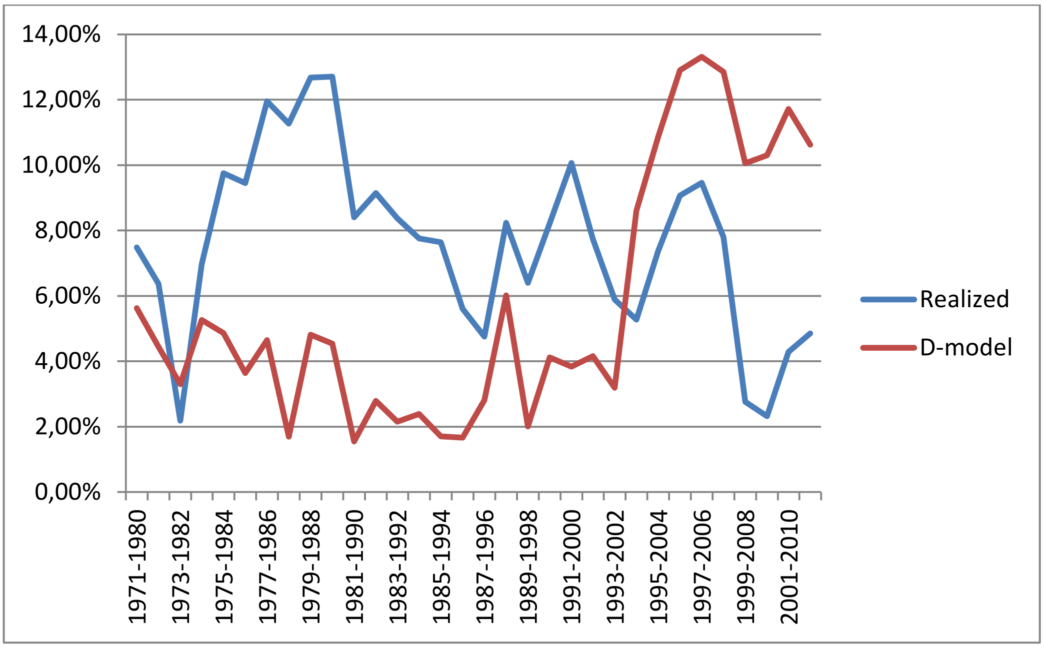
and since the emerging countries still constitutes a relatively small fraction of the world portfolio, this time development of the equity premium is probably not a major concern in our study. Nevertheless, it might be an explanation to why the price of risk (Sharpe ratios) is not equalized across markets.

Another point is the choice of the risk free proxy. As discussed, what one chooses to be the risk free rate has a major effect on the equity premium estimates, but not on the difference between the two models (Fama and French 2002, 642). The same is true for the Sharpe ratios. However, when making cross-markets comparisons based on the dividend-model, it will still influence our inference. For this reason, and because there are different thoughts of which assets should be considered risk free, we should be careful with our conclusions in this regard.

10-year periods

To look at the development of the equity premium estimates, we have constructed 10-year periods of both models. The following figure shows the movement of the 10-year cross-market average equity premium.

Figure 11 – 10 year averages
The figure graphs the 10 year moving average Equity Premium of the cross-market mean. This is equivalent to a portfolio of equal weights in all markets (including the World index), disregarding currency and other risk factors.



This indicates a significant change in the dividend-model average post 2002. From this point, the dividend-model exceeds the realized estimates, a result of the average dividend growing faster than prices. Thus, the unexpected capital gains that Fama and French argues occurred, especially in the 80's and 90's, are no longer observed, or even reversed. This is also the main reason that the differences between the dividend-model estimates and the realized average estimates are less than compared to what Fama and French (2002, 647 Table II) discovered in their 2002 paper. Because of the same shift, the precision advantage of the dividend-model has also been reduced.

Since, in the long-run, the two models should indeed revolve around the same mean, a reversion of unexpected capital gains should have been inevitable. Hence, the recent decline in realized returns is consistent with Fama and French (2002, 657) hypothesis that the fundamental-derived expected equity premiums are closer to the true unconditional expectations. However, the increase in dividend growth is left unexplained. A closer look at the individual markets show that it were mainly the years 2003, 2005 and 2009 which experienced very high dividend growth in most markets, making the 2000s with a very high 10-year average. (Table 5 shows all the ten-year periods of the dividend-model and realized equity premiums in the 13 markets.) Whether this was expected growth, random events or structural change we think is better left for future research which includes good earnings data. But we will however look at the predictability of dividend growth in the last subsection.

Table 5 - 10-year periods of Equity Premium estimates

*This table shows the evolution of the 10-year average equity premiums in each market. The * indicates nominal values, and as before the risk-free rate for the "World" market is the US proxy.*

	Norway		UK		Australia		Canada		Japan		US		Singapore		Germany		France*		Italy		Denmark*		Sweden		World*	
Periode	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model	Realized	D-model
1971-1980	11,03 %	4,33 %	10,31 %	8,80 %	5,83 %	10,38 %	7,27 %	5,60 %	14,99 %	2,54 %	2,11 %	4,50 %	34,13 %	19,47 %	-0,44 %	-0,15 %	2,18 %	5,29 %	0,06 %	-3,72 %	1,58 %	1,77 %	3,28 %	7,50 %	4,87 %	6,79 %
1972-1981	9,07 %	5,93 %	7,18 %	6,92 %	4,00 %	6,68 %	3,83 %	3,78 %	13,87 %	2,04 %	-0,42 %	3,93 %	30,05 %	15,55 %	-1,73 %	-2,17 %	0,73 %	6,16 %	1,85 %	-4,61 %	6,01 %	0,62 %	6,74 %	8,09 %	1,61 %	4,76 %
1973-1982	6,52 %	4,71 %	8,06 %	8,60 %	0,68 %	6,33 %	0,41 %	4,35 %	2,88 %	-0,54 %	-0,65 %	5,45 %	8,15 %	7,07 %	-1,96 %	-1,28 %	-1,16 %	2,01 %	-1,21 %	-3,22 %	-3,43 %	-6,11 %	10,51 %	10,85 %	-0,39 %	4,59 %
1974-1983	6,26 %	5,78 %	13,26 %	10,25 %	8,97 %	11,41 %	3,48 %	2,50 %	7,36 %	3,08 %	2,72 %	5,63 %	14,93 %	12,98 %	4,49 %	0,34 %	5,05 %	2,59 %	-1,42 %	1,94 %	6,76 %	-1,71 %	15,66 %	8,46 %	3,10 %	5,11 %
1975-1984	11,92 %	8,38 %	20,50 %	13,61 %	10,33 %	5,55 %	5,45 %	2,40 %	10,85 %	2,26 %	5,60 %	5,95 %	16,63 %	10,84 %	5,36 %	-1,23 %	10,24 %	1,65 %	3,23 %	9,47 %	6,48 %	-6,63 %	14,13 %	6,69 %	5,98 %	4,27 %
1976-1985	16,56 %	8,88 %	10,18 %	7,12 %	8,93 %	3,35 %	5,77 %	2,01 %	10,33 %	0,28 %	5,35 %	5,62 %	7,34 %	3,73 %	9,66 %	2,09 %	9,77 %	-0,48 %	12,55 %	8,45 %	5,99 %	-5,80 %	13,83 %	7,86 %	6,60 %	4,14 %
1977-1986	15,38 %	7,73 %	12,17 %	8,02 %	12,22 %	8,24 %	5,78 %	1,73 %	15,09 %	1,70 %	4,67 %	3,79 %	11,20 %	7,46 %	10,70 %	2,54 %	16,28 %	1,19 %	19,59 %	11,09 %	4,81 %	-5,84 %	18,26 %	8,35 %	9,22 %	4,37 %
1978-1987	16,31 %	3,54 %	9,05 %	2,66 %	11,34 %	4,68 %	5,88 %	-0,59 %	16,69 %	0,00 %	5,68 %	1,87 %	10,56 %	1,71 %	5,70 %	-2,24 %	13,56 %	-3,26 %	18,31 %	10,05 %	4,75 %	-5,70 %	17,99 %	7,33 %	10,59 %	1,99 %
1979-1988	20,24 %	4,70 %	9,15 %	5,64 %	10,63 %	7,17 %	3,74 %	0,04 %	18,35 %	1,81 %	6,67 %	3,16 %	10,14 %	3,95 %	8,41 %	3,90 %	13,90 %	2,83 %	17,23 %	13,25 %	13,27 %	0,90 %	21,84 %	12,49 %	11,19 %	2,70 %
1980-1989	7,53 %	-1,97 %	11,51 %	7,48 %	7,20 %	7,05 %	1,08 %	-1,35 %	19,34 %	2,37 %	8,41 %	3,38 %	11,28 %	4,69 %	13,16 %	6,34 %	14,54 %	2,19 %	17,42 %	14,89 %	17,30 %	-0,02 %	24,68 %	11,85 %	11,75 %	2,13 %
1981-1990	7,90 %	-0,02 %	8,00 %	3,63 %	1,45 %	4,79 %	-2,31 %	-2,74 %	14,56 %	0,54 %	5,91 %	1,70 %	4,51 %	1,47 %	11,21 %	2,77 %	11,33 %	-0,26 %	6,11 %	7,77 %	13,43 %	-6,02 %	19,35 %	6,62 %	7,78 %	-0,15 %
1982-1991	7,21 %	-4,50 %	8,90 %	4,63 %	7,20 %	7,15 %	0,48 %	-1,53 %	12,14 %	0,74 %	9,99 %	4,26 %	4,88 %	4,37 %	12,20 %	4,74 %	14,97 %	0,56 %	5,39 %	11,33 %	10,72 %	-4,62 %	13,97 %	6,18 %	10,82 %	2,88 %
1983-1992	7,66 %	-4,35 %	8,26 %	4,42 %	8,81 %	5,09 %	0,23 %	-4,50 %	9,53 %	0,70 %	9,32 %	2,23 %	7,11 %	4,41 %	10,16 %	3,79 %	15,06 %	3,61 %	6,51 %	9,14 %	7,17 %	-3,76 %	9,00 %	5,05 %	9,98 %	2,15 %
1984-1993	4,37 %	-4,81 %	8,41 %	4,59 %	6,75 %	4,29 %	-0,26 %	-1,91 %	8,77 %	0,48 %	8,64 %	3,50 %	10,38 %	7,02 %	10,38 %	5,88 %	12,03 %	5,41 %	9,67 %	4,31 %	1,91 %	-5,32 %	9,35 %	4,10 %	10,46 %	3,53 %
1985-1994	4,38 %	-3,24 %	5,10 %	1,73 %	7,04 %	4,39 %	0,71 %	-2,96 %	7,28 %	-0,27 %	8,82 %	3,19 %	12,58 %	6,76 %	8,90 %	3,28 %	9,11 %	4,67 %	8,54 %	-2,49 %	4,44 %	-0,35 %	11,39 %	3,78 %	11,03 %	3,66 %
1986-1995	1,01 %	-5,67 %	5,55 %	3,48 %	5,04 %	4,72 %	0,28 %	-2,26 %	6,70 %	2,01 %	9,57 %	3,97 %	15,55 %	8,82 %	1,48 %	0,05 %	5,61 %	4,21 %	-0,59 %	-5,87 %	2,89 %	-1,00 %	10,60 %	5,36 %	9,20 %	3,75 %
1987-1996	5,27 %	-1,56 %	5,12 %	3,93 %	2,41 %	2,81 %	2,77 %	-0,32 %	-0,02 %	-1,97 %	10,40 %	5,06 %	9,81 %	4,64 %	3,15 %	2,60 %	3,68 %	5,81 %	-5,79 %	-2,56 %	8,08 %	5,08 %	10,42 %	9,49 %	6,52 %	3,46 %
1988-1997	9,47 %	4,68 %	7,48 %	8,45 %	3,94 %	4,44 %	4,26 %	0,58 %	-2,13 %	0,59 %	13,39 %	6,45 %	8,94 %	8,88 %	11,57 %	7,00 %	9,97 %	9,36 %	3,38 %	2,83 %	14,95 %	7,94 %	15,28 %	12,49 %	6,52 %	4,48 %
1989-1998	2,75 %	-0,11 %	8,46 %	4,63 %	4,39 %	0,91 %	4,04 %	-2,08 %	-6,78 %	-1,86 %	14,94 %	4,16 %	4,68 %	5,81 %	10,07 %	2,31 %	7,91 %	2,02 %	5,68 %	-2,56 %	8,23 %	1,39 %	12,05 %	8,90 %	6,67 %	2,59 %
1990-1999	2,59 %	4,50 %	7,33 %	3,30 %	4,74 %	-1,01 %	7,18 %	0,14 %	-3,46 %	-0,42 %	14,50 %	2,86 %	11,29 %	5,55 %	10,65 %	7,13 %	10,71 %	5,56 %	6,73 %	1,40 %	8,11 %	5,18 %	18,61 %	16,25 %	7,87 %	3,03 %
1991-2000	4,88 %	4,58 %	8,37 %	2,42 %	7,47 %	0,73 %	9,93 %	-1,63 %	-1,06 %	-1,39 %	13,69 %	0,97 %	10,79 %	4,60 %	11,98 %	8,24 %	13,90 %	5,41 %	10,60 %	5,47 %	11,06 %	5,20 %	20,69 %	14,20 %	8,46 %	1,03 %
1992-2001	5,54 %	6,36 %	5,85 %	0,61 %	5,41 %	1,19 %	7,81 %	0,41 %	-2,48 %	-1,80 %	9,64 %	-0,20 %	7,52 %	5,55 %	9,71 %	7,48 %	10,59 %	4,24 %	9,06 %	4,80 %	8,59 %	10,64 %	18,30 %	15,20 %	5,04 %	-0,41 %
1993-2002	4,18 %	5,38 %	2,18 %	-0,86 %	4,71 %	3,38 %	7,14 %	1,33 %	-1,86 %	-3,10 %	6,89 %	-0,79 %	5,22 %	4,00 %	6,41 %	3,48 %	7,03 %	2,40 %	7,99 %	8,48 %	8,85 %	8,49 %	14,07 %	9,75 %	3,77 %	-0,46 %
1994-2003	3,40 %	14,44 %	1,55 %	3,33 %	2,21 %	4,71 %	7,67 %	3,89 %	-0,58 %	2,37 %	8,94 %	3,32 %	2,37 %	4,73 %	6,12 %	13,86 %	6,38 %	6,59 %	5,48 %	8,37 %	7,72 %	17,64 %	12,25 %	23,77 %	5,02 %	4,86 %
1995-2004	6,68 %	15,48 %	3,43 %	4,07 %	5,52 %	7,70 %	9,02 %	5,78 %	-0,23 %	3,59 %	10,00 %	3,83 %	4,51 %	10,06 %	7,85 %	13,73 %	9,22 %	10,58 %	7,86 %	17,95 %	10,98 %	17,52 %	14,85 %	24,90 %	6,21 %	6,02 %
1996-2005	11,04 %	24,62 %	3,43 %	3,61 %	6,55 %	8,10 %	10,40 %	6,21 %	3,78 %	8,35 %	7,17 %	2,99 %	5,74 %	12,01 %	9,99 %	18,36 %	11,90 %	12,47 %	10,55 %	19,57 %	14,98 %	20,52 %	16,93 %	25,21 %	5,42 %	5,71 %
1997-2006	11,58 %	20,79 %	3,46 %	3,99 %	7,89 %	8,93 %	9,22 %	7,08 %	4,98 %	10,53 %	6,41 %	3,99 %	9,87 %	17,12 %	9,95 %	20,01 %	11,16 %	14,19 %	12,20 %	19,42 %	14,50 %	16,92 %	15,49 %	22,79 %	6,18 %	7,33 %
1998-2007	10,72 %	19,58 %	1,47 %	3,23 %	8,36 %	9,42 %	8,36 %	9,41 %	5,39 %	11,05 %	3,68 %	3,66 %	13,41 %	20,00 %	7,57 %	19,31 %	8,39 %	13,81 %	6,39 %	14,89 %	10,14 %	13,76 %	11,97 %	20,83 %	5,52 %	8,07 %
1999-2008	8,21 %	16,59 %	-2,56 %	2,57 %	3,26 %	6,99 %	5,41 %	8,53 %	2,20 %	9,17 %	-2,71 %	0,83 %	10,57 %	15,09 %	1,30 %	15,42 %	1,21 %	10,56 %	-2,28 %	11,97 %	5,43 %	9,56 %	6,66 %	18,81 %	-0,78 %	4,64 %
2000-2009	10,17 %	16,90 %	-0,99 %	4,27 %	5,93 %	9,61 %	4,68 %	10,72 %	-1,55 %	7,41 %	-1,75 %	3,79 %	7,43 %	19,02 %	-0,37 %	15,28 %	-0,87 %	11,18 %	-1,44 %	7,78 %	5,74 %	7,93 %	2,93 %	12,90 %	0,19 %	7,08 %
2001-2010	10,90 %	20,86 %	1,15 %	4,69 %	5,45 %	7,55 %	5,71 %	13,30 %	0,51 %	10,99 %	1,48 %	5,85 %	11,18 %	19,72 %	2,59 %	15,57 %	-0,38 %	12,40 %	-2,49 %	5,19 %	9,09 %	10,72 %	7,19 %	16,29 %	3,24 %	9,18 %
2002-2011	11,64 %	20,43 %	2,60 %	6,82 %	3,33 %	6,24 %	6,49 %	10,72 %	0,61 %	10,36 %	3,34 %	6,79 %	11,53 %	16,75 %	3,18 %	13,99 %	0,45 %	11,06 %	-2,10 %	4,13 %	9,14 %	6,73 %	7,93 %	14,01 %	4,90 %	10,10 %

3.2 PREDICTABILITY

So far we have been concentrating on the unconditional expected equity premium. However, if investors form their expectations based on point-in-time variables connected to the state of the market and the economy, the unconditional expectations would be inferior. That is, one could use state-variables to make superior predictions of next year's equity premium. To investigate this, we will in the following look at how a possible state-variable does in predicting the premium.

Following the uncertainty of our risk free proxies, we have chosen to use market returns as the dependent variable in the regressions. Since the risk free rate by definition is known when the investment decision is made, this should not affect the inference with respect to predictability. In other words, if a variable can predict next period market returns, it should have equally predictive power of the next period equity premium.

Consistent with other researchers, we use the dividend-price price ratio to predict the stock returns. All though it does not appear to be a unilateral agreement among scholars, many hold the dividend-price ratio as the best candidate for a predictive variable of stock returns. If the dividend-price ratio can predict returns and premiums, we can think of three plausible explanations for this. 1) The dividend-price ratio is related to additional risk factor(s). 2) The markets are mispriced and dividend-price can be used to time the market. 3) The equity premium, risk aversion and the dividend-price ratio are time-varying and correlated with the business cycle. These refer back to some of what we discussed in the literature review.

Stock returns - *Variable: The dividend-price ratio*

Table 6 shows the regression results. Our estimations show that for most of the markets, the dividend-price ratios have very little predictive power. The coefficient is insignificant (5 % lvl) in 7 out of 13 countries, and it explains less than 10 % of the variance in all but 4 markets. We can also see that the World dividend-price ratio is not a significant predictor in any markets.

Table 6 – Univariate OLS prediction of stock returns with one lagged dividend-price ratios

*The regression table shows the p-values of the dividend-price coefficients and the R-squared adjusted for degrees of freedom for each regression. A constant term was included in the regressions. * Denotes markets where nominal values have been used.*

Prediction table for Stock Return - Univariate regressions				
Variable	D/P ratio (t-1)		World D/P ratio (t-1)	
	P-value	Adj R^2	P-value	Adj R^2
Norway	1,33 %	12,52 %	54,68 %	-1,60 %
UK	4,90 %	16,46 %	11,42 %	3,87 %
Australia	0,53 %	16,21 %	37,46 %	-0,49 %
Canada	49,47 %	-1,33 %	66,52 %	-2,07 %
Japan	2,64 %	9,75 %	11,17 %	3,96 %
US	0,17 %	-0,17 %	65,01 %	-2,02 %
Singapore	1,52 %	11,99 %	29,14 %	0,36 %
Germany	97,77 %	-2,56 %	58,24 %	-1,76 %
France*	37,18 %	-0,46 %	16,87 %	2,36 %
Italy	71,02 %	-2,20 %	58,53 %	-1,77 %
Denmark*	7,95 %	5,31 %	23,24 %	1,17 %
Sweden	31,95 %	0,04 %	39,94 %	0,69 %
World*	9,60 %	4,56 %		

Nevertheless, especially in the UK and Australia, the dividend-price does seem to give some indication of the future return (in-sample). We should however be cautious in our inference. As we discussed earlier, the dividend-price ratios appear generally non-stationary and highly autocorrelated. Since this can lead to spurious and unreliable coefficients, the variance explained by the model may be overstated. For Australia, however, we could reject a unit root of the dividend-price ratio on the 5 % level. Thus, there appears to be most evidence of predictability in the Australian market. In general however, we conclude that our evidence for predictability is relatively weak. Hence, we do not find much indication of either predictable abnormal return and/or a time-varying risk premium.

***Dividend growth** – Multivariate regression*

As, Fama and French (2002, 648-649 Table III), we also want to investigate whether the growth in dividends are predictable. If so, the dividend growth estimate of the dividend-model should be made conditional, and the unconditional mean growth would no l onger be the best estimator. Here we use a panel of different explanatory variables related to the stock market with up to three lags, all of which are known at time t. These multivariate regressions are very similar to those done by Fama and French (2002, 648-649 Table III). First, we use the dividend-price ratio lagged once. As mentioned, the dividend-price ratio is by some considered to contain information about either mispricing, risk or risk aversion, and thus may be an indicator of the state of the economy. Thus, we think it constitutes a possible indicator of growth of fundamentals. Moreover, we include the World dividend-price ratio for all the individual markets, in case it may indicate the state of the world economy and because of the high level of market integration across capital markets. To account for possible autocorrelation, we also include three lags of previous dividend growth and previous returns. As before, we evaluate the significance of the individual variables with p-value (t-statistics) and their combined explanatory power using the R-squared adjusted for degrees of freedom. Table 7 shows our results:

Table 7 – Multivariate OLS prediction of dividend growth

*The regression table shows the p-values of the coefficients and the R-squared adjusted for degrees of freedom for each regression. A constant term was included in the regressions. * Denotes markets where nominal values have been used. Green and yellow are used to highlight p-values lower than 5 and 10 percent respectively.*

Prediction table for Dividend growth - Multivariate regressions									
Variable	D/P (t-1)	World D/P (t-1)	Div growth (t-1)	Div growth (t-2)	Div growth (t-3)	Returns (t-1)	Returns (t-2)	Returns (t-3)	
	P-value	P-value	P-value	P-value	P-value	P-value	P-value	P-value	Adj R^2
Norway	93,09 %	97,73 %	86,02 %	28,97 %	71,96 %	16,84 %	28,34 %	43,43 %	4,30 %
UK	84,21 %	86,55 %	58,44 %	78,37 %	68,77 %	16,62 %	62,71 %	79,36 %	3,52 %
Australia	20,02 %	56,85 %	22,67 %	54,27 %	83,77 %	0,22 %	82,44 %	80,56 %	25,75 %
Canada	4,97 %	17,03 %	34,96 %	87,11 %	87,81 %	10,95 %	42,98 %	62,30 %	10,04 %
Japan	36,03 %	52,45 %	65,75 %	41,26 %	55,18 %	39,85 %	31,29 %	78,49 %	-7,52 %
US	15,76 %	9,91 %	71,31 %	96,26 %	47,72 %	8,20 %	45,85 %	15,37 %	7,77 %
Singapore	88,34 %	89,83 %	91,38 %	49,49 %	7,83 %	2,16 %	13,01 %	13,65 %	21,09 %
Germany	27,13 %	91,15 %	58,51 %	81,02 %	46,17 %	12,58 %	70,42 %	97,56 %	18,54 %
France*	9,94 %	15,78 %	46,93 %	29,48 %	89,71 %	0,36 %	43,78 %	50,54 %	22,44 %
Italy	4,09 %	46,39 %	23,45 %	19,18 %	32,25 %	1,60 %	96,95 %	87,47 %	10,43 %
Denmark*	55,97 %	46,11 %	24,64 %	62,10 %	97,71 %	18,83 %	23,88 %	55,93 %	11,60 %
Sweden	22,28 %	50,80 %	67,96 %	82,39 %	60,06 %	3,64 %	97,71 %	54,53 %	7,18 %
World*		60,73 %	39,58 %	72,12 %	56,79 %	1,80 %	45,56 %	77,37 %	5,54 %

As shown, the most frequently significant variable is the one-lag returns, which is significant in half of the markets. The one-lag D/P ratio is significant in two markets at the 5 % level plus one market at the 10 % level. The explained variance is over 10 % in about half of the markets, but the World-aggregate regression explains only 5 % of its variation.

Since the dividend-price ratios are not entirely stationary, we turn our focus to the lagged returns which are stationary in all the markets. Our findings suggest that last periods stock returns have an influence on the growth in dividends. This predictive power however does not reach beyond one period. This is relatively consistent with Fama and French (2002, 648-649 Table III), findings in the US market. We conclude that although the next period expected dividend growth may be somewhat predicted conditionally, it appears to quickly revert back to the unconditional mean.

Section IV – Discussion and Conclusion

4.1 DISCUSSION

Given our findings above, we will now try to answer each of the research questions we have stated. This includes a discussion of their significance and consistency with other research papers, as well as possible implications for future theoretical or empirical works.

Are the fundamental-derived estimates lower than average returns?

From Table 4 we found that in most markets (10 out of 13), the fundamental-derived estimate of the dividend growth model is lower than the average return estimate. Thus, if the dividend model is closer to true unconditional expectations, the general picture is that the observed historical equity premium has exceeded expectations in the period from 1970 to 2011, resulting from unexpected capital gains. The difference, however, is not very large in most markets, and significant lower than found by Fama and French (2002, 641 Table I) in the US market.

We have no indications as to why the two models differ more in some markets than in others. Given our limited longitude and number of observations, however, it could very well be that much of this is simply random. The high premium observed in Sweden for example, could be due to a disproportional high unexpected growth in the 1970 to 2011 period and thus just a random outperformance. Another explanation could be that the starting value in 1970 was especially low in the Swedish market. For similar reasons, the fact that the dividend-model estimates are higher than average returns in three of the markets, may simply be the result of random events, and not necessarily evidence against the dividend-model. What we find most important is therefore, not the characteristics of each of the markets, but the fact that in 10 out of 12 of the individual markets, as well as the World portfolio, the dividend-model does provide a lower estimate of expected premiums. Hence, we conclude that, in general, the dividend-model gives lower equity premium estimates for the 1970-2011 period.

Are the fundamental-derived estimates more precise than average returns?

Again, this is the case for most of the markets (11 out of 13), resulting from a lower volatility in dividend than in prices, as shown in Table 4. However, the differences are not particularly large. The standard errors of the dividend model only range from about -1% to 2.5% higher than the realized average model. Also, Fama and French (2002, 641 Table I) find a much higher precision advantage in the US market in their 1951-2001 sample than we do in our 1970-2011. Combined with our findings regarding the recent “jump” in dividend growth, we think that the small precision differences are mostly due to the 2000’s. Even so, the dividend-model is more precise in so many of the markets, that we think this alone, rather than the magnitude of the precision, suggests that the dividend model is in general a more precise estimator of the long run expectations.

How have the fundamental-derived estimate and the average return developed over time?

The dynamics of the dividend model is determined by the growth in dividend, while the average return depends on growth in prices. Although the individual markets differ in this respect, we find the differences to be such that the general picture should be reasonably described by a simple cross-market average. We find that the ten year cross-market average dividend growth was much less than the growth in prices up unt il around 2002. In the 2000’s however, the situation reversed and dividend growth have been higher. As discussed, this is related to the growth in the dividend-price ratio from its historic low around 2000.

Can state variables predict the stock returns?

Here our results are mixed. We find that the dividend-price ratio have some predictive power in certain markets, but due to non-stationary of the dividend-price ratio, we do not feel confident enough to make a general conclusion. That would require a more comprehensive study with more observations, robustness checks and out-of-sample analysis. We therefore leave this task to future researchers. Also, our main focus with regard to predictability was to look for evidence of a strongly time-varying equity premium that would make our two unconditional estimates inferior. Even with an explained variance of 16 % like in Australia, however, we still think that the unconditional dividend-model estimates should be valid.

Is dividend growth predictable?

Like with stock returns, the predictability of dividend-growth is also mixed. The difference with dividend-growth is however, that the most frequently significant variable is the one-lagged stock market return, which we find to be stationary. It is significant in half of the markets. Thus, we see this as weak evidence for the need to include conditional dividend-growth estimate in the dividend-model.

Even so, the results are not entirely conclusive. We find that the explained variance varies from 0 to 25 %, while in the World-proxy it is only 5 %, as shown in Table 7. Moreover, we find that the one-lagged return cannot predict dividend growth beyond one period in any of the markets. Thus, the conditional estimate of dividend-growth appears to quickly return to the unconditional mean. Also, since we find the rate of dividend growth to be mean reverting and because this paper focuses primary on the long-run estimates, we have chosen not to make a conditional dividend-model in this thesis. Still, we think such a model may be necessary to both investors and researcher interested in the point-in-time estimates of the next periods expected returns. Blanchard (1993, 75-76) explores one such model and investigates the movement of the equity premium.

on general findings across markets and not so much on the individual markets, and we think this strengthens our results.

We conclude that the dividend-model do appear to have some important attributes in determining the true unconditional expectation of the equity premium in markets with limited data series available. For markets with very long and reliable data series available like the US however, the best estimate of the long-term future equity premium might be the long-run historical realized mean. That is, unless one has good reasons to believe there have been structural breaks in either capital markets and/or investor behavior. If so, we think that the dividend-model gives the most precise unconditional estimate within the regimes in these markets as well. But then the final question is whether it gives estimates more consistent with theory and thus whether it helps to explain the equity premium puzzle.

Can the fundamental-derived expected returns resolve the equity premium puzzle?

Since we have already concluded that the dividend-model gives in general lower and more precise estimates of the equity premium, the remaining question is whether it is "low enough". To answer this, we need to assess the required equity premium. Since economic and financial theory state a relationship between equilibrium risk, return, and aggregated risk aversion, one can, by imposing reasonable restrictions on risk preferences, use these models to calculate a plausible level of the required premium. One consumption-based model, with no habit persistence, gives the following expression for the expected-required relationship[6]:

$$\frac{E(r_{m,t}) - r_{f,t}}{\sigma_m} = A \cdot \sigma_{\Delta c} \qquad (8)$$

[6] This particular model is taken from the lecture notes of Mr. Richard Priestley in the BI Business School course "Introduction to Financial Economics" taught in the fall of 2010. There are however different versions of this relationship. $E(r_{m,t})$: Expected market return at time t. $r_{f,t}$: Risk-free rate at time t. σ_m: Standard deviation of market returns. A: Equilibrium coefficient of aggregated risk aversion. $\sigma_{\Delta c}$: Standard deviation of consumption growth.

4.2 CONCLUSION

In general, our descriptive seems to match those of Fama and French (2002) reasonably well. Our findings suggest that the fundamental-derived estimate may indeed be a better estimate of the expected equity premium. In all the markets except Australia, Germany and Italy, we find that the dividend-model gives lower estimates than the average realized returns. The differences between the models, however, are generally smaller than Fama and French found in 2002. W e conclude that this is because of a reversion of the long term decline of the Dividend-Price ratio, as the growth in dividends has been higher than the growth in prices the last decade. Thus, the unexpected capital gains of the 80's and 90's have been replaced by capital gains more in line with the long-run unconditional mean. Even so, we find that in all markets except Germany and Sweden, the dividend-model is more precise than the average realized.

We also find some evidence suggesting that the dividend-price has some in-sample predictive power of stock returns in certain markets. Due to the non-stationarity of the in-sample dividend-price ratio however, we do not find this evidence particular persuasive. The possible exception is Australia, where the dividend-price ratio is both stationary, and explains 16 % of the variance. But even so, we see no reason for the Australian market to be any less rational than the others. Furthermore, we find that the growth in dividend is somewhat predictable in some of the markets. Again, Australia tops the list with 25 % of the variance explained. The only two significant predictors of the growth in dividend are the lagged dividend-price ratio and the lagged returns. Despite that some markets have explained variance exceeding 20 %, we find the world portfolio to only explain about 5 %. For all markets, we are unable to predict dividend growth beyond one year into the future. Thus, despite some predictability, the true expected return seems to revert back to the unconditional mean relatively quickly.

We conclude that our thesis has provided support for the dividend-model, even though it may not entirely resolve the equity premium puzzle. Thus, we suggest that a final resolution may involve modifications of investor preferences and behavior. Nonetheless, we think both past and future expected equity premiums are lower than the historical observed average. We also hope future studies will continue to explore the nature and dynamics of the equity premium.

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GRA 19003 PRELIMINARY THESIS REPORT

BI NORWEGIAN SCHOOL OF MANAGEMENT

The Equity Premium Puzzle

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Date of submission: 16.01.2012

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BI Norwegian School of Management

BI Nydalen

Program:

Master of Science in Business and Economics

Department of Financial Economics

Table of Contents

Introduction

This master thesis will investigate the equity premium puzzle, a subject that has troubled many researchers over the previous three decades.

The expected equity premium (EP) is defined as the aggregated stock return in excess of the risk-free rate. Because of its use in pricing assets, evaluating fund performance, capital structure, investment and risk aversion, the EP is one of the most important quantities in finance. The term "**Equity Premium Puzzle"** originates from an article of Mehra and Prescott (1985) where they claim that historical excess returns on risky assets in the US were too large to comply with standard economic theory.

Suggested solutions to the puzzle have been numerous, but it is still subjected to debate among scholars. Our approach to the issue is that of Fama & French (2002) which use fundamentals to estimate expected returns. Instead of data from the US, data from Norway and England will be applied. Further, we will compare our findings with the findings of Fama & French (2002) which used US data.

In our preliminary thesis report we will first give a review on earlier research performed on the equity premium. We will continue by elaborating our research questions, our choice of methodology and provide a plan for data collection. Finally, we will give a brief outlook on the further progress with the thesis.

We stress that all aspects of this preliminary report are of a work-in-process nature.

Literature Review

The Equity Premium has been the subject of many studies, both theoretical and empirical. Mehra and Prescott (1985) discovered that the persistent outperformance of stocks to bonds seems to have been too high according to standard economic models. Thus, the question that arose was why any long-run investor would invest in bonds rather than stocks. Nicknamed The Equity Premium Puzzle, this phenomenon has led to e1xtensive research and debate over the nature of stock markets.

One debate has been whether the equity premium really is constant. According to Campbell (2007), the early academics in the 1960's and the 1970's interpreted the efficient market hypothesis to mean that the true equity premium was constant. This would imply that the more data history you used, the closer your estimate would be to the equity premium.

Related to this is the question of predictability. In the 1980's multiple scholars found that valuation ratios, such as dividend-price and earnings-price ratios, could indicate over- or undervaluation of the stock market (Fama and French (1988), referred to in Campbell (2007)). Whether these ratios can persistently predict future returns has remained disputed. Goyal and Welch (2008), for example, argue that historical averages often preform just as well, if not better, than out-of-sample forecasts form valuation ratios. Campbell (2007), however, argues that by assuming a stationary dividend price ratio that follows a geometric random walk, one can use the logic from the classic Gordon Growth model to produce successful out-of-sample forecasts of the equity premium.

Fama & French (2002) also use valuation ratios in their attempt to explain the equity premium. Then they compare the estimates of the unconditional expected stock returns from fundamentals with the average stock returns. They further look at the evidence from Sharpe ratios, estimates of precision, and the behavior of book –to-market ratio and the income return on investment. This enables them to choose between the estimates from fundamentals and the estimates from average stock returns. They argue that using dividend and earnings growth rates to measure expected rate of capital gain gives a more precise estimate of the equity premium. Moreover, they claim the high average stock returns from 1951-2000 is due to a decline in discount rates that produces a large unexpected capital gain. Their conclusion is that the average stock return of the last half-century is a lot higher than expected, and that the unconditional expected premium the last 50 years is probably far below the realized premium. Hence, Fama and French claim the equity premium puzzle is not a real puzzle after all.

If the equity premium is predictable by using valuation ratios, this would imply that the equity premium is unknown and that it must be interpreted in each time period based on the observable data (Campbell, 2007). However, this seems to violate the efficient market hypothesis, that is, unless investors risk preferences also where state-dependent. Multiple writers have explored this problem and tried to explain it. Campbell and Cochrane (1999) (referred to in Campbell (2007)), for example, gives insight to how habit formation can make rational investors more averse to risk in recessions.

If risk aversion and the equity premium vary over the business cycle, it could also be that changes in the equity premium are a response to macroeconomic factors relating to the state of the economy. In a study of the Norwegian stock market, Næs, Skjeltorp and Ødegaard (2007) investigate whether different macroeconomic variables can affect the market risk premium and the risk-free interest rate, referring to research from the US that show weak evidence for macroeconomic variables affecting stock returns. Næs, Skjeltorp and Ødegaard (2007) find that the Norwegian stock market can be influenced by oil prices. Other examples are the dividend yield, term spread, consumption, unemployment, import, export, inflation and the money stock. Further they find that it is mainly nominal macro variables which are related to stock returns. They investigate if the macro variables have a risk premium, and find that few of the risk premiums are significant. They say that an explanation of this might be that the stock market is a leading indicator for the macro economy than the other way around.

Lettau and Ludvigson (2001a) look at what role fluctuations in the aggregate consumption-wealth ratio has for predicting stock returns, and they find that it is a strong predictor for real stock returns and the excess return over a Treasury bill rate. Moreover, in short and intermediate horizons it is a better forecaster of future returns than the dividend yield and the dividend payout ratio, among others. They state that indicators as price to dividend, price to earnings and dividend to earnings ratios have been most successful in predicting returns over longer horizons, while for a shorter length like a typical business cycle they are viewed as weakly forecasters.

An implication of their results is that huge swings in financial assets do not have to be followed by huge movements in consumption. Investors will try to smooth their consumption and when the equity premium is expected to be higher (lower) in the future, they will increase (decrease) current consumption. They will isolate future consumption from fluctuations, and in this way the labor income can be a predictor of excess stock returns. They conclude that in this respect the investor's own behavior should reveal expectations of future return to aggregate wealth, which gives a good proxy of expected returns to the market portfolio.

Lettau and Ludvigson (2001b) also say that weaknesses in CAPM and (C)CAPM since the 1980's made researchers look for other models to explain the pattern of returns on portfolios according to size and book-to-market equity ratios. Lettau and Ludvigson (2001b) use the (C)CAPM to explain the cross section of average stock returns. E ssential to their method is the use of the log consumption-aggregate wealth ratio as a conditioning variable. They find this to explain much of the cross-sectional variation in portfolio returns. And this can account for the difference in returns between low and high book-to-market firms. Their results are also supporting the theory of the habit-formation-version of the (C)CAPM, and they find that this method preforms better than those originating from dividend-price ratios, default spread and term spread.

Goyal and Welch (2008) looked at variables suggested by previous literature to be good predictors for the equity premium. They conclude that these models have predicted badly in-sample and out-of sample the last 30-years, and therefore seems unstable. They conclude that the literature still have not found a variable that has a robust empirical and meaningful forecasting power for the equity premium in- and out-of sample.

Henkel, Martin and Nardari (2011) signify that the strength of predictability is that it is distinctively time-varying. Dividend yield and commonly used term structure variables are, in the short-horizon, effective predictors in recessions and contractions, but non-existing during expansions. Like Campbell and Cochrane (1999) they also find the market risk premium to be higher during recessions. They find a strong link between aggregate return predictability and business cycles in all of the seven countries they examine, except Germany. Their empirical model outperforms historical average in recessions, while the historical average is best during expansions.

Summary

As attested by this brief review, there are many findings on the subject of stock return and premium. We conclude by saying that the out-of-sample predictability of the equity premium remains disputed, but that valuation ratios like dividend-price ratios and also some macroeconomic factors do tend to have some predictive power. This does, however, not nessseraily violate the efficient market hypothesis, as for example the habit-formation version of the Consumption-CAPM provide a framework where risk aversion, and hence the equilibrium risk premium, is higher in recessions.

We find the approach used by Fama and French (FF) (2002) particularly interesting. Their argument for using dividend and earnings growth rates to measure expected rate of capital gain more precisely will therefore be the starting point for our work.

Research questions

The objective of our thesis is to investigate the equity premium in the Norwegian and British stock markets. In this regard, we have established the following preliminary research question:

Have the average stock returns in Norway and the UK been too high?

This question addresses implicitly the existence of the Equity Premium Puzzle in the two markets. In order to answer it however, we need to specify what is meant by "too high". Recall that Mehra and Prescott (1985) state that the average return was too high given the observed volatility of consumption. FF (2002) argue, however, that the fundamentals such as dividend and earnings growth rates are superior to average stock returns in producing estimates for the expected returns on the market portfolios. Thus, if average returns are significantly higher than fundamental-derived expected returns, one may infer that the high average returns were unexpected. Hence, the equity premium may not be as high as it seems. Following this line of thought, our main focus is the history of the fundamental-derived expected returns and its components:

Does the fundamental-derived expected return perform better than the average returns in estimating and explaining the equity premium?

Given FF's findings in the US markets, we hypothesize that the fundamental-derived returns are lower than average returns in the Norwegian and British markets as well. But if this is the case, we are left with the explanation of why they are different. FF list three potential explanations from valuation theory; 1) Dividend and earnings growth have been unexpectedly high. 2) The end-of-sample expected future growth rates of dividends and earnings are unexpectedly high. 3) The expected stock return is unexpectedly low at the end-of-the sample period. Hence, we will also address the following questions in our paper:

Have dividend and earnings growth been as expected?

Are the end-of-period expected growth rates unusually high?

Have expected returns fallen during the sample period?

As a conclusion to our inquiry, we will intend to sum up the results by asking the more important underlying economic question:

Is the Equity Premium Puzzle really a puzzle?

Methodology

As Fama and French's findings constitute the primus motor for our thesis, we will start by applying their approach and methodology to address the research questions. This should also render our results comparable with those of FF in the US market.

The FF approach to investigating the equity premium, is simple and not very deep. The main point of difficulty is the estimation of the unconditional expected stock return $E(R_t^m)$. The standard method here has been to use a simple long-run average stock returns as the expected return for a long-horizon investment in the market portfolio. FF however argue that fundamental-derived expected returns are better estimates as they find them more precise and more in line with reasonable assumption of risk preferences.

Estimation of Unconditional Expected Stock Return

We start off with the trivial expression that the expected stock return is the expected dividend yield plus the expected rate of capital gains:

$$E(R_t^m) = E\left(\frac{D_{t+1}}{P_t}\right) + E\left(\frac{P_{t+1} - P_t}{P_t}\right) \tag{1}$$

This is essentially equivalent to the solution for the expected return in the Gordon (1962) valuation model;

$$E(P) = \frac{E(D)}{E(r) - E(g)} \tag{2}$$

The principal focus here is the estimation of the latter term in (1), the expected growth rate (capital gains). As mentioned, the standard approach is to use simple averages over realized values:

$$\widehat{E(R_t^m)} = Avg(R_t) = Avg\left(\frac{D_t}{P_{t-1}}\right) + Avg\left(\frac{P_t - P_{t-1}}{P_{t-1}}\right) \tag{3}$$

Another approach can be derived by assuming that the dividend-price ratio $\frac{D_t}{P_t}$ is stationary. This implies that with a long-run sample, the compounded dividend growth should approach the compounded rate of capital gain (FF, 2002). Thus, we can substitute the average dividend growth for the average realized capital gain as the estimator of the expected growth rate:

$$\widehat{E(R_t^m)} = Avg(RD_t) = Avg\left(\frac{D_t}{P_{t-1}}\right) + Avg\left(\frac{D_t - D_{t-1}}{D_{t-1}}\right) \tag{4}$$

This is called the **Dividend Growth Model**. A problem with the dividend growth model is that some stocks, especially growth stocks, may not pay dividend for long periods of time. We can get around this, by assuming that the earnings-price ratio is also stationary, and that in the long-run at least, the Modigliani–Miller (1958) theorem of dividend policy irrelevance holds. Consequently, we can replace the average dividend growth with the average earnings growth. We then get the **Earnings Growth Model:**

$$Avg(RE_t) = Avg\left(\frac{D_t}{P_{t-1}}\right) + Avg\left(\frac{E_t - E_{t-1}}{E_{t-1}}\right) \qquad (5)$$

One motive for using dividends and earnings to estimate expected returns is that fundamental-derived estimates are less volatile then those derived from prices. In fact, FF (2002) find that the standard error of equity premium from the dividend growth model is less than half the standard error of the estimate from the average return. Moreover, as prices irrefutably cannot out-grow fundamentals, the assumption of stationary dividend- and earnings-price ratios seems highly reasonable. All though firms can move from dividends to share repurchases, this strategy has its limitations. The problem of growth stocks, are probably not very significant as all stocks eventually have to return earnings to shareholder. That is, (4) and (5) should converge in the long-run.

An important consequence of the FF approach is that it focuses on the long-run unconditional expected return. Thus, we cannot infer much about the conditional point-in-time expected returns. This will vary considerably over time in the short-run, but in the long-run however, it should approach the unconditional expected return. As long as the dividend-price and earnings-price are stationary the FF approach should be valid and provide unbiased estimates of the unconditional expected return, given a sufficient sample length (mean reversion may be slow) (FF, 2002). FF (2002) also argue that reasonable forms of non-stationary does not render their approach invalid.

Estimation of the Equity Premium

The fundamental-derived expected return will be used to estimate the historical equity premium for Norway and the UK, and we will investigate whether it has been too high. In this we seek to answer the remaining research questions above. The equity premium estimates by models (3), (4) and (5) are given respectively as

$$Avg(EP_t) = Avg(R_t) - Avg(R_t^f) \qquad (6)$$

$$Avg(EPD_t) = Avg(RD_t) - Avg(R_t^f) \qquad (7)$$

$$Avg(EPE_t) = Avg(RE_t) - Avg(R_t^f) \qquad (8)$$

It then follows that the associated Sharpe Ratios are

$$S_t = \frac{EP_t}{\sigma(R_t)} \qquad SD_t = \frac{EPD_t}{\sigma(R_t)} \qquad SE_t = \frac{EPE_t}{\sigma(R_t)} \qquad (9)$$

Explaining the Equity Premium

After having developed an estimate of the expected equity premiums we can move on to the subject of trying to explain our findings. As we do not have our estimates yet, it is difficult to state the procedures needed to explain them. However, if our estimates make sense, as well as line up with similar research, we can give a preliminary synopsis.

First, we will compare and discuss the estimates of the expected return from the different models.

- *Which of the estimates is more precise, e.g. which have the lowest standard error, and how much do they differ?*
- *Do the Sharpe Ratios differ significantly?*

Both of these questions address which of the models that produces the best estimates of the expected returns. Obviously, the lower the standard error of any estimate, the better it is. The second question is important because of the link between the Sharpe ratio and the level of risk aversion. All though it may vary with the business cycle, a reasonable assumption about risk aversion is that it should be relatively stationary. FF (2002) use two sub-samples (1872-1950 and 1951-2000) to investigate whether the estimated Sharpe ratios indeed have constant unconditional means, and whether they are in line with asset pricing theory. We intend to do similar tests with our estimates, and see if fundamental-derived estimates perform better, as FF (2002) find them to do.

Predictability of the growth rates

If growth rates are unpredictable, the historical (unconditional) average growth rate must be the best forecast of future growth rates FF (2002). If, however, autocorrelation of growth rates are high and mean reversion slow, it might be possible to improve the predictive power beyond that of the historical average. By exploring predictability of growth rates, we might therefore be able to say something about whether the end-of-sample expected growth rates are unusually high. Like FF (2002) we intend to test forecasting power by a series of OLS regressions using lagged values know at time t:

Forecast of real growth in dividends:

$$RGD_t = \alpha + \beta_1\left(\frac{D_{t-1}}{E_{t-1}}\right) + \beta_2\left(\frac{D_{t-1}}{P_{t-1}}\right) + \beta_3(RGD_{t-1}) + \beta_4(R_{t-1}) + \varepsilon_t \quad (10)$$

Forecast of real growth in earnings:

$$RGE_t = \alpha + \beta_1\left(\frac{E_{t-1}}{B_{t-2}}\right) + \beta_2\left(\frac{D_{t-1}}{E_{t-1}}\right) + \beta_3\left(\frac{E_{t-1}}{P_{t-1}}\right) + \beta_4(RGE_{t-1}) + \beta_5(R_{t-1}) + \varepsilon_t \quad (11)$$

We will also look at changes in predictability when more lags are added and at different times (t-2 etc.). Estimation will be conducted independently of Norwegian and British markets. Level of predictability will be addressed by standard measurements of fit and explanatory power (e.g. R-squared, RMSEA etc.). T-statistics of each variable will also be addressed. Finally, we seek to discuss our results in context of other findings on predictability.

Discussion

Rearranging the Gordon valuation model (2) yields,

$$\frac{D}{P} = E(r) - E(g) \quad (12)$$

According to (12) the dividend-price ratio is driven by the expected future returns (equity discount rate) and the expected future growth rate of fundamentals (dividend and earnings). We can also use the Gordon valuation model to look at capital gains.

$$\Delta P = \frac{\Delta D}{\Delta\big(E(r) - E(g)\big)} \quad (13)$$

The point of (13) is simply to show that capital gains can come from either an increase in dividend or a decline in the required return. Thus, an unexpected decline in the required return would lead to unexpectedly high capital gains, and hence unexpectedly high realized return. Hence, a persistent decline in the discount rate could explain the high equity premium observed. This possibility, as well as other once, will be discussed in great detail in our thesis.

Additional Tests and Issues

Since, our framework implicitly assumes that the dividend-price and earnings-price ratios are at least reasonably stationary, we intend to test the mean-reversion and autocorrelation properties of these to variables. Moreover, we need to address the unbiasness of our sample and estimates, as survivor bias in the data may invalidate our results. Other issues include repurchases of stocks, structural changes, investments horizons, liquidity and taxes. We are also considering using consumption growth as another estimate for expected future growth.

Plan for data collection

Given the above approach to expected return estimation, we need variables from fundamentals as well as stock price histories. Summing up all required variables yields this list:

Stock market data	*Other*
Dividends	*Consumer Price index*
Stock prices	*Six-month commercial paper or T-bills*
Earnings	
Nominal values of book equity	

All variables are needed for both the Norwegian and the British equity markets. In addition, a deflator (price index) is needed to investigate the development of real values, and the short-term commercial paper is our estimate of the risk free interest rate.

All of our required variables should be available in DataStream on annual basis. The proxy for the Norwegian and British equity markets will be the OSX and the FTSE respectively. Since we need a reasonably long sample period to estimate unconditional means, we intend to use the largest time period of which there is reliable and uninterrupted data points.

We will also have to address the quality of the available data. For instance, the historical data on earnings might be of lower quality, especially those dating back many decades.

Thesis progression plan

In the first part of January our main focus will be on our preliminary thesis report, and in this respect work on how to formulate more specific research questions and place it according to previous literature by doing a literature review.

After the submission of the preliminary report we will continue to study earlier literature and further make plans for our data collection. Further, we will make preparations for the master thesis presentation, and in this respect do some more research on the topic, and further sharpen our selection of previous research which is relevant for our studies.

In March we will continue our collection of data, and set up a more precise plan for methodology applied. Then, we will start with running test, and revaluate as we carry on. In April, May and June we will primarily be running tests and document our findings.

July will consist of wrapping up our findings and evaluate the results.
In august our goal is to have the final draft ready, and use the time left to make the last adjustments.

Concluding remarks

In this preliminary report we have laid out the purpose and motivation for our master thesis. We have gone through some of the relevant literature on the topic, and found that The Equity Premium Puzzle remains a disputed issue in Finance. We hope to investigate this further by using Fama and French's approach of deriving unconditional expected returns from fundamentals in the Norwegian and the British stock markets.

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