some degree of risk, the returns to those investments can not relatively be judged without taking into consideration those risks. The

²² Nasdaq OMX, OMX Stockholm 30, Methodology.

<https://indexes.nasdaqomx.com/Data.aspx?IndexSymbol=OMXS30>(Accessed 2012-05-02).

²³ Bodie et al., *Investments*, 8th edn (New York: McGraw-Hill, 2009), p.825.

²⁴ *Ibid*, p. 826.

study is adjusts all returns to their risks and then tries to compare both value and growth stocks and see which one is giving a superior payoff than the other.

2.4. Valuation Models and Fundamental Analysis Models

Dividend discount models (DDM) and Constant-growth dividend discount model (CDDM) are two prominent measures for valuing securities. The DDM is used to get the present price of a security by discounting its dividend payout and future sale value by using this formula.

Specifically, fundamental analysis uses variables such as P/E , price-to-book value (P/BV), market-value-to-book-value (MV/BV), market capitalization, cash-flow-to-price (C/P), and dividend-to-price (Div/P) multiples together with the DDM to identify equities that are undervalued, called value stocks, by the market.

This model is discussed here in order to help the reader appreciate that in a real world investment decision making process, investors make a priori evaluations (expected returns) using these variables to identify value and growth stocks.

Using one variable of the fundamental evaluation model namely price-earning-multiple, the study constructs both value and growth stocks for the five buy and hold portfolio periods.

2.5. Previous Researches

The performance of value stocks over growth stocks has attracted many researchers who attempt to unravel the underlying cause for this phenomenon over the years. At different times and on different markets studies were conducted and testes were performed.

Here attempts are made to recast a few of these studies. Market studied, time period, variables studied and methods employed for sample selection and analysis and results of the studies are summarized below for comparison.

2.5.1. Oertmann- Study in three regions, 18 stock markets²⁵

The study covers 18 stock markets in Europe (including Sweden), North America and the Pacific Rim for the period starting January 1980 up to June 1999. This study categorized companies into value-growth using the previous month-end price-to-book ratios (P/BV). Those with the lowest P/BV, which is half of the market capitalization of the country, fall under value index and the remaining half got categorized as growth index.

Over the study period, the average annual return spread between these two categories account for 1.79 % in Europe, 5.17 % in the Pacific Rim and minus 0.43 % in North America denominated in local currencies. This shows a significant divergence among the three regions. There is a wide spread for specific countries. For example, in Sweden it was minus 1.84 % while it showed 12.84 % for Norway.

However, overall value stocks earned higher returns than growth stocks for more than two third of the countries.

2.5.2. Anderson and Brooks, Study of Long-Term Price-Earnings Ratio (UK).²⁶

This study examines all UK companies for the period 1975 - 2003 and takes into consideration many years of Price-Earnings-Ratios to identify stocks as value and growth and see if it has improved effects on returns than what has been observed using a single year P/E-multiple.

It gathers eight years of price-earnings ratios rather than the previous one year many studies used to categorize stocks as value and growth. After that, it divides each category into deciles and calculates the average returns for up to eight years of holding periods.

According to this research, using several years of earning data has reinforced the ability of the P/E-multiple to predicting the return differences between growth and value stocks. This

²⁵ Peter Oertmann, 'Why do Value Stocks Earn Higher Returns Than Growth Stocks, and Vice Versa?', *Finanzmarkt und Portfolio Management*, 14 Jahrgang, 2000 , Nr 2 (131-151).
http://www.fmpm.org/files/2000_02_Oertmann.pdf (Accessed: 2012-01-16).

²⁶ Anderson, Keith and Brooks, Chris, 'Long-Term Price-Earnings Ratio', *Journal of Business Finance & Accounting*, 33(7) & (8), (September/October 2006), pp. 1063–1086.

approach led them to find that the return difference between value stocks and growth stocks almost doubled.

This study identified that value stocks outperform growth stocks on average annual return of 6 % in the period 1975- 2003 when all UK companies were studied.

2.5.3. Fama and French, the International Evidence.²⁷

This study analysed returns on United States and twelve other countries called EAFE (Europe, Australia, and the Far East) countries.

Portfolios of both value and growth stocks were formed on the basis of such variables as BV/MV, E/P, C/P, and dividend-to-price (Div/P). According to these variables the value portfolio consisted of securities for which any of the four variables is the highest 30 % for a particular the country. The growth portfolio was formed of securities that lie in the lowest 30 % of the same variables. In addition to these two portfolios, one global market portfolio was also constructed.

This global study showed that the average returns on global value portfolio are 3.07 % to 5.16 % per year higher than the average returns on global market portfolio.

The average returns on the global value portfolios are 5.56 % to 7.68 % higher than the average returns on global growth portfolio.

Moreover, when securities were categorized on BV/MV variable, value stocks outperformed growth stocks in twelve of the thirteen major markets during the period under study. Similar results were observed when variables such as E/P, cash -flow-to-price (C/P), and Div/P multiples were considered.

2.5.4. The Value Premium by Lu Zhang²⁸

This study tries to answer why value stocks are evaluated with higher risks and earn higher

²⁷ Fama, Eugene F. and French, Kenneth R. 'Value versus Growth: the International Evidence', *The Journal of Finance* vol. 53, No. 6 (Dec., 1998), pp. 1975-1999.

²⁸ Lu Zhang, 'The Value Premium', *The Journal Of Finance*, Vol. 70, No. 1 (February 2005), pp. 67-103.

returns than growth stocks when conventional wisdom shows that growth opportunities are highly dependent upon future economic conditions and thus entail greater risks.

Using rational expectation and the neoclassical industry equilibrium framework, this study analyses the relationship between risk and expected return using economic variables. Zhang explains the outcome of the study by stating that,

Contrary to the conventional wisdom, assets in place are much riskier than growth options, especially in bad times when the price of risk is high. This mechanism can potentially explain the value anomaly, a high spread in expected return between value and growth strategies even though their spread in unconditional market beta is low.²⁹

Using countercyclical and costly reversibility features of the model, Zhang asserts that discount rates are higher in bad economic times with countercyclical price of risk. Cost reversibility, he explains, is the conditions in which companies face higher costs in cutting capital than when they are expanding capital (the word capital here has the meaning as used by economics).

Countercyclical price of risk, according to Zhang, is that in times of economic distress value firms are tied down by much unproductive capital that they can not easily dispose like growth firms. Thus value firms appear more prone to disinvest in times of economic distress raising the level of risk even higher. This in turn results in higher average value premiums.

This research, using the neoclassical economic model and computing some mathematical equations draws the conclusion that the two factors namely, costly reversibility and countercyclical price, make value stocks riskier than growth stocks especially during times of economic distress which in turn forces the investors to expect higher rate of return.

2.5.5. Summary of the Selected Previous Studies and the Research Frontiers

The three studies conducted by Oetermann; Fama and French, and Anderson and Brooks all share a common characteristics in that they are focused on investigating if value stocks give better rewards than growth stocks. While Oetermann used P/BV-multiple as the main fundamental variable, Anderson preferred to use an average of several years of E/P-multiples as a variable in categorizing stocks as value and growth. Fama and French, on the other hand, used several variables in order to categorize stocks as value and growth. All the three studies have taken into consideration several years of investment: twenty eight years in the case of

²⁹ Lu Zhang, 'The Value Premium', The Journal Of Finance, Vol. 70, No. 1 ,(February 2005), pp. 67-103.

Anderson and Brooks, twenty years each in cases of both Oetermann and, Fama and French (1975-1995).

The latest of the three studies is the one conducted by Anderson and Brooks and the results of the study did not divert essentially from what has been established earlier by Fama and French.

A cursory survey of the various researches conducted on this topic shows that there seems a consensus among academics in recognizing the prevalence of value premium in capital markets. The focus and the direction of research have now moved towards identifying the factors that give rise to such a phenomenon than investigating if it ever exists. That is why it is quite difficult to find recent studies done with the sole purpose of investigating if in a particular stock market value stocks give higher returns than growth stocks.

Many examples can be drawn from the bulk of studies that have moved towards identifying the causes of the existence of value premium. The prominent among these are Conrad et al. (2003) study on *data snooping biases*, Doukas et al. (2004) investigating the *role of divergence of opinions among investors*, Chan et al. (2004) examination on *behavioural aspects and agency costs*, Fama and French (2006) investigation on *effects of firm size* are a few of those worthy of a mention. The study by Zhang that is included on this paper can easily be grouped under this category that has accepted value premium as “a stylized fact in empirical finance”.³⁰ Zhang, as many others, has accepted the prevalence of value premium and then attempted to investigate if business cycles have any bearings on its observance.

In summary, it can be restated that all the four previous studies selected on their own rights have confirmed the existence value premiums on international markets they examined in their studies. Moreover, Zhang has tried to elucidate that business cycles have the effects of countercyclical nature on risk and expected return adjustments as well as costly reversibility of capital that can help, to at least, partly explain the persistence of value premiums.

³⁰Ole Risager, The Value Premium on the Danish Stock Market: 1950-2008, CIBEM Working Paper Series, (September 2010) p.3.
<http://www.mpp.cbs.dk/content/download/145363/1918677/file/CIBEM%20WP%20%20RISA%20GER%20Danish%20Value%20Premium%20July%202010.pdf>. (Accessed 2012-06-05)

3. METHOD

Under this chapter the method selected for the study, the rationale for selecting the particular method; and the sources, procedures and techniques used in the data collection, portfolio creation and the several computational processes as well as acknowledgment of the shortcomings of the study itself are discussed in detail.

3.1. Methodological Approach

The study uses historical quantitative data that are collected from Börsguide, Ecowin Pro, Statistiska Centralbyrån (Swedish Central Statistics Bureau) and in OMX Norden. These collected data are analysed with the assistance of the financial models discussed below making use of the Microsoft Excel calculation and analysis tools. The results produced through such analysis will be used to answer the thesis questions and draw conclusions.

The study selected this approach because the task of building, maintaining the stocks and identifying the performances of the two types of stocks requires quantitative fundamental stock data. Since the study stretches back to 1995, the researchers have no means of recording transactions back in time. The only available access to them is through registered historical data. The sources listed above are the best available and accessible to the researchers by the time of the study.

Obviously, qualitative study might have shed some light on the behavioral aspects of the market participants. But, this study avoided the use of qualitative approach for basically for the following reasons. The first reason is that the researchers are not well-equipped to deal with the study of human behavior. The second reason is that expanding the study to another dimension requires more resources in terms of time and access to various human actors in the market which by itself is beyond the scope of this study. These factors have restricted the study to the quantitative approach alone.

In social sciences, research seeks to integrate theory and empirics and this can be achieved in different ways. There are two approaches; a deductive and inductive approaches. In deductive the research starts from known theories and then formulates its own hypotheses and determine

if the empirical data confirm the theory or not. In inductive approach, which is the opposite of deductive, the study starts in the empirics and collect data to determine general patterns that may create theories.³¹

This paper is based on previous research and stands on known and accepted theories and computational methods. It is based on collecting and calculating empirical data, and then setting it against those theories to see which portfolio performs to what level. From the discussions given above, it can easily be discerned that a deductive approach is used.

Scientific method furthermore promotes two methods which are the foundations for the survey element of the research. These are called quantitative and qualitative methods.³² Lindblad states that both of them have their pros and cons and even though one method does not exclude the other, they both have certain specific demands. A quantitative study is characterized by a large amount of data collected and processed. It identifies and quantifies the purpose of providing generalizable knowledge. A qualitative study is often composed of a smaller collection of data but with a more strategic approach when collecting it.³³

3.2. Quantitative Research

The study uses quantitative research method. Historical data (secondary data) regarding the performances of stocks traded on Stockholm stock markets between 1996- 2009 is collected.

Together with the stock market historical price data, information about changes in GDP growth during this period is collected from Statistiska Centralbyrån (Swedish Central Statistic Bureau) for tracing the economic states.

Thomson Reuters Ecwin Pro database is used to access historical price data. Mean monthly stock prices and P/E-multiples for all stocks traded on Stockholm stock market during this period are gathered.

Using for example fundamental valuation models P/E multiple firms are selected and

³¹ Johannessen, Asbjörn & Tufte, Per Arne, *Introduktion till Samhällsvetenskaplig Metod*, (Malmö : Liber 2003), uppl 1:2, p.35.

³² Ibid, p.20.

³³ Inga-Britt Lindblad, *Uppsatsarbete En kreativ Process*, (Lund : Studentlitteratur, 1998), p.25.

categorized into value and growth stocks. From these categories portfolios of both value and growth stocks will be built. Portfolios shall be held for a period ranging from one year up to four years in accordance with the economic situations as reflected in the GDP data or the availability of P/E-multiple data in the source books Börsguide.

To identify securities that are fair representatives of each category and compile portfolios of value and growth stocks accordingly, statistical techniques of selecting samples from finite population will be applied.

These two portfolios shall be compared against each other as well as against OMXS 30 index.

3.3. Data Collection and Portfolio Creation

The aim of this study is to observe the performance differences between value and growth stocks. In order to achieve that goal portfolio have to be built and compared with each other and market index.

When this study was planned the expectation was that Södertörns University has access to financial and equity databases like many other universities in Sweden. That, however, turned out to be a wrong presumption. The university, unlike many other universities in Sweden that have access to Reuters Thomson DataStream database, has access only to the limited database called Ecwin Pro.

This significant shortcoming compelled the study to manually collect data for each portfolio period from the several issues of Börsguide. Accordingly for all the five portfolio holding periods, 1996-1999, 1999-2004, 2004-2005, 2005-2006 and 2006-2009 one fundamental variable, that is, P/E-multiple is selected. P/E-multiple historical data for all companies at the beginning of each portfolio investing period is manually collected from Börsguide.

The P/E-ratios for all companies quoted in Nordenbörsen, New Growth Market, NYAM, Aktietorget, and OMX Norden for the corresponding portfolio beginning periods are collected and then the list for each period is divided into three equal parts. Then companies with the lowest and the highest 30 % P/E-multiples are included as the population for value and

growth stocks respectively while the remaining 40 % are treated as neutral stocks and left out in the same way Fama and French did in their study of the USA stock market.

Accordingly, the historical P/E-multiple data is collected for the following number of companies for the beginning of each portfolio investing periods.

1996-1999 for 238 stocks
1999-2004 for 350 stocks
2004-2005 for 376 stocks
2005-2006 for 384 stocks
2006-2009 for 425 stocks

After manually collecting the P/E-multiple for all companies, some markets, namely Inoff and First North which do not have continuous price information are filtered out using Microsoft Excel's filter function. The remaining stocks were further filtered using Microsoft Excel's percentage filtering tools in to top 30 % for growth stocks and bottom 30 % for value stocks. When equities were categorized into top 30 % and bottom 30 % groupings, the following number of stocks falls under value and growth stocks category for the five buy and hold portfolio periods.

1996-1999 Value Stocks 51 and Growth Stocks 52
1999-2004 Value Stocks 80 and Growth Stocks 76
2004-2005 Value Stocks 64 and Growth Stocks 66
2005-2006 Value Stocks 73 and Growth Stocks 74
2006-2009 Value Stocks 82 and Growth Stocks 73

Historical stock prices are collected from Ecowin Pro. Ecowin Pro, as indicated above has a limited historical data for Swedish stocks. Consequently, for the first portfolio periods, 1996-1999, historical prices were collected only for eleven value stocks and fourteen growth stocks.

For each of the remaining four portfolio periods, historical monthly mean prices for 20 companies were collected from Ecowin Pro. In cases where price data are unavailable the next stock in the 30 % population is considered. The raw data collected using the above sources and methods and are attached at the end of the paper.

3.4. Procedures and Steps Used in the Calculation of the Various Returns

In the process of computation and subsequent analysis of the results, the following basic facts

are used as the foundation.

- ❖ All filtering, computations and drawing of figures are done using Microsoft Excel's tools.
- ❖ Dividends are assumed to be paid out annually and during the accounting period.
- ❖ Transaction costs are not given special treatment.
- ❖ All stocks are treated with equal weight.
- ❖ Taxes are not given special consideration.
- ❖ Stock splits and new stock issues, if ever any, are assumed to be considered in the data collected and thus are not given special consideration.
- ❖ There are no delisted companies in this study.
- ❖ All earned dividends are reinvested in the succeeding year and throughout the holding period.
- ❖ For Annual Mean Price Return calculations, the geometric mean computed from the monthly mean price return obtained from Ecwin Pro and the returns from the investment made during the period are used.
- ❖ For each year HPR, the monthly mean price return obtained from Ecwin Pro data, the investment made and its return earned during the period are used as the basis for the calculations.
- ❖ For Annual Risk-adjusted Returns, the HPR and the annual standard deviations of the monthly mean price returns computed together with the annual mean of the 3-month Risk-free rates are used as the basis for calculations.

The results are computed for the portfolio holding periods 1996 -1999, 1999 - 2004, 2004-2005, 2005-2006 and 2006-2009. The beginning of each period was taken as the start point for building the portfolio and the previous year's P/E-multiple that was calculated for the previous year is used to identify value and growth stocks. Due lack of access to Börsguide that contain data of P/E-multiple for 2001, one period is folded into the 1999-2004 period. Thus, portfolios were build for fives periods and held for varying years depending on the length of the period. The longest duration is nearly fives years that span between 1999 and 2004 while the shorts period is twelve months.

The idea of building these portfolios around a significant shift in the rate of the growth of GDP is an attempt to see if there is any patter in the performances of both the value and growth portfolios in reflection to the general economic conditions that might have factored into the investors' high risk and high expected rate of return calculations.

At the beginning of each of the five portfolio holding periods, a total of 20000 SEK is thought to be invested in each of the value and growth portfolios. There is no weight attached to particular stocks and whenever there is a fraction in the number of stocks held, a rounding of stocks to a whole number is done that has resulted in instances where the total invested

amounts run either short of or a bit higher than the 20000 SEK total.

At the end of each year (or if the portfolio holding period ends before the calendar year at the end of that period) returns are calculated and together with any dividend earned the money is re-invested in the same stocks in the next year.

For the first holding period 1996-1999 fourteen stocks, for which price data can be retrieved from Ecwin Pro, are selected to build the growth portfolio. With initial investment of 19961.31 SEK, this portfolio is held from 1 January 1996 up to 30 September 1999.

For the same portfolio holding period 1996-1999 eleven stocks, for which price data can be retrieved from Ecwin Pro, are selected to build the value portfolio. With initial investment of 19917.29 SEK, this portfolio is also held from 1 January 1996 up to 30 September 1999.

The second portfolio holding period goes from 1 October 1999 up to 30 September 2004. During this period nineteen stocks were selected to build the growth portfolio and a total of 20787.05 SEK is invested. During the same portfolio holding period twenty stocks are selected to build the value portfolio and a total of 19664.86 SEK is invested in it.

The third period runs from 1 October 2004 up to 30 September 2005. During this short portfolio holding period, nineteen stocks were selected to build growth portfolio and a total of 19726.09 SEK is invested. For the value portfolio twenty stocks were selected and a total of 19511.58 SEK is invested.

The fourth portfolio holding period is between 1 October 2005 and 30 September 2006. During this period twenty stocks were selected to build growth portfolio and a total of 19756.43 SEK is invested. The value portfolio of this period is also constituted of twenty stocks and a total of 19490.78 SEK is invested.

The last holding period is between 1 October 2006 and 31 December 2009. During this period twenty stocks each were selected for both growth and value portfolios. In growth portfolio, a total of 19755.87 SEK is invested. In value portfolio, a total of 19428 SEK is invested. Attempts will be made to show the computation process by giving an example of the data

used and the method of calculations for each of the three average returns namely; average Holding Period Returns (HPR), average Mean Price Returns and Risk-Adjusted Returns.

For this illustration purpose, growth portfolio of the first Holding Period (1996-1999) is used.

Table 1. Value Stocks Mean Monthly Price 1996

YEAR	Sweden, ACTIVE BIOTECH ORD, Close, SEK	Sweden, ATLAS COPCO B ORD, Close, SEK	Sweden, BEIJER ALM A B ORD, Close, SEK	Sweden, ELANDERS B ORD, Close, SEK	Sweden, HEXAGON B ORD, Close, SEK	Sweden, JM ORD, Close, SEK	Sweden, OEM INTERNATIONAL B ORD, Close, SEK	Sweden, ROTTNEROS ORD, Close, SEK	Sweden, SKF B ORD, Close, SEK	Sweden, SSAB A ORD, Close, SEK	Sweden, TRELLEBORG B ORD, Close, SEK
1996-01-31	16,40	12,13	11,25	52,33	6,06	12,65	16,55	16,11	26,56	20,53	33,21
1996-02-29	16,39	13,68	11,44	52,46	5,95	12,40	16,11	15,07	28,91	22,81	35,48
1996-03-29	20,37	14,68	11,89	53,01	6,56	12,73	17,13	16,22	31,21	23,73	38,27
1996-04-30	22,68	15,29	12,28	54,62	6,59	14,00	19,87	17,64	31,21	24,86	40,04
1996-05-31	26,94	15,36	12,64	59,72	6,97	14,48	21,44	19,13	31,53	25,95	41,18
1996-06-28	28,15	15,26	12,67	65,79	7,54	14,70	23,28	18,47	31,79	25,39	38,73
1996-07-31	27,24	14,78	12,96	67,15	7,90	15,25	24,14	18,53	30,64	25,42	37,15
1996-08-30	27,36	15,00	13,14	68,56	8,44	16,54	24,12	19,22	30,22	25,35	38,39
1996-09-30	27,19	16,81	14,40	73,04	8,96	18,37	24,86	19,73	32,79	29,30	40,24
1996-10-31	27,68	17,10	16,49	75,13	9,24	21,59	24,81	19,09	32,33	29,37	40,16
1996-11-29	29,37	17,34	18,17	80,03	10,96	22,26	26,51	18,63	29,25	31,38	38,58
1996-12-31	30,61	19,47	20,39	80,44	12,27	22,93	31,61	20,80	31,31	33,18	40,27

Source: Ecwin Pro

After taking this data average monthly prices (in actual Ecwin data figures are given in five decimal places but here they are shortened to only two decimal places because of space needs), the January mean monthly prices for each stocks are added together. This sum, 223.789812 SEK is considered the sum of the portfolio prices. Then the average monthly prices of each stock is divided by this portfolio total price and then multiplied by the 20000 SEK initial total investments to get the amount invested in each stock. Thereafter wherever there appears fraction numbers of stocks a rounding of numbers to the whole number is done that might result in slight change in the total amount invested different from the initial 20000 SEK outlay.

Table 2. Value Stocks Monthly Price Return Year 1996

	ACTIVE BIOTECH	ATLAS COPCO B	BELJER ALM AB	ELANDERS B	HEXAGON B	JM	OEM INTERNATIONAL B	ROTTNEROS	SKF B	SSABA	TRELLERBORG B	PORTFOLIO
AVAILABLE TO INVEST	1465,83	1084,33	1005,73	4677,12	541,29	1130,38	1478,97	1439,33	2373,65	1835,04	2968,33	2000,00
NO OF SHARES	89,37	89,37	89,37	89,37	89,37	89,37	89,37	89,37	89,37	89,37	89,37	
ACTUAL NO OF SHARES	89,00	89,00	89,00	89,00	89,00	89,00	89,00	89,00	89,00	89,00	89,00	979,00
1996-01-31	1459,76	1079,84	1001,57	4657,78	539,05	1125,70	1472,85	1433,38	2363,84	1827,45	2956,06	19917,29
1996-02-29	1458,76	1217,66	1017,85	4669,33	529,44	1103,24	1434,14	1341,29	2572,85	2030,53	3157,40	20532,48
1996-03-29	1812,96	1306,78	1058,11	4718,14	584,22	1133,10	1524,43	1443,52	2777,53	2111,96	3405,70	21876,44
1996-04-30	2018,76	1360,90	1092,95	4860,87	586,22	1245,59	1768,82	1569,63	2777,65	2212,37	3563,53	23057,29
1996-05-31	2397,56	1367,01	1124,75	5314,69	620,73	1288,54	1908,36	1702,61	2806,38	2309,24	3665,30	24505,18
1996-06-28	2505,17	1358,25	1128,07	5855,65	670,78	1308,30	2071,66	1644,07	2829,07	2259,31	3447,15	25077,48
1996-07-31	2423,94	1315,21	1153,77	5976,55	702,83	1357,27	2148,69	1649,61	2727,26	2262,56	3306,27	25023,95
1996-08-30	2434,99	1335,18	1169,47	6101,54	750,95	1472,06	2146,46	1710,86	2689,94	2256,35	3416,90	25484,70
1996-09-30	2420,26	1496,43	1281,67	6500,55	797,64	1635,02	2212,94	1755,85	2918,19	2607,44	3581,54	27207,53
1996-10-31	2463,50	1521,72	1467,53	6686,27	822,24	1921,61	2208,11	1699,32	2877,56	2614,11	3574,44	27856,41
1996-11-29	2613,52	1543,58	1617,18	7122,40	975,12	1981,50	2359,70	1657,74	2603,33	2793,01	3433,72	28700,80
1996-12-31	2724,50	1732,59	1815,06	7159,30	1091,59	2040,98	2813,42	1851,59	2786,79	2953,44	3583,82	30553,09
DIVIDEND /SHARE	9,26	3,28	5,00	1,81	4,00	2,00	2,00	0,20	5,25	4,00	3,00	
TOTAL DIVIDEND	824,14	291,92	445,00	161,09	356,00	178,00	178,00	17,80	467,25	356,00	267,00	3542,20
HPR	1,43	0,87	1,26	0,57	1,69	0,97	1,03	0,30	0,38	0,81	0,30	0,71

Source: Abadiga and Neibig

From Table 2 above it can be seen that 89 shares of each company is bought and a total of 19917.29 SEK is invested in all the eleven companies. The monthly average return for each stock is calculated by multiplying the monthly average price by the number of shares in each company. To get the portfolio monthly return, the monthly returns of each stock are summed up together. At the end of the year, as it can be computed, the initial investment of 19917.29 SEK grows to 30553.09 SEK. These two inputs together with the total dividend earned are used to calculate the 1996 average annual Holding Period Return.

$$HPR_{1996} = \left(\frac{Pend_{1996} - Pbeg_{1996} - Div}{Pbeg_{1996}} \right) = \left(\frac{30553.09 - 19917.29 + 3542.20}{19917.29} \right) = 0.71$$

The same method is applied for all the returns studied in this paper.

The next step is to compute the geometric Mean Annual Price Rate of Return and the standard deviations of the changes in the prices.

Table 3. Value Stocks Mean Monthly Rate of Return 1996

	ACTIVE BIOTECH	ATLAS COPCO B	BEIJER ALM AB	ELANDERS B	HEXAGON B	JM	OEM INTERNATIONAL B	ROTTNEROS	SKF B	SSAB A	TRELLERBORG B	PORTFOLIO
1996-01-31	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
1996-02-29	- 0,00	0,13	0,02	0,00	- 0,02	- 0,02	- 0,03	- 0,06	0,09	0,11	0,07	0,03
1996-03-29	0,24	0,07	0,04	0,01	0,10	0,03	0,06	0,08	0,08	0,04	0,08	0,07
1996-04-30	0,11	0,04	0,03	0,03	0,00	0,10	0,16	0,09	0,00	0,05	0,05	0,05
1996-05-31	0,19	0,00	0,03	0,09	0,06	0,03	0,08	0,08	0,01	0,04	0,03	0,06
1996-06-28	0,04	- 0,01	0,00	0,10	0,08	0,02	0,09	- 0,03	0,01	- 0,02	- 0,06	0,02
1996-07-31	- 0,03	- 0,03	0,02	0,02	0,05	0,04	0,04	0,00	- 0,04	0,00	- 0,04	- 0,00
1996-08-30	0,00	0,02	0,01	0,02	0,07	0,08	- 0,00	0,04	- 0,01	- 0,00	0,03	0,02
1996-09-30	- 0,01	0,12	0,10	0,07	0,06	0,11	0,03	0,03	0,08	0,16	0,05	0,07
1996-10-31	0,02	0,02	0,15	0,03	0,03	0,18	- 0,00	- 0,03	- 0,01	0,00	- 0,00	0,02
1996-11-29	0,06	0,01	0,10	0,07	0,19	0,03	0,07	- 0,02	- 0,10	0,07	- 0,04	0,03
1996-12-31	0,04	0,12	0,12	0,01	0,12	0,03	0,19	0,12	0,07	0,06	0,04	0,06
Mean(geometric)	0,12	0,10	0,11	0,10	0,12	0,11	0,12	0,08	0,07	0,10	0,08	0,10
Variance	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
Std deviation	0,28	0,28	0,28	0,28	0,27	0,28	0,28	0,29	0,29	0,28	0,29	0,28

Source: Abadiga and Neibig

The results on Table 3 show the monthly Mean Price Rate of Returns for each stock in the

portfolio that is calculated as follows. $\left(\frac{p_{t+1} - p_t}{p_t} \right)$.

From these mean monthly price rate of returns, the annual geometric mean price rate of return is calculated for each portfolio during the year using Microsoft Excel tools for Geometric

mean calculations. For example, $=\{GEOMEAN(1+(C93:C104))-1\}$ is used to calculate the 1996 Mean Annual Price Rate of Return for Atlas Copco stock.

The third measurement of returns (that is, following Holding Period Return, Mean Annual Price Rate of Returns) is the Risk-Adjusted Rate of Return (in this study the Sharpe ratio is used). To calculate this, first the price variability of each stock during the year is computed.

To calculate the standard deviation, the same mean monthly rate of returns data are used for each stock in the portfolio during the year and Microsoft Excel formula for computing standard deviations is utilized. For example, $=STDEV(C93:C104)$ is the Excel formula used to calculate the standard deviation of the mean monthly price rates of return for Atlas Copco stock during 1996.

Once the standard deviation (STDV) of each stock is calculated, the next variable needed for the calculation of the Risk-Adjusted Rate of Return is the Risk-Free Rate. The values for this variable are shown in Appendix G and thus the appropriate mean Risk-Free Rate is computed for the period under consideration. In this particular example, that is year 1996, it is 0.057045.

Using the formula for Sharpe ratio explained under section 2.3.3 the following calculation is done for year 1996.

$$\text{Risk-Adjusted Return} = \left(\frac{\text{HPR} - \text{Riskfree rate}}{\text{STDV}} \right) = \left(\frac{0,711844 - 0,057045}{0,278084} \right) = 2,354684$$

All these results are summarized in annual stock data tables that are attached as appendices B-F of which the data table for value Stock 1996 is reproduced here.

Table 12B. Value Stocks 1996

			1996		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ACTIVE BIOTECH	4,9	9,26	0,283175	1,430972	0,116014
ATLAS COPCO B	3,5	3,28	0,280852	0,874816	0,102039
BEIJER ALMA B	4,6	5	0,276457	1,256512	0,113277
ELANDERS B	6,1	1,81	0,279044	0,571648	0,098104
HEXAGON B	4,6	4	0,274425	1,685444	0,123626
JM ORD,	4,7	2	0,27727	0,971192	0,113321

OEM INTERNATIONAL B	6,1	2	0,278091	1,031042	0,118173
ROTTNEROS	2,5	0,2	0,287225	0,304184	0,082309
SKF B	5,9	5,25	0,289301	0,376594	0,074096
SSAB A	2,7	4	0,279999	0,810958	0,102705
TRELLEBORG B ORD,	3,3	3	0,286808	0,302688	0,076602
PORTFOLIO			0,278084	0,711844	0,097921
R^f	0,057045				
SHARPE^g	2,354684				

Source: Abadiga and Neibig

What has so far been done is an illustration of how the three different measurements of returns are calculated.

3.5. Reliability

The term reliability means how trustworthy the data collecting methods, the use of data used and how it is processed.³⁴ All data used in this study were taken from different independent organizations (Börsguide by Delphi Economics, Thomas Reuters Ecowin Pro database and Central Statistical Bureau) where all data is presumed to be checked before they are published. We therefore believe there is no doubt regarding the reliability of the study.

Furthermore, we have chosen to apply well-tested models for calculations in order to minimize the risks of misleading and erroneous results and conclusions. However, there is always a risk of error. Looking at the large amount of data across various companies, registered in the Swedish stock market, which is manually compiled from Börsguide and the amount of different calculations, there is a certain risk of error. Since we have been aware of this possibility, we have taken great care in compiling to minimize it.

3.6. Validity

Validity covers the relevance of data that is to represent the phenomenon under investigation and whether the study measures what it intends to measure.³⁵ The data that we used in this study is a prerequisite to answer the purpose and questions of this study. The study is based on historical data. The selected time period is important as the length of time assumed to

³⁴ Johannessen, Asbjörn & Tufte, Per Arne, *Introduktion till Samhällsvetenskaplig Metod*, (Malmö: Liber 2003), uppl 1:2, p.28.

³⁵ Ibid, p.47.

include both the high and low performance periods for many stocks. This ensures accurate results across the various portfolios development over a given time period. The reference of this study is previously studies and how they have chosen to define value and growth stocks, the way they created different portfolios, what measures they have used and how they have arrived at their results.

3.7. Method Critic

During the formation of portfolios, stocks are grouped into value and growth categories using the highest and the lowest 30 % criteria through the help of Microsoft Excel filter tools. Each group is again ranked within itself according to its characteristics. For growth stocks, the ranking is made from the highest to the lowest with decreasing values while the value stocks were ranked from the lowest to the next lowest with increasing steps. Choosing twenty stocks from such a neat arrangement according to their rank in the group was the intention of this study. However, due to the absence of historical price data, particularly for the period 1996-1999 in Ecowin Pro, the study is forced to take only those stocks for which there are historical price data irrespective of where within the group ranking the stocks stand. This hampers the exactness of the results of the study. Added to this, the use of limited number of stocks in the first holding period (fourteen and eleven for growth and value stocks respectively) can have its own bias in the outcomes calculated.

The study of the characteristics of any stock market will not give an overall picture of the market without the study of the general behavioural characteristics of market participants. The dependence of this study on only quantitative study method deprives it of an additional tool in drawing a better conclusion. Method triangulation would have been a better approach for getting a better and closer observation of the market.

4. RESULTS

Under this chapter, a detailed description of the returns obtained from the investments made in both categories of stocks under the entire portfolio holding periods are presented by using the three selected performance measures. The presentation of the comparisons made between those three measures of returns with the OMXS 30 market index and the pattern of returns observed under different GDP growth rate are also presented.

The study constructed five portfolios that are held for different lengths of time that are more or less the reflection of the pattern of a significant percentage change in GDP. As can be seen from Figure 1 below, there are six periods under which the GDP growth shows marked changes between year 1995 and year 2009.



Figure 1. Annual Change in GDP 1995-2009

Source: Adapted from Statistiska Cenralbyrån, BNP från produktionssidan (ENS95), volymförändring, procent efter näringsgren SNI 2007 och tid

Based on the information provided so far, the next step obviously becomes to calculate the return for each of the measurements and compare the results for these measurements for each set of portfolios and against each other and against the market index and study if value stocks on average have generated superior returns.

4.1. Comparing Value and Growth Portfolio Holding Period Returns (HPR)

In order to compare the performances of the two stocks with each other and the market index as well as study their performance during periods of significant change in the GDP using HPR,

the study uses the data summarized in the following table.

Table 4. Summarized Average Annual HPR

YEAR	Vavlu Portfolios HPR	Growth Portfolios HPR	Value- Growth SPREAD	OMXS 30	GDP(Annu al Rate of Change)
1996	0,711843785	0,325888142	0,385956	0,210692	1,6
1997	0,379282563	0,037301475	0,341981	0,490037	2,7
1998	-0,027972593	0,506628063	-0,5346	0,197985	4,2
1999	0,287680621	0,421476452	-0,1338	0,206291	4,7
1999	0,195513131	0,294488548	-0,09898	0,206291	4,7
2000	0,460839691	-0,168021657	0,628861	0,549227	4,5
2001	-0,17406188	-0,267341894	0,09328	-0,32773	1,3
2002	-0,283613107	-0,467298302	0,183685	-0,27611	2,5
2003	0,359299687	0,324603742	0,034696	-0,13325	2,3
2004	0,211206436	-0,036997406	0,248204	0,274575	4,2
2004	0,098756372	0,103646336	-0,00489	0,274575	4,2
2005	0,251778141	0,50235091	-0,25057	0,1925	3,2
2005	0,09448286	0,137183686	-0,0427	0,1925	3,2
2006	0,173460374	0,038777288	0,134683	0,220189	4,3
2006	0,131098902	0,070331355	0,060768	0,220189	4,3
2007	0,030291408	0,082711968	-0,05242	0,186422	3,3
2008	-0,470456378	-0,406603708	-0,06385	-0,28607	-0,6
2009	0,594899657	0,621676621	-0,02678	-0,05761	-5

Source: Abadiga and Neibig

The HPR average annual value-growth spread shows that value stocks outperformed growth stocks in three of the five portfolio holding periods. In period one, period two and period four value stocks outperformed growth stocks by average HPR of 5.9 %, 108.5 % and 9.2 % respectively. Growth stocks outperformed value stocks in only two of the portfolio holding periods that is, in period three by 25.5 % HPR and in period five by 8.2 % HPR . These results plotted on Figure 1 using HPR as the performance measurement does conform to the general assumption that value stocks outperform growth stocks.

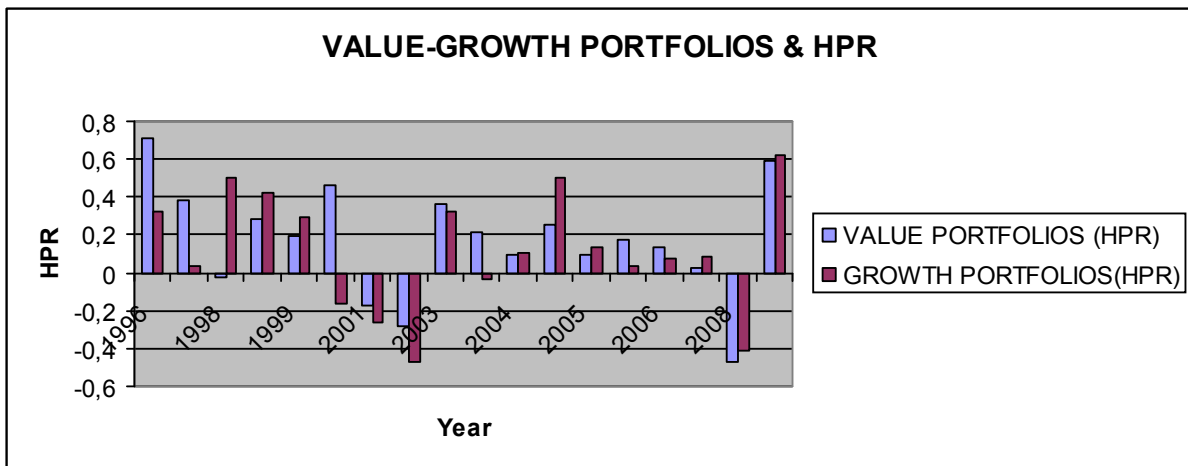


Figure 2. Value-Growth Annual HPR
Source: Abadiga and Neibig

4.1.1. HPR vs. Market Index

When we compare both portfolios against OMXS 30 market index with the calculation of HPR–OMXS 30 spread, we find the following results.

Value stocks outperformed market index in period one, period two and period five with an average of 24.6 %, 47.6 % and 22.3 % respectively. That is, in three out of the five portfolio holding periods value stocks outperformed market index. This result shows that when HPR is used as a benchmark, value stocks outperform market index as plotted on Figure 3 below.

The result for growth stocks shows that they also outperform the market index in three out of the five portfolio holding periods namely, 18.6 %, 13.9 % and 30.5 % in period one, period three and period five respectively.

When the average annual HPR value-growth spread for all portfolio holding periods are computed, value stocks outperform OMXS 30 Index by 2.7 % annual return rate. Similar computation for growth stocks gives the result that OMXS 30 index outperforms it by an average of 2.9 % annual return rate.

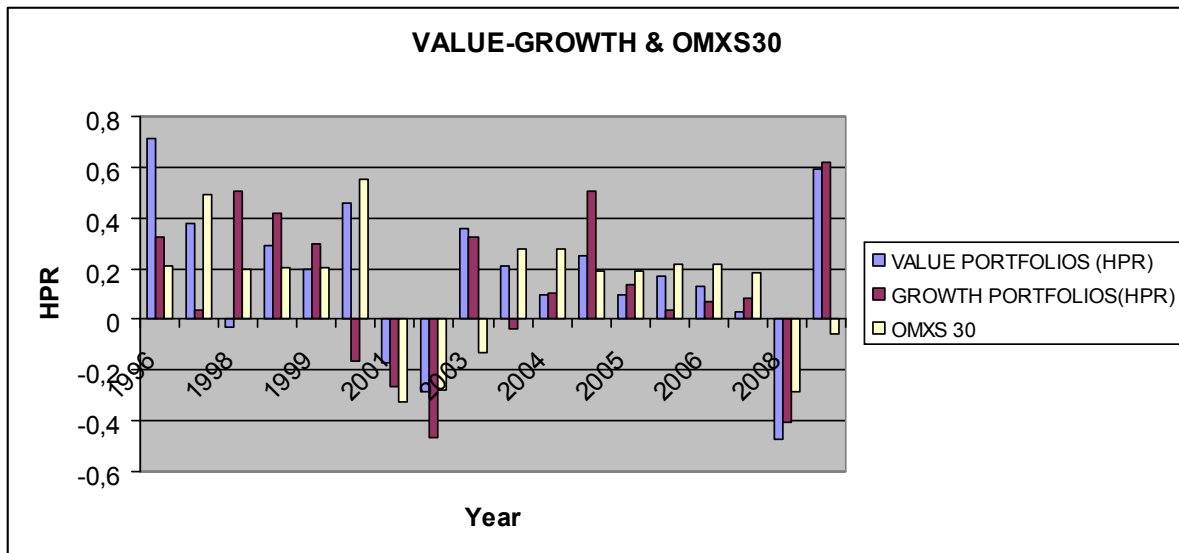


Figure 3. Value-Growth HPR & OMXS 30
Source: Abadiga and Neibig

Finally, when the value-growth spread of the five portfolio holding periods are combined and analysed to see the average performances of value and growth stocks vis-à-vis HPR, it shows that value stocks outperform growth stocks by an average of 5.6 % annual HPR. This result confirms the general assertion that value stocks outperform growth stocks.

4.2. Comparing Value and Growth Portfolio Mean Price Returns

In order to compare the performances of the two stocks with each other using Mean Price Return and compare them with the market index as well as study their performance during periods of significant change in the GDP, the data is summarized in the following table.

Table 5. Summarized Average Annual Mean Price Returns

YEAR	Growth Portfolio Mean Price Return	Value Portfolio Mean Price Return	Value-Growth Spread	OMXS 30	GDP(Annual Rate of Change)
1996	0,082027934	0,097921375	0,015893	0,210692	1,6
1997	0,009087744	0,080346857	0,071259	0,490037	2,7
1998	0,093062825	-0,009770029	-0,10283	0,197985	4,2
1999	0,099643187	0,079160938	-0,02048	0,206291	4,7
1999	0,609029862	0,546294365	-0,06274	0,206291	4,7
2000	0,043346351	0,089622178	0,046276	0,549227	4,5
2001	0,03142679	0,038358594	0,006932	-0,32773	1,3
2002	0,003594773	0,022347854	0,018753	-0,27611	2,5
2003	0,08301835	0,076437061	-0,00658	-0,13325	2,3

2004	0,072203742	0,093628234	0,021424	0,274575	4,2
2004	0,302026951	0,300101125	-0,00193	0,274575	4,2
2005	0,125819207	0,100770756	-0,02505	0,1925	3,2
2005	0,228047468	0,216353307	-0,01169	0,1925	3,2
2006	0,082580851	0,087637513	0,005057	0,220189	4,3
2006	0,209586862	0,226401418	0,016815	0,220189	4,3
2007	0,05990428	0,062898773	0,002994	0,186422	3,3
2008	0,003644033	0,010487562	0,006844	-0,28607	-0,6
2009	0,099405401	0,101054985	0,00165	-0,05761	-5

Source: Abadiga and Neibig

From the data on Table 6 above a calculation for value-growth spread gives the following results. Value portfolios outperform growth portfolios by 0.4 % and 0.7 % annual Mean Price Rate of Return in period two and period five respectively. Growth portfolios outperform the value portfolio with an average annual mean return of 0.9 %, 1.3 % and 0.3 % annual mean price rate of return in period one, period three and period four respectively as plotted on Figure 4 below.

When the spreads of the returns on all the five portfolio holding periods are combined and calculated for both groups, it shows that value stocks outperform growth stocks by only 0.023 % average Price Rate of Return.

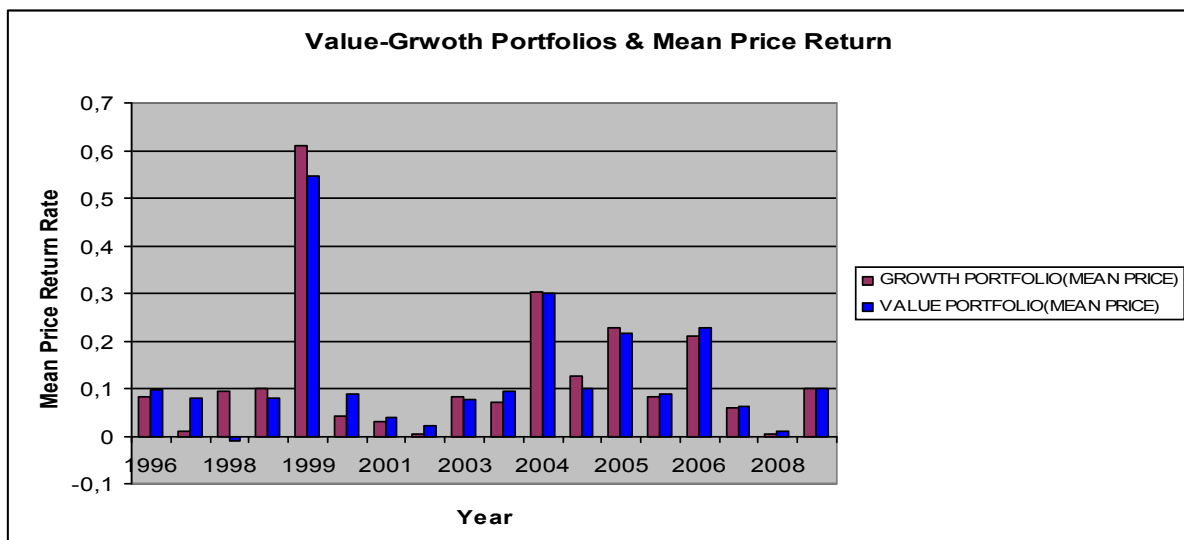


Figure 4. Value-Growth Annual Mean Price Return

Source: Abadiga and Neibig

4.2.1 Mean Price Return vs. Market Index

When we compare each portfolio with the OMXS 30 market index, we get the following results.

The growth portfolios outperformed the market index in two of the five portfolio holding periods, namely period two and period five by 9.2 % and 7.7 % average price return rate.

Value portfolios also outperformed the market index in two of the five holding periods. They give a superior return to the market index only during the second and fifth holding periods by average return rate of 9.6 % and 8.4 % respectively.

These results show that when average annual Mean Price Rate of Return is used as a measure of performance both value and growth stocks fail to outperform the market. This indicates that the OMXS 30 market index gives a return of 4.1 % more than growth stocks and 3.7 % more than value stocks.

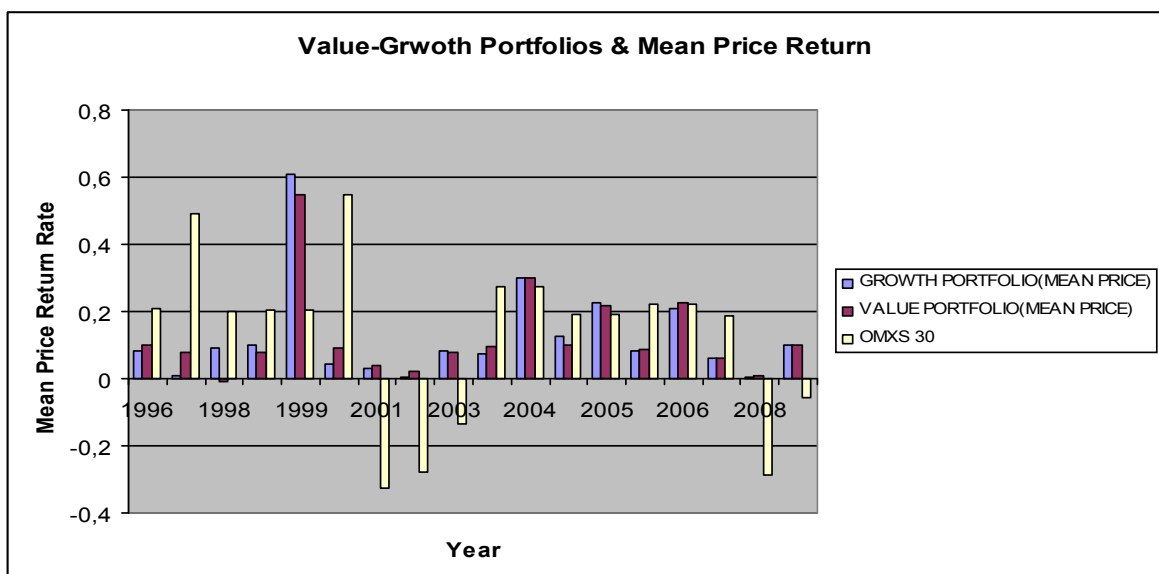


Figure 5. Value-Growth Annual Mean Price Return and OMX
Source: Abadiga and Neibig

When all the portfolios of the five holding periods are combined together and evaluated for the performance of value and growth stocks, the results show that that value stocks outperform growth stocks by an annual average 0.023 % rate.

4.3. Comparing Value and Growth Portfolio Risk-Adjusted Returns

In order to compare the performances of the two stocks with each other and the market index using Risk-Adjusted Rate of Return the data is summarized in the following table.

Table 6. Summarized Average Risk-Adjusted Rate of Return

YEAR	Value Portfolios Risk-Adjusted Return	Growth Portfolios Risk-Adjusted Return	Value- Grwoth Spread	OMXS 30	GDP(Annual Rate of Change)
1996	2,354684	0,946663	1,408021	0,210692	1,6
1997	1,173272	-0,19199	1,365263	0,490037	2,7
1998	-0,0007	1,604515	-1,60522	0,197985	4,2
1999	0,863318	1,327791	-0,46447	0,206291	4,7
1999	0,284013	1,327791	-1,04378	0,206291	4,7
2000	1,465493	-0,68274	2,148232	0,549227	4,5
2001	-0,70932	-0,96374	0,254415	-0,32773	1,3
2002	-1,05088	-1,57131	0,520432	-0,27611	2,5
2003	1,149615	1,025553	0,124063	-0,13325	2,3
2004	0,16302	-0,17172	0,334743	0,274575	4,2
2004	0,143313	1,149615	-1,0063	0,274575	4,2
2005	0,7158	0,576847	0,138953	0,1925	3,2
2005	0,16302	0,534093	-0,37107	0,1925	3,2
2006	0,455489	0,051678	0,403811	0,220189	4,3
2006	0,210719	0,192433	0,018287	0,220189	4,3
2007	0,16351	-0,01769	0,181202	0,186422	3,3
2008	-1,43796	-1,57816	0,140197	-0,28607	-0,6
2009	2,191919	2,017884	0,174034	-0,05761	-5

Source: Abadiga and Neibig

Analysing the spread between Risk-Adjusted Rate of Returns of value and growth portfolios show the following results .Value portfolio outperformed growth portfolio by an average return rate of 16.2 % , 38.9 % , 3.1 % and 12.8 % in period one, period three, period four and period five respectively. These average annual Risk-Adjusted Rates of Returns are plotted on Figure 6 below.

When all the five portfolio holding periods are combined and the average Risk-Adjusted Rate of Return is calculated, value stocks outperform growth stocks by an average of 15.1 % rate.

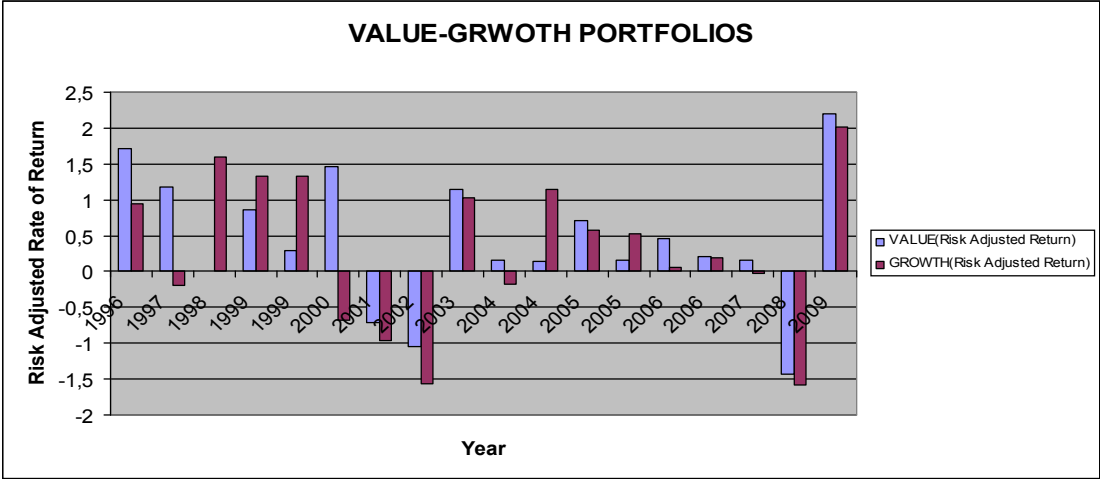


Figure 6. Value-Growth Annual Risk-Adjusted Rate of Return
Source: Abadiga and Neibig

4.3.1. Risk-Adjusted Return vs. Market Index

When each portfolio is compared to the market index, the following results are found. Value Portfolio outperforms the market index by an average of 66 %, 17 %, 19.6 %, 10.3 % and 26.6 % in periods one to period five respectively. Growth portfolio on the other hand outperforms the market index by an average of 64.5 %, 63 %, 8.6 % and 13.8 % during period one and period three to five. These results are plotted on Figure 7 below.

When all the portfolio holding periods combined and the Risk-Adjusted Returns are computed, value stocks outperform OMXS 30 Index by an annual 33 % return rate.

When all the portfolio holding periods are combined and the Risk-Adjusted Returns are computed, growth stocks outperform OMXS 30 Index by an annual 17.9 % return rate.

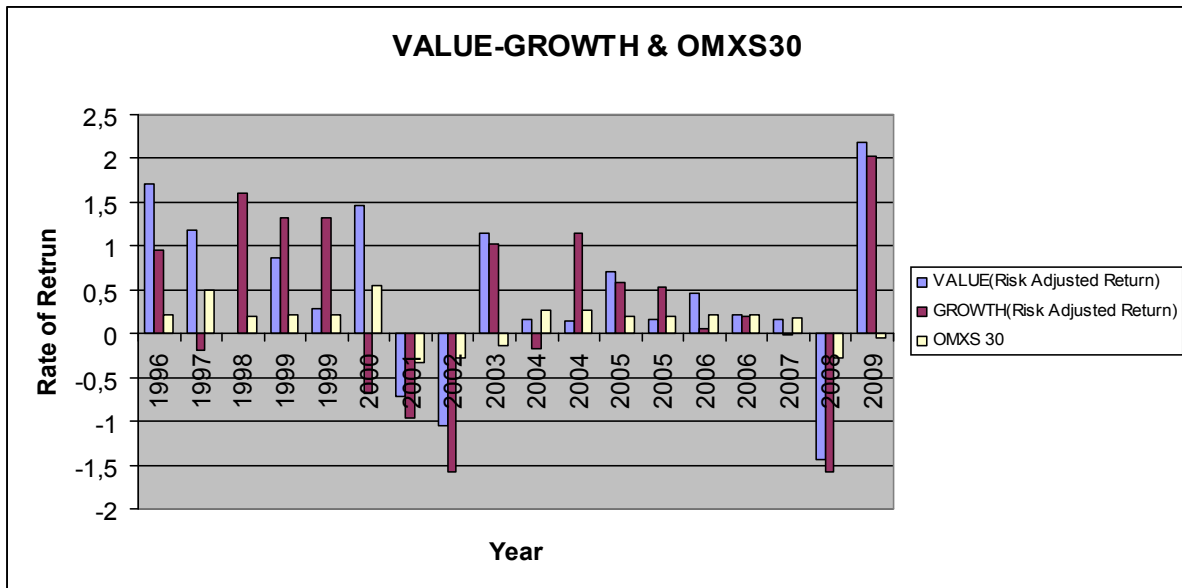


Figure 7. Value-Growth Risk-Adjusted Return and OMXS 30

Source: Abadiga and Neibig

When all the portfolios in the five holding periods are combined together and their Risk-Adjusted Rate of returns are analysed the following result is found. The analysis shows that value stocks outperform growth stocks by an annual 15.12 % Risk-Adjusted Return rate.

4.4. Comparing Value and Growth Portfolio Returns and Change in GDP

In order to assess the performances of the two stocks, each of the three measurements of return are looked at against periods of significant movements in GDP.

4.4.1 Holding Period Return (HPR) and GDP

When the growth in GDP declines from 4.7 % in 1999 to 2.3 % in 2003 value stocks outperform growth stocks by 16.7 % HPR. When the GDP again declines from an average of 4.3 % in 2006 to an average of -5 % in 2009, value stocks outperform growth stocks by an average of 19.2 % HPR.

As can easily be seen from the results plotted on Figure 8 below, when the average rate of change in GDP shows improvement, for example from 1996 to 1999, growth stocks tend to perform better than value stocks.

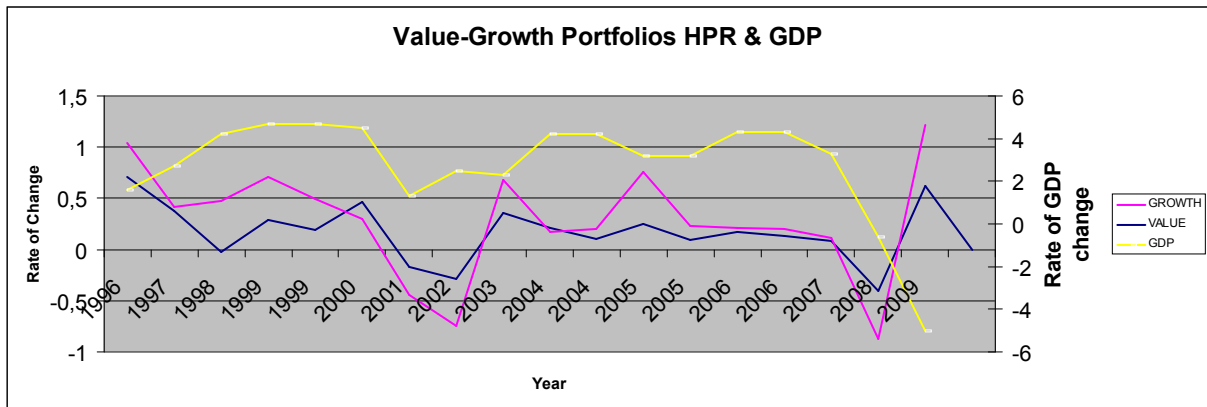


Figure 8. Value-Growth HPR and Annual Change In GDP
Source: Abadiga and Neibig

4.4.2 Mean Price Return and GDP

When the change in the average GDP growth rate goes from 1.6 % in 1996 up to 4.7 % in 1999, growth stocks outperform value stocks by 0.9 %. However, when the GDP growth declines from 4.7 % in 1999 to 2.3 % in 2003, value stocks outperform growth stocks by 1.6 % mean annual Price Rate of Return. When the average GDP growth rate declines significantly from 4.3 % in 2006 to -5 % in 2009, value stocks outperform growth stocks by an average of 0.7 % mean annual Price Rate of Return rate.

As can be seen from the Figure 9, when the measurement is the mean annual Price Rate of Return, the two stocks tend to move closer together on average with out any single stock recording significant return different from the other.

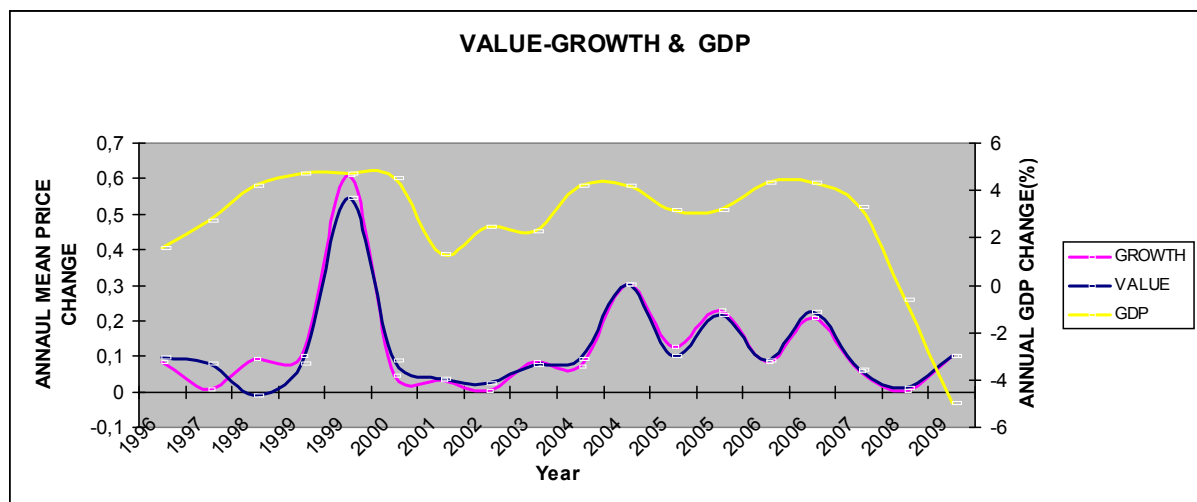


Figure 9. Value-Growth Annual Mean Price Return and GDP
Source: Abadiga and Neibig

4.4.3 Risk-Adjusted Rate of Return and GDP

When Risk-Adjusted Rate of Return is used the results get clearer. When the change in GDP growth rate goes from 1.6 % in 1996 up to 4.7 % in 1999, value stocks outperform growth stocks by 17.6 %. When the change in average GDP growth declines from 4.7 % in 1999 to 2.3 % in 2003, value stocks outperform growth stocks by 40.1 % annual Risk-Adjusted Rate of Return. When the average GDP growth rate declines significantly from 4.3 % in 2006 to -5 % in 2009, value stocks outperform growth stocks by an average of 12.8 % mean annual Risk-Adjusted Rate of Return.

As it is demonstrated in the Figure 10 below, the above results indicate that when computed for Risk-Adjusted Rate of Return, value stocks, save for shorter periods in 1998 -1999 and 2004, and tend to generate a superior payoff than growth stocks in under all conditions.

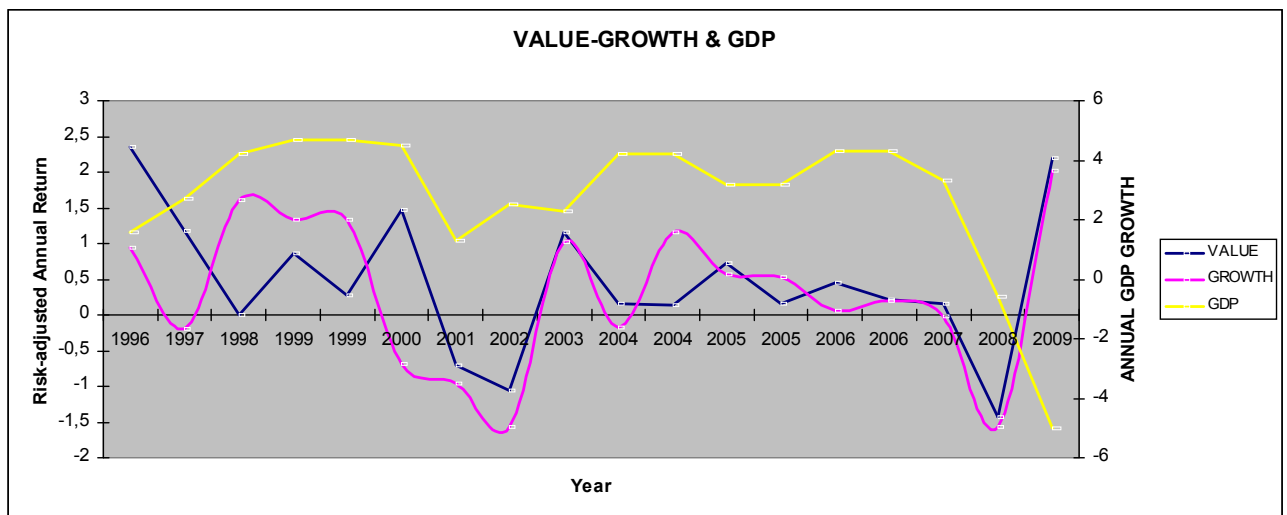


Figure 10. Value-Growth Risk-Adjusted Return and GDP

Source: Abadiga and Neibig

5. ANALYSIS

In this chapter results of the study will be analysed and comparisons will be made with the selected previous studies and the EMH.

5.1. Analysis and Discussions

The study set out to find out if investments in value stocks generate higher returns than investments in growth stocks in Stockholm stock market during the period 1995-2009. The results computed under section four show that value stocks outperformed growth stock during the study period. How can this result be generalized is what comes under this section.

To get a clear picture of the performances of the two types of stocks, as shown under section 4 above, the average rate of returns are calculated for all the three types of measurements of returns. Moreover, the annual value-growth spread, value-OMXS 30 spread, growth-OMXS 30 spread and the total stocks' average annual spreads are calculated to understand the behaviours of these stocks and the characteristics of Stockholm stock markets.

Even though attempts to see the behaviour of returns in all these measurements are made, the main instrument for comparing the performances of these two stocks remains the Risk-Adjusted Rate of Return as it is the reliable tool chosen as indicated during discussions under sections 2.3.

Using HPR as measuring instrument for investment returns, it is shown that value stocks give an annual average payoff of 5.6 % higher than growth stocks. Moreover, when the same measurement is used value stocks give an annual average of 2.7 % return above the OMXS 30 market index.

Measuring the performances of growth stocks using HPR shows that the OMXS 30 index outperforms growth stocks by an annual average of 2.9 %.

If no provisions are made for risks taken for the resources invested, these results indicate that investors who construct portfolios using fundamental analysis techniques and buy and hold

stocks categorized as value stocks can earn superior returns than investments in either growth stocks or in the OMXS 30 market index.

On the other hand, using the mean Price Rate of Return as measuring instrument for evaluating investment returns shows that value stocks give an average pay off of 0.023 % higher than growth stocks. The comparison between value stocks and market index shows that OMXS 30 generates an annual average of 3.7 % return than value stocks. When only price variability alone is taken as performance measuring tool, value stocks appear not to generate better results than growth stocks and they even generate inferior annual average returns than the OMXS 30 market index.

If only Mean Price Rate of Return is the measurements for appraising the performances of securities, it can be concluded that no investor can identify undervalued stocks and earn superior returns by investing in them than what the market offers. Had this been the only measurement for the returns of the stocks, the conclusion would have been that the EMH holds true for Stockholm stock markets. But as indicated many times, the study also uses two other performances tools to compare the two groups of stocks.

Finally, using the Risk-Adjusted Rate of Return as measuring instruments for evaluating investment returns has resulted in the outcome that value stocks outperform growth stocks by an annual average of 15.1 % return rate. This measurement also shows that value stocks generate an annual average of 33 % return rate higher than the OMXS 30 market index.

These results confirm the position held by the Fundamental Valuation Model where it is stated that using historical fundamental stock data, investors can identify undervalued stocks and earn higher payoff than the market.

The global study conducted by Fama and French shows that on global scale value portfolios outperforms growth portfolio by an annual average rate 5.56 % to 7.68 %. Our result of an annual average of 5.6 % for Holding Period Return and 15.1 % mean annual Risk-Adjusted Return Rate lie relatively well within a reasonable band of the global results.

The same study found that global value portfolios outperformed global market index by an average 3.07 % to 5.16 % rate of returns per year. Our study found that value portfolios

outperform the OMXS 30 market index by an annual average of 33 % Risk-Adjusted Rate of Return and 2.7 % HPR. It can be safely assumed that given the difference in the magnitude of the study and the two indices the results of this study confirm the results found by other studies.

The 5.6 % average annual Holding Period Return that value stocks registered over growth stocks in our study is almost the same with the study conducted by Anderson and Brooks in UK, though their study goes about with some modification of approach, that has found that value stocks outperforming by 6 % average annual holding rate of return .

The last factor this study tries to look at is the change in GDP growth rate and the pattern of the performances of both value and growth of stocks. Before analysing the results of this comparison, it is vital to highlight here that this study does not analyse the change in GDP growth rate and the corresponding risk-return behaviours of these stocks.

This simple observation reveals that using HPR as a measuring tool and during a period of significant decline in GDP, value stocks outperform growth stocks. For growth stocks, the result becomes similar only during a period of significant rise in GDP.

The comparison between these two stocks using Risk-Adjusted Rate of Return shows that during most of the up and down movements of the change in the GDP growth, value stocks tend to give better returns than growth stocks. These results and their relation with the change in the level of the growth of the GDP can cautiously be related to the countercyclical nature of the expected rate of return investors demand from value stocks as explained by Zhang in his study. Since this study does not closely observe the level of risk and the expected rate of return demanded during different phases of the change in the rate of the growth of GDP, it obviously finds it difficult to draw any conclusion. Moreover, the deliberate choice made at selecting specific periods in changes in the GDP growth rate and connect them with the movements of the prices of the stocks under study might fall into a data mining pitfall.

This study, in more or less the same way previous studies have done, demonstrates that it is possible to use historical fundamental stock data and identify undervalued stocks and by investing in them earn a superior return in Stockholm stock markets.

The Value vs. Growth debate that this paper has attempted to study has not yet come to a definite conclusion among academics. Many researchers have tried to identify various factors that might contribute to this phenomenon. They have identified such other factors as the behaviours of investors, the band wagon effect and data mining among others that lead to value stocks giving superior results to growth stocks than the existence of inherent inefficiencies in security market systems. Therefore, the analysis given so far should be reflected within the context of this general debate going on at various academic levels.

6. CONCLUSIONS and REMARKS

Under this last chapter the a wrapping up of the study and the whole process, the shortcomings of the study, the impression of the authors and a suggestion for prospective researchers intending to study on this topic or other related topics will be given.

6.1. Conclusion

This study has, to more or less satisfactory level, attained its objective of investigating if investments in value stocks would generate better returns than investments in growth stocks in Stockholm stocks markets under selected investment periods.

These were the fundamental study questions: can portfolio of value stocks give superior payoff than growth stocks and how do the two portfolios perform when compared to the market index?

We have shown that there is value premium in Stockholm stock markets. However, this result is achieved through only using a single fundamental variable namely, price-earning-multiple. Moreover, the study included almost all stock markets without discriminating them on the basis of legal and financial grounds that might have quite a different bearing on the selections of stocks analysed as well as the results obtained.

Overall, the results arrived at by this study and the analysis done as well as the conclusion to be drawn can only be appreciated when they are put into a context. Compared to other markets such as New York and London Stock Exchanges, Stockholm stock markets are relatively small. For example at particular point in 2012, on London Stock Exchange there were around 2549 companies that listed,³⁶ while there are around 4340 companies listed on New York Stock Exchange.³⁷ On the other hand, the number of listed companies on the Nasdaq OMX Stockholm, as of 29 March, 2012 was only a mere 255.³⁸

Without even looking at the market capitalization data, one can easily assume the immense

³⁶ London Stock Exchange, 'Companies and issuers', <http://www.londonstockexchange.com/statistics/companies-and-issuers/companies-and-issuers.htm>. (Accessed 2012-05-14).

³⁷ New York Stock Exchange, 'Listings Directory', http://www.nyse.com/about/listed/lc_all_overview.html. (Accessed, 2012-05-14)

³⁸ Nasdaq Omx, 'Changes to the List: 2012', http://nordic.nasdaqomxtrader.com/newsstatistics/corporateactions/Stockholm/Changes_to_the_List/. (Accessed 2012-05-14).

differences that exist between these markets both in terms of turnovers and market shares.

Börsguide 2011:1, for example, gives the following information on its introductory pages about which companies hold most of the total stock market values in Sweden. For year 2010, 55 % of the total stock market value belonged to only ten biggest companies. That list includes such big companies as ABB, H&M, AstraZeneca, Nordea, TeliaSonera, and Ericsson.³⁹

As pointed out earlier, this study considers stocks that are traded on nearly all available stock markets including Nasdaq OMX Stockholm. Since most of the market capitalization is taken up by the bigger companies that are traded on Nasdaq OMX Stockholm labelled as Large, Medium and Small cap shares, the market share of the other companies becomes very small.

Taking the performances of companies that are very small in terms of market capitalization and are traded in the smaller stock markets might not be fair enough to characterize Stockholm Stock Exchange, where the bulk of trading occurs, with the results of this study.

As this study takes the perspective of the investors, common sense dictates that most of the institutional investors and fund managers hold portfolios in the bigger and well-established companies that are traded in the Nasdaq OMX Stockholm than in the smaller and more risky companies that are traded on other markets.

We think that the conclusion that can be drawn from this study may not properly reflect the characteristics of Stockholm stock markets as a whole. What this study contributes to, for certain, is that it can be the basis upon which more advanced and deep-going studies conducted in the future.

³⁹ Öhman Investkonsult, *BÖRGUIDE*, Delphi Economics, 2011:1, p14.

6.2. Shortcomings of the Study

The study uses only P/E-multiple as a criterion to separate value and growth stocks. As mentioned in many places, the lack of access to a better database has forced the study to do so. The ideal situation would have been to use as many fundamental variables as possible to group stocks as value and growth and observe their returns. This shortcoming has its limiting effect on the generalization of the results.

Moreover, the study uses only one accounting year P/E-multiple to categorize stocks. Given the fluidity of value-growth dichotomy over time, it would have been a better study if P/E-multiples the average of several years were used.

The other obvious shortcoming of the study is that the P/E-multiple and the Dividend data are manually collected from various issues of *Börsguide* that stretches back to several years. Though cross-checks were done, human error both during the publication of the books and at the time of manual collection of data by this study are unavoidable.

Finally the dependence on *Börsguide*, which publishes the final issues for each year at around October, as the only source for P/E-multiples data has restricted the selection of the starting periods for portfolio building or the point for beginning investment .

6.3. Remarks

One of the most remarkable things that we have come to observe during the process of this study is the change that we our selves have gone through. The fact that we gradually but surely went deep into the issues of investments and returns and have come out learning a great deal from accumulated knowledge of both the old and new perspectives is appreciable . It is highly rewarding and invaluablely educative to get immersed into the synthesis and development of the bulk of knowledge that has been accumulating over the years about investments and returns starting from the classic work duly titled *Security Analysis* by Graham and Dodd (1934), *Portfolio Selection* of Markowitz (1952) and *Investment Performance of Common Stocks in Relation to their Price-earnings Ratios* by Basu (1977) right up to the recent *Value Premium* study of Zhang (2005).

Turning back to the study itself, we would like to say that the persistence of the prevalence value premium, we tend to believe, has more to do with human nature than it is influenced by other factors. Stock markets like the Stockholm stock markets are dominated by big companies that are run by professional managers and security analysts. When compared to private investors like Graham and Dodd of the old days or Warren Buffet of our times, these professional fund managers don't have that much discretion to take extreme risks as they are beholden to many interest groups as well as employee performance evaluation benchmarks. Consequently, many of these fund managers tend to go with the crowd and avoid securities valued by the market as underperforming and more risky and invest in the much sought after glamour stocks. Hence, we presume, continues the prevalence of value premium in the market.

Finally, we would like to highlight here that as there have not been significant researches conducted on the Stockholm stock markets around these issues, the modest contribution we have made by this paper would be of some use to those who come after us and pursue this path.

6.4. Recommendations for Further Studies

The first and the utmost important thing that we recommend to future researchers is that they must ensure that they have access to correct sources of data. They must keep in my mind that historical price data and data for other fundamental variables are not readily available for all years and for every company. There are limited databases (at least up to this point in time), that have a bulk of data that goes several decades back, in their possession.

Having made that very clear, we recommend that future studies take as many fundamental variables as possible in categorizing stocks as value and growth instead of using a single variable, that is, price-earning-multiple or any other single multiple as we have done with only P/E-multiple.

Since Stockholm stock markets are dominated by very few companies, it would be of great interest if future studies take into consideration this aspect and study the behaviours of Stockholm stock markets by separately analysing the big stocks (Large Caps) in OMX

Norden, the smaller stock markets as well as a combination of the two and examine their behaviours.

Finally we would like to emphasize here that the issue of value stocks outperforming growth stocks seem to have been accepted as a fact among academics as is mentioned under section 2.5.5. The research frontiers seem now to have expanded towards other dimensions by focusing researches on the causes of these anomalies. For this very fact, we think it would be of great addition to the already existing body of knowledge if future studies follow, for example, the approaches employed by Anderson and Brooks that make use of several years of price-earnings-multiples to categorize stocks as value and growth. Stretching their approach one step ahead, future researchers can use ratios of several years of other fundamental variables in categorizing stocks as value and growth, then study returns as well as observe the characteristics of Stockholm stock markets.

Like Anderson and Brooks, another researcher, Lu Zhang, has also selected quite a different and relatively new approach in studying why value stocks generate higher returns than growth stocks. Future studies that follow on this approach, we strongly believe, would shed fresh lights on the underlying factors that might contribute to the existence of value premium in Stockholm stock markets.

Last but not least we would like to point out the fact that Stockholm stock markets might not possess similar characteristics as all the other markets studied so far. A market dominated by few companies might exhibit different characteristics and sensitivities, for example, to business cycle fluctuations than other markets and thus this frontier might open quite an interesting window for a new investigation.

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APPENDICES

Appendix A: Definitions

Fundamental analysis is an analytical method where an analyst tries to determine the correct stock price from a company's basic, fundamental value. The analyst hopes to get an idea of the company's future performance, which the market does not know and predict its future development to determine if the current stock price is over- or undervalued.⁴⁰

Technical analysis is another analytical method. When using technical analysis the analyst consider various graphs, showing various buy or sale signals and by that determining whether an investment should be placed. The analyst is mainly looking for reoccurring and predictable patterns/trends in historical stock prices.⁴¹

Stock-price-to-Earnings (P/E) multiple is the ratio between the current market price and earnings per stock. Firms perceived to have higher growth opportunities appear to have higher P/E multiples.⁴²

Value stocks are securities with high earnings-to-price multiples or securities with high book-value-to-stock-price multiples while **growth stocks** are securities with low.⁴³

Risk-free rate is defined according to Riksbanken(Swedish Central Bank) as:”Short risk “free” rate, as measured by Riksbanken interest rate (1856-1982) and Swedish 30-day Treasury bills since 1982”.⁴⁴ Treasury bills with 1, 3, 6 and 12-month maturity.⁴⁵

Value Premium is the spread (difference) between the returns on value and growth stocks, usually stated in average measures.

⁴⁰ Bodie et al. *Investments*, 6th edn. (Boston, McGraw-Hill, 2005), p.377.

⁴¹ Ibid p.374

⁴² Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe. *Corporate Finance* 7th edn (Boston, McGraw-Hill, 2005) p.125.

⁴³ Ibid, p.368.

⁴⁴ Sverigesriks Bank, Räntor och aktieavkastningar 1856–2006.

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⁴⁵ Sverigesriks Bank, Svenska Marknadsräntor.

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Appendix B: Portfolio Data for Period One (1996-01-01 to 1999-09-30)

The following information applies to all tables under Appendix B up to Appendix F. Explanation to Superscripts used in each table.

- a) Previous year's P/E-multiple collected from Börsguide (2005 to 2008)
- b) Annual Dividend/share collected from Börsguide (2005 to 2011)
- c) Standard Deviation calculated from average monthly price returns data collected from Ecwin Pro.
- d) Holding Period Returns; are calculated according to Portfolio Return discussed under Section 2.3.1
- e) Mean Price Returns; are geometric mean calculated from average monthly prices data collected from Ecwin Pro
- f) Risk Free Rates: annual average calculated from the 3-months rate data gathered from Riksbanken for the period 1996 - 2009
- g) Sharpe Ratio (risk-adjusted rate); are calculated by subtracting risk free rate from Holding period return and dividing it by standard deviation.

PERIOD ONE 1996- 1999

GROWTH STOCKS

Table 7 B. Growth Stocks 1996

			1996		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
DORO	13,9	0,46	0,288064	0,19918	0,074265
ELEKTA B	21	1,51	0,296172	-0,08953	0,048688
ERICSSON B	16,6	0,31	0,285462	0,578288	0,100221
HAVSFRUN INVESTMENT B	95	2	0,291956	0,284855	0,060232
HEBA	15,1	1	0,286728	0,349757	0,079434
HENNES & MAURITZ B	16,5	0,55	0,273364	1,46367	0,139934
KABE B	89	0,4	0,286587	0,330706	0,08009
LUNDBERG	12,9	3,3	0,285256	0,332042	0,07895
NCC A	27	1,5	0,29277	0,150803	0,070415
NOKIA	19	0,32	0,286635	0,563381	0,098443
PEAB B	17,4	0,28	0,288179	0,692756	0,103513
SECURITAS B	14	0,6	0,272626	0,972535	0,119177
WALLENSTAM B	87	0,25	0,292424	0,393443	0,083271
PORTFOLIO			0,283991	0,325888	0,023257
Rf^f	0,057				
SHARPE^g	0,9467				

Table 8 B. Growth Stocks 1997

		1997			
		GROWTH STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
DORO	13,9	0,55	0,286878	0,286878	0,103041
ELEKTA B	21	0	0,313996	0,313996	-0,0033
ERICSSON B	16,6	0,44	0,291056	0,291056	0,081155
HAVSFRUN INVESTMENT B	95	2	0,290289	0,290289	0,061057
HEBA	15,1	1,3	0,288029	0,288029	0,07149
HENNES & MAURITZ B	16,5	0,75	0,283238	0,283238	0,105143
KABE B	89	0,5	0,29551	0,29551	0,078
LUNDBERG	12,9	3,8	0,293335	0,293335	0,076492
NCC A	27	1,5	0,294034	0,294034	0,053399
NOKIA	19	0,68	0,294484	0,294484	0,081092
PEAB B	17,4	0,4	0,292988	0,292988	0,050357
SECURITAS B	14	0,69	0,294764	0,294764	0,068525
WALLENSTAM B	87	0,5	0,299611	0,299611	0,049547
PORTFOLIO			0,037301	0,037301	0,009088
R^f	0,044463				
SHARPE^g	-0,19199				

Table 9B. Growth Stocks 1998

		1998			
		GROWTH STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
DORO	13,9	1,75	0,302336	2,131465	0,164164
ELEKTA B	21	0	0,35497	-0,57892	-0,01421
ERICSSON B	16,6	0,5	0,305751	0,313486	0,083564
HAVSFRUN INVESTMENT B	95	5,75	0,287434	0,909923	0,072619
HEBA	15,1	1,9	0,288708	0,177999	0,062801
HENNES & MAURITZ B	16,5	1	0,280621	0,848177	0,113913
KABE B	89	0,75	0,305771	-0,26495	0,021948
LUNDBERG	12,9	4,3	0,298502	-0,12761	0,039972
NCC A	27	2,5	0,302832	-0,22777	0,033306
NOKIA	19	1,15	0,278688	2,106543	0,163443
PEAB B	17,4	0,6	0,297278	0,070605	0,056912
SECURITAS B	14	0,85	0,286338	1,136945	0,127535
WALLENSTAM B	87	0,75	0,298106	0,05213	0,042709
PORTFOLIO			0,28952	0,506628	0,093063
R^f	0,042089				
SHARPE^g	1,604515				

Table 10B: Growth Stocks 1999

		1999			
		GRWOTH STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
DORO	13,9	2	0,306024	0,055448	0,07026
ELEKTA B	21	0	0,318021	-0,08802	0,056157
ERICSSON B	16,6	0,5	0,30056	0,930453	0,130666
HAVSFRUN INVESTMENT B	95	6	0,300555	0,081857	0,072292
HEBA	15,1	2,2	0,303338	-0,01821	0,063088
HENNES & MAURITZ B	16,5	1,35	0,29889	0,420821	0,099576
KABE B	89	1	0,300106	0,131483	0,076873
LUNDBERG	12,9	4,8	0,298769	0,162074	0,079564
NCC A	27	4	0,29671	0,334468	0,093272
NOKIA	19	0,17	0,300651	0,944068	0,13139
PEAB B	17,4	0,8	0,306056	0,055619	0,070138
SECURITAS B	14	1	0,304462	0,104023	0,074645
WALLENSTAM B	87	1,3	0,302838	0,045436	0,06889
PORTFOLIO			0,294403	0,421476	0,099643
Rf ^f	0,030571				
SHARPE ^g	1,327791				

PERIOD ONE 1996- 1999
VALUE STOCKS

Table 11B. Value Stocks 1996

		1996			
		VALUE STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ACTIVE BIOTECH	4,9	9,26	0,283175	1,430972	0,116014
ATLAS COPCO B	3,5	3,28	0,280852	0,874816	0,102039
BEIJER ALMA B	4,6	5	0,276457	1,256512	0,113277
ELANDERS B	6,1	1,81	0,279044	0,571648	0,098104
HEXAGON B	4,6	4	0,274425	1,685444	0,123626
JM ORD,	4,7	2	0,27727	0,971192	0,113321
OEM INTERNATIONAL B	6,1	2	0,278091	1,031042	0,118173
ROTTNEROS	2,5	0,2	0,287225	0,304184	0,082309
SKF B	5,9	5,25	0,289301	0,376594	0,074096
SSAB A	2,7	4	0,279999	0,810958	0,102705
TRELLEBORG B ORD,	3,3	3	0,286808	0,302688	0,076602
PORTFOLIO			0,278084	0,711844	0,097921
Rf ^f	0,057045				
SHARPE ^g	1,715144				

Table 12B. Value Stocks 1997

			1997		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ACTIVE BIOTECH	4,9	3,7	0,301311	0,877476	0,110686
ATLAS COPCO B	3,5	3,72	0,284301	0,5724	0,088994
BEIJER ALMA B	4,6	6	0,286966	1,090616	0,112343
ELANDERS B	6,1	2	0,291895	0,406296	0,088241
HEXAGON B	4,6	5	0,292395	0,543299	0,074025
JM ORD,	4,7	3,3	0,29004	0,11315	0,056836
OEM INTERNATIONAL B	6,1	2,5	0,290592	0,336674	0,080632
ROTTNEROS	2,5	0,2	0,307535	-0,29186	0,028252
SKF B	5,9	5,25	0,298678	0,197922	0,062944
SSAB A	2,7	4,5	0,292851	0,222518	0,067525
TRELLEBORG B ORD,	3,3	3,5	0,29355	0,087572	0,060673
PORTFOLIO			0,285372	0,379283	0,080347
Rf^f	0,044463				
SHARPE^g	1,173272				

Table 13B. Value Stocks 1998

			1998		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ACTIVE BIOTECH	4,9	0	0,166577	-0,01649	0,043436
ATLAS COPCO B	3,5	3,94	0,063214	-0,01826	0,041719
BEIJER ALMA B	4,6	6,5	0,052056	-0,01333	0,04651
ELANDERS B	6,1	3	0,065422	0,029287	0,087871
HEXAGON B	4,6	5	0,078752	-0,02234	0,03775
JM ORD,	4,7	3,3	0,068771	-0,00098	0,058512
OEM INTERNATIONAL B	6,1	3	0,058068	-0,0244	0,035739
ROTTNEROS	2,5	0,1	0,10672	-0,05565	0,005291
SKF B	5,9	2	0,089084	-0,04154	0,01905
SSAB A	2,7	4,5	0,094597	-0,04971	0,011081
TRELLEBORG B ORD,	3,3	2	0,088874	-0,03945	0,021082
PORTFOLIO			0,063536	-0,01065	-0,00977
Rf^f	0,042089				
SHARPE^g	-0,00053				

Table 14B. Value Stocks 1999

			1999		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ACTIVE BIOTECH	4,9	0	0,302002	0,166939	0,080094
ATLAS COPCO B	3,5	4,75	0,297929	0,558556	0,09279
BEIJER ALMA B	4,6	7	0,308778	0,057523	0,045749
ELANDERS B	6,1	4,5	0,303326	0,048937	0,066606
HEXAGON B	4,6	5	0,308697	0,280989	0,048922
JM ORD,	4,7	6,8	0,295319	0,663673	0,096122
OEM INTERNATIONAL B	6,1	3,75	0,301535	0,253383	0,077082
ROTTNEROS	2,5	0,25	0,293131	2,134219	0,180433
SKF B	5,9	4	0,288854	1,038196	0,125777
SSAB A	2,7	4,5	0,300494	0,438	0,087437
TRELLEBORG B ORD,	3,3	3,25	0,303659	0,203077	0,074241
PORTFOLIO			0,297815	0,287681	0,079161
Rf^f	0,030571				
SHARPE^g	0,863318				

Appendix C: Portfolio Data for Period Two (1999-10-01 to 2004-09-30)

Table 15C. Growth Stocks 1999

			1999		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100		0,487118	0,311111	0,619328
FEELGOOD	76		0,671752	0,05	0,449138
KINNEVIK B	73,3		0,363952	0,485294	0,723539
MODERN TIMES GROUP MTG B	70,7		0,3598	0,491166	0,726943
HENNES & MAURITZ B	68,7		0,667823	0,055556	0,452966
SECURITAS B	64,3		0,644641	0,088341	0,475358
ERICSSON B	61,2		0,476547	0,326061	0,628534
NOKIA	55,6		0,525428	0,256933	0,585518
SECTRA B	55,4		0,506584	0,283582	0,602237
POOLIA B	54,3		0,51464	0,272189	0,595111
PROFFICE B	51,7		0,453038	0,359307	0,648822
DUROC B	51,1		0,608898	0,138889	0,509231
ASSA ABLOY B	49,9		0,564975	0,201005	0,549842
MEDIVIR B ORD	49,9		0,568329	0,196262	0,546778
SOFTRONIC B	39,9		0,686397	0,029289	0,434774
BRIO B	37,2		0,440991	0,376344	0,659123
PROACT	36		0,297729	0,578947	0,777047
TIETO	36		0,449307	0,364583	0,652019
ORTIVUS A	35,1		0,494975	0,3	0,612452
PORTFOLIO			0,498872	0,294489	0,60903
R^f	0,03395				
SHARPE^g	0,522255375				

Table 16C. Growth Stocks 2000

			2000		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100	1,1	0,311951	1,263158	0,134084
FEELGOOD	76	0	0,320043	-0,12108	0,04813
KINNEVIK B	73,3	0,6	0,310521	-0,19302	0,040622
MODERN TIMES GROUP MTG B	70,7	0	0,302354	-0,15261	0,044943
HENNES & MAURITZ B	68,7	1,35	0,319667	-0,45826	0,006549
SECURITAS B	64,3	1,2	0,316268	-0,04749	0,055045
ERICSSON B	61,2	0,36	0,32837	-0,30861	0,027367
NOKIA	55,6	2,48	0,294333	0,053929	0,064058
SECTRA B	55,4	0,3	0,307377	0,036071	0,062546
POOLIA B	54,3	0,75	0,291879	0,858695	0,115551

PROFFICE B	51,7	0,5	0,326759	0,593031	0,101306
DUROC B	51,1	0	0,323762	0,256944	0,079847
ASSA ABLOY B	49,9	0,9	0,290818	0,462143	0,093491
MEDIVIR B ORD	49,9	0	0,395072	-0,4	0,015309
SOFTRONIC B	39,9	0	0,396061	-0,53092	-0,00531
BRIO B	37,2	0	0,30575	-0,33945	0,023477
PROACT	36	0	0,393204	0,071428	0,065572
TIETO	36	4,35	0,352639	-0,45697	0,006774
ORTIVUS A	35,1	0	0,357915	-0,60294	-0,01903
PORTFOLIO			0,303992	-0,16326	0,043346
R^f	0,039525205				
SHARPE^g	-0,66709096				

Table 17C. Growth Stocks 2001

			2001		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100	0,6	0,30898	-0,15306	0,041696
FEELGOOD	76	0	0,408963	-0,753	-0,05708
KINNEVIK B	73,3	0,3	0,348667	-0,31088	0,026607
MODERN TIMES GROUP MTG B	70,7	0	0,318538	-0,25	0,034366
HENNES & MAURITZ B	68,7	1,75	0,304768	0,083538	0,065149
SECURITAS B	64,3	1,5	0,296098	0,200082	0,07452
ERICSSON B	61,2	0	0,355842	-0,50435	-0,00073
NOKIA	55,6	2,5	0,363803	-0,19672	0,039491
SECTRA B	55,4	0,4	0,307375	0,039683	0,062129
POOLIA B	54,3	0,25	0,376082	-0,59201	-0,01727
PROFFICE B	51,7	0,25	0,361147	-0,46367	0,00532
DUROC B	51,1	0	0,327676	-0,56522	-0,01158
ASSA ABLOY B	49,9	1	0,318209	-0,07879	0,051664
MEDIVIR B ORD	49,9	0	0,355292	-0,58667	-0,01574
SOFTRONIC B	39,9	0	0,417258	-0,88295	-0,11396
BRIO B	37,2	0,25	0,287644	0,396546	0,088867
PROACT	36	0	0,331094	-0,59033	-0,01647
TIETO	36	9,31	0,320849	-0,10028	0,047264
ORTIVUS A	35,1	0	0,339121	-0,375	0,018769
PORTFOLIO			0,318915	-0,26734	0,031427
R^f	0,040008891				
SHARPE^g	-0,96373874				

Table 18C. Growth Stocks 2002

			2002		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100	0	0,324789	-0,26667	0,032431
FEELGOOD	76	0	0,333973	-0,73256	-0,05081
KINNEVIK B	73,3	0,3	0,400183	-0,5187	-0,00423
MODERN TIMES GROUP MTG B	70,7	0	0,371542	-0,71341	-0,04532
HENNES & MAURITZ B	68,7	6	0,303067	-0,0625	0,047739
SECURITAS B	64,3	2	0,322614	-0,46258	0,003274
ERICSSON B	61,2	0	0,544373	-0,81718	-0,08042
NOKIA	55,6	2,57	0,333226	-0,42624	0,009978
SECTRA B	55,4	0,5	0,305041	-0,0914	0,050018
POOLIA B	54,3	0,25	0,387284	-0,64455	-0,02929
PROFFICE B	51,7	0,25	0,35939	-0,50128	-0,00129
DUROC B	51,1	0	0,343046	-0,56897	-0,01229
ASSA ABLOY B	49,9	1,25	0,323243	-0,29049	0,028522
MEDIVIR B ORD	49,9	0	0,341805	-0,28403	0,030371
SOFTRONIC B	39,9	0	0,399864	-0,5	0
BRIO B	37,2	0	0,297744	-0,078	0,052317
PROACT	36	0	0,337531	-0,68282	-0,03722
TIETO	36	4,58	0,335467	-0,50566	-0,00407
ORTIVUS A	35,1	0	0,30322	-0,2	0,039944
PORTFOLIO			0,323241	-0,4673	0,003595
R ^f	0,040614738				
SHARPE ^g	-1,571315				

Table 19C. Growth Stock 2003

			2003		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100	0,5	0,294385	0,483333	0,092256
FEELGOOD	76	0	0,350895	0,296296	0,082625
KINNEVIK B	73,3	0,5	0,269445	1,920479	0,157693
MODERN TIMES GROUP MTG B	70,7	0	0,313405	1,118881	0,127876
HENNES & MAURITZ B	68,7	6	0,291672	0,022346	0,055434
SECURITAS B	64,3	2	0,307144	0,046717	0,060378
ERICSSON B	61,2	0	0,32715	0,77931	0,111579
NOKIA	55,6	2,72	0,299191	0,042787	0,061256
SECTRA B	55,4	0,5	0,294954	0,304619	0,082334
POOLIA B	54,3	0,25	0,334148	0,424335	0,08995
PROFFICE B	51,7	0	0,333776	-0,01951	0,057725
DUROC B	51,1	0	0,306447	0,168318	0,073287
ASSA ABLOY B	49,9	1,25	0,305177	-0,01977	0,056423
MEDIVIR B ORD	49,9	0	0,338822	1,729412	0,151927
SOFTRONIC B	39,9	0,1	0,348918	0,660606	0,101782

BRIO B	37,2	0	0,301421	-0,17174	0,042957
PROACT	36	0	0,277706	1,042735	0,124441
TIETO	36	4,58	0,293712	0,699414	0,105228
ORTIVUS A	35,1	0	0,313826	0,588235	0,101105
PORTFOLIO			0,287232	0,324604	0,083018
R^f	0,030031912				
SHARPE^g	1,025552551				

Table 20C. Growth Stock 2004

		2004			
		GROWTH STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
CONCORDIA MARITIME B	100	3	0,336067	0,532258	0,118595
FEELGOOD	76	0	0,339318	0,088083	0,090238
KINNEVIK B	73,3	0,25	0,345886	-0,18697	0,054954
MODERN TIMES GROUP MTG B	70,7	0	0,350766	-0,11111	0,066017
HENNES & MAURITZ B	68,7	8	0,332249	0,196133	0,092409
SECURITAS B	64,3	3	0,345084	0,03784	0,07822
ERICSSON B	61,2	0,25	0,338645	0,372727	0,11848
NOKIA	55,6	3	0,371667	-0,32131	0,031158
SECTRA B	55,4	0,5	0,342324	-0,08599	0,068061
POOLIA B	54,3	0,25	0,339741	-0,05634	0,071668
PROFFICE B	51,7	0	0,378016	-0,49602	0,000882
DUROC B	51,1	0	0,344801	0,076433	0,088935
ASSA ABLOY B	49,9	2,6	0,339073	-0,00688	0,075868
MEDIVIR B ORD	49,9	0	0,346292	-0,20401	0,053023
SOFTRONIC B	39,9	0	0,365439	-0,36765	0,026437
BRIO B	37,2	0	0,327567	0,557591	0,134571
PROACT	36	0	0,354916	-0,23047	0,049074
TIETO	36	9,01	0,339202	0,020831	0,077542
ORTIVUS A	35,1	0	0,358714	-0,35227	0,02918
PORTFOLIO			0,340147	-0,037	0,072204
R^f	0,021413687				
SHARPE^g	-0,17172285				

PERIOD TWO 1999-2004
VALUE STOCKS

Table 21C. Value Stocks 1999

		1999		
		VALUE STOCKS		
COMPANIES	P/E ^a	STD ^c	HPR ^d	MEAN ^e RETURN
HAVSFRUN B	3,1	0,616838	0,12766	0,501772

VOLVO B	4	0,66088	0,065375	0,459709
HANDELSBANKEN B	4,6	0,743796	-0,05189	0,377035
KUNGSLEDEN	5	0,636396	0,1	0,48324
RATOS B	5	0,579596	0,180328	0,536443
BORAS WAFVERI B	5,3	0,676363	0,043478	0,44463
EXPANDA,	5,8	0,562059	0,205128	0,5525
LUNDBERG B	5,9	0,694592	0,017699	0,426674
BURE EQUITY	6,3	0,460442	0,348837	0,64246
GEVEKO B	6,3	0,604462	0,145161	0,513381
KABE B	7,2	0,642599	0,091228	0,477314
BEIJER ALMA B	7,4	0,620187	0,122924	0,498615
INVESTOR B	8,1	0,673141	0,048035	0,447781
MALMBERGS ELEKTRISKA B	8,2	0,582323	0,176471	0,53393
PEAB B	8,2	0,687019	0,028409	0,434161
GETINGE B	8,6	0,647182	0,084746	0,472919
GUNNEBO	8,9	0,618719	0,125	0,5
WESTERGYLLEN B	9,8	0,608898	0,138889	0,509231
SAAB B	9,9	0,535687	0,242424	0,57634
TRACTION B	9,9	0,725715	-0,02632	0,395481
PORTFOLIO		0,568858	0,195513	0,546294
Rf^f	0,03395			
SHARPE^f	0,28401305			

Table 22C. Value Stocks 2000

			2000		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
HAVSFRUN B	3,1		0,299528	0,908257	0,05865
VOLVO B	4	8	0,303307	-0,05289	0,033001
HANDELSBANKEN B	4,6		0,279092	0,684211	0,106502
KUNGSLEDEN	5	9	0,290863	1,119559	0,078142
RATOS B	5	5,5	0,289591	0,406017	0,06646
BORAS WAFVERI B	5,3	1	0,288948	0,121483	0,067404
EXPANDA,	5,8	1,5	0,288407	0,168421	0,070847
LUNDBERG B	5,9	5,3	0,286738	0,282353	0,075179
BURE EQUITY	6,3	2,08	0,302556	0,657518	0,104848
GEVEKO B	6,3	10	0,293156	0,382169	0,065896
KABE B	7,2	0,31	0,29054	0,037576	0,059463
BEIJER ALMA B	7,4	4	0,285763	0,580645	0,09125
INVESTOR B	8,1	5,5	0,288608	0,186235	0,071228
MALMBERGS ELEKTRISKA B	8,2	2,5	0,29458	0,133333	0,061405
PEAB B	8,2	1,3	0,278951	1,281185	0,125012
GETINGE B	8,6	0,81	0,294136	0,171265	0,07081
GUNNEBO	8,9	1,63	0,309964	0,35844	0,075584
WESTERGYLLEN B	9,8	2,25	0,312776	0,040994	0,055182

SAAB B	9,9	3	0,295836	0,191176	0,071646
TRACTION B	9,9	3,15	0,303284	0,1545	0,06462
PORTFOLIO			0,28749	0,46084	0,089622
R^f	0,039525205				
SHARPE^g	1,465493177				

Table 23C. Value Stocks 2001

			2001		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
HAVSFRUN B	3,1		3,032425	0,904306	0,243503
VOLVO B	4	8	4,245073	0,234099	0,25649
HANDELSBANKEN B	4,6		6,281156	-0,05195	0,291691
KUNGSLEDEN	5	1,64	3,762211	0,434574	0,273952
RATOS B	5	6,25	4,005237	0,458943	0,265499
BORAS WAFVERI B	5,3	1	6,698972	-0,01138	0,300075
EXPANDA,	5,8	1,5	6,871119	-0,22617	0,275137
LUNDBERG B	5,9	5,8	2,997095	0,211429	0,237174
BURE EQUITY	6,3	1,21	94,02388	-0,39759	0,552727
GEVEKO B	6,3	9	5,563363	0,100722	0,267889
KABE B	7,2	0,44	1,0942	0,295758	0,160604
BEIJER ALMA B	7,4	2	8,539873	-0,375	0,269725
INVESTOR B	8,1	5,5	9,57979	-0,15493	0,318291
MALMBERGS ELEKTRISKA B	8,2	0	5,576505	-0,01136	0,284029
PEAB B	8,2	2,1	4,640695	0,5	0,294317
GETINGE B	8,6	0,94	1,763301	0,314074	0,202683
GUNNEBO	8,9	1,75	2,286532	0,315569	0,218036
WESTERGYLLEN B	9,8	0	9,717442	-0,51587	0,264745
SAAB B	9,9	3,25	3,446102	0,334416	0,264731
TRACTION B	9,9	3,85	5,098657	0,079167	0,273182
PORTFOLIO			0,301796	-0,17406	0,038359
R^f	0,04000889				
SHARPE^g	-0,7093237				

Table 24C. Value Stocks 2002

			2002		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
HAVSFRUN B	3,1		0,300237	0,652893	0,062338
VOLVO B	4	8	0,314799	0,142862	0,047356
HANDELSBANKEN B	4,6		0,302875	-0,23448	0,036133
KUNGSLEDEN	5	1,88	0,287336	0,318541	0,075931
RATOS B	5	6,75	0,299006	0,23279	0,054531
BORAS WAFVERI B	5,3	0	0,300948	-0,31818	0,026183
EXPANDA,	5,8	1	0,306363	-0,23016	0,033603

LUNDBERG B	5,9	6	0,288086	0,254545	0,074315
BURE EQUITY	6,3	0	0,339901	-0,65333	-0,03006
GEVEKO B	6,3	9	0,327478	0,002402	0,028064
KABE B	7,2	0,62	0,28917	0,282174	0,077772
BEIJER ALMA B	7,4	1	0,35691	-0,36615	0,013557
INVESTOR B	8,1	3,4	0,332311	-0,49174	-0,00391
MALMBERGS ELEKTRISKA B	8,2	0,7	0,307899	-0,20976	0,035064
PEAB B	8,2	7,8	0,291071	0,975139	0,08727
GETINGE B	8,6	1,06	0,296336	-0,0451	0,053258
GUNNEBO	8,9	2	0,303455	0,063604	0,054962
WESTERGYLLEN B	9,8	0	0,321324	-0,43363	0,010441
SAAB B	9,9	3,5	0,299344	-0,0787	0,049115
TRACTION B	9,9	1,4	0,303769	-0,18431	0,037142
PORTFOLIO			0,308529	-0,28361	0,022348
R^f	0,040614738				
SHARPE^g	-1,05088287				

Table 25C. Value Stocks 2003

			2003		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
HAVSFRUN B	3,1		0,312508	2,6	0,139646
VOLVO B	4	8	0,288368	0,841719	0,097868
HANDELSBANKEN B	4,6		0,282028	0,370192	0,087638
KUNGSLEDEN	5	2,03	0,284426	0,496345	0,088841
RATOS B	5	7,25	0,286132	0,558495	0,077285
BORAS WAFVERI B	5,3	0	0,307577	-0,00857	0,058703
EXPANDA,	5,8	0	0,295394	0,057143	0,064381
LUNDBERG B	5,9	6	0,285841	0,328804	0,080321
BURE EQUITY	6,3	0	0,549082	-0,74823	-0,05557
GEVEKO B	6,3	10	0,281523	1,039756	0,100086
KABE B	7,2	1	0,278049	1,155039	0,126723
BEIJER ALMA B	7,4	1,5	0,301668	0,662791	0,099351
INVESTOR B	8,1	2,25	0,284879	0,464286	0,090774
MALMBERGS ELEKTRISKA B	8,2	1,25	0,288639	0,750842	0,105537
PEAB B	8,2	2,2	0,301177	0,11484	0,057266
GETINGE B	8,6	1,35	0,2846	0,686141	0,104762
GUNNEBO	8,9	2,25	0,282942	0,669365	0,097543
WESTERGYLLEN B	9,8	0	0,302917	0,507462	0,096326
SAAB B	9,9	3,5	0,286694	0,30814	0,080596
TRACTION B	9,9	2,4	0,289576	0,138064	0,06337
PORTFOLIO			0,286416	0,3593	0,076437
R^f	0,03003191				
SHARPE^g	1,1496154				

Table 26C. Value Stocks 2004

		2004			
		VALUE STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
HAVSFRUN B	3,1		0,337979	-0,02333	0,070958
VOLVO B	4	12,5	0,331189	0,425346	0,095645
HANDELSBANKEN B	4,6		0,331386	0,089928	0,090443
KUNGSLEDEN	5	2,33	0,332212	0,317338	0,104623
RATOS B	5	8,5	0,32946	0,573701	0,10604
BORAS WAFVERI B	5,3	0	0,354296	-0,17808	0,056779
EXPANDA,	5,8	0	0,331648	0,242857	0,106468
LUNDBERG B	5,9	7	0,329412	0,192053	0,094853
BURE EQUITY	6,3	0	0,333635	0,070313	0,088245
GEVEKO B	6,3	10	0,335519	0,350301	0,087222
KABE B	7,2	2	0,333004	0,479452	0,12338
BEIJER ALMA B	7,4	5	0,323878	0,605263	0,121904
INVESTOR B	8,1	2,25	0,333836	0,035714	0,080837
MALMBERGS ELEKTRISKA B	8,2	3,5	0,318846	0,808511	0,142594
PEAB B	8,2	2,5	0,323899	0,50823	0,115141
GETINGE B	8,6	1,65	0,328287	0,279528	0,107696
GUNNEBO	8,9	2,25	0,440173	0,976925	0,159124
WESTERGYLLEN B	9,8	1,25	0,330857	0,460379	0,117897
SAAB B	9,9	3,75	0,337974	-0,0119	0,07422
TRACTION B	9,9	2,8	0,336711	0,059341	0,076044
PORTFOLIO			0,329017	0,211206	0,093628
Rf^f	0,021413687				
SHARPE^g	0,576847186				

Appendix D. Portfolio Data for Period Three (2004-10-01 to 2005-09-30)

PERIOD THREE 2004 - 2005
GROWTH STOCKS

Table 27D. Growth Stocks 2004

			2004		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
SECTRA B	90,3	0,476081	0,385	0,404408	0,451536
LAGERCRANTZ GROUP B	78,7	0,515802	0,252874	0,358248	0,415903
READSOFT B	77,7	0,566539	0,043956	0,278117	0,34877
SIGMA B	73,2	0,57101	0,023622	0,269765	0,341406
MULTIQ INTERNATIONAL	53	0,639579	-0,20339	0,167953	0,261834
FEELGOOD	42,6	0,571114	0,02907	0,272013	0,344113
BRINGWELL	41,2	0,61281	-0,11505	0,209622	0,294668
THALAMUS	41,2	0,549843	0,097561	0,299629	0,365097
EXPANDA	40,8	0,551974	0,095	0,298618	0,365
MEDA AB A	40,6	0,515851	0,224389	0,347876	0,404348
LUNDIN PETROLEUM	38,5	0,622766	-0,13605	0,199975	0,289703
KNOW IT	35,8	0,535193	0,15625	0,322393	0,384136
HIQ	34	0,451683	0,49375	0,440244	0,482275
ADDNODE B	33,7	0,511549	0,25	0,357209	0,41299
ORTIVUS B	33,4	0,578518	-0,00403	0,258225	0,331989
RAYSEARCH B	32,5	0,561536	0,148936	0,319599	0,393386
PARTNERTECH	32,3	0,563701	0,066406	0,287214	0,357848
BTS GROUP B	32,1	0,555908	0,092827	0,297758	0,365997
ACANDO	31,4	0,581709	-0,00813	0,256497	0,331791
PORTFOLIO		0,54857	0,103646	0,302027	0,36541
Rf ^f	0,02				
SHARPE ^g	0,152481				

Table 28D. Growth Stocks 2005

			2005		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
SECTRA B	90,3	2,3	0,371345	-0,18469	0,050868
LAGERCRANTZ GROUP B	78,7	0	0,332167	0,201031	0,102268
READSOFT B	77,7	4,24	0,320789	1,130769	0,15709
SIGMA B	73,2	0	0,333558	0,647059	0,141633
MULTIQ INTERNATIONAL	53	0	0,333697	0,265823	0,108722
FEELGOOD	42,6	0	0,33219	0,775956	0,151231
BRINGWELL	41,2	0	0,361308	-0,18085	0,056383
THALAMUS	41,2	2	0,393396	-0,0625	0,061308
EXPANDA	40,8	6,6	0,341023	0,133484	0,078146
MEDA AB A	40,6	0	0,375118	1,708218	0,20649
LUNDIN PETROLEUM	38,5	1,65	0,30987	1,256386	0,179377
KNOW IT	35,8	1,17	0,318015	0,854864	0,153616

HIQ	34	0	0,312373	1,161905	0,176662
ADDNODE B	33,7	1	0,329003	0,310345	0,107456
ORTIVUS B	33,4	0,25	0,333352	0,136815	0,094605
RAYSEARCH B	32,5	0	0,302446	2,138889	0,226437
PARTNERTECH	32,3	0,23	0,320581	0,44716	0,125028
BTS GROUP B	32,1	0	0,327481	0,363971	0,11796
ACANDO	31,4	0,25	0,343543	0,560171	0,131419
PORTFOLIO			0,31961	0,502351	0,302027
Rf^f	0,017581				
SHARPE^g	1,516755				

PERIOD THREE 2004 – 2005
VALUE STOCKS

Table 29D. Value Stocks 2004

			2004		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
SVITHOID TANK B	2	0,62345	-0,14985	0,193556	0,282161
LUXONEN SDR,	2,5	0,530851	0,168136	0,326909	0,387272
BRIO B	3,1	0,544371	0,126602	0,310992	0,375474
BURE EQUITY	3,2	0,528765	0,1839	0,332851	0,393061
SVOLDER B	5,1	0,587934	-0,03583	0,244689	0,321368
TAURUS ENERGY B	5,6	0,394247	0,774244	0,525274	0,556679
RORVIK TIMBER B	6,1	0,591441	-0,04772	0,239552	0,317323
SSAB A	6,1	0,544114	0,119648	0,30829	0,372249
GEVEKO B	6,5	0,567995	0,034829	0,274382	0,34518
LATOUB B	6,5	0,55974	0,062068	0,285466	0,353731
FENIX OUTDOOR B	6,8	0,584494	-0,02437	0,249603	0,3252
ITAB	7,2	0,502851	0,310365	0,378714	0,433291
TRELLEBORG B	7,3	0,559825	0,061879	0,28539	0,353687
WALLENSTAM B	7,4	0,530189	0,17069	0,327875	0,388068
MEDIROX A	7,7	0,559798	0,061889	0,285394	0,353677
INDUSTRIVARDEN A	8	0,55045	0,095466	0,298802	0,364445
WESTERGYLLEN B	8	0,543446	0,121075	0,308845	0,372563
HAVSFRUN INVESTMENT B	8,2	0,568854	0,030225	0,272489	0,343424
NORDNET B	8,5	0,547102	0,107744	0,303636	0,368359
3L SYSTEMS	8,6	0,523116	0,233636	0,35126	0,411212
PORTFOLIO		0,54954	0,098756	0,300101	0,365491
Rf^f	0,02000				
SHARPE^g	0,143313				

Table 30D. Value Stocks 2005

			2005		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
SVITHOID TANK B	2	0	0,327763	0,616442	0,139256
LUXONEN SDR,	2,5	0	0,334264	-0,01772	0,077916
BRIO B	3,1	0	0,348883	-0,09233	0,068496
BURE EQUITY	3,2	0	0,328314	0,20882	0,10306
SVOLDER B	5,1	3	0,325707	0,309565	0,106619
TAURUS ENERGY B	5,6	0	0,461981	1,385477	0,189599
RORVIK TIMBER B	6,1	0	0,330251	0,153782	0,097363
SSAB A	6,1	2,85	0,321416	0,439654	0,119575
GEVEKO B	6,5	11	0,332318	0,370538	0,090894
LATOUR B	6,5	7	0,335936	0,125555	0,080339
FENIX OUTDOOR B	6,8	1,5	0,316905	0,73884	0,144478
ITAB	7,2	1,5	0,323836	0,426296	0,120603
TRELLEBORG B	7,3	5,5	0,332759	0,211158	0,092294
WALLENSTAM B	7,4	2	0,327337	0,594316	0,129267
MEDIROX A	7,7	3,3	0,320609	1,428907	0,181551
INDUSTRIVARDEN A	8	7	0,330548	0,184946	0,091727
WESTERGYLLEN B	8	1,25	0,337308	0,169576	0,092899
HAVSFRUN INVESTMENT B	8,2	1,5	0,333983	0,052886	0,080261
NORDNET B	8,5	0,1	0,329144	0,321685	0,112861
3L SYSTEMS	8,6	1,5	0,347857	0,251578	0,099442
PORTFOLIO			0,327182	0,251778	0,100771
Rf^f	0,017581				
SHARPE^g	0,7158				

Appendix E. Portfolio Data for Period Four (2005-10-01 to 2006-09-30)

PERIOD FOUR 2005 – 2006 GROWTH STOCKS

Table 31E. Growth Stocks 2005

			2005		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
BILLERUD ORD	74,3	0,495503	0,050505	0,203946	0,203946
SYSTEMSE	71,6	0,61139	-0,4385	0,029424	0,029424
STORA ENSO R	53,5	0,500141	0,004673	0,190594	0,190594
FOLLOWIT HOLDING	50,9	0,494518	0,081081	0,212613	0,212613
EMPIRE B	44	0,464499	0,267327	0,261768	0,261768
RETAIL AND BRANDS	50,7	0,486649	0,09375	0,21615	0,21615
ENEA ORD	50,5	0,482322	0,189516	0,241938	0,241938
THALAMUS	44	0,485846	0,2	0,244666	0,244666
ELEKTA B	42,7	0,500855	-0,00282	0,188369	0,188369
ONE MEDIA	42,4	0,608262	-0,48684	0,006515	0,006515
MILLICOM INTERNATIONAL CELLULAR SDR,	42,2	0,431005	0,5	0,316074	0,316074
HEBA B	40,1	0,504682	-0,02256	0,182444	0,182444
DUROC B	36,6	0,455332	0,453202	0,305687	0,305687
CONCORDIA MARITIME B	36	0,486739	0,108247	0,22016	0,22016
POOLIA B	34,6	0,485069	0,121018	0,22366	0,22366
FAGERHULT	33,4	0,467597	0,231328	0,252711	0,252711
MULTIQ INTERNATIONAL	31,4	0,488272	0,093404	0,216053	0,216053
MEDA AB A	30,7	0,494836	0,034195	0,199245	0,199245
SKY COMM,	30,5	0,434823	0,495723	0,315135	0,315135
JLT MOBILE	29,9	0,48321	0,117188	0,222613	0,222613
PORTFOLIO		0,480068	0,137184	0,228047	0,228047
Rf^f	0,015385				
SHARPE^g	0,534093				

Table 32E. Growth Stocks 2006

			2006		
			GROWTH STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
BILLERUD ORD	74,3	2,48	0,343344	0,122007	0,090207
SYSTEMSE	71,6	0	0,397498	-0,79565	-0,09464
STORA ENSO R	53,5	4,07	0,336129	0,090929	0,085877
FOLLOWIT HOLDING	50,9	0	0,344765	0,185185	0,100642
EMPIRE B	44	0	0,594159	0,489655	0,128963
RETAIL AND BRANDS	50,7	0	0,416158	1,26	0,182478
ENEA ORD	50,5	0	0,366465	-0,4188	0,016861
THALAMUS	44	0	0,360444	-0,375	0,025104
ELEKTA B	42,7	1	0,337562	0,077519	0,088184
ONE MEDIA	42,4	0	0,350474	-0,20792	0,052446
MILLICOM INTERNATIONAL CELLULAR SDR,	42,2	0	0,349284	0,017007	0,082085

HEBA B	40,1	2,57	0,323575	0,459924	0,121338
DUROC B	36,6	0	0,347381	-0,07718	0,070463
CONCORDIA MARITIME B	36	1	0,333856	0,138498	0,093205
POOLIA B	34,6	2,5	0,331328	0,263124	0,101083
FAGERHULT	33,4	3,75	0,34079	-0,00762	0,075976
MULTIQ INTERNATIONAL	31,4	0	0,351871	-0,29891	0,038274
MEDA AB A	30,7	0,96	0,320044	0,547157	0,132127
SKY COMM,	30,5	0	0,365316	-0,24816	0,046367
JLT MOBILE	29,9	0,25	0,348833	-0,23978	0,043576
PORTFOLIO			0,336057	0,038777	0,082581
R^f	0,021411				
SHARPE^g	0,051678				

PERIOD FOUR 2005 – 2006
VALUE STOCKS

Table 33E. Value Stocks 2005

			2005		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
SSAB A	4,2		0,465492	0,232409	0,252986
RORVIK TIMBER B	5,5		0,471585	0,18239	0,240074
SVOLDER B	6		0,483999	0,108871	0,220331
ICM KUNGSHOLMS	6,6		0,521275	-0,08392	0,163433
BURE EQUITY	6,9		0,484949	0,106977	0,21981
LUNDBERGFÖRETAGEN B	7,2		0,493092	0,043546	0,201947
AROS QUALITY	7,9		0,485091	0,102128	0,218472
MEDIROX A	8		0,508717	-0,02683	0,181149
HAVSFRUN INVESTMENT B	8,2		0,478972	0,133333	0,227007
VOLVO B	9,7		0,484168	0,10963	0,22054
WIHLBORGS FASTIGHETER	9,7		0,493081	0,057851	0,206045
RATOS B ORD	9,8		0,488727	0,076923	0,211445
SKISTAR B	9,9		0,468806	0,243902	0,255897
TRACTION B	10		0,468939	0,225256	0,251164
GEVEKO B	10,2		0,49479	0,045	0,202366
SVENSKA HANDELSBANKEN A	10,3		0,485991	0,097493	0,217189
INDUSTRIVARDEN A	10,4		0,484376	0,104326	0,219079
AUTOLIV SDR	10,9		0,488987	0,068452	0,209056
HALDEX	11		0,49256	0,048118	0,203262
SCANIA B	11		0,497582	0,020278	0,195191
PORTFOLIO			0,485202	0,094483	0,216353
R^f	0,015385				
SHARPE^g	0,16302				

Table 34E. Value Stocks 2006

			2006		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
SSAB A	4,2	4,12	0,330079	0,290238	0,107078
RORVIK TIMBER B	5,5	1	0,328547	1,357096	0,126144
SVOLDER B	6	8	0,329535	0,362205	0,10581
ICM KUNGSHOLMS	6,6	0,86	0,350095	-0,09647	0,061139
BURE EQUITY	6,9	0	0,331554	0,064748	0,087615
LUNDBERGFÖRETAGEN B	7,2	8,5	0,334218	0,150585	0,091655
AROS QUALITY	7,9	1,1	0,426057	-0,61732	-0,03174
MEDIROX A	8	0,7	0,45598	-0,42634	0,012276
HAVSFRUN INVESTMENT B	8,2	1,5	0,337928	0,06383	0,082231
VOLVO B	9,7	22	0,330471	0,480913	0,09942
WIHLBORGS FASTIGHETER	9,7	5,5	0,330172	0,451777	0,115769
RATOS B ORD	9,8	5,5	0,326365	0,652026	0,132308
SKISTAR B	9,9	4,5	0,326832	0,36802	0,114115
TRACTION B	10	1,1	0,33407	0,156181	0,095647
GEVEKO B	10,2	86	0,338949	1,76062	0,07309
SVENSKA HANDELSBANKEN A	10,3	8	0,335219	0,101604	0,086941
INDUSTRIVARDEN A	10,4	9	0,337808	0,106236	0,082803
AUTOLIV SDR	10,9	9,38	0,334233	0,11079	0,08997
HALDEX	11	2,92	0,345226	-0,0949	0,057053
SCANIA B	11	14,1	0,328393	0,58915	0,11904
PORTFOLIO			0,333816	0,17346	0,087638
Rf^f	0,021411				
SHARPE^g	0,455489				

Appendix F. Portfolio Data for Period Five (2006-10- 01 to 2009-12-31)

GROWTH STOCKS

Table 35F. Growth Stocks 2006

		2006		
		GROWTH STOCKS		
COMPANIES	P/E ^a	STD ^c	HPR ^d	MEAN ^e RETURN
CONFIDENCE B	96,4	0,545322	-0,23636	0,111678
GUNNEBO	89,1	0,484381	0,104895	0,219236
SAS	74,6	0,47078	0,21671	0,248977
RAYSEARCH B	71,4	0,478089	0,145038	0,230163
OREXO	69,9	0,539872	-0,18791	0,128908
HOMEMAID HEMSERVICE B	64,8	0,525844	-0,14254	0,144356
MILLICOM SDR,	57,6	0,438466	0,443144	0,303422
STARBREEZE	57,3	0,521923	-0,125	0,150163
ROTTNEROS	55,4	0,502726	-0,00758	0,186948
HEBA B	55,1	0,479219	0,167568	0,236169
FIREFLY	52,8	0,461498	0,342541	0,280087
DUROC B	51,8	0,493128	0,069091	0,209236
FEELGOOD	48,3	0,477291	0,195	0,243367
MICRO SYS B	43,4	0,480472	0,214286	0,248354
BETSSON B	42,5	0,481582	0,141361	0,229174
RELATION & BRAND B	41,6	0,471667	0,190476	0,242189
CONCORDIA MARITIME B	41,5	0,481118	0,157895	0,233601
BILLERUD	40,9	0,485687	0,089686	0,215018
SECTRA B	40,2	0,481005	0,131481	0,226505
PHONERA	39,6	0,506228	-0,03416	0,178919
PORTFOLIO		0,489397	0,070331	0,209587
R^f		0,03		
SHARPE^e		0,192433		

Table 36F. Growth Stocks 2007

		2007			
		GRWOTH STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
CONFIDENCE B	96,4	0	0,325245	-0,44944	0,00806
GUNNEBO	89,1	1,6	0,299278	-0,10846	0,046614
SAS	74,6	0	0,315685	-0,36276	0,020417
RAYSEARCH B	71,4	0	0,310647	0,107872	0,068546
OREXO	69,9	0	0,332041	-0,60669	-0,0198
HOMEMAID HEMSERVICE B	64,8	0	0,426442	-0,32581	0,025221
MILLICOM SDR,	57,6	0	0,292018	0,58811	0,101098
STARBREEZE	57,3	0	0,331915	-0,19999	0,039945
ROTTNEROS	55,4	0	0,323228	-0,65	-0,02929
HEBA B	55,1	2,8	0,294889	-0,06173	0,049754

FIREFLY	52,8	0,6	0,306315	-0,25893	0,030169
DUROC B	51,8	1,5	0,298484	-0,0981	0,045664
FEELGOOD	48,3	0	0,317446	-0,40493	0,014612
MICRO SYS B	43,4	0,65	0,316085	0,002525	0,05675
BETSSON B	42,5	5	0,327292	2,017774	0,153839
RELATION & BRAND B	41,6	0,06	0,319094	-0,33072	0,02292
CONCORDIA MARITIME B	41,5	1	0,310438	-0,46154	0,00315
BILLERUD	40,9	2,48	0,306819	-0,3978	0,01128
SECTRA B	40,2	0,5	0,303643	-0,2405	0,034629
PHONERA	39,6	20	0,290965	1,128992	0,088727
PORTFOLIO			0,291466	0,030291	0,059904
R^f	0,035448				
SHARPE^g	-0,01769				

Table 37F. Growth Stocks 2008

						2008
						GROWTH STOCKS
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN	
CONFIDENCE B	96,4	0	0,386698	-0,925	-0,14623	
GUNNEBO	89,1	0	0,355848	-0,72807	-0,04949	
SAS	74,6	0	0,363897	-0,37355	0,018966	
RAYSEARCH B	71,4	0	0,361639	-0,74817	-0,05555	
OREXO	69,9	0	0,313043	-0,16552	0,043608	
HOMEMAID HEMSERVICE B	64,8	0	0,319959	-0,43019	0,010951	
MILLICOM SDR,	57,6	0	0,350476	-0,45282	0,007543	
STARBREEZE	57,3	0	0,303744	-0,03846	0,056006	
ROTTNEROS	55,4	0	0,345805	-0,54148	-0,00719	
HEBA B	55,1	0,9	0,29946	-0,11941	0,046706	
FIREFLY	52,8	0,75	0,333588	-0,36705	0,01383	
DUROC B	51,8	0	0,323813	-0,4313	0,010787	
FEELGOOD	48,3	0,05	0,310381	-0,34973	0,01849	
MICRO SYS B	43,4	0,65	0,330957	-0,61194	-0,02797	
BETSSON B	42,5	5,1	0,299422	0,219329	0,069411	
RELATION & BRAND B	41,6	0	0,336486	-0,59324	-0,01705	
CONCORDIA MARITIME B	41,5	1	0,310668	-0,36	0,015309	
BILLERUD	40,9	0	0,35531	-0,63761	-0,02647	
SECTRA B	40,2	0	0,308106	-0,42427	0,011822	
PHONERA	39,6	1,1	0,305316	-0,20389	0,035696	
PORTFOLIO			0,32243	-0,47046	0,003644	
R^f	0,038388					
SHARPE^g	-1,57816					

Table 38F. Growth Stocks 2009

						2009
						GROWTH STOCKS

COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETUR N
CONFIDENCE B	96,4	0	0,369374	-0,2	0,039944
GUNNEBO	89,1	0	0,352235	1,047598	0,124664
SAS	74,6	0	1,462451	2,411079	0,173528
RAYSEARCH B	71,4	0	0,337091	0,725146	0,108719
OREXO	69,9	0	0,320708	-0,0963	0,050561
HOMEMAID HEMSERVICE B	64,8	0	0,310849	-0,025	0,05723
MILLICOM SDR,	57,6	9,8	0,303843	0,683101	0,104763
STARBREEZE	57,3	0	0,312532	-0,18182	0,041893
ROTTNEROS	55,4	0	0,283841	1,412079	0,140123
HEBA B	55,1	1	0,288433	0,19403	0,073623
FIREFLY	52,8	0,9	0,291756	1,162162	0,126185
DUROC B	51,8	0	0,29935	0,351145	0,08637
FEELGOOD	48,3	0	0,306262	0,219512	0,07713
MICRO SYS B	43,4	1	0,306697	0,564246	0,092939
BETSSON B	42,5	9	0,299445	0,60001	0,09358
RELATION & BRAND B	41,6	0	0,311289	-0,23579	0,035985
CONCORDIA MARITIME B	41,5	1	0,306544	0,333333	0,080012
BILLERUD	40,9	0,5	0,406069	3,495852	0,19991
SECTRA B	40,2	0	0,294295	0,156858	0,072406
PHONERA	39,6	1,15	0,305217	-0,02967	0,05281
PORTFOLIO			0,293006	0,5949	0,099405
R^f	0,003648				
SHARPE^e	2,017884				

PERIOD FIVE 2006 – 2009
VALUE STOCKS

Table 39F. Value Stocks 2006

		2006		
		VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	MEAN ^e RETURN
ASPIRO	14,1	0,513685	-0,07205	0,167183
OEM INTERNATIONAL B	14,1	0,476374	0,155963	0,233086
MALMBERGS ELEKTRISKA B	13,9	0,492948	0,046154	0,202697
SOFTRONIC B	13,9	0,469291	0,262019	0,260445
INTRUM JUSTITIA	13,8	0,464412	0,232639	0,253044
SIGMA B	13,7	0,481917	0,165957	0,235743
NOKIA	13,6	0,506323	-0,0351	0,178632
SEMCON	13,6	0,473825	0,181818	0,239924
BE GROUP	13,3	0,482455	0,128	0,225561
PREVAS B	13,3	0,466423	0,32093	0,274904
TRACTION B	13,3	0,479434	0,12963	0,226003
TELE2 B	13,2	0,450114	0,351351	0,282182
TELIASONERA	13,2	0,471741	0,196809	0,243838

ELECTROLUX B	13,1	0,478696	0,151261	0,23183
KAPPAHL	13,1	0,454272	0,328704	0,276776
NGM HOLDING B,	13,1	0,496983	0,0625	0,207368
SE BANKEN A	13,1	0,484259	0,104061	0,219006
MIDWAY HOLDING B	13	0,483001	0,12069	0,22357
VITEC SOFTWARE GROUP B	13	0,513937	-0,0458	0,17535
VOLVO B	12,8	0,487714	0,080183	0,212361
PORTFOLIO		0,47978	0,131099	0,226401
R^f	0,03			
SHARPE^g	0,210719			

Table 40F. Value Stocks 2007

		2007			
		VALUE STOCKS			
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ASPIRO	14,1	0	0,320526	-0,60526	-0,01951
OEM INTERNATIONAL B	14,1	3	0,301555	-0,24541	0,029079
MALMBERGS ELEKTRISKA B	13,9	2,5	0,306384	-0,05948	0,050526
SOFTRONIC B	13,9	0,3	0,294621	0,462265	0,089957
INTRUM JUSTITIA	13,8	3,25	0,284943	0,407738	0,087562
SIGMA B	13,7	0,17	0,319031	-0,53755	-0,00878
NOKIA	13,6	5	0,279907	0,674877	0,104166
SEMCON	13,6	0	0,300257	0,228137	0,077762
BE GROUP	13,3	3,5	0,306284	-0,25758	0,028436
PREVAS B	13,3	0,6	0,309998	-0,33117	0,022019
TRACTION B	13,3	1,85	0,291998	-0,04932	0,052666
TELE2 B	13,2	8,2	0,288434	0,336893	0,079871
TELIASONERA	13,2	4	0,290906	0,162546	0,067106
ELECTROLUX B	13,1	4,25	0,308458	-0,14259	0,042624
KAPPAHL	13,1	5	0,300676	0,151096	0,06158
NGM HOLDING B,	13,1		0,311157	-0,27136	0,031879
SE BANKEN A	13,1	3,35	0,304423	-0,25865	0,030058
MIDWAY HOLDING B	13	5	0,296975	-0,09539	0,044058
VITEC SOFTWARE GROUP B	13	0,6	0,299345	-0,125	0,045444
VOLVO B	12,8	5,5	0,298485	0,164635	0,068592
PORTFOLIO			0,289058	0,082712	0,062899
R^f	0,035448				
SHARPE^g	0,16351				

Table 41F. Value Stocks 2008

			2008		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ASPIRO	14,1	0	0,319782	-0,2973	0,028766
OEM INTERNATIONAL B	14,1	3	0,307057	0,027027	0,054568
MALMBERGS ELEKTRISKA B	13,9	0	0,31854	-0,58475	-0,01536
SOFTRONIC B	13,9	0,3	0,30853	-0,19118	0,036041
INTRUM JUSTITIA	13,8	3,5	0,311474	-0,18812	0,037444
SIGMA B	13,7	0,17	0,34177	-0,38727	0,012709
NOKIA	13,6		0,318282	-0,47116	0,004683
SEMCON	13,6	0	0,369643	-0,82154	-0,08227
BE GROUP	13,3	3,5	0,36681	-0,56209	-0,02444
PREVAS B	13,3	1,5	0,313793	0,121053	0,063111
TRACTION B	13,3	2,5	0,293217	-0,05042	0,050934
TELE2 B	13,2	5	0,321922	-0,42747	0,005474
TELIASONERA	13,2	1,8	0,312132	-0,27304	0,027778
ELECTROLUX B	13,1	0	0,304953	-0,32576	0,025228
KAPPAHL	13,1	4,5	0,324011	-0,34199	-0,00142
NGM HOLDING B,	13,1		0,450236	-0,73485	-0,05149
SE BANKEN A	13,1	0	0,326784	-0,57592	-0,01363
MIDWAY HOLDING B	13	2	0,323034	-0,61493	-0,02809
VITEC SOFTWARE GROUP B	13	0,75	0,300653	-0,19804	0,036923
VOLVO B	12,8	2	0,335783	-0,47176	0,000781
PORTFOLIO			0,309461	-0,4066	0,010488
R ^f	0,038388				
SHARPE ^g	-1,43796				

Table 42F. Value Stocks 2009

			2009		
			VALUE STOCKS		
COMPANIES	P/E ^a	DIVIDEND ^b	STD ^c	HPR ^d	MEAN ^e RETURN
ASPIRO	14,1	0	0,298187	0,727273	0,108832
OEM INTERNATIONAL B	14,1	2	0,293419	0,0825	0,062291
MALMBERGS ELEKTRISKA B	13,9	0,5	0,303135	0,45339	0,091657
SOFTRONIC B	13,9	0,45	0,293455	0,141593	0,064783
INTRUM JUSTITIA	13,8	3,75	0,305011	0,364964	0,083589
SIGMA B	13,7	0,25	0,287399	0,588235	0,096764
NOKIA	13,6		0,308798	-0,09489	0,050698
SEMCON	13,6	0	0,323582	1,878788	0,157053

BE GROUP	13,3	0	0,305147	1,477273	0,14266
PREVAS B	13,3	0	0,305243	-0,18723	0,041317
TRACTION B	13,3	1,85	0,299305	0,42551	0,088793
TELE2 B	13,2	2	0,286575	0,656089	0,103296
TELIASONERA	13,2	2,25	0,283532	0,470434	0,09017
ELECTROLUX B	13,1	4	0,287374	1,834711	0,153296
KAPPAHL	13,1	1,25	0,282454	1,640269	0,145877
NGM HOLDING B,	13,1				
SE BANKEN A	13,1	1	0,291421	1,454886	0,139676
MIDWAY HOLDING B	13	1	0,290674	0,456	0,090622
VITEC SOFTWARE GROUP B	13	1	0,298927	0,47343	0,091206
VOLVO B	12,8	0	0,288948	0,828869	0,114126
PORTFOLIO			0,281958	0,621677	0,101055
Rf^f	0,003648				
SHARPE^g	2,191919				

Appendix G. Risk-Free Rate

År	Månad	Statsskuldväxl ar 3 mån
1996	1	8,22
1996	2	7,69
1996	3	7,11
1996	4	6,28
1996	5	6,22
1996	6	5,82
1996	1996 7	5,46
1996	8	5,20
1996	9	4,83
1996	10	4,64
1996	11	4,46
1996	12	3,91
1997	1	3,79
1997	2	3,96
1997	3	4,16
1997	4	4,06
1997	5	4,12
1997	6	4,08
1997	1997 7	4,09
1997	8	4,20
1997	9	4,13
1997	10	4,26
1997	11	4,33
1997	12	4,45
1998	1	4,44
1998	2	4,36
1998	3	4,51
1998	4	4,50
1998	5	4,52
1998	6	4,23
1998	1998 7	4,14
1998	8	4,23
1998	9	4,22
1998	10	4,20
1998	11	3,82
1998	12	3,45
1999	1	3,27
1999	2	3,14
1999	3	3,13
1999	4	2,87
1999	5	2,92
1999	6	2,97
1999	1999 7	3,01
1999	8	3,00
1999	9	3,05
2000	10	3,00

2000		2	3,90
2000		3	4,06
2000		4	3,99
2000		5	3,96
2000		6	3,94
2000	2000	7	4,03
2000		8	4,00
2000		9	3,94
2000		10	3,99
2000		11	4,00
2000		12	4,07
2001		1	4,07
2001		2	4,10
2001		3	4,06
2001		4	3,94
2001		5	4,01
2001		6	4,17
2001	2001	7	4,31
2001		8	4,28
2001		9	4,01
2001		10	3,70
2001		11	3,70
2001		12	3,71
2002		1	3,74
2002		2	3,87
2002		3	4,09
2002		4	4,25
2002		5	4,29
2002		6	4,28
2002	2002	7	4,26
2002		8	4,19
2002		9	4,17
2002		10	4,07
2002		11	3,91
2002		12	3,67
2003		1	3,65
2003		2	3,61
2003		3	3,40
2003		4	3,42
2003		5	3,18
2003		6	2,81
2003	2003	7	2,68
2003		8	2,71
2003		9	2,71
2003		10	2,73
2003		11	2,72
2003		12	2,69
2004		1	2,60

2004		8	2,02
2004		9	2,00
2004		10	1,99
2004		11	2,03
2004		12	2,00
2005		1	2,00
2005		2	1,97
2005		3	1,97
2005		4	1,99
2005		5	1,90
2005		6	1,65
2005	2005	7	1,48
2005		8	1,48
2005		9	1,47
2005		10	1,49
2005		11	1,51
2005		12	1,69
2006		1	1,83
2006		2	1,93
2006		3	1,96
2006		4	2,05
2006		5	2,11
2006		6	2,21
2006	2006	7	2,28
2006		8	2,43
2006		9	2,54
2006		10	2,74
2006		11	2,90
2006		12	3,00
2007		1	3,21
2007		2	3,30
2007		3	3,26
2007		4	3,34
2007		5	3,40
2007		6	3,45
2007	2007	7	3,53
2007		8	3,58
2007		9	3,62
2007		10	3,81
2007		11	4,02
2007		12	4,12
2008		1	4,11
2008		2	4,21
2008		3	4,24
2008		4	4,14
2008		5	4,11
2008		6	4,17
2008	2008	7	4,34
2008		8	4,41
2008		9	4,49
2008		10	3,63
2008		11	3,20
2008		12	1,82

2009		2
2009		3
2009		4
2009		5
2009		6
2009	2009	7
2009		8
2009		9
2009		10
2009		11
2009		12

Source: Statistiska Cetrалbyrån:
http://www.scb.se/Pages/TableAndChart___32290.aspx.(Accessed 2012-04-17).

Appendix H: OMXS 30 Mean Annual Return 1996 - 2009

ew:swe15580

Sweden,
OMX -
Stockholm
Stock
Exchange,
OMXS30
Index, Price
Return,
Close, SEK

1995-12-29	320,6348
1996-12-31	388,1898
1997-12-31	578,4172
1998-12-31	692,9351
1999-12-31	835,881
2000-12-29	1294,969
2001-12-31	870,5691
2002-12-31	630,198
2003-12-31	546,2235
2004-12-31	696,2027
2005-12-30	830,2215
2006-12-29	1013,027
2007-12-31	1201,877
2008-12-31	858,0593
2009-12-31	808,6233

Source: Ecwin Pro

Appendix I: Annual GDP Volume Change – Production

BNP från produktionssidan (ENS95), volymförändring, procent efter näringsgren SNI 2007 och tid

YEAR	BNP till marknadpris
1995	3,9
1996	1,6
1997	2,7
1998	4,2
1999	4,7
2000	4,5
2001	1,3
2002	2,5
2003	2,3
2004	4,2
2005	3,2
2006	4,3
2007	3,3
2008	-0,6
2009	-5

SOURCE: Statistiska Centralbyrån, <http://www.ssd.scb.se/databaser/makro/SaveShow.asp>



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