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THE VALUE PREMIUM ON THE DANISH STOCK MARKET: 1950-2004

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Abstract:
A number of influential studies have documented a strong value premium for US stocks over the period 1963 to 1990 (Fama and French (1992), Lakonishok et al. (1994)). Stocks with low price-earnings multiples, price-book values and other measures of value are reported to have given a higher mean return than the high multiple growth firms. Work by Basu (1997) and others have shown that the value dominance is also a feature of the earlier market history of the United States. The value premium is reported also to exist in a number of other countries over the period 1975 to 1995 (Fama and French (1998)). The results for these markets are based on Morgan Stanley (MSCI) data. Since these data are softer due to a relatively short time horizon and due to a small number of stocks in some cases down at 10 stocks, the conclusions are likely to be less robust. There is therefore a need for more research on this issue. The purpose of this paper is to report evidence for the Danish stock market and to test whether the value premium is a genuine long-term feature of the market or just a phenomenon that pops up now and then. To research this issue we have collected accounting and stock market data for more than half a century. We report in particular on the insights obtained when portfolios are formed on the basis of the price-earnings multiple. The paper shows that there is a value premium. The paper also analyzes whether the premium is likely to be due to risk (Fama and French (1992,98)) or mispricing as emphasized by the Behavioral Finance School (Chan et al. (2000), Lakonishok et al. (1994) and La Porta et al. (1997)).

Introduction

A number of influential studies have documented a considerable value premium for US stocks over the period 1963 to 1990 (Fama and French (1992), Lakonishok et al. (1994)). Stocks with low price-earnings multiples, price-book values, price-dividend ratios and other measures of value are reported to have given a significantly higher mean return than the high multiple growth stocks. Work by Basu (1997) and others have shown that the value dominance is also a feature of the earlier market history of the United States as noted also by Graham and Dodd (1934)[1].

The value premium is reported also to exist in a number of other countries over the period 1975 to 1995. Outside the US, value portfolios have produced a higher mean return in Japan (Chan et al. (1991) and in 11 out of the 12 developed countries studied in Fama and French (1998). Fama and French also provide evidence for the existence of a value premium in a large number of emerging markets. These results are based on Morgan Stanley data. Since the time horizon of the MSCI universe is relatively short (20 years in the case of advanced markets and 9 years for the emerging markets) and since the number of stocks for some of the smallest markets occasionally is very low (sometimes down at 10 stocks), the results for these markets are likely to be less robust. There is therefore a need to undertake more research on this issue in order to find out whether the value premium is a robust feature of how stocks are priced over long time periods.

Notwithstanding that value stocks frequently outperform growth stocks there are of course episodes with a negative value premium. Thus, Chan et al. (2000) show that the US value premium disappeared in the late 1990s. They argue that the shift in the 1990s reflects that investors got too excited about growth stocks. Anticipating the bursting of the bubble, Chan et al. (2000) predicted that the historic cross sectional return pattern will be reestablished. However, since the bubble to a large extent reflected excesses in Telecom, Media and Tech (TMT), it is of interest to look at how other markets with a smaller role of TMT stocks have performed during these years since this provides an out of sample test of the hypothesis that the US value premium will be reestablished once markets have returned to normal.

The purpose of this paper is to report evidence on the Danish value premium and in particular to investigate whether the premium is a stylized fact or just a phenomenon that pops up now and then. Despite the Danish market lists a number of well-known companies with global businesses and foreign ownership interests little is known about the value premium. To research this issue we collected stock market and

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[1] It is impossible to do justice to all the contributions in this literature; Cuthbertson and Nitzsche (2004) contains additional references.

accounting data for the period 1950 to 2004, that is, for more than half a century. We present evidence for the 20 largest and most liquid Danish stocks. These stocks account for a high proportion of the market's capitalization reflecting the small size of the market. These stocks provide therefore a good description of the market's performance.

The paper reports in particular on the insights obtained when portfolios are formed on the basis of the price-earnings multiple. In this paper we do not only study portfolios based on trailing P/E ratios as in the literature, but we also examine portfolios based on forward P/E ratios. Forward looking investors should in principle be more interested in basing their investment decisions on expected earnings rather than on past earnings, and it is therefore of interest also to analyze the outcome of sorting stocks on the basis of the forward P/E. The paper shows that the forward P/E produces the highest premium. However, in both the forward and trailing P/E case the mean premium is significant. The paper also shows that the value premium varies considerably from decade to decade. The high premium in the 1980s is for example followed by a low premium in the 1990s. Unlike in the US, the premium remains in positive territory in the 1990s probably due to a low proportion of TMT stocks.

Fama and French (1992, 1998) argue that the value premium is likely to be a compensation for risk. According to this view, firms that trade at high P/E multiples are therefore on average considered to be less risky relative to value stocks. Lakonishok et al. (1994) take the position that the premium reflects mispricing. They also provide evidence for the hypothesis that the market irrationally undervalues value stocks and overvalues growth stocks, which in turn explains the subsequent excess returns on value stocks, see also Dreman and Berry (1995) and La Porta et al. (1997). In spite the TMT bubble in the late 1990s seems to offer more recent support for the view that stocks are sometimes incorrectly priced (Chan et al. (2000) and Shiller (2000)), it would obviously be inappropriate to dismiss the risk explanation also because risk could be part of the story. The paper therefore also examines whether different risk measures can explain the Danish value premium. Moreover, the paper also addresses the alternative Behavioral explanation that says that markets often get too excited about growth stocks, which subsequently leads to a disappointing performance.

The remainder of the paper is organized as follows. Section I describes the data and the formation of the value and the growth portfolio. Section II presents the Danish value premium over the period from 1950 to 2004. Moreover, we also discuss the robustness of the premium and its economic and statistical significance. Section III analyzes different risk explanations including risk in the CAPM sense, emphasizing the covariance between value and growth stocks and the stock market, and risk in the

C-CAPM, emphasizing the covariance of value and growth stocks with the overall behavior of the macro economy. In order for the Behavioral explanation to make sense growth stocks should disappoint investors. One way to test this hypothesis is to compare earnings growth before and after portfolio formation. If growth stocks have much higher earnings growth prior to than after portfolio formation, there is a basis for arguing that growth stocks are likely to have disappointed investors. Section IV tests whether there is support for this view in the Danish market. Section V concludes the paper.

I. The Data and the Portfolio Formation

This paper draws on our own data work in the absence of an official data source. We have therefore compiled all the relevant accounting and stock market data for the largest stocks in the Danish market. Due to the small size of the market, these stocks account for a high proportion of the market's capitalization and they provide therefore a good description of the market's performance.

The sample period runs from 1950 to 2004.[2] For each year we select the 20 largest companies in order to get a sample that historically have been considered to be the Danish Blue Chips universe. In case the companies have two share classes, we only included the liquid B shares but not the A shares since they are typically held by the controlling family and a few other large investors. Due to the reduced liquidity, A shares trade with a discount even though they have superior voting rights. The advantage of working with this set of stocks is that we minimize the risk that the cross sectional return difference is due to liquidity. The stocks we have chosen from 1989 and onwards are almost identical to the stocks that enter the KFX price index (the Danish Blue Chips price index first introduced in 1989). There are however a few differences, which are outlined in greater detail in Risager (2005). One of the most important is that our universe as noted only includes the B shares when there are two share classes. The KFX includes in some cases both share classes. Moreover, we have also eliminated some of the problems with cross holdings in the KFX universe. Companies that basically are holding other KFX companies are therefore not included in our universe. For liquidity reasons, we have also adjusted for State ownership in telephone companies and in SAS, that is, we have excluded the portion of shares that belong to the State.

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[2] The accounting data is further described in Risager (2005). The stock market data prior to 1999 is either from Nielsen and Risager (2001) if possible or compiled and estimated for the purpose of this paper. The new data is compiled for the purpose of this paper. The data can be obtained on request to the author.

At the end of each year, we form value and growth portfolios on the basis of the stocks' P/E multiples. The value portfolio includes the 10 stocks with the lowest P/E, and the growth portfolio includes the 10 stocks with the highest P/E. In the literature, the portfolio formation has been based on trailing P/E ratios, assuming implicitly that investors only look at current stock prices relative to past earnings known with certainty at the time of portfolio formation. In this paper we shall, however, also form portfolios on the basis of a forward-looking earnings measure. In the absence of published forward P/E ratios, we construct these ratios by taking the share price at the end of the year relative to net-profit over the year. Because the earnings data that is available at the end of a year is earnings for the first 3 quarters, this approach assumes that investors were able to make a good (unbiased) earnings forecast for the last quarter in order to estimate annual earnings. We therefore label this approach the forward P/E method since it to some extent embodies a forward-looking earnings component.[3] Following the portfolio formation at the end of a calendar year, returns are calculated for the following year, assuming a 1-year holding period. We will later examine long-term buy and hold strategies.

Because the classification of stocks according to the forward P/E can be criticized for a potential look ahead bias, we also consider the case where the portfolio formation is based on a trailing P/E.[4] In this case, the P/E is the end of year price relative to earnings last year. Given that annual earnings reports typically are available in the second quarter of a year this approach can certainly not be said to be informational demanding, on the contrary. Because investors in this case react with a delay of around 2 quarters relative to the earnings availability date, we would expect that the forward P/E is associated with a higher value premium than the trailing P/E. However, if the value premium exists and is significant even in the trailing P/E case this is evidence of a high degree of persistence in the premium.[5] In order to further investigate the persistence of the value premium, we also report 2-year and 3-year holding period returns. This serves to record the return to investors who stick to their portfolios over a long time.

As the returns take into account bankruptcies, the data is free of survivor biases. We will later discuss the role of business failures and crises since that turns out to be important for the results in the early 1990s. Stocks are value-weighted in the two

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[3] The conventional forward P/E is current P relative to projected earnings 12 months ahead. With this caveat in mind we proceed to use the term the forward P/E in the absence of a better label.

[4] Earlier, companies only published annual reports and were moreover parsimonious in offering earnings guidelines to the market.

[5] Fama and French (1998) also form portfolios for the 12 markets outside the US at the end of the year and calculate returns for the following year, but they use the most recent available trailing year of earnings for the 12 countries. Such earnings data do, however, not exist for the Danish firms over the long historic period we are researching. For the US, Fama and French (1998, p. 1977) form portfolios at the end of the year but calculate returns 2 quarters after portfolio formation.

portfolios like in Fama and French (1998). Due to that we therefore control for a potential size effect. As in Lakonishok et al. (p. 1546), it is only companies with positive earnings that enter the portfolios. In other words, investors are assumed not to invest in highly distressed firms or in other companies with negative earnings at the outset. It is important to emphasize that this assumption does not lead to any biases; the value premium we report is an unbiased estimate of the return difference between large value and large growth stocks that are part of the set of stocks with positive earnings. If firms later produce poor returns due to negative earnings then that is reflected in the return calculation.

II. The Danish Value Premium

As shown by Table 1, the mean annual value premium is 5.7 percent per year when the portfolio formation is based on the forward P/E. The premium declines to 4.2 percent when stocks are sorted on the basis of the trailing P/E. These results show that value investors benefit from using the most up-to-date earnings estimate. We return to this result when we discuss the potential explanations for the premium.

Table 1. Returns for Value, Growth and the Market: 1951 to 2004

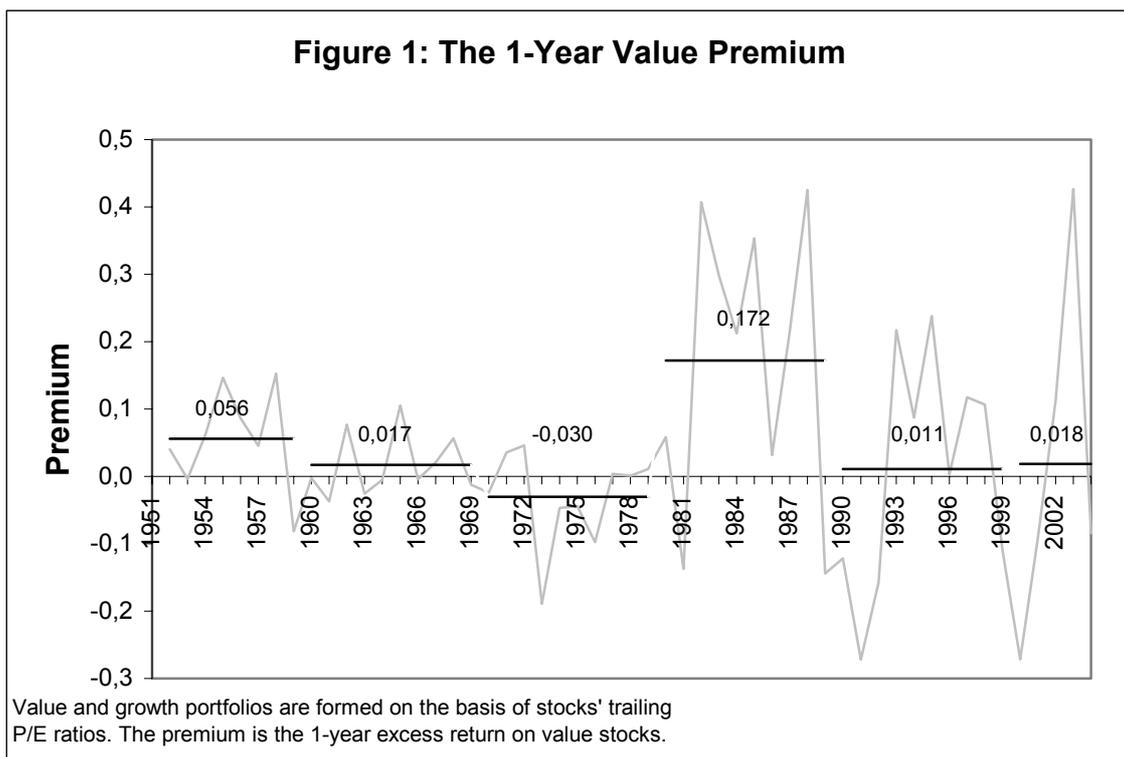|	Low P/E (Forward)	High P/E (Forward)	Value Premium (Forward)	Mkt.	Low P/E (Trailing)	High P/E (Trailing)	Value Premium (Trailing)	Mkt.
R1 (Mean)	0.160	0.103	0.057	0.131	0.152	0.110	0.042	0.130
Std.	0.270	0.245	0.122	0.249	0.287	0.241	0.157	0.249
Std.Error	0.037	0.033	0.017	0.034	0.039	0.033	0.021	0.034
t(Mean)	4.36	3.10	3.44	3.86	3.87	3.34	1.95	3.80

At the end of each year, we form value and growth portfolios on the basis of the stocks' P/E multiples. The value portfolio includes the 10 stocks with the lowest P/E's, and the growth portfolio includes the 10 stocks with the highest P/E's. The share price is the end of year price, while earnings is defined as net-profit over the year. Returns are calculated for the following year; we have therefore annual value and growth portfolio returns over 54 years from 1951 to 2004. Because the earnings data available at the end of a year is earnings for the first 3 quarters, this approach assumes that investors were able to estimate a good (unbiased) forward P/E and classify stocks accordingly. Another approach is to classify stocks on the basis of a trailing P/E, defined as the year-end share price relative to earnings for the previous year (typically available in the second quarter of the current year). In this case, we have 53 value and growth portfolio returns covering the period 1952 to 2004.
R1 is the mean of the annual returns. Std. is the standard deviation of the returns. Std.Err. is the standard error of the mean. The conventional t-statistic is the R1 (Mean) relative to the Std.Err..

The estimate of the mean value premium is in both cases higher than the average of 3.8 percent for the 12 countries reported in Fama and French (1998, Table III, Col.

8).[6] However, since the MSCI sample period is much shorter than ours, it should be noted that the Danish premium over the same period actually is higher and equals 7.6 percent in the case of trailing P/E portfolio formation. The considerable shift in the premium from 4.2 percent (over the entire sample period 1951-04) to 7.6 percent (over the MSCI period 1975-95) indicates that the value premium is volatile.

The value premium based on the trailing P/E is illustrated in Figure 1.[7] The yearly premium is highly volatile ranging from 42.5 percent in 1988 (maximum) to –27.2 percent in 1991 (minimum). Across decades, the volatility remains substantial. The highest premium is recorded in the 1980s with a mean equal to 17.2 percent per year. The 1980s are therefore the golden age for Danish value stocks. The lowest premium is recorded in the 1970s, where the premium is negative and equal to –3.0 percent per year. This is the only decade with a negative premium. In passing, it should be noted that the premium drops to 1.2 percent if the 1980s are excluded from the sample. In other words, even without this period, the premium is non-negligible from an economic point of view.

Figure 1: The 1-Year Value Premium

Value and growth portfolios are formed on the basis of stocks' trailing P/E ratios. The premium is the 1-year excess return on value stocks.

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[6] By including the US premium of 6.7 percent, the average (equal weighted) increases to 4.1 percent over the period 1975 to 1995, but would be higher under value weighting.
[7] From now on we concentrate the presentation on the conservative estimate of the value premium based on trailing P/E. The findings are by and large the same for the portfolios based on the forward P/E.

As shown by Figure 1, the yearly value premium varies substantially and the volatility seems moreover to have gone up since the early 1980s. This coincides with a general rise in stock market volatility following the liberalization of the Danish capital market including a move to free capital mobility in the early 1980s (Nielsen and Risager (2001 and Sellin (1996)). If value and growth were swinging in the same way relative to the market we would not have had this rise in the annual volatility of the premium. At lower frequencies like the 5-year horizon, the higher volatility is more muted.

In view of the negative premium reported for the US in the 1990s (Chen et al. (2000), it is interesting to note that the Danish premium on average remains in positive territory even though the premium is under severe pressure both at the beginning and at the end of the 1990s. The events that had a negative impact on the premium are a financial sector crisis in the early 1990s and a strong focus on growth stocks in the late 1990s as in the US. As regards the financial sector crisis, it should be noted that this crisis had a strong adverse effect on banks and insurance companies, which often enter the value portfolio. The financial sector crisis led in a few cases to bankruptcy and to a complete loss of the share capital and in other cases to "just" a sharp fall in the share price. Due to this crisis, value stocks underperformed relative to growth stocks in the 4 consecutive years from 1989 to 1992. In the late 1990s, growth stocks became the darlings of investors, but due to a relatively small proportion of TMT stocks this trend had only a moderate impact on the Danish market. In the first 5 years of the new millennium, value stocks have on average earned higher returns than growth stocks. The premium in this period is 1.8 percent. Had we used the forward P/E this finding would stand out much stronger given that the forward P/E premium equals 12.6 percent. These trends are therefore providing some support for the view in Chen et al. (2000) that the disappearance of the US value premium is likely to be a temporary phenomenon.

The value premium does not only exist in the first year after portfolio formation but is also evident in the second and the third year after portfolio formation, see Table 2. Investors who held the same portfolio of value stocks over a 3-year period have on average earned 4.3 percent more per year compared to a buy-and-hold growth portfolio. Within this time horizon there is therefore no evidence that growth stocks eventually outperform value stocks. The persistence of the excess-return to value strategies several years beyond portfolio formation is also a clear feature of US data (Lakonishok et al. (1994)).

The economic significance of the value premium should not be understated. Table 2 shows that the cumulative wealth level in 2004 of investing one DKK in value stocks at the beginning of the sample period is 5.5 times the outcome of investing in growth

stocks (and 14.9 times higher when stocks are sorted using forward P/E multiples). From an economic point of view the premium is therefore of considerable importance even though the premium is not that significant from a statistical point of view. As shown by Table 1, the trailing value premium is about two standard errors away from zero corresponding to a t-value equal to 1.95.[8] The results are statistically more significant when stocks are sorted on the basis of forward P/E multiples, see Table 1. In that case, the t-statistic equals 3.44.

Table 2. Returns for Buy and Hold Value and Growth Portfolios over longer Holding Periods

	Low P/E (Forward)	High P/E (Forward)	Value Premium (Forward)	Low P/E (Trailing)	High P/E (Trailing)	Value Premium (Trailing)
R1	0.160	0.103	0.057	0.152	0.110	0.042
R2	0.128	0.076	0.052	0.128	0.077	0.051
R3	0.119	0.072	0.047	0.116	0.074	0.043
WT	915.6	61.5	Factor 14.9	469.9	85.2	Factor 5.5

Rt is the average geometric return when the holding period is t years. WT is the nominal wealth level in T=2004 from a one Dollar investment at the end of 1950 (Forward P/E case) or at the end of 1951 (Trailing P/E case), assuming annual rebalancing.

By examining the dividend yields of the two portfolios it turns out that value stocks offer higher dividend yields. For the portfolios formed on the basis of trailing P/E multiples, the dividend yield is on average 1.0 percentage point higher for value stocks. Hence, three quarter of the value premium of 4.2 percent is due to faster share price appreciation. The difference in dividend yields between value and growth is shown in Figure 3. The dividend yield is almost always higher on value stocks. There are only 12 years (out of 53) in which the dividend yield on growth stocks is at the same level or exceeds the yield on value stocks.

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[8] We will later see that the value premium is not entirely symmetric but skewed to the right. The skewness and the fat tails are, however, not enough to reject the normality distribution hypothesis. The standard $Chi^2(2)$ test for normality equals 3.54, and we can therefore not reject the normality assumption at conventional significance levels.

Figure 2: Dividend Yield Difference between the Value and the Growth Portfolio
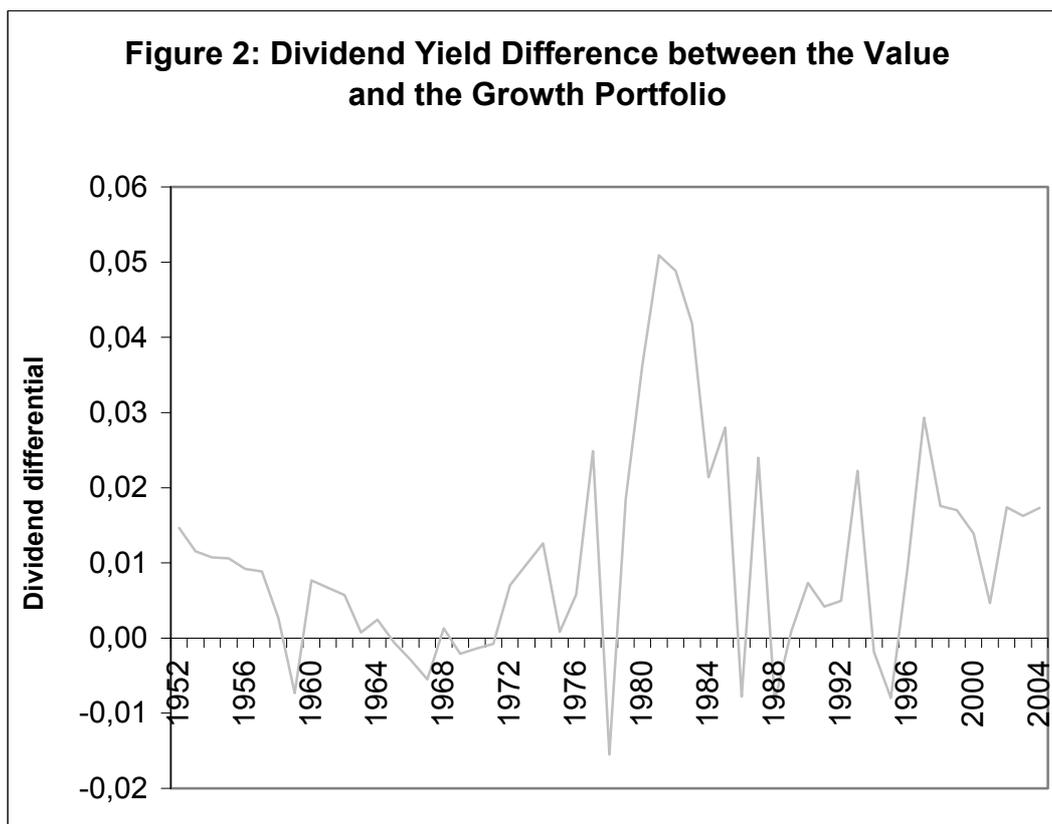
Before we proceed to investigate other aspects of the premium, we note that the premium cannot be explained by transaction costs simply because the value strategy does not entail a higher number of transactions than the growth strategy. In passing, it should also be noted that the return to value stocks exceeds the market return. The difference equals 2.2 percent in the trailing P/E case, see Table 1. Whether that result also holds after taking transaction costs into account goes beyond the purpose of this paper. We will examine this in future work.

III. Are Value Strategies Riskier?

In order to answer this question we begin with the simplest indicator of risk, namely, the standard deviation of returns. As shown by Table 1, the value portfolio has a higher standard deviation than the growth portfolio. By diagnosing the volatility it turns out that the value portfolio has more upside risk than the growth portfolio and less extreme downside risk. Thus, both the value and the growth portfolio exhibit excess kurtosis, that is, both distributions have fat tails, but the extreme returns for the growth portfolio are in particular in the negative range of the distribution. Table 3 therefore also shows that the growth portfolio has produced the worst return over the sample period equal to -33.2 percent. The worst return for the value portfolio is –22.4 percent. Table 3 also shows that the value portfolio is more skewed to the right than

the growth portfolio. In other words, the value portfolio has more upside risk than the growth portfolio. The growth portfolio's higher downside risk and the value portfolio's higher upside risk send the message that higher standard deviation of the value portfolio is not necessarily equivalent with higher risk in the economic sense.

Table 3: Statistics on the Value and Growth Portfolio and the Premium under Trailing P/E

	Low P/E	High P/E	Premium
R1 (Mean)	0.152	0.110	0.042
Std.	0.287	0.241	0.157
Cov(portf, market)	0.069	0.057	
Skewness	1.655	1.436	0.602
Excess Kurtosis	3.113	3.504	0.443
Minimum	-0.224	-0.332	-0.272
Maximum	1.151	1.012	0.426
Normality CHI2(2)	29.21 (0.000)	14.78 (0.001)	3.54 (0.170)

Because the value portfolio has the largest asymmetry, the value premium is also skewed to the right as shown also by Figure 3.

Figure 3: Density Value Premium
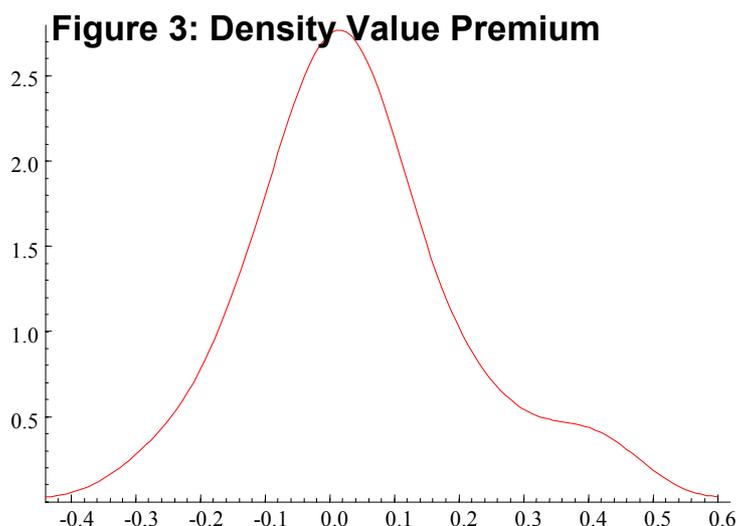
Disregarding the value stocks' higher upside risk, the quantitative difference in standard deviations between the value and the growth portfolio is in any case too small to explain the entire value premium of 4.2 percent. Thus, the difference in standard deviations amounts to 4.6 percentage points and given that the mean return to the standard deviation in the Danish stock market over the 20th century is around 0.5 (Nielsen and Risager (2001)), the difference in standard deviations can only explain about half of the value premium.

Table 4 elaborates further on the point that the value portfolio has been more exposed to upside risk than the growth portfolio. The table shows that the value portfolio outperformed growth stocks by 4.6 percent in the best year of the market. Moreover, the value portfolio strongly outperformed in the second best year, in the third best year and in the fourth best year but not in the fifth best year. It turns out that value stocks outperformed in 8 out of the 10 best years. The table also shows that the mean value premium in the good years is by any standards very high.

Table 4: Value Premium in the best stock market years[1]		
	Year	Premium
The best year	1972	0.046
The 2nd best year	1983	0.298
The 3rd best year	1988	0.425
The 4th best year	1997	0.118
The 5th best year	1975	-0.044
Average of 2 best years		0.172
Average of 5 best years		0.169
Average of 10 best years		0.143
Average of 15 best years		0.082

1) Using the Trailing P/E method

In order for the value portfolio to be riskier than the growth portfolio, the value portfolio will have to underperform in states of the world that are considered to be particularly bad. We consider first a CAPM inspired risk measure, that is, we look at the performance in extreme down markets. Table 5 shows that value stocks strongly outperformed growth stocks in the worst bear market, which is in 1984 with a market return equal to -24.4 percent. In 1984, the value premium is 21.2 percent. Value stocks also outperformed growth stocks in the second worst year and in the third worst year. In the fourth and fifth worst stock market years, growth stocks did better than value stocks. It turns out that value stocks have done better than growth stocks in 6 out of the 10 worst years and in 9 out of the 15 worst years. Moreover, the mean value premium is equal to 2.9 percent in the 10 worst years, and is equal to 1.3 percent in the 15 worst years. In other words, in times of poorly performing stock markets it is hard to argue that the value portfolio is more risky than the growth portfolio. It is actually the other way round.

Table 5: Value Premium in the worst stock market years[1]		
	Year	Premium
The worst year	1984	0.212
The 2nd worst year	2002	0.112
The 3rd worst year	1986	0.032
The 4th worst year	1974	-0.047
The 5th worst year	1992	-0.157
Average of 2 worst years		0.162
Average of 5 worst years		0.030
Average of 10 worst years		0.029
Average of 15 worst years		0.013

1) Using the Trailing P/E method

For completeness we briefly report the beta associated with the value and the growth portfolio. To this end we use the estimates of the covariance of the value and the growth portfolio with the market return reported in Table 3 and the variance of the market return in Table 1. This exercise produces betas for the value and growth portfolios equal to 1.11 and 0.92, respectively. With a typical estimate of the equity premium around 3 to 5 percent (Nielsen and Risager (2001)), the small difference in betas is unable to explain the value premium. We obtain a similar result when we broaden the market portfolio to include a number of small caps as in Nielsen and Risager (2001), which is not surprising given that the small caps have little weight in the market return. In other words, the market portfolio of large caps is highly correlated with the portfolio that also includes a number of small caps. In passing it should be noted for the CAPM to be able to explain the value premium, the difference between the betas would have to be around one, disregarding the tendency for the value portfolio to have more upside risk than the growth portfolio.

If value stocks under perform in other bad states of the world in which the marginal utility of wealth is high, one could still argue that the premium is a reward for risk. We therefore first identify the times when value stocks under perform growth stocks. We then check whether these periods are recessions or otherwise bad states of the economy in which the marginal utility of wealth is high.

Column 1 in Table 6 identifies the time periods in which the value premium is negative and column 2 records the average magnitude of the underperformance. Column 3 characterizes the state of the macro economy and column 4 presents the average real GDP growth as an indicator of the macroeconomic performance. Similar results are obtained when we look at private consumption.

In the 1950s and 1960s, a negative value premium does not coincide with a weak macro economy. Value stocks actually under perform in times when the economy is doing well. There is therefore no support to the risk based explanation in the first two decades of the sample period.

The story is different in the 1970s and in the 1980s. The negative value premium now coincides with a distressed and poorly performing macro economy. That is certainly the case in the period around the first OPEC shock and in the aftermath of the second OPEC shock. Moreover, value stocks also strongly under perform in the early 1990s where growth is weak albeit still in positive territory. The slowing of the economy in the early 1990s is essentially due to a Danish austerity package, including a sharp increase in after tax interest rates, that was implemented in response to a ballooning current account deficit (Andersen et al. (1999)). The tightening of the domestic policy stance had a strong adverse effect on banks and insurance companies. The financial sector crisis led to a very poor performance of the value stocks in this period, see also Risager (2005).

Following these episodes, the value premium again turns negative in the period from 1999 to 2001. The under performance of the value portfolio is substantial, that is, at the same level as in the financial crisis period in the early 1990s. This time the underperformance is an international phenomenon. Chan et al. (2000) explains the negative premium for the US by a change in investor sentiment rather than a change in underlying fundamentals. In any case, the negative premium does not coincide with a bad macro economy. In these years, the macro economy is doing well with growth above the estimated long-term trend. Finally, the premium is also negative in 2004, which is a year with a healthy recovery of the economy.

To sum up: Table 6 records the 9 periods in which there has been a negative value premium. In 3 instances, the negative premium coincides with a bad state of the macro economy. That is around the first and the second OPEC shock and in the early 1990s. There are 6 instances where the premium is also negative and in some cases also substantial like in the late 1990s. In these instances, the macro economy is doing well. In other words, it is not easy to argue that value stocks systematically under perform when growth is weak and the overall economic development is disappointing.

Table 6: The Value Premium and the Macro Economy.[9]

Years with a Negative Premium	Average Annual Premium	Performance of the Economy	GDP Growth
1953: 1 year	**-0.004**	Strong GDP growth.	**1953:**0.061
1959-61: 3 consecutive years	**-0.040**	In this period growth is strong following a poor performance in 1958. The mean growth rate at 0.066 exceeds the average/trend growth rate at 0.038 over the period 1950 to 1970.	**1959:** 0.081 **1960:** 0.061 **1961:** 0.056 **Mean:**0.066
1963-64: 2 consecutive years	**-0.015**	Recession in 1963. Strong rebound of the economy in 1964. Mean growth is above trend.	**1963:**-0.011 **1964:** 0.110 **Mean:**0.050
1969-70: 2 consecutive years	**-0.018**	Growth is upbeat in 1969 but is slowing in 1970. Mean growth above trend.	**1969:** 0.063 **1970:** 0.020 **Mean:**0.042
1973-76: 4 consecutive years	**-0.094**	Weak economy. Recession in 1974 and in 1975. A hike in the oil price and in wages are key explanatory factors. Low mean growth.	**1973:** 0.042 **1974:**-0.004 **1975:**-0.020 **1976:** 0.058 **Mean:**0.019
1981: 1 year	**-0.137**	Recession. Sharp fall in GDP.	**1981:**-0.020
1989-92: 4 consecutive years	**-0.174**	Weak economy following an austerity package in 1986/87, incl. a sharp rise in (after tax) interest rates. Financial sector crisis. Mean growth rate below trend.	**1989:** 0.009 **1990:** 0.011 **1991:** 0.005 **1992:**-0.001 **Mean:**0.006
1999-01: 3 consecutive years	**-0.157**	Strong macro performance. Mean GDP growth above trend growth.	**1999:** 0.029 **2000:** 0.035 **2001:** 0.018 **Mean:**0.028
2004: 1 year	**-0.084**	Recovery of the economy.	**2004:** 0.017

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[9] Source: Adam Databank, Statistics Denmark.

In the above analysis we focused on the years with a negative premium and we asked whether a negative premium coincides with a weak macro economy. Now we turn this around and ask whether recessions coincide with a negative premium? Over the sample period from 1950 to 2004, GDP growth is negative in 8 years, that is, in 1955, 1963, 1974, 1975, 1980, 1981, 1992, and in 1993. In 5 out of these years, namely in 1963, 1974, 1975, 1981, and in 1992 the value premium is negative. However, the mean of the premium in the 8 years with negative GDP growth is positive and equals 1.0 percent. In other words, when the macro economy is in a bad state with falling GDP, value stocks are on average not a poorer hedge compared to growth stocks. That said, it should be noted that the premium is lower than the mean premium over the sample period. In other words, recessions are associated with a decline in value stocks superior return performance, but value stocks have still on average given a higher return than growth stocks. We obtain similar results when we look at fluctuations in private consumption and industrial production (not shown).

The conclusion on the historic risk analysis is that value stocks have had more upside risk than growth stocks and in that sense a higher beta in good times. Moreover, when the stock market is really doing bad, value stocks have on average also done better than growth stocks and in that sense value stocks have had a lower downside beta than growth stocks. In the 8 recessions recorded in the sample period, value stocks have under performed in 5 of them, but the mean of the value premium in all 8 recessions remains in positive territory though not very high. In other words, the value premium is lower in recessions relative to times with positive GDP growth.

IV. Do High P/E Stocks often Disappoint Investors?

This section investigates whether Danish growth stocks also tend to have significantly better earnings performance before than after portfolio formation (Lakonishok et al. (1994)). If there is evidence of this also in the Danish market, there is a case for arguing that high P/E stocks are likely to have disappointed investors, which could be the source of the under performance of growth stocks.

Table 7 summarizes the evidence of earnings growth for the value and the growth portfolio. To explain the results consider first the 3-year window. Earnings growth 3 years before portfolio formation is the geometric average annual earnings growth 3 years before formation; the first 3-year growth rate we have is for earnings over the years 1950 to 1953 associated with the portfolio formed in 1953 (end of the year). Earnings growth rates are overlapping; the next 3-year geometric rate is therefore for 1951 to 1954, associated with the portfolio formed in 1954 (end of year). We use

overlapping earnings growth rates for efficiency reasons, but the spirit of the results is the same in the case of non-overlapping data. Post-portfolio formation earnings growth rates are defined analogously to ex-ante earnings growth.

Table 7: Average Earnings Growth Before & After Portfolio Formation[1]		
3 Years Before & 3 Years After		
	Before	**After**
Low P/E	0.100 (0.205)	0.117 (0.222)
High P/E	0.154 (0.147)	0.067 (0.159)
2 Years Before & 2 Years After		
	Before	**After**
Low P/E	0.136 (0.283)	0.094 (0.434)
High P/E	0.181 (0.292)	0.074 (0.173)
1 Year Before & 1 Year After		
	Before	**After**
Low P/E	0.064 (0.702)	0.278 (0.865)
High P/E	0.431 (0.635)	0.123 (0.357)

1) Returns are geometric returns and numbers in brackets are standard deviations.

Earnings growth 3-year ahead of portfolio formation equals 10.0 percent for the value portfolio, whereas earnings growth after portfolio formation roughly is at the same level though a bit higher. The picture is very different for the growth portfolio. Earnings growth is much higher prior to than after portfolio formation. Thus, the difference in growth rates equals 8.7 percent for the growth portfolio. For the 2-year window, the results for the growth strategy are further strengthened in the sense that the gap between ex-ante and ex-post earnings growth is even higher than in the 3-year case. The discrepancy between earnings growth prior to and after formation is also at the 2-year window higher for the value portfolio. However, at the 1-year window the difference between ex-ante and ex-post earnings growth for the growth portfolio is huge by any standards. The difference is also associated with a t-statistic equal to 2.50 and is therefore statistically significant at conventional significance levels. In other words, growth stocks show very strong performance up to portfolio formation, but disappoints immediately thereafter. The strong earnings growth prior to formation is likely to lure investors into buying growth stocks, which they may later regret due to the disappointing return performance.

The picture is different for value stocks with low earnings growth prior to formation but high earnings growth after portfolio formation. However, since the t-statistic of the earnings difference is only equal to 1.61 one cannot say that value stocks have significantly better earnings performance after portfolio formation, but it is safe to

say that value stocks are unlikely systematically to have disappointed investors. The moderate t-statistic at 1.61 is essentially due to value stocks' high earnings volatility.

The higher earnings volatility of the value portfolio shows up at all three horizons except at the 2-year ex-ante horizon where value and growth have about the same volatility. The higher earnings volatility therefore helps to explain the higher return volatility. That said, it should be noted that the value portfolio's return volatility only exceeds the growth portfolio's return volatility by 4.6 percentage points, which is not that high in view of the much larger difference in earnings volatility. We conjecture that the large difference in earnings volatility reflects the role of financial stocks, which often appear in the value portfolio. These stocks are associated with large ups and downs in earnings due to among other things portfolio valuation effects, that is, shifts in asset prices that immediately affect the bottom line, whereas other companies are less sensitive to yearly swings in asset prices partly because they are not as geared as banks. Moreover, in the past industrial and non-financial service companies also reported their assets using book values. The much higher earnings volatility of value stocks does not show up in an equally higher return volatility probably because investors are aware of the annual noise, which to some extent is filtered out in the pricing of these stocks.

Conclusions

There is an extensive literature that has documented the existence of a value premium not only for the United States but also for a number of other markets. Stocks with low price-earnings multiples, price-book values, price-dividend ratios and other measures of value are reported to have given a significantly higher mean return than the high multiple growth stocks. Due to data scarcity some of the results outside the United States are, however, likely to be less robust. There is therefore a need for more research. This paper has therefore investigated whether and to what extent there is a value premium on the Danish market.

To this end the paper has collected accounting and stock market data for more than half a century. The long sample period enables us to test whether the value premium is a stylized fact or just a phenomenon that pops up now and then. The paper has in particular focused on portfolios formed on the basis of stocks' price-earnings multiples. The value portfolio consists therefore of the stocks with the lowest price-earnings multiples, whereas the growth portfolio includes the stocks with high valuation ratios. The paper has not only formed portfolios based on trailing P/E multiples as in the literature, but has also examined portfolios based on forward P/E

ratios given that investors are likely also to be concerned with companies' expected earnings.

The results show that value stocks on average have out performed growth stocks. Moreover, the forward price-earnings multiple produces the highest value premium. However, in both the forward and trailing P/E case the mean premium is significantly different from zero at conventional significance levels. That said, the paper also shows that the value premium is highly volatile even across decades. Thus, following the 1970s, which is the only decade with a small negative premium, the premium is skyrocketing in the 1980s. The 1980s is therefore the golden-age period for value stocks. Following the 1980s, there is a sharp fall in the premium in the 1990s. Unlike in the US, the premium remains, however, in positive territory probably due to a low proportion of TMT stocks in the Danish market. In the new Millennium, the value portfolio has on average out performed the growth portfolio.

Why do we have a value premium? One potential explanation is that value stocks are more risky than growth stocks. We have therefore examined different risk measures. The simplest indicator of risk is the standard deviation of returns. The standard deviation is higher for the value portfolio, but that is to a large extent due to higher upside risk. Moreover, the value portfolio has generally outperformed the growth portfolio in extreme down markets. Disregarding the value portfolio's right skewness, the higher standard deviation can at maximum explain only half of the value premium. The value portfolio does also have a marginally higher beta, but the difference to the growth portfolio is tiny. Moreover, the higher beta does to some extent reflect that the value portfolio has more upside risk. In any case, the difference in betas is far from being able to explain the value premium, which parallels the findings for the US and a number of other countries (Fama and French (1992) and Lakonishok et al. (1994)). The paper has also looked into macroeconomic risk. If value stocks under perform in macroeconomic downturns in which the marginal utility of wealth is high one can still argue that the premium is a reward for risk. In the 8 recessions recorded in the period from 1950 to 2004, the value portfolio under performed in 5 of them. The mean value premium in all 8 recessions remains, however, in positive territory though not very high.

The alternative explanation is that the market frequently undervalues value stocks and overvalues growth stocks, which leads to a strong performance of value stocks and to a weak performance of growth stocks when investors realize that they have been too positive on the exciting growth stocks and too negative on the value stocks (Lakonishok et al. (2004), Dreman and Berry (1995), La Porta et al. (1997) and Chan et al. (2000)). One way to test this hypothesis over a long historic sample period is to compare earnings growth before and after portfolio formation. If growth stocks have

much higher earnings growth prior to than after portfolio formation, there is a basis for arguing that growth stocks are likely to have disappointed investors. This hypothesis, which was first backed by evidence in Lakonishok et al. (1994), finds also support in the Danish dataset. Thus, for the growth portfolio earnings growth prior to portfolio formation is significantly higher than after portfolio formation. For the value portfolio it is the other way round. Thus, earnings growth tends to be higher after than before portfolio formation. At this stage there is therefore more support to the Behavioral explanation than to the classic risk explanation.

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