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Expected value premium: Evidence from combined Nordic markets

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ABSTRACT

Accumulated empirical research has evidenced the existence of value premium, which refers to the return gap between value and growth stocks. Our paper aims to investigate this phenomenon for Nordic market by estimating expected return from its fundamentals, dividends and earnings. Our study covers analyses of expected returns from 1998 to 2016 for 141 companies. We use dividend approach to calculate expected returns by decomposing it on two components: expected dividend yield and long-term dividend growth rate. According to our findings the expected dividend yield takes majority part in determining expected returns compared to long-term dividend growth rate, which we interpret as a corollary of firms cutting dividend payment and using stock repurchase as payout. Our empirical findings further show that value premium is positive and is on average 0.68 percent per month. Moreover, we confirm value premium predictability by indicating that independent variables: default spread, terms spread, dividend yield and risk free rate are statistically significant in its forecasting.

Keywords: Value premium, expected returns, expected dividend yield, Nordic market, value stocks, growth stocks, predictive regressions

Table of Contents

1. INTRODUCTION

Stock price behaviors and the predictability of future stock returns have been two of the top topics for financial professionals through time. In examination of price patterns, Sharpe (1964), Linter (1965) and Black (1972) contribute one of the most foundational theories in asset pricing that says returns of risky asset could be estimated with stock sensitivity to market portfolio. Their Capital Asset Pricing Model (CAPM) is, due to its usefulness and simplicity, one of the most used models among market practitioners. However, this model fails to explaining return anomalies like higher returns of small stocks compared to large stock or excess profitability of value stocks (stocks with high book to market ratios) in relative to growth stocks (stock with low book to market ratios). This paper investigates one of one of the most pronounced anomalies, the value premium, particularly for Nordic market. Employing the estimation of expected returns from fundamentals, we test the hypotheses as to whether value premium exists in Nordic market and whether the value premium, if any, is predictive.

Return anomalies refer to return patterns that are beyond the explanatory capacity of CAPM. Banz (1981) evidence significant contributions of Market Equity to the cross section of expected returns provided by the market exposure. Basu (1983) finds the cross section of US stocks returns results in part from high level of earnings to price while De Bondt and Thaler (1985) document that stocks with abnormally low long-term returns experience abnormally high long-term future returns. Later on, Rosenberg, Reid and Lanstein (1985) find a positive relationship between the average return and the ratio of a firm's book value to market equity. Further developing this approach in two influential papers, Fama and French (1992) and Lakonishok, Shleifer and Vishny (1994) investigate the explanatory power of various factors and find that size, as indicated by market capitalization, and value, as measured by the book to market ratio, are the two most significant variables capturing the cross-sectional return patterns in the U.S stock market. Since then, the value premium has become arguably important in portfolio allocation decisions, estimation of the cost of capital, and many other applications of asset pricing theory globally.

One of the most critical part of computing value premium is estimation of expected returns for each portfolio. Most of earlier studies on value premium follows ex post approach. As such, average realized returns are used as proxies for expected returns. However, average historical returns might not converge to the expected returns in a finite sample as pointed out by Elton (1999). Fama and French (2002) also agree that extra noises of average realized returns make it a bad proxy for expected returns. In the search for a better proxy, Fama and French (2002) find that estimates of expected returns from fundamentals (dividends and earnings) are more proper and unbiased compared to those from historical returns. The use of fundamentals in estimating expected returns is popular in the literature of equity premium yet quite infant in value premium literature. In this approach, the average expected stock return would be the sum of average expected dividend yield and the average expected rate of capital gain. To compute the expected capital gains, some scholars (Claus and Thomas, 2001; Gebhardt, Lee and Swaminathan, 2001) use forecasts by security analyst to estimate cash flow. However, this approach would cause bias as analysts have the tendency to overestimate corporate growth (Fama and French, 2002). Blanchard (1993) and Fama and French initiate the use of dividend growth rates to estimate the expected rate of capital gain, avoiding the bias problem. Chen, Petkova and Zhang (2008) combine the ex-ante and cash flow approach for the first time in estimation of expected returns of value and growth stocks to compute premium value of the US equities. The authors compare the obtained results with the findings of previous studies using ex post angle and see consistency in conclusions about the existence and characteristics of value premium.

Inspired by those studies, we investigate whether or not the value premium exists in returns behaviors of companies in Nadaq Nordic Large Capitalization list for the 1998 to 2016 period. In this paper, we follow the methodology of Fama and French (1993) to construct portfolios of value stocks and growth stocks and calculate the high minus low (HML) returns. However, our study differs from that paper in the way of computing returns. Employing methodology introduced by Chen, Petkova and Zhang (2008), we estimate expected returns as the sum of expected dividend yield and expected long-term dividend growth rate rather than using the average realized returns as a proxy for expected returns.

Nordic market, regardless of its high economic development status, has been among the most neglected parts in the value premium literature. Although Fama and French (1998) include Sweden in their study on the international evidence of a value premium, they do not examine Sweden in detail, not to mention that Swedish stocks only account for 0.7 percent of their overall international portfolio. We focus solely on the return of value stocks compared to that of growth stocks of Nordic market in this paper. Our study is of interest and importance because Nordic markets are becoming more and more active in the global financial market. According to PwC (2016), the Nordic stock exchanges (Nasdaq OMX) have overtaken the London Stock Exchange's position as the leading marketplace in Europe in terms of IPO volume and value for the first half of 2016.

We find that the dividend yield is the main contributor of expected returns of each portfolio over the period from 1999 to 2016 while long-term dividend growth rate plays a minor role. With this approach, the average expected returns of HML is economically large, posting at 0.68 percent per month from January 1999 to December of 2016 compared to the HLM returns of 0.33 percent produced by average realized return based method in the same period. In addition, we perform the regression of HML returns on business cycle variables, including dividend yield, default premium, term premium and short-term interest rate. The empirical results indicate that value premium of Nordic market is predictive in the sample period given adjusted R-squared of 23.72 percent. Variables are jointly significant in explaining value premium with dividend yield and default spread being positive predictors.

With these results, our paper provides the literature on value premium with more insights into Nordic markets in most recent time. More importantly, our studies contribute a new approach in examining value premium of Nordic market by combine the ex-ante and cash-flow approach in the estimation of expected returns of value and growth stocks. This is the first time this method is applied to Nordic sample. Our computation of expected returns from expected dividend yield and expected average long run dividend growth, as empirically evidenced by foundational studies, is unbiased and more precise compared to the use of realized returns as a proxy for expected returns. Our main findings are consistent with the majority of value premium and in line with the results of the two papers that we follow (Fama and French, 2002 and Chen, Petkova and Zhang, 2008).

Our study proceeds as follows. In chapter two, we review the relevant theories related to expected returns and the value premium in order to set a theoretical framework for the estimations and model building. The third chapter will provide details of data collection, portfolio formulation and sample characteristics. We then explain the empirical approach to the problem and the use of model for that purpose in chapter four. Chapter five would be about analyzing the results obtained from empirical process. Paper ends with the discussion of the shortcomings of the paper and suggestions for further research in chapter six.

2. THEORY

This chapter covers briefly financial theories, models and past literature used throughout the study. The most pivotal financial theories and explanations for value premium are presented in the beginning of the chapter, followed by discussions of proxies for expected returns. The chapter ends with a review about the cash flow based method to estimate expected returns.

2.1 Value premium

Sharpe (1964) and Lintner (1965) introduce the single factor Capital Asset Pricing Model with the main assumption that the firm is only affected by systematic risk while the idiosyncratic risk can be diversified away. This model estimates stock excess returns based on stock sensitivity to the market factor with the formula as follows:

$$E(R_i) - R_f = \beta_i[E(R_m) - R_f)] \tag{1}$$

Where $E(R_i) - R_f$ is the expected stock excess return; $E(R_m) - R_f$ is the market premium and β_i is the stock beta.

However, this model fails to explain some cross section return patterns. Further studies find other additional factors that capture cross sectional variation in stock returns other than β_i. Banz (1981) identifies significant explanatory power of Market Equity (ME) for expected returns while Basu (1983) argues that earnings to price ratios (E/P) results in variation of US stock returns. Studies by Rosenberg, Reid and Lanstein (1985); Lakonishok, Sheifer and Vishny (1994) and Fama and French (1992, 1993, 2002) all examine relationship between average returns and book to market ratios of firms. Among that vast literature, studies by Fama and French present critical empirical evidence against the CAPM model. They introduce book to market and size factors, and conclude that these two variables explain significant return patterns that are not captured by CAPM.

Book to market ratio (B/M) represents relative comparison of book value of firm's assets to its total market value. High B/M firms yield persistent lower earnings on assets and are defined as value stock (Fama and French, 1993). By contrast, firms with low B/M tend to have sustained higher earnings on assets and are traded at a high price compared to estimation of intrinsic values due to expectation of investors on their growth potentials. Low B/M stocks are termed as growth stock (Fama and French, 1992). Fama and French also define value premium as the return anomaly pattern in which a portfolio of high B/M firms outperforms a portfolio of low B/M firms. In addition to value factor, Fama and French (1992) find that firm size is a determinant of returns as well. They evidence that profits from small firms outperform those of big firms when controlled for book to market value.

The aforementioned variables is incorporated in Fama-French three-factor model (1993), including a market premium, a size premium and a value premium. The model is formulated as in the following equation:

$$E(R_i) - R_f = \beta_i[E(R_m) - R_f)] + s_iE(SMB) + h_iE(HML) \quad (2)$$

Where $E(R_i) - R_f$ is the expected stock excess return and $E(R_m) - R_f$ is the market premium. SMB is the average return of small stocks minus the average return of big stocks, controlled for the value effect. HML is the average return of high B/M stocks minus the average return of low B/M stocks, controlled for the size effect. β_i, s_i and h_i are coefficients or the betas of the three independent variables.

Testing U.S stock returns from COMPUSTAT database, the model produces the average SMB value as proxy for size premium from 1929 to 1996 of 0.20, indicating 0.20 percent excess return of small stocks in relation to big stocks on average. The results for HML as the proxy for value premium is larger with high B/M stocks yielding a 0.46 percent monthly return higher than low B/M stocks on average for the same timeframe. Furthermore, HML factor obtains higher statistical significance level than SMB given t-statistics of 4.24 and 1.78 respectively. This result makes value premium an important factor in return studies and triggers vast follow-up research with specializations in this return anomaly only.

Some of those follow-up studies question the trustworthiness of Fama and French (1993)'s findings due to concerns of data bias and data snooping. Kothari, Shanken and Sloan (1995) use an alternative data source from Standard and Poor's for the 1947-1987 period to re-examine the results presented by Fama and French (1993). Their findings show a weak relationship between B/M and average stock returns. They acknowledge a significant selection bias in portfolio construction for both SMB and HML factors given the fact that some stocks with high B/M do not survive and are eliminated from the databases. They, therefore, argue that the survivorship bias may affect the results of Fama and French (1993). Additionally, Black (1993) and MacKinlay (1995) suppose that data snooping during variable construction process might cause bias in findings of Fama and French (1993).

Meanwhile, several studies provide empirical supports for the results of Fama and French (1993). Barber and Lyon (1997) suggest that the problem of data snooping could be fixed by using different timeframes of observations and different markets. In that vein, Fama and French (1998) reinforce their previous findings with an expansion of their studies to global markets. In the paper published in 1998, Fama and French observe the persistence of value premium in twelve (12) of thirteen (13) countries for the 1975 – 1995 period and confirm the superior returns of small stocks to those of large stocks in eleven (11) out of sixteen (16) countries of the sample. Adding more validations for results of Fama and French (1998), Chan, Hamao and Lakonishok (1991) do a likewise test for Japanese stock market and document a significant relationship between book to market ratios and average returns. Lededakis et al. (2001) performs the test of three-factor model on UK market and obtains statistically significant results for all premiums, including market premium, size premium and value premium in explaining stock excess returns. Studies of Drew and Veeragahavan (2002) and Xie and Qu (2016) also reaffirm value premium outside US markets. These two studies evidence the excess returns of value stocks to growth stock in Malaysian stock exchange and Shanghai Stock exchange and positive correlations between BM and average returns.

In addition to the examination on the existence of value premium, empirical studies also offer explanations for this return anomaly. The first source of value premium is supposed to have the link to distress risks (Fama and French 1993, 1997). They find out that value premium varies with the changes in financial strength of the industry. Supporting this result, Griffin and Lemmon (2002) and Campbell et al. (2008) agree that financial distress explains in part the existence of value premium given the evidence of lower returns gained by distressed firms. Chava and Purnanandam (2010) use default probability as a proxy for the financial risk and document a positive link between the proxy and expected stock returns. Their findings are in line with risk-aversion behaviors of investors who require higher returns in compensation for higher risks.

The second explanation links value premium to profitability of firms. Some studies have a consensus that firms with higher profitability bear fewer risks and often have low B/M (Zhang, 2005 and Cooper, 2006). Zhang (2005) argues that value firm is riskier given its inflexibility. During downturns, businesses want to shrink their operations, especially value firms that are less productive than growth firms. Because capital reduction is more costly than an expansion, value firms are more negatively influenced by economic recessions.

The third argument for the intuition behind value premium is related to mispricing. Lakonishok, Shleifer, and Vishny (1994) explain the value premium as a result of mispricing process due to irrational behaviors of investors. Under this argument, investors overvalue growth stock on the expectation that its high growth performance in the past would reoccur far into the future. Similarly, investors undervalue value stock as they extrapolate its weak past performance to the future. In such mechanism, the irrational behaviors of the investors lead to a significant HML returns. If the investors' forecast about coming performances of value and growth change over time, the mispricing would also vary over time, causing a time-varying value premium.

The fourth explanation is largely influenced by the literature of expected market premium. As such, business cycle variables are employed to predict value premium. Petkova and Zhang (2005) use three conditional variables include the default spread, the term spread and the short-term spread. Chen, Petkova and Zhang (2008) add log book-to-market spread to the conditional variable list. Log book-to-market spread is defined as the log book-to market of portfolio ten minus the log book-to-market of portfolio one from ten declines sorted on book-to-market. This variable represents portfolio-specific characteristics. Using regressions, Chen, Petkova and Zhang (2008) show that value premium is predictive given adjusted R^2 of 30 percent. Specifically, the term premium has significant predictive ability for expected value premium with negative coefficients in all cases whereas the log book-to-market spread is a positive predictor. The remaining variables do not yield significant results.

In short, vast literature has confirmed the existence of value premium and the significant role of B/M in explaining stock returns. In addition, value premium could be predictive using risks or profitability factors as indicators. Business cycles variables are also empirically applicable in predictive regressions of value premium. Despite the convergence on the existence of value premium, these studies differ sharply from each other in the estimate method. While a majority of papers use average realized returns as a proxy for expected returns, a number of studies apply fundamental approach to estimate expected returns from future cash flows. These two research approaches would be reviewed in the next section.

2.2 Expected returns and average realized returns

The popularity of average returns as a proxy for expected returns relies on the argument that disturbance terms are independent so that as the observation window increases, they tend to counterbalance each other across time horizon and approach a mean of zero. In that vein, realized returns are therefore precise estimates of expected returns. Under the IID assumption, Campbell (2011) states that when returns are serially uncorrelated which means returns of current period would not influence the returns of the coming periods, the best forecast of future return is the arithmetic average return. However, Elton (1999) challenges this argument and criticizes its weak assumptions.

Elton (1999) breaks down the returns into expected returns and surprised parts and formulate as follows:

$$R_t = E_{t-1}(Rt) + e_t \tag{3}$$

Where R_t is return in period t, $E_{t-1}(Rt)$ is the expected return at t conditional on information available at time t-1 and e_t is the unexpected return, resulting from systematic risk factors and/or firm-specific events and/or macro-economic announcements.

Elton (1999) evidences that there exists information surprises that are too significant to be cancelled out. Furthermore, the surprises are not completely independent over time. They are correlated with each other and affect the average returns persistently. Elton (1999) illustrates the idea by introducing a new variable to the decomposition of returns. The new breakdown is as follows:

$$R_t = E_{t-1}(Rt) + I_t + e_t \qquad (4)$$

Where I_t is a significant information event.

In the model presented by Elton (1999), I_t obtains very large values occasionally and equates zero otherwise. Consequently, Elton (1999) views distributions of e_t as a joint of standard properties and a jump process. Examining the model with data from U.S market, Elton (1999) observes that the average return might not converge to the expected return in finite sample. Realized returns of stocks on average are below the risk free rate in the period from 1973 to 1984. In addition, there are periods longer than 50 years during which returns of risky long-term bonds on average are inferior to the risk free rate (1927-1981). Elton (1999), therefore, views the average realized return as a bad proxy for the expected return given its large noise. Elton (1999) recommends the removal of I_t by observing the event announcements and adjusting for the surprises.

Fama and French (2002) further evidence the imprecision of average realized returns as an indicator of expected returns. The standard error of the average-based forecast of return is 2.43 percent from 1951 to 2000, much higher the level of 0.74 percent of the dividend-based forecast. Fama and French (2002) also report the expected equity premium of 4.32 percent per year compared to the average realized equity premium of 7.43 percent per year and conclude that average stock returns are much higher than the expected one. Chen, Petkova and Zhang (2008) perform the test again on the same data set and obtain the results consistent with findings of the Fama and French (2002). The expected real equity market return is computed at 4.91 percent, versus the average realized return of 10.21 percent.

The imprecision of average returns as a proxy for expected returns motivates a shift from ex-post to ex-ante approach in estimating returns. The most influential papers by Blanchard (1993) and Fama and French (2002) use cash-flows to forecast returns in the search of a better proxy for expected returns. The literature of this method is presented in details in the following section.

2.3 Estimating expected return from fundamentals

The estimation of the expected return from fundamentals (dividends and earnings) is encouraged by Blanchard (1993) and Fama and French (2002) given its ability to overcome the over-optimism of return forecast based on the average realized returns.

Blanchard (1993) estimates the return that investors could expect for an infinite holding period. In the buy-and-hold forever case like that, there is no capital gains. The expected real rate of return relies only on the current price and the series of expected future dividends. In other words, the expected real rate of return is the equal to expected dividend yield plus the expected long-run growth rate of real dividends. This idea is formally presented in the following equations:

$$E(R_t) = E\left(\frac{D_t}{P_t}\right) + EA(GD_t) \tag{5}$$

Where $EA(gd_t) \equiv \left[\frac{r-g}{1+r}\right] \sum_{i=0}^{\infty} \left[\frac{1+g}{(1+r)}\right]^i Eg_{d(t+i+1)}$ (6)

$\frac{D_t}{P_t}$ is the expected dividend to price ratio over period t at time t where P_t is known while D_t is not. GD_t is the growth rate of dividends in period t, defined as the ratio of real dividends in period t to real dividends in period t-1. $A(GD_t)$ is the long-run growth rate of dividends, given by the annuity value of the growth rate of future dividends. r and g are the mean rates of growth of real dividends and the mean real rate of return on stocks, respectively.

Given the fact that dividend is observable, this estimate method could overcome the shortage of data and avoid the complicated techniques required for forecasting capital gains. Blanchard (1993) claims that the assumption of holding stock forever is not rigid and the model still works well enough for a finite horizon of 5 years. Fama and French (2002) validate this claim by showing that expected returns are equal to dividend yields plus the expected long-run dividend growth rate for a limited holding period. Fama and French (2002) starts with a basis idea that the average stock return comprises average dividend yield and average rate of capital gain as presented in the following equation:

$$A(R_t) = A\left(\frac{D_t}{P_{t-1}}\right) + A(GP_t) \tag{7}$$

Where D_t is the dividend for year t, P_{t-1} is the price at the end of year t-1, $GP_t = \frac{P_t - P_{t-1}}{P_{t-1}}$ is the rate of capital gain, A () indicates an average value and $\frac{D_t}{P_{t-1}}$ is termed as dividend yield.

Fama and French (2002) suppose that the dividend-price ratio ($\frac{D_t}{P_t}$) is stationary. Consequently, if the sample interval is long, mean reversion property would make the compound rate of dividend growth converges to compound rate of capital gain. As such, the equation (7) is equivalent to the following:

$$A(RD_t) = A\left(\frac{D_t}{P_{t-1}}\right) + A(GD_t) \tag{8}$$

Where $GD_t = \frac{D_t - D_{t-1}}{D_{t-1}}$ is the growth rate of dividends. Model presented by the equation (8) is called the dividend growth model. Furthermore, Fama and French (2002) apply the same rationale that leads to (9) to the earnings to price ratio, Y_t/P_t. If Y_t/P_t is stationary, the average growth rate of earnings, $A(GY_t) = A\ (\frac{Y_t - Y_{t-1}}{Y_{t-1}})$, closely approaches the expected rate of capital gains. Therefore, the average growth rate of earnings together with the average dividend yield could composes the expected stock returns. The equation (7) is now equivalent to the following:

$$A(RY_t) = A\left(\frac{D_t}{P_{t-1}}\right) + A(GY_t) \tag{9}$$

The model presented above is called the earnings model. Fama and French (2002) do not use forecasts by security analysts to estimate capital gains given the fact that analysts tends to overestimate future cash flows as pointed out by Claus and Thomas (2001). Therefore, forecasts of analysts are likely to cause biased estimates of expected growth rates.

Due to the stationary of ${D_t}/{P_t}$ and ${Y_t}/{P_t}$, both dividend model and earnings model could have the same ability as the average return model of equation in providing estimates of the unconditional expected returns. Although the earnings model could be an alternative of dividend model as they are developed in the same logic, Fama and French (2002) prefer the later to the former given that dividend model is more precise than the earnings model. The standard error of the dividend growth estimate of the expected return for the 1951 to 2000 period arrives at 0.74 percent, much higher than that of earnings model, reporting at 1.93 percent. This difference is attributable to larger volatility of earnings growth compared to dividend growth. Fama and French (2002) also argues that in the presence of nonstationarity of ${D_t}/{P_t}$ and ${Y_t}/{P_t}$ caused by a structural shift in productivity, the estimates in equation (8) and (9) are still valid if that shift only affects expected dividend and earnings growth rates. In that case, the permanent change in expected growth rates is counterbalanced by a corresponding change in the first component, the expected dividend yield. The mean-reversion is hence somewhat preserved and the equations (8) and (9) still manage to yield decent estimates.

In addition, Fama and French (2002) points out that when it comes to precision, these two models both beat the average return model, which produces the standard error of 2.43 percent. It is also of note that the results produced by equation (7), (8) and (9) are all in nominal terms. Fama and French (2002), therefore, emphasize the necessity of adjusting these results by inflation to obtain the real returns as the goal of investment is consumption.

3. DATA

The chapter discusses the choice of sample and the selection of data sources**.** As Nordic market is of our particular interest, this study only treats the companies in Nadaq Nordic Large Cap. We choose Large Cap list to assure the quality of data and the representativeness for Nordic stock market. Following that, 141 companies are taken in the period from 1998 to 2016 for this research due to availability of the data. To avoid the potential survivorship bias, we restrict that firms must be on the database for two years before using the data. We use the accounting data for book value of equity and market data for prices and expected dividend yields. We use macroeconomics data as well (CPI) to extract the real returns from the nominal ones. All the data are sourced from DataStream. In order to create a robust and significant model, we construct our sample for 19 years, starting from 1998 till 2016. This time interval is able to capture the most recent developments in the stock market and it is long enough in order not to be affected by singular or extreme events. The sample is observed on a monthly basis.

In addition, we use the data of market dividend yield, default spread, term spread and short-term interest rates to illustrate business cycle as recommended by most literature of equity premium. Due to the availability, the data is taken from U.S market. Dividend yield is 12-month dividend per share to price of S&P500. The default premium is defined as the yield spread between Moody's Baa and Aaa corporate bonds (Keim and Stambaugh, 1986; Fama and French, 1989); the term premium is denoted for the yield spread between a long-term and a one-year Treasury bond (Campbell, 1987; Fama and French, 1989); and short term rate is for the one-month Treasury bill rate. The data is used at monthly frequency. All the business cycle variables we use have shown good predictive power over value premium on US market given empirical evidence by Chen, Petkova and Zhang (2011). We expect the equal explanatory power of those variables on Nordic market. We argue that companies in Nadaq Nordic Large Cap companies operate their businesses in an international business environment and hence expose to international risk factors. Business cycle variables of US market are good indicators for those risks. These business cycle variables are observed on a monthly frequency.

4. METHODOLOGY

Computation of the value premium and testing its predictability require complex calculations and empirical assessments. This chapter goes through models and methods which are necessary in the examination of the value premium. The chapter starts by presenting the separation of value stocks and growth stocks to construct respective portfolios. Later on, the estimation of expected returns using dividend growth model of Blanchard (1993) and Fama and French (2002) is added. To compare the approach from fundamentals with the traditional one, the calculation of expected returns from average realized returns is included as well. The chapter closes with the method of predictive regressions on value premium.

4.1 Portfolio constructions

Following the Fama and French (1993, 1996) procedure, we use book to market ratios (B/M) as a criteria to classify stocks into value and growth portfolios. For each year starting from 1999, we rank NASDAQ Nordic stocks based on market capitalization from smallest to largest. In the next step, we use median to split stocks into two groups, small and big. We then base on ranked values of B/M to divide stocks into three groups low, medium and high. Low group represents lowest 30 percent of stocks based on B/M ratio, medium group follows with 40 percent and high group takes the top 30 percent. Since book-to-market equity has stronger role on average stock return than size (Fama and French, 1992), we have three groups compared to two based on size. Any given stock will at the same time fall into one size group and one B/M group.

In these calculations, market capitalization data is extracted from DataStream for NASDAQ Nordic companies at the end of each year starting from 1998. B/M is calculated as ratio of book equity and market capitalization. Book equity is the product of book equity per share and number of shares outstanding for each company in the sample in the period of 1998 to 2016. For B/M ratio, book equity data obtained at the end of year t-1is divided by market capitalization of year t. While timing of portfolio constructions is in June in a majority of studies (Fama and French 1992, 1993, 1996, 2002 and Lakonishok, 1994), we follow Chen, Petkova and Zhang (2008) method to form our portfolios at December. The main intuition behinds this timing is that it allows the observation of dividend growth from the beginning to the end of calendar year.

In order to construct six portfolios, we use intersections among the groups previously described so we have: SL (small-low), SM (small – medium), SH (small-high), BL (big-low), BM (big – medium) and BH (big-high). For example, all companies that have big market capitalization and low B/M are put into BL portfolio. We repeat this process on all companies for all years from 1998 to 2016.

4.2 Estimation of value premium from dividend growth model

Our method set up is based on procedures for estimated expected returns from expected dividend yield and expected long-term dividend growth rate as described by Blanchard (1993) and Fama French (2002). The method is recommended due to more precise results compared to average stock return approach, less volatile Sharpe ratio and because fundamentals such as book-to-market ratio and return on investment are more in line with dividends. Following that, we estimate expected rates of dividend growth and expected dividend-to-price ratios, and then combine them to obtain expected returns. These two components of the model are calculated for both value portfolio and growth portfolio.

For this method of estimation to be valid, the stationarity of expected dividend yield is required. Under the stationarity assumption, Fama and French (2002) claim that if sample interval is long, mean reversion property would make the compound rate of dividend growth converges to compound rate of capital gain. Therefore, to check if this method is applicable to our sample, we perform the Dickey–Fuller test for all expected dividend yield series. The results confirm that all the series of expected dividend yields in our sample are stationary and stationary AR (1), making the dividend based method of estimation applicable. We hereby only report the test results for expected dividend yield of the four portfolios, namely SL, SH, BL and BH in the Appendix. As could be seen from table A1 in the Appendix, the test statistics (-3.67; -4.71; -3.99 and -3.52) are more negative than the critical values, even at the 1 percent level, we reject the null hypotheses of a unit root in the series.

After validating the assumption, we start with the dividend based estimation formula:

$$E_t[R_{t+1}] = E_t\left[{}^{D_{t+1}}/_{P_t}\right] + E_t[Ag_{t+1}] \tag{10}$$

Where $E_t[R_{t+1}]$ is expected return at time t, ${}^{D_{t+1}}/{}_{P_t}$ is the expected dividend yield and Ag_{t+1} is the long-run growth rate of dividends defined as the annuity value of the growth rate of future dividends.

As the dividend yield on DataStream expresses the anticipated dividend payment per share over the following 12 months as a percentage of the share price, the dividend yield hereby therefore indicates the expected value. Considering that expression, we take the dividend yield data from DataStream for $E_t\left[{}^{D_{t+1}}/{}_{P_t}\right]$ part. We then adjust the obtained data with CPI to get real terms from nominal values. We adjust the data of each company for CPI of the country of its nationality.

For the coming step, we calculate the real dividend growth as:

$$g_{t+1} = \frac{(D\_(t+1) \;/\; P\_t\;)}{(D\_t \;/\; P\_(t-1)\;)} * (R_t^X + 1) * \left[{}^{CPI_{t-1}}/{}_{CPI_t}\right] - 1 \qquad (11)$$

Where R_t^X is nominal return without dividends.

The final step for calculating expected returns is to determine long run dividend growth rate which represents the annuity value of future growth rates of real dividends per share (Blanchard, 1993). We follow the formula described by Chen, Petkova and Zhang (2008):

$$Ag_{t+1} = \left[\frac{r-g}{1+r}\right] * \sum_{i=0}^{\infty} \left[\frac{1+g}{1+r}\right]^i * g_{t+i+1} \qquad (12)$$

Where r is the average real stock return, g is the average growth rate of real dividends, g_{t+i+1} is the dividend growth as ratio of dividend to price in time t+1 over time t, r and g represent discount rate required for Ag_{t+1} calculation.

Long-run growth rate of dividends is defined as infinite sum of future real dividend growth rates as could be seen from the above. However, in practice, we need to use finite sum in order to determine the values when estimating the model. Blanchard (1993) claims that five years is long enough for applying this estimation while Chen, Petkova and Zhang (2008) use a time horizon of 100 years. In this paper, we use 20 years of future growth, indicating that our parameter i from above is equal to 20. We assume that the future real dividend growth rates beyond 2016 equal the average dividend growth rate during the 1996-2016 period. We take advantage of this average to capture the most recent trend in dividend growth for future estimations. Due to complexity of this formula in excel, we separately calculate all ratios for each company in order to combine them later.

Finally, we calculate the expected dividend yield and expected long term dividend growth of the portfolio by taking average the respective ratios of all companies in the portfolio. We repeat this calculation in all years for all portfolios. In that way, we manage to create time series of expected dividend to price ratio and average long run dividend growth rate for the four following portfolios: SL (small-low), SH (small-high), BL (big-low) and BH (big-high). We then sum up these two values to compute the expected returns for each portfolio. Value premium is calculated by subtracting the average expected return of the two growth portfolios (low B/M) from the average expected return of the two value portfolios (high /BM). It follows the below formula:

$$Value\ premium = \frac{1}{2} * (Small\ High + Big\ High) - \frac{1}{2} * (Small\ Low + Big\ Low) \quad (13)$$

We are interested in comparing the results of this method with the value premium yield from the traditional approach that uses realized returns as a proxy for expected returns. For the comparison purpose, the computation of value premium follows that method is presented in the next section.

4.3 Estimation of value premium from average realized return

From average realized return approach, historical return data at time t+1 is used as a proxy of expected return at time t (Graham and Dodd, 1934; Rosenberg, Reid, and Lanstein, 1985; Fama and French, 1992). For our research sample, we use realized returns of 1999 to indicate the expected returns for our portfolios in 1998 and so on.

The portfolio constructions follows the same step as before, sorting on B/M ratios. We calculate the expected returns for each company in the portfolio using the historical returns and then take average values of these components to reach the expected return of the whole portfolio. This principle is applied for all portfolio SL, SH, BL and BH from 1998 to 2016. To be precise, we have estimated expected return R_{t+1} as price difference from time t+1 and t, $(P_{t+1} - P_t)$, plus real dividend paid from time t to t+1. In other words, the expected returns in this case would be the sum of realized capital gain and realized dividen yield. As stated before, we estimate the value premium as average return on two value portfolios (with high B/M ratio) minus the average return on the two growth portfolios (low B/M ratios)

4.4 Predictive regressions

Final part of our method includes predictive regressions where we want to see if expected value premium and its components are predictable in regards to conditional variables. If it is the case, we would like to see which variable has statistically significant explanatory power to the premium.

So far there has been evidence in literature that time-variation of the value premium could be predicted. Asness, Friedman, Krail, and Liew (2000) as well as Cohen, Polk, and Vuolteenaho (2003) indicate in their research that spread in book-to-market ratios between value and growth stocks predicts high value premium in the future. Moreover, Cohen, Polk, and Vuolteenaho (2003) show that value spread is significant predictor to value premium in Fama French three factor model. They state that the predictive power of the value premium is strong in presence of business cycle variables such as term spread and default spread. Reasons behind this predictability could be either mispricing or time-varying relative risks. Lakonishok, Shleifer, and Vishny (1994) in their paper also suggest mispricing as value premium source, arguing that value stocks are undervalued while growth stocks are overvalued. This is mainly due to expectation investors have about future performance of both growth and value stocks, which may vary over time. Barberis and Shleifer (2003) shape this phenomena into investing style theory, saying that investor's expectations switch depending on past performance which further follows rise to time-varying relative mispricing. If growth stocks have recently performed well, the switchers would move into growth stocks and out of value stocks even if there is no bad news about value stocks. This is how growth stocks become overvalued due to period of value stocks underperformance and vice versa, predicting high and low value premium subsequently.

The time-varying property of the value premium gives a rise of its countercyclical trend. Zhang (2005) argue that the inflexibility causes value firms to become more risky than growth firms during economic meltdowns. Following that, value stocks should lag behind growth stocks during recessions and outperforms them in booming phases. As a result, value premium would be low in during recessions and high in upturns. If this is the case, business cycle variable should be good indicators for variations of the HML spread. Under this argument, the test of predictability of value premium therefore is to see if it is countercyclical or not.

In order to test the predictability of value premium, we regress the expected value premium and its components, the expected dividend yield and expected long-term dividend growth, on four conditional aggregate variables: default premium, aggregate dividend yield, term premium and risk free rate (Chen, Petkova, Zhang, 2008). These variables are chosen as standard conditional variables in time series predictability in literature as mentioned earlier. Default premium in general represents amount of money a borrower must pay in order to compensate default risk to investor. It is often paid by companies that have lower grade bonds and credit rating in general since they are more risky to invest in. In our case, it is defined as yield spread between Moody's Baa and Aaa corporate bonds from the monthly database of the Federal Reserve Bank of Saint Louis (Chen, Petkova, Zhang (2008)). We take aggregate dividend yield of S&P 500 composite. Term premium is the excess yield that investors require for holding a long-term bond instead of a series of shorter-term bonds. In our model, the former and the later are indicated by 10-year and one-year Treasury bond rates respectively. Risk free rate of return is the theoretical rate of return of an investment with zero risk and we use U.S Treasury three-month bill rate for our regression.

5. EMPIRICAL RESULTS AND DISCUSSIONS

This chapter presents empirical results and the related analyses. The results of expected returns using dividend-based estimation in comparison with the results computed from historical return approach is summarized in the first subsection. After this, the value premiums calculated from those two methods are shown. The chapter ends with a display of regression statistics about the predictability of the value premium. All results would be discussed in conjunction with related theories and findings of previous research.

5.1 Expected returns of portfolios

Throughout this paper, we use the dividend-based model to estimate expected returns. As such, expected returns is the sum of expected dividend yield and expected average long-term dividend growth. With this method, the expected portfolio returns of the SL, SH, BL and BH are 3.21 percent, 3.80 percent, 2.14 percent and 2.91 percent per month respectively. These results are much lower than the average expected portfolio returns calculated based on the historical average realized return method which yields the results of 4.92 percent, 4.89 percent, 2.22 percent and 2.91 percent per month respectively from 1999 to 2016 for the SL, SH, BL and BH portfolios. Our results are in line with previous findings of Blanchard (1993), Elton (1999), Fama and French (2002) and Chen, Petkova and Zhang (2008) which find that the long term average realized returns are higher than expected returns and are hence biased and noisy proxies for expected returns. Explaining for the gap between the two methods of estimation, Fama and French (2002) suppose that expected returns estimates from fundamentals are likely to be less sensitive than the average return to long-lived shocks to dividend and earnings growth rates or the expected stock return. They show that a permanent change in expected returns influences the average dividend yield, which is the common components of the both estimate methods. However, that variation also causes a shock to the capital gain term in the average return estimate in the equation (7) that is not present in the estimates following the equation (8) and (9). In research sample of Fama and French (2002), the expected capital gain is surprisingly very high due to a reduction in the discount rate. On that ground, the estimates of expected stock return from fundamentals are likely to be more precise than the average stock returns. Comparison of the portfolios for two methods are visualized in Figure 1 below.

Regarding the decompositions of expected returns estimated by dividend-based model, expected dividend yield is the main contributor of the expected returns of each portfolio over the period from 1999 to 2016, while expected long-term dividend growth rate makes up a minor part. Specifically, the expected SL return is on average 3.21 percent per month from 1999 to 2016, consisting of an expected dividend yield component of 1.64 percent and an expected long-term dividend growth component of 1.57 percent. The expected SH return of 3.80 percent comes from an expected dividend yield of 3.31 percent and an expected long-term dividend growth of 0.49 percent. Meanwhile, the expected BL return of 2.14 percent is the sum of an expected dividend yield of 1.44 percent and an expected long-term dividend growth of 0.70 percent. The expected BH return of 2.91 percent results from an expected dividend yield of 2.33 percent and an expected long-term dividend growth rate of 0.58 percent. These results show that the expected yield component is more important in magnitude than the expected long-term dividend growth component.

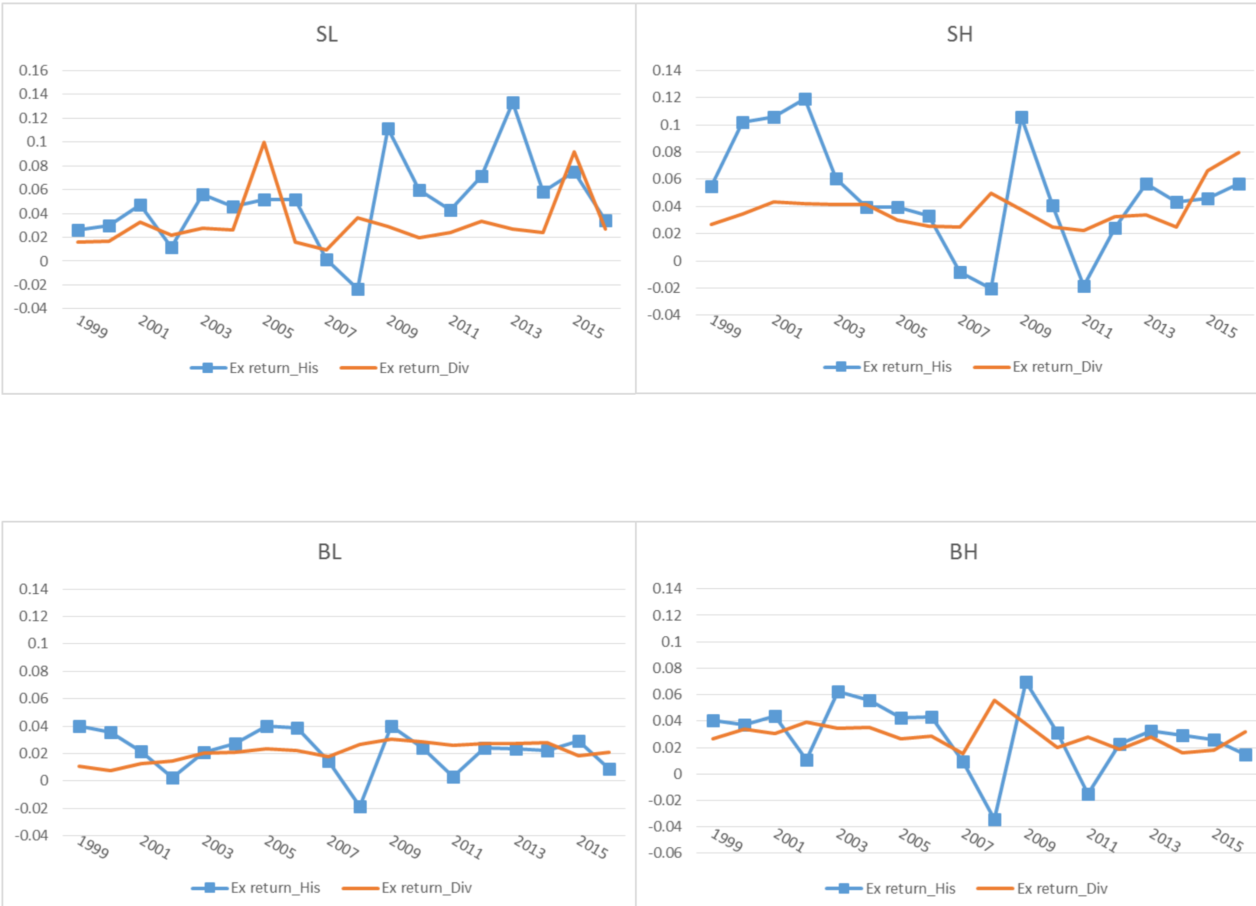

Figure 1: Comparison of expected returns using dividend-based estimation and realized average returns

This figure compares the estimated expected returns of portfolios using dividend-based estimation (Ex return_Div) with the expected returns computed from historical return approach (Ex return_His) which uses average return as proxies of expected return. Comparison is given for four portfolios SL, SH, BL and BH respectively. Straight line represents average expected return of portfolio based on dividend approach and dot line presents average expected returns based on historical return approach.

The results also suggest that mean-reverting valuation ratios play a more influential role than cash flow fundamentals in driving the returns. Our findings are different from the evidence from Chen, Petkova and Zhang (2008) who observe a main contribution of the expected long-term dividend growth component in determining the expected returns. The divergence of our findings can be related by the fact that our sample (from 1999 to 2016) is more recent than the sample of Chen, Petkova and Zhang (2008) (from 1941 to 2002). Our sample therefore might reflect the trend of dividend cut as firms use stock repurchase more as a payout form recently (Grullon and Michaely, 2002). This effect is intensified in our sample observation as we use the time horizon of 20 years to calculate the long-term dividend growth rate rather than the time horizon of 100 years employed by Chen, Petkova and Zhang (2008). The decompositions of expected returns for portfolios are illustrated on Figure 2 bellow.

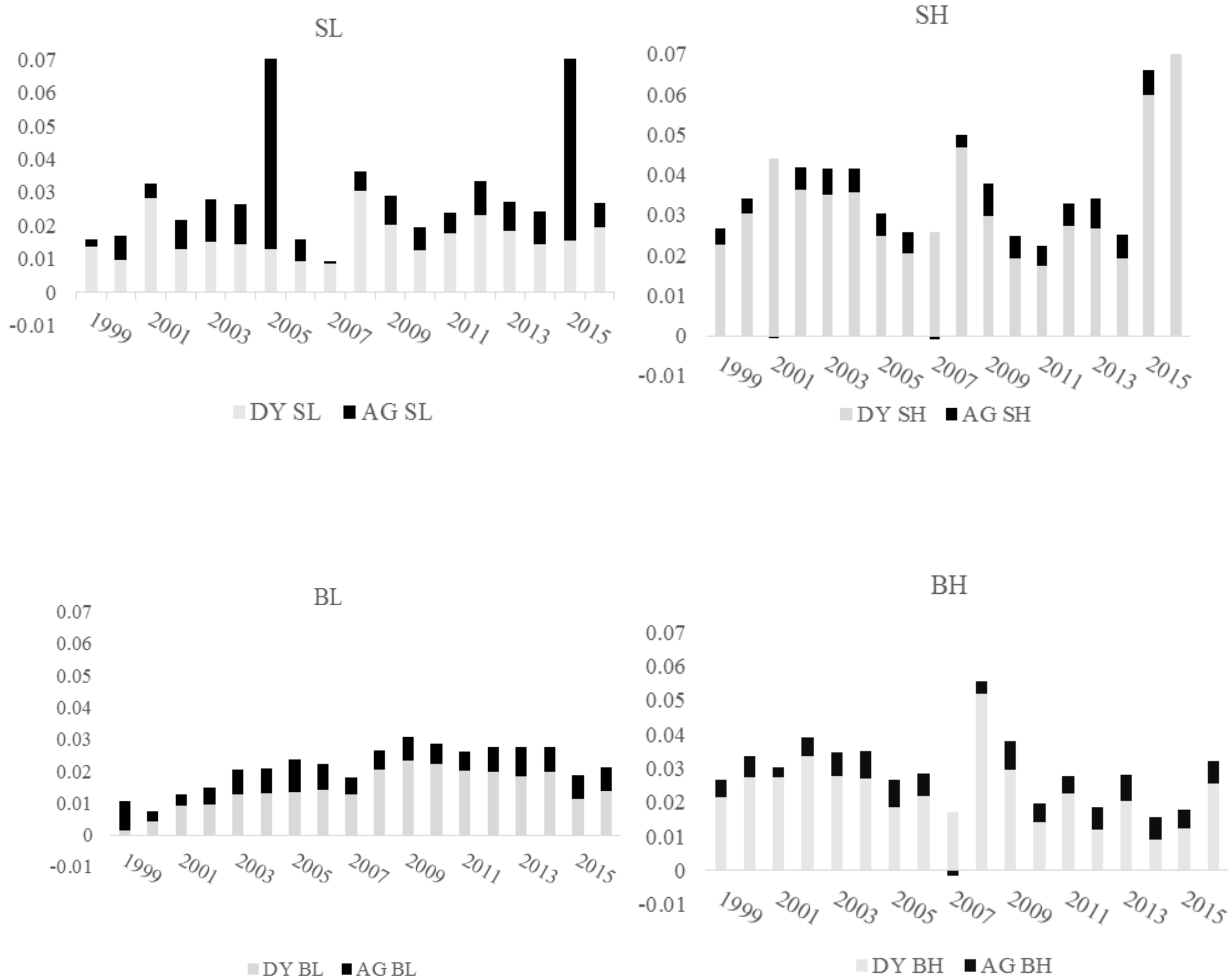

Figure 2: Decomposition of the expected returns using dividend-based estimation

This figure breaks down the estimated expected returns of portfolios using dividend-based estimation (Ex return_Div) into expected dividend yield component (DY) and expected average long-run dividend growth rate (AG). Decomposition is given for four portfolios SL, SH, BL and BH respectively. Grey part of columns represents expected dividend yield component and black part of columns presents expected average long-run dividend growth rate.

5.2 Value premium

Using dividend-based estimates, the expected value premium is positive in our sample for the period from 1999 to 2016. In this period, our estimate method produces a premium of 0.68 percent per month on average. The expected value premium yield from our method is higher than the premium of 0.33 percent per month on average estimated from realized return based method. This result is attributable to the higher magnitude of difference between the expected returns and the average realized return across growth portfolios compared to value portfolios.

Regarding the breakdown of HLM returns, the expected dividend yield component posts at 0.678 percent per month on average while the average long-run dividend component arrived at -0.001 per month from 1999 to 2016. Our evidence contributes to our understanding of the determinant of the value premium. There exists three controversial explanations for value premium. The first rationale argues that the value premium results from rational variations of expected returns (Fama and French 1993, 1996). The second explanation attributes the high premium of value stock to investor sentiment (De Bondt and Thaler, 1985; Lakonishok, Shleifer, and Vishny, 1994). The remaining theory begs the question about the existence of value premium, arguing that HML spread results spuriously from sample-selection bias (Kothari, Shanken, and Sloan, 1995) and data-snooping bias (MacKinlay, 1995). Our findings, which show that the value premium is real and primarily stems from the mean-reverting valuation ratios, provide some supports to the irrational investor behavior theory of De Bondt and Thaler (1985) and Lakonishok, Shleifer, and Vishny (1994). These authors suppose it is the mispricing in valuation ratio and its sluggish correction in the long-term that cause the HML spread. The difference between expected value premium and its average realized value and the decomposition of value premium are shown in the figure 3 below:

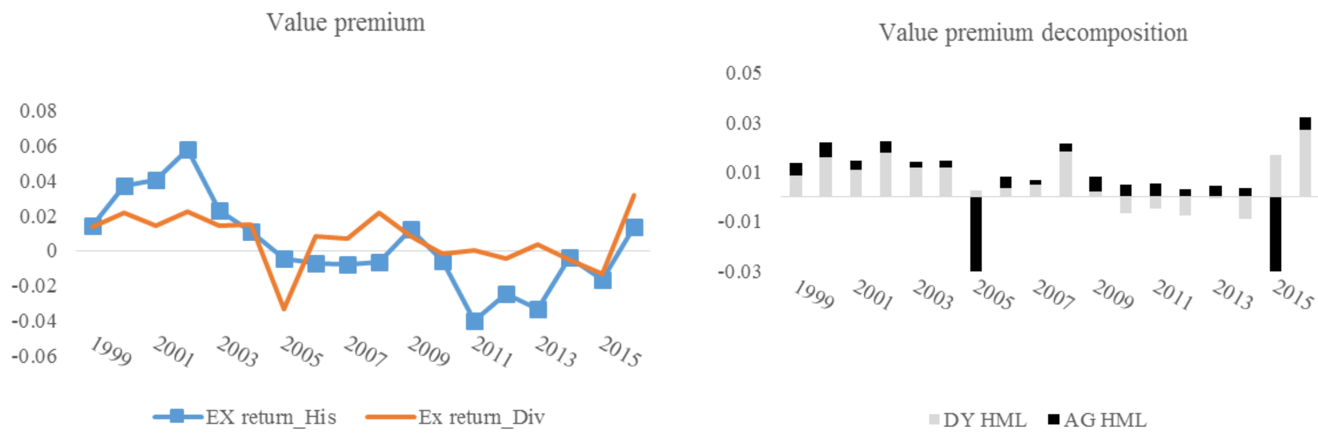

Figure 3: Comparison of value premium and decomposition

This figure compares the estimated value premium using dividend-based estimation (Ex return_Div) with the value premium from historical return approach (Ex return_His) which uses average return as proxies of expected return. Straight line represents average expected return of portfolio based on dividend approach and dot line presents average expected returns based on historical return approach. The figures also decompose value premium using dividend-based estimation into expected dividend yield component (DY) and expected average long-run dividend growth rate (AG). Grey part of columns represents expected dividend yield component and black part of columns presents expected average long-run dividend growth rate.

5.3 Predictive regressions

We now report the empirical evidence on the predictability of the value premium. As indicated before, our regressions include four conditioning variables, namely dividend yield (DY SP500), the default premium (DEFAULT SPEAD), the term premium (TERM SPREAD) and the one-month T-bill rate (ST RATES). Statistic results for the regression of value premium are presented in Table 1.

As could be seen from the regression result, the value premium is indeed predictable given the adjusted R-squared of 23.72 percent. The F-statistic of 0.000 indicates that the coefficients are jointly different from zero. Specifically, the regression suggests that the dividend yield is statistically significant in forecasting value premium with positive coefficients of 1.83 and p-value of 0.0046. This result makes sense as a higher dividend yield could lead to a higher expected rate of return on stock due to higher expected dividend yield next year, as pointed out by Blanchard (1993)

	Regression of Value premium		Regression of expected dividend yield component		Regression of expected dividend growth rate component	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
INTERCEPT	0.0208	1.3475	0.0078	3.9431	-0.0170	-1.3168
DY SP500	1.8389**	2.8622	1.8692**	4.6920	0.0303	0.0565
TERM SPREAD	-0.0795	-0.3401	-0.5059**	-3.4914	0.5854**	3.0055
DEFAULT SPREAD	1.7899**	4.9711	1.6082**	7.2031	0.1817	0.6056
ST RATES	-0.5723	-0.0341	-0.2624**	-2.5200	0.2681*	1.9157
Number of obs.	216		216		216	
Adjusted R-squared	0.2372		0.3138		0.1140	

Table 1: Predictive regressions models for value premium and its components

The table shows predictive regression models of the value premium and its components on conditioning variables. Coefficients which differ significantly from zero at less than the 0.05 level are marked with two asterisks while those significant at the 0.10 level are marked with one asterisk. *DY SP500* presents for aggregate dividend yield of SP500 composite. *TERM SPREAD* is calculated by excess returns of 10 year U.S Treasury bond rates minus one-year Treasury bond rates. *DEFAULT SPREAD* is denoted for yield spread between Moody's Baa and Aaa corporate bonds; *ST RATES* is for U.S Treasury three-month bill rates.

Also to note, the default spread poses a significant explanatory power for HML returns given the coefficients of 1.78 and p-value of 0.00. Other variables do not fare well given the large p-values. Our findings are consistent with Zane (2005) and Chen, Petkova and Zhang (2008). Chen, Petkova and Zhang (2005) point out that value premium is countercyclical and it is hence predictive by business cycle variables. Zang (2005) claims that value premium is due to the countercyclical time-variation in the relative risks of value and growth firms. In this approach, during downturns, businesses want to shrink their operations, especially value firms that are less productive than growth firms. Because capital reduction is more costly than an expansion, value firms are more negatively influenced by economic recession. Value firms therefore have higher tendency of bankruptcy during economic meltdown than growth firms, meaning that the former should have higher loadings on the default spread than the later. The positive coefficient of default premium is also presented in the studies of Jagannathan and Wang (1996).

Of independent interest, we implement regressions of the two components of value premium, namely expected dividend yield and expected long-term dividend growth rate on the same conditioning variables. The results are presented in Table 1 following value premium regression. As could be seen from the descriptive tables, these two components are predictive also. However, the conditioning variable list is better in predicting the expected dividend yield given the adjusted R-squared of 31.38 percent, much higher than the R-squared in the regressions of expected long-term dividend growth rate which posts an adjusted R-squared of 11.40 percent. The F-statistics in both regression indicate that we reject the null hypothesis of all coefficient are jointly insignificant. All business cycle variables pose significant explanatory power to the expected dividend yield while the result is ambiguous for the expected long-term dividend with both dividend yield and default spread being statistically insignificant.

To validate the model, we also check if multicollinearity exists. With highly correlated variables, minor variations in the data could cause abrupt changes in coefficient estimates. We investigate the problem by looking at the correlation matrix of all of the independent variables in the Table 2 below. As shown in the matrix, there is no correlation above 0.8. As a rule of thumb, we conclude that the model does not have a problem with multicollinearity.

	DY SP500	*TERM SPREAD*	*DEFAULT SPREAD*	*ST RATES*
DY SP500	1.0000			
TERM SPREAD	0.3519**	1.0000		
DEFAULT SPREAD	0.6326**	0.2634**	1.0000	
ST RATES	-0.7092**	-0.7152*	-0.3338**	1.0000

Table 2: Correlation matrices of conditioning variables

The table shows correlation matrices of conditioning variables of the predictive regression models. Coefficients which differ significantly from zero at less than the 0.10 level are marked with one asterisk while those significant at the 0.05 level are marked with two asterisks. *DY SP500* presents for aggregate dividend yield of SP500 composite. *TERM SPREAD* is calculated by excess returns of 10 year U.S Treasury bond rates minus one year Treasury bond rates. *DEFAULT SPREAD* is denoted for yield spread between Moody's Baa and Aaa corporate bonds; *ST RATES* is for U.S Treasury three-month bill rates

6. CONCLUSIONS AND SUGGESTIONS FOR FUTHER STUDIES

This chapter summarizes the main findings of our study and gives suggestions of future research possibilities.

6.1 Conclusions

Using methods of Blanchard (1993) and Fama and French (2002) to estimate stock returns from dividends, we document the value premium from ex-ante approach. We here feature three main findings of our paper. First, dividend-based expected returns from of portfolios SL, SH, BL and BH, arriving at 3.21 percent, 3.80 percent, 2.14 percent and 2.91 percent per month are lower than average realized return of 4.92 percent, 4.89 percent, 2.22 percent and 2.91 percent per month respectively. The value premium is economically positive for Nadaq Nordic Large Cap companies from 1999 to 2016, posting at 0.68 percent per month. Our results are in line with previous findings of Blanchard (1993), Elton (1999), Fama and French (2002) and Chen, Petkova and Zhang (2008) which says long term average realized returns are higher than expected returns and are hence biased and noisy proxies for expected returns. The gap, as evidenced by these authors, is due to larger sensitivity of the average return to long-lived shocks to dividend and earnings growth rates or the expected stock return. Second, we document that value premium is economically positive in our sample. As such, value stocks outperform growth stocks in the Nadaq Nordic Large Cap list by 0.68 percent per month on average in 1999 to 2016. The value premium yielded from our method is higher than the premium of 0.33 percent per month on average estimated from realized return based method. This result is attributable to the higher magnitude of difference between the expected return and the average realized return across growth portfolios compared to value portfolios. We also find that expected dividend yield is the main contributor of the premium with 0.68 percent while expected long-term dividend growth rate makes up a minor of -0.001 percent, suggesting that mean-reverting valuation ratios play a more influential role than cash flow fundamentals in driving the returns. Our result also lends support to the irrational investor behavior theory of De Bondt and Thaler (1985) and Lakonishok, Shleifer, and Vishny (1994). These authors suppose it is the mispricing in valuation ratio and its sluggish correction in the long-term that cause the HML spread.

The empirical results indicate that value premium of Nordic market is predictive in the sample period given adjusted R-squared of 23.72 percent. All variables are jointly significant in explaining value premium with dividend yield and default spread being positive predictors. The result might hint that the HML returns are likely countercyclical as pointed out by Zang (2005).

6.2 Suggestions for further studies

What could be added as limitation of our research is considering whole period from 1998 till 2016 without taking into account period of crises in 2008. Moreover we have focused on large firms only, since they cover most of market cup however it could be nice to compare results in some further research by taking all firms into account.

As our research offers a new approach towards value premium on Nordic market, follow-up studies could offer more in-depth research towards some subjects of our paper. Researchers who are interested in investigating value premium from ex ante approach could further examine our topic by incorporating stock repurchases as a part of total payout together with dividends. As pointed out by Grullon and Michaely (2002), stock repurchases now become the most popular form of payouts. Firms, regardless of performances, size and BM, share the tendency to reduce dividend payment given the cash dividend falling from 66.5 percent in 1978 to 20.8 percent in 1999 (Fama and French, 2011).

Furthermore, the predictability of value premium could be approached from firm-specific variables or retested by using the other set of business cycle variables to see if it is really cyclical or not.

REFERENCES

Asness, C., Friedman, J., Krail, R. & Liew, J. (2000). Style Timing. *The Journal of Portfolio Management*, vol. 26, no. 3, pp. 50-60.

Banz, R. (1981). The Relationship between Return & Market Value of Common Stocks. *Journal of Financial Economics*, vol. 9, no. 1, pp. 3-18.

Barberis, N. & Shleifer, A. (2003). Style Investing. *Journal of Financial Economics*, vol. 68, pp. 161–199.

Basu, S. (1977). Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis. *The Journal of Finance*, vol. 32, no. 3, pp. 663-698.

Basu, S. (1983). The relationship between Earnings' Yield, Market Value and Return for NYSE common stocks. *Journal of Financial Economics*, vol. 12, no. 1, pp. 129-156.

Black, F. (1972). Capital Market Equilibrium with Restricted Borrowing. *The Journal of Business*, vol. 45, no. 3, pp. 444-479.

Black, F. (1993). Beta and Return. *The Journal of Portfolio Management*, vol. 20, no. 1, pp. 8-18.

Blanchard, O., Shiller, R. & Siegel, J. (1993). Movements in the Equity Premium. *Brookings Papers on Economic Activity*, vol. 1993, no. 2, pp. 75-138.

Brooks, C. (2015). *Introductory Econometrics for Finance*. 1st ed. Cambridge: Cambridge University Press.

Campbell, J., Lo, A. & MacKinlay, A. (2012). *Econometrics of Financial Markets*. 1st ed. New Jersey: Princeton University Press.

Campbell, J. (1987). Stock Returns and the Term Structure. *Journal of Financial Economics*, vol. 18, no. 2, pp. 373-399.

Campbell, J., Hilscher, J. & Szilagyi, J. (2008). In Search of Distress Risk. *The Journal of Finance*, vol. 63, no. 6, pp. 2899-2939.

Chava, S. & Purnanandam, A. (2010). Is Default Risk Negatively Related to Stock Returns?. *Review of Financial Studies*, vol. 23, no. 6, pp. 2523-2559.

Chan, L., Hamao, Y. & Lakonishok, J. (1991). Fundamentals and Stock Returns in Japan. *The Journal of Finance*, vol. 46, no. 5, pp. 1739-1772.

Chen, L., Petkova, R. & Zhang, L. (2008). The Expected Value Premium. *Journal of Financial Economics*, vol. 87, no. 2, pp. 269-280.

Claus, J. & Thomas, J. (2001). Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets. *The Journal of Finance*, vol. 56, no. 5, pp. 1629-1666.

Cohen, R., Polk, C. & Vuolteenaho, T. (2003). The Value Spread. *The Journal of Finance*, vol. 58, no. 2, pp. 609-641.

DeBondt, W. & Thaler, R. (1985). Does the Stock Market Overreact?. *The Journal of Finance*, vol. 40, no. 3, pp. 793-805.

Drew, M. & Veeraraghavan, M. (2002). A Closer Look at the Size and Value Premium in Emerging Markets: Evidence from the Kuala Lumpur Stock Exchange. *Asian Economic Journal*, vol. 16, no. 4, pp. 337-351.

Elton, E. (1999). Presidential Address: Expected Return, Realized Return, and Asset Pricing Tests. *The Journal of Finance*, vol. 54, no. 4, pp. 1199-1220.

Fama, E. (1982). Inflation, Output, and Money. *The Journal of Business*, vol. 55, no. 2, pp.201-211.

Fama, E. & French, K. (1989). Business Conditions and Expected Returns on Stocks and Bonds. *Journal of Financial Economics*, vol. 25, no. 1, pp. 23-49.

Fama, E. & French, K. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, vol. 47, no. 2, pp. 427-665.

Fama, E. & French, K. (1993). Common Risk Factors in the Returns on Rtocks and Bonds. *Journal of Financial Economics*, vol. 33, no. 1, pp. 3-56.

Fama, E. & French, K. (1995). Size and Book-to-Market Factors in Earnings and Returns. *The Journal of Finance*, vol. 50, no. 1, pp. 131-155.

Fama, E. & French, K. (1998). Value versus Growth: The International Evidence. *The Journal of Finance*, vol. 53, no. 6, pp. 1975-1999.

Fama, E. & French, K. (2001). Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?. *Journal of Financial Economics*, vol. 60, no. 1, pp. 3-43.

Fama, E. & French, K. (2002). The Equity Premium. *Journal of Finance*, vol. 57, pp. 637-659.

Gebhardt, W., Lee, C. & Swaminathan, B. (2001). Toward an Implied Cost of Capital. *Journal of Accounting Research*, vol. 39, pp. 135-176

Graham, B. & Dodd, D. (2009). *Security Analysis*. 1st ed. New York: McGraw-Hill.

Griffin, J. & Lemmon, M. (2002). Book-to-Market Equity, Distress Risk, and Stock Returns. *The Journal of Finance*, vol. 57, no. 5, pp. 2317-2336.

Grullon, G. & Michaely, R. (2002). Dividends, Share Repurchases, and the Substitution Hypothesis. *The Journal of Finance*, vol. 57, pp. 1649-1684.

Guo, H., Savickas, R., Wang, Z. & Yang, J. (2009). Is the Value Premium a Proxy for Time-Varying Investment Opportunities? Some Time-Series Evidence. *Journal of Financial and Quantitative Analysis*, vol. 44, no. 01, pp. 133.

Hodrick, R. & Prescott, E. (1997). Postwar U.S. Business Cycles: An Empirical Investigation. *Journal of Money, Credit and Banking*, vol. 29, no. 1, pp. 1.

Jagannathan, R. & Wang, Z. (1996). The Conditional CAPM and the Cross-Section of Expected Returns. *The Journal of Finance*, vol. 51, no. 1, pp. 3.

Keim, D. & Stambaugh, R. (1986). Predicting Returns in the Stock and Bond Markets. *Journal of Financial Economics*, vol. 17, no. 2, pp. 357-390.

Kothari, S., Shanken, J. & Sloan, R. (1995). Another Look at the Cross-Section of Expected Stock Returns. *The Journal of Finance*, vol. 50, no. 1, pp. 185.

Lakonishok, J., Shleifer, A. & Vishny, R. (1994). Contrarian Investment, Extrapolation, and Risk. *The Journal of Finance*, vol. 49, no. 5, pp.1541.

Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *The Review of Economics and Statistics*, vol. 47, no. 1, pp. 13.

MacKinlay, A. (1995). Multifactor Models do not Explain Deviations From the CAPM. *Journal of Financial Economics*, vol. 38, no. 1, pp. 3-28.

Petkova, R. & Zhang, L. (2005). Is Value Riskier Than Growth?. *Journal of Financial Economics*, vol. 78, pp. 187-202.

Petkova, R. (2006). Do the Fama-French Factors Proxy for Innovations in Predictive Variables?. *The Journal of Finance*, vol. 61, no. 2, pp. 581-612.

PwC (2016). IPO Watch Europe Q2 2016 Report.

Rosenberg, B., Reid, K. & Lanstein, R. (1985). Persuasive Evidence of Market Inefficiency. *The Journal of Portfolio Management*, vol. 11, no. 3, pp. 9-16.

Sharpe, W. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *The Journal of Finance*, vol. 19, no. 3, pp. 425.

Wang, H. & Yu, J. (n.d.). An Empirical Assessment of Models of the Value Premium. *SSRN Electronic Journal*. Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1866397 [Accessed 18 April 2017].

Yen, J., Sun, Q. & Yan, Y. (2004). Value versus growth stocks in Singapore. *Journal of Multinational Financial Management*, vol. 14, no. 1, pp. 19-34.

Xie, S. & Qu, Q. (2016). The Three-Factor Model and Size and Value Premiums in China's Stock Market. *Emerging Markets Finance and Trade*, vol. 52, no. 5, pp. 1092-1105.

Zhang, L. (2005). The Value Premium. *The Journal of Finance,* vol. 60, pp. 67-103.

APPENDIX

	Without trend	*With trend*
DY SL	-4.7115***	-4.7257**
DY SH	-3.9940***	-3.9875*
DY BL	-3.5246***	-3.6378***
DY BH	-3.6667***	-3.8994***

Table A1: ADF unit root test for dividend yield of portfolios

The tables presents results of ADF unit root test for stationarity of dividend yield of portfolios. DY SL stands for dividend yield of small low portfolio; DY SH is denoted for dividend yield of small high portfolio; DY BL is for dividend yield of big low portfolio and DY BH represents the dividend yield of big high portfolio. ***,**,* indicate significant level at 1 percent, 5 percent and 10 percent respectively.