Expected Returns and Expected Dividend Growth in Europe: Institutional and Financial Determinants.

DOORUJ RAMBACCUSSING[1]

School of Business

University of Dundee

DAVID POWER[2]

School of Business

University of Dundee

ABSTRACT

This paper uses a present value approach to show that price movements for equity indices in a sample of European stock markets can be traced to institutional and corporate finance factors. The present value literature states that stock indices move either due to changes in discount rates, dividend growth or a combination of the two. Empirically, little is known about the mechanism through which legal and corporate financial factors influence these variables, especially in a European context. The current paper attempts to plug this gap in the literature. Using the state space approach, we show that while expected returns are highly persistent, expected dividend growth tends to vary across the sample. Movements in stock markets are mostly driven by dividend growth in those countries with an English (or Common) Law tradition while those countries with a Germanic Civil Law tradition tend to be driven by the discount rate. The efficiency and stock market activity of a country has a positive relationship with expected returns, while size has a negative impact. On the other hand, expected dividend growth appears to be positively affected by all three factors. Company profitability turns out to be an important factor in influencing both expected returns and expected dividend growth positively. Gearing tends to impact only expected dividend growth.

[1] Email: d.rambaccussing@dundee.ac.uk. The authors are grateful to Grigorios Emvalomatis and Andrzej Kwiatkowski for the help on the High Performance Computing environment at the University of Dundee.

[2] Email: d.m.power@dundee.ac.uk

1. **Introduction**

There is a great deal of evidence that the present value model of equity prices can either forecast dividend growth or equity returns, or a combination of the two (Reference). This predictability literature usually uses the price-dividend variable as one of the main valuation ratios to forecast either returns or dividend growth. The literature has recently been extended to empirically decompose movements in equity prices into those attributable to variations in either discount rates or expected dividend growth (Reference). However, different findings have emerged within this literature when different approaches to forecasting equity prices have been employed. A plethora of models and factors have been considered in this literature to improve inference properties, explain persistence of the price-dividend ratio over time, and account for where stock market movements come from. In this paper, we examine the properties of expected returns and expected dividend growth as well as stock market movements in Europe according to the legal tradition within a country and measures of corporate financial performance. The findings suggest that a country's institutional framework and corporate finance characteristics may offer some explanations as to the different properties of expected retunes, expected dividend growth and the present value more generally in various national settings.

One of the main premises of present value models is that, while stock prices can be characterised by a random walk, their movements can be traced to variations in discount rates (Cochrane, 2011) or dividend growth (Chen, 2009). The standard asset pricing model assumes that stock prices are simply discounted expected future dividends. Hence, higher expected dividends or higher growth rates of dividend lead to price increases. Similarly, lower expected returns also imply higher prices. A low price dividend ratio relative to the mean (over time, or across different industries) implies either higher returns or lower future growth, or a combination of the two. One of the major challenges which researchers in this area face is how to empirically estimate the expected returns and expected dividend growth ex ante. One interesting solution to this problem proposed by Koijen and Van Binsbergen (2010) is the state space approach where the dividend yield is decomposed into expected returns and expected dividend growth components. Their methodology yields a set of parameters which are estimated jointly and which can be used to estimate expected returns and expected dividend in a time varying environment.

To date, a great deal of work in this area has focused on the US market. Relatively few researchers have so far sought to understand the properties of expected returns and expected dividends in another setting. Those that have adopted a non-US focus have produced a small but growing body of evidence on return predictability in global or European Markets. However, different results have emerged. For instance, Engsted and Pedersen (2010) note that dividend growth and return predictability are influenced by inflation and the smoothing of dividends, especially in the UK. Henkel et al. (2011) show that return predictability is higher during economic contractions for G7 economies, which they associate with counter-cyclical risk premiums. Jordan et al. (2014) examine monthly return predictability in the case of 14 countries and find that fundamental ratios (such as dividend yield, the earnings-price ratio and the dividend-payout ratio) have weak predictive power for equity returns compared to macroeconomic variables. Rangvid et al. (2010) show that predictability of dividend growth rates is better than return predictability in smaller stock markets. Dividend growth predictability also tends to differ depending on how the portfolio of equities being considered is constructed.

Most of the literature attempts to examine predictability, but little is understood as to the reason why predictability is more pronounced in some markets rather than others. While some papers explain predictability through asset pricing models, this paper looks at the supply side of the story where frictions exist in terms of the legal and institutional environments in which firms operate. The current paper also recognises that expected returns and expected dividend growth are based on company policies which are themselves affected by a firm's operating financial performance (or structure).

This paper bridges the gap between the financial environment and asset pricing strands of the literature. It recognises that the legal and institutional structures within a country will impact on the financial decisions which companies make (La Porta et al. 1996; Demirgüç-Kunt and Maksimovic, 1998). Dividend payments, as well as expected dividend growth will depend on the level and type of external funding which is used to finance investment. For instance Common Law countries where stock markets play a prominent role corporate funding, might expect a more persistent level of expected dividend growth and more movement in prices due to changes, or revision in expected dividend growth. A bank-based system on the other hand, (which usually characterises countries with Civil Law traditions) may make it easier for firms to access debt finance. The interest rate channel may play a more important role in this latter setting where companies operate with higher gearing ratios. A stable system may mean that interest rates are persistent and this persistence is imparted to expected returns. In the current paper, we focus on eight European countries, which differ in terms of their legal systems and institutional structures. The financial environment in which firms operate is

also different. As a result, we examine whether movements in equity indices are explained by three main factors. Firstly, the legal origins of a country are used to comment on the results. Secondly, we look at the impact of three variables employed in Beck (2000) to characterize a financial system on our findings: namely size, activity and efficiency. Lastly, we study whether profitability and gearing ratios at the corporate finance level may influence stock market movements.

The remainder of this paper is structured as follows. Section 2 explains the log-linear present value model, and illustrates how it may be formulated using the State Space approach. Section 3 reports the results from the State Space model and also applies decomposition analysis to the returns. Section 4 documents the findings from a joint significance test. Section 5 explains the results and discusses the findings. Section 6 concludes.

2. The present value model

In this section, we illustrate the log-linearized present value model and show how it may be estimated using an application of the state space model. Denoting D_t and P_t as the dividend from the stock market index and the stock price at time *t*, the log returns on the index from t to t+1 (r_{t+1}), dividend growth from t to t+1 (Δd_{t+1}) and the logarithm of the price-dividend ratio (pd_t) can be defined as follows:

$$r_{t+1} = ln\left(\frac{P_{t+1} + D_{t+1}}{P_t}\right) \quad (1)$$

$$pd_t = \ln\left(\frac{P_t}{D_t}\right) \quad (2)$$

$$\Delta d_{t+1} = ln\left(\frac{D_{t+1}}{D_t}\right) \quad (3)$$

Definitions (1)-(3) can be used to derive the Campbell-Shiller dynamic present value relationship. This dynamic present value relationship is given as follows:

$$pd_t \simeq \kappa + \rho pd_{t+1} + \Delta d_{t+1} - r_{t+1}, \quad (4)$$

where $\kappa = \ln(1 + e^{\overline{pd}}) - \rho pd$ and $\rho = \frac{e^{\overline{pd}}}{1+e^{\overline{pd}}}$. $\overline{pd}$ is the mean of the price-dividend ratio. Equation (4) implies that current price-dividend ratio is equal to the next period dividend growth rate and the rate of return. ρpd_{t+1} is the next period price-dividend ratio discounted by the log-linearization

parameter. This term is usually important when allowing for price bubbles in the present value model with a constant rate of return. However, assuming that a bubble can never exist, $lim\ \rho^{\infty} pd_{t+\infty} = 0$. Solving for pd_{t+1}, returns can be written as follows:

$$pd_t = \frac{\kappa}{1-\rho} + \frac{1}{1-\rho}\Delta d_{t+1} - \frac{1}{1-\rho} r_{t+1} \tag{5}$$

Equation (5) is a long run condition which simply states that the current price-dividend ratio will move only if the next period's realized dividend growth or returns change. It should be noted that at time t, both r_{t+1} and Δd_{t+1} are unknown.

The State Space Model

The variables r_{t+1} and Δd_{t+1} , being unknown at time t, are driven by expectations. Consider the market conditional expectations of r_{t+1} and Δd_{t+1} as being denoted by μ_t and g_t. Equation (5) can simply be rewritten as (6):

$$pd_t = \frac{\kappa}{1-\rho} + \frac{1}{1-\rho} g_t - \frac{1}{1-\rho}\mu_t \tag{6}$$

Equation (6) is simply the price dividend ratio broken down into its expected dividend growth and expected returns components. In the current setting, g_t and μ_t are constant. However, g_t and μ_t can assume any functional form as long as it includes details about the information set involved. Two specifications that have been explored in this literature are the AR(p) and ARFIMA (p,d,q) as in Golinski et al. (2015). Following Koijen and Van Binsbergen (2010), an AR(1) is assumed in the current analysis. Hence, expected returns and the expected dividend growth rate, in demeaned form can be written as follows:

$$\mu_{t+1} - \phi_{\mu 0} = \phi_{\mu 1}(\mu_t - \phi_{\mu 0}) + \varepsilon_{\mu,t+1}\,, \tag{7}$$

$$g_{t+1} - \phi_{g0} = \phi_{g1}(g_t - \phi_{g0}) + \varepsilon_{g,t+1}\,, \tag{8}$$

where $\mu_{t+1} = E_t(r_{t+1})$ and $g_{t+1} = E_t(\Delta d_{t+1})$. μ_{t+1} and $g_{t+1}$are market expectations of future realized returns and dividend growth respectively. $\phi_{\mu,0}$ and $\phi_{g,0}$ represent the unconditional mean of the expected returns and dividend growth respectively. $\phi_{\mu,1}$ and $\phi_{g,1}$ are the autoregressive parameters and are usually assumed to be less than one. The error terms are assumed to be normally distributed with $\varepsilon_{\mu,t+1} \sim N(0, \sigma_{\mu}^2)$ and $\varepsilon_{g,t+1} \sim N(0, \sigma_g^2)$. The correlation between the residuals is denoted by$\rho_{g\mu}$.

The measurement equation requires two observed variables with two state variables. One of the observed variables is the price-dividend ratio. The other variable can be either realized returns or observed dividend growth. These may be related to their expected counterparts by the following equations:

$$r_{t+1} = \mu_t + \varepsilon_{r,t+1}\,, \tag{9}$$

$$\Delta d_{t+1} = g_t + \varepsilon_{\mathrm{d},t+1}\,, \tag{10}$$

In order to allow for more flexibility with expected returns, the second observed variable is given by (10), where realized growth is linearly determined by expected dividend growth. Formally, equations (7) and (8) can be rewritten in demeaned form as expected dividend growth (11) and conditional expected returns (12):

$$\hat{\mu}_{t+1} = \phi_{\mu 1}\hat{\mu}_t + \varepsilon_{\mu,t+1}, \tag{11}$$

$$\hat{g}_{t+1} = \phi_{g1}\hat{g}_t + \varepsilon_{g,t+1}, \tag{12}$$

where $\hat{g}_{t+1}$ and $\hat{\mu}_{t+1}$ are demeaned expected dividend growth and returns. In other words, $\hat{g}_t = g_t - \phi_{g0}$ and $\hat{\mu}_{t+1} = \mu_t - \phi_{\mu 0}$.

The measurement equations are given by the following:

$$\Delta d_{t+1} = \phi_{g0} + \hat{g}_t + \varepsilon_{\mathrm{d},t+1}, \tag{13}$$

$$pd_t = \mathrm{B}_0 - \mathrm{B}_1\hat{\mu}_t + \mathrm{B}_2\hat{g}_t. \tag{14}$$

Equation (13) states that realized dividend growth is equal to its expected counterpart plus the unobserved shock ($\varepsilon_{\mathrm{d},t+1}$). Equation (14) is the Campbell-Shiller (1988) present value form which relates the price–dividend ratio to expected dividend growth and expected returns. The terms B_0, B_1 and B_2 are defined as follows:

$$\mathrm{B}_0 = \frac{\kappa}{1-\rho} + \frac{\phi_{g0}-\phi_{\mu 0}}{1-\rho}, \tag{15}$$

$$\mathrm{B}_1 = \frac{1}{1-\rho\phi_{\mu 1}}, \tag{16}$$

$$\mathrm{B}_2 = \frac{1}{1-\rho\phi_{g1}}\,. \tag{17}$$

The Kalman Filter can be applied to the model by optimising the log-likelihood function from the Kalman Filter to the data. The objective of such a procedure is to yield the autoregressive terms ($\phi_{\mu,1}$ and $\phi_{g,1}$), the intercept terms ($\phi_{\mu 0}$ and $\phi_{g,0}$), the shock terms (σ_μ , σ_g , σ_d) and the correlation parameters ($\rho_{g\mu}, \rho_{x\mu}$) . The vector of parameters to be estimated from the model is given by:

$$\Phi = (\phi_{g0}, \phi_{\mu 0}, \phi_{g1}, \phi_{\mu 1}, \sigma_\mu \ , \sigma_g \ , \sigma_d \ , \rho_{g\mu}, \rho_{x\mu})$$

Sequentially, once the optimal values are solved, it is possible to derive a time series of expected returns and expected dividend growth values; the implied present value parameters $\mathrm{B}_0, \mathrm{B}_1$ and B_2 can also be determined. The last two parameters depend on the autoregressive parameters $\phi_{\mu 1}$ and ϕ_{g1}. High levels of persistence, implying high values for the autoregressive parameters, give greater weight in the decomposition to a particular series. For instance, if expected returns are more persistent ($\phi_{\mu 1} > \phi_{g1}$), then most of the variation in the price-dividend ratio is due to expected returns. However, this will also depend on the variance of the noise terms σ_μ and σ_g .

Decomposition of Price Movements.

Decomposing the price-dividend ratio into expected returns and expected dividend growth provides a measure of what moves stock market prices (assuming that dividends are more or less constant). The variance of the price-dividend ratio can be written as follows:

$$\sigma_{pd}^2 = B_1^2\sigma_\mu^2 + B_2^2\sigma_g^2 - 2B_1B_2\sigma_{\mu g} \ , \qquad (18)$$

where $B_1^2\sigma_\mu^2$ refers to the proportion of the variance of the price dividend ratio, which is due to the variance of expected returns (discount rate). $B_2^2\sigma_g^2$ is that part of the variance due to variation in expected dividend growth. $2B_1B_2\sigma_{\mu g}$ measures the covariation between both components. From the optimized model, the time series of expected returns and expected dividend growth are shown.

3. Results

Data on monthly dividends and the dividend yields were collected from Thompson Reuters DataStream for the period January 1973 until December 2014. Dividends were geometrically compounded to get the annual growth rate. The Price-Dividend ratio is the average of the monthly price-dividend ratio over the year. This data were analysed for eight European countries: Belgium,

France, Germany, Italy, Ireland, the Netherlands, the UK and Switzerland. The countries were selected on the basis of data availability for the 42 years being examined. In addition, an attempt was made to examine a range of countries with different legal origins and institutional structures. We also wanted a sample where stock markets varied in in terms of size and funding importance within a country. An analysis of table 1 reveals that two of the countries (Ireland and the UK) had common law traditions while the other 6 (Belgium, France, Germany, Italy, the Netherlands and Switzerland) had legal origins based on civil law.

Sample Details

Country	Legal Origin	Stock Market Size	Stock Market Activity	Structure-Size	Structure-Efficiency
Belgium	French Civil Law	42.55	-1.73	-0.32	-1.45
France	French Civil Law	45.81	-0.94	-0.54	-0.34
Germany	Civil Law	29.83	-0.94	-1.04	-0.27
Ireland	Common Law	54.76	-1.73	-0.93	-3.26
Italy	Civil Law	18.34	-1.31	-1.00	-0.09
Netherlands	Civil Law	64.08	-0.58	-0.45	0.07
UK	Common Law	90.68	-0.44	-0.09	0.78
Switzerland	Civil Law	145.9	-.025	0.04	1.34

Table 1: Sample Details. The legal origin uses the classification of countries' legal systems from La Porta et al. (1998). Stock market size is measured by the ratio of market capitalisation to GDP for a country.

The results are presented in two sections. The findings from estimating the parameters for the present value model applied to each of the eight countries under the state-space approach are initially reported. Then, we attempt to determine whether these findings are linked to the legal origin of a country, the prominence of the stock market within a country and the financial performances of companies in the countries being studied.

Estimation of the Present Value Model.

	France		Germany		Italy		UK		Ireland		Switzerland		Netherlands		Belgium	
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE
ϕ_{g0}	0.073	0.027	0.019	0.008	0.067	0.030	0.074	0.022	0.070	0.035	0.070	0.025	0.048	0.013	0.075	0.031
$\phi_{\mu 0}$	0.089	0.046	0.047	0.026	0.051	0.047	0.062	0.101	0.030	0.175	0.062	0.072	0.041	0.240	0.066	0.083
ϕ_{g1}	0.319	0.293	0.120	0.084	0.714	0.271	0.399	0.179	0.391	0.367	0.081	0.295	0.219	0.108	0.326	0.268
$\phi_{\mu 1}$	0.859	0.103	0.654	0.176	0.719	0.149	0.872	0.109	0.992	0.069	0.934	0.092	0.990	0.068	0.907	0.087
σ_d	0.077	0.035	0.047	0.024	0.141	0.062	0.012	0.016	0.150	0.064	0.095	0.041	0.043	0.031	0.130	0.069
σ_g	0.050	0.053	0.080	0.039	0.084	0.044	0.070	0.017	0.089	0.057	0.068	0.038	0.099	0.030	0.119	0.016
σ_μ	0.028	0.018	0.071	0.041	0.008	0.030	0.017	0.027	0.006	0.006	0.003	0.006	0.005	0.005	0.018	0.069
$\rho_{g\mu}$	0.503	0.424	-0.038	0.231	0.438	0.407	0.437	0.220	0.452	0.480	0.072	0.397	0.076	0.359	0.146	0.555
$\rho_{d\mu}$	-0.418	0.636	0.044	0.222	-0.058	0.402	-0.075	0.839	-0.026	0.434	-0.181	0.775	-0.28	0.611	-0.363	0.671

Table 1: **Estimation of the Present Value Model.** The table illustrates the parameters optimized and the corresponding standard errors from the state space model for eight European countries using the sample 1974-2014. The estimates and the standard errors were computed using 100 draws of initial values from a uniform distribution.

Results for the present value model

Table 1 illustrates the estimation results from the optimization of the state space model. For each of the eight countries, the vector of parameters ϕ_{g0}, $\phi_{\mu 0}$, ϕ_{g1}, $\phi_{\mu 1}$, σ_{μ} , σ_{g} , σ_{d} , $\rho_{g\mu}$ and $\rho_{d\mu}$ is reported.

A number of findings emerge from an analysis of the results in Table 1. First, the autoregressive parameters for the expected dividend growth rate in the current study tend to be relatively higher than those documented for the United States[3] in prior investigations. It our analysis, the persistence parameter for expected dividend growth is lowest for Germany and Switzerland at 0.120 and 0.081 respectively. The estimated persistence term for the expected dividend growth in Italy seems very high at 0.714; in fact, it is more than double the next highest values for $\phi_{g,1}$ for the UK and Ireland. Relatively high persistence is estimated in the case of UK and Ireland where the values for $\phi_{g,1}$ are 0.399 and 0.391 respectively; in these two countries (as well as in Italy), the impact of a change in expected dividend growth from last year continues to influence expected dividend growth into the future for several years. If investors anticipate that a share's expect dividend growth will rise by 1%, for example, the influence of this expected dividend rise will remain above 0.05 of 1% for over three years. Such expectations among UK and Irish investors may be based on a level of persistence in dividend changes which has been reported for UK (Lonie et al., 1996) and Irish (McCluskey et al., 2007) companies[4].

Expected returns are more persistent than expected dividend growth rates for all eight countries included in the current investigation. The values of $\phi_{\mu 1}$ documented range from a low of 0.654 for Germany to a high of 0.990 for the Netherlands; in fact, with the exception of Germany and Italy, all of the $\phi_{\mu 1}$ values reported are greater than 0.850. Indeed, for four of the countries (Belgium, Ireland, the Netherlands and Switzerland), $\phi_{\mu 1}$ is greater than 0.90. The persistence in expected returns is statistically significant for all countries which may be due to persistent interest rates in the sample.

Shocks to the realized dividend growth are generally higher than shocks to expected dividend growth from one period to another. The Netherlands, Germany and the UK appear as exceptions to this

[3] Studies of US data have typically reported values for $\phi_{g,1}$ of 0.354 (Cash-Reinvested Dividends) and 0.638 (Market-Reinvested Dividends. (Koijen and Binsbergen(2010)).

[4] Evidence suggests that managers of companies in these two countries will only raise a dividend when they expect to maintain the dividend at the new higher level into the future. In addition, managers of UK and Irish companies appear reluctant to cut dividends unless the reduction is forced on t
hem by a lack of liquidity.

generalisation where the values for σ_d are higher than the estimates for σ_g . The realized dividend growth rate in UK is moderately lower than its counterparts in other European countries especially Ireland, Belgium and Italy. Interestingly, the UK has the lowest realized dividend growth shock which links to the notion that UK companies try not to surprise the market by maintaining dividend growth. Shocks to the expected returns process are very small in the Netherlands, which contrasts with the case of Belgian where the standard deviation is 11.4 %. Other countries having a high ratio of standard deviation to expected returns include Italy and Germany. Low shocks to expected returns are also noted for Ireland, Italy, the Netherlands and Switzerland. Correlation among the present value parameters tend to differ across both in sign and magnitude. The correlation between expected returns and expected dividend growth is positive in most instances, except in the German case which has a correlation close to zero.

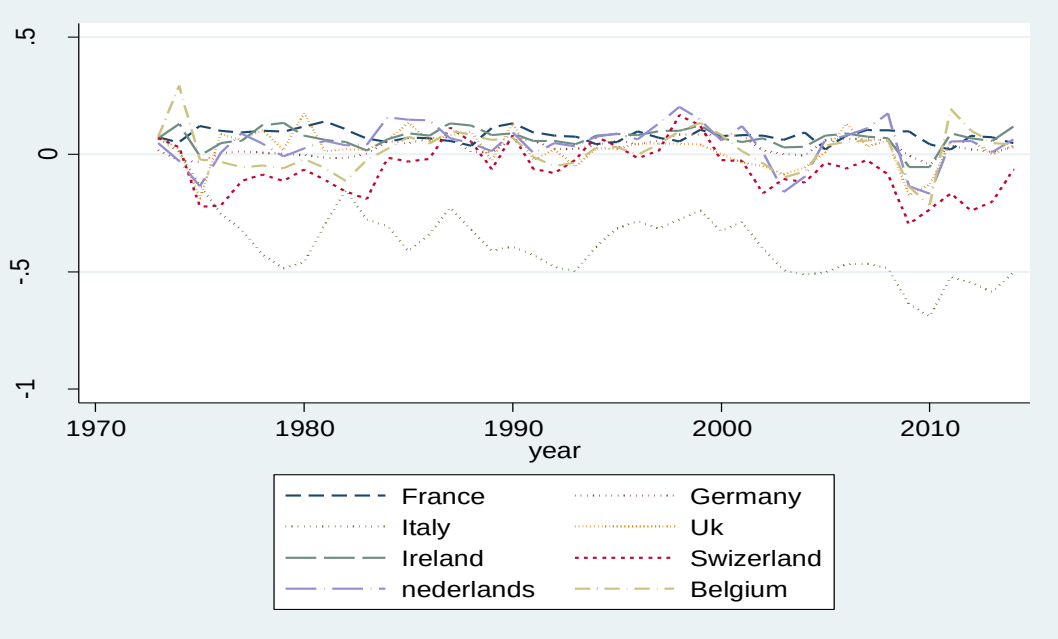

Figure 1: Time Series of Expected Dividend Growth from 1973 to 2014.

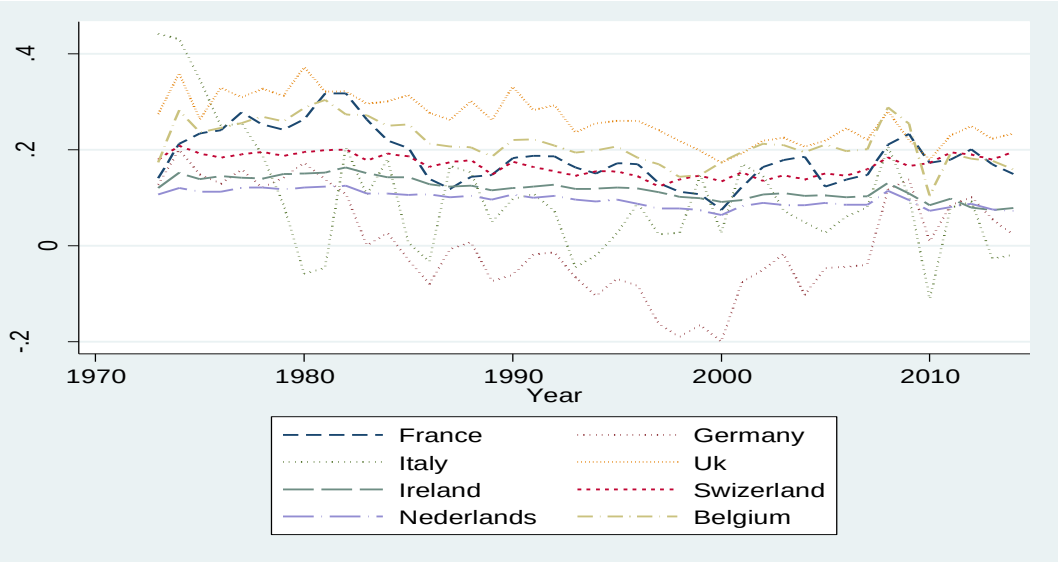

Figure 2: Time Series of Expected Returns from 1973 to 2014.

The results from the stock market price decomposition in from equation (18) is shown table 2:

	France	Germany	Italy	UK	Ireland	Switzerland	Netherlands	Belgium
	Decomposition of price-dividend ratio							
Discount Rate	133.8	75.00	66.22	118.31	101.78	99.86	99.55	98.91
Dividend Growth	1.01	19.28	37.21	0.02	0.01	0.16	0.79	2.61
Both	-34.81	5.73	-3.44	-18.34	-1.78	-0.02	-0.34	-1.52

Table 2: Decomposition of Stock Market Movement due to discount Rate news and dividend growth news.

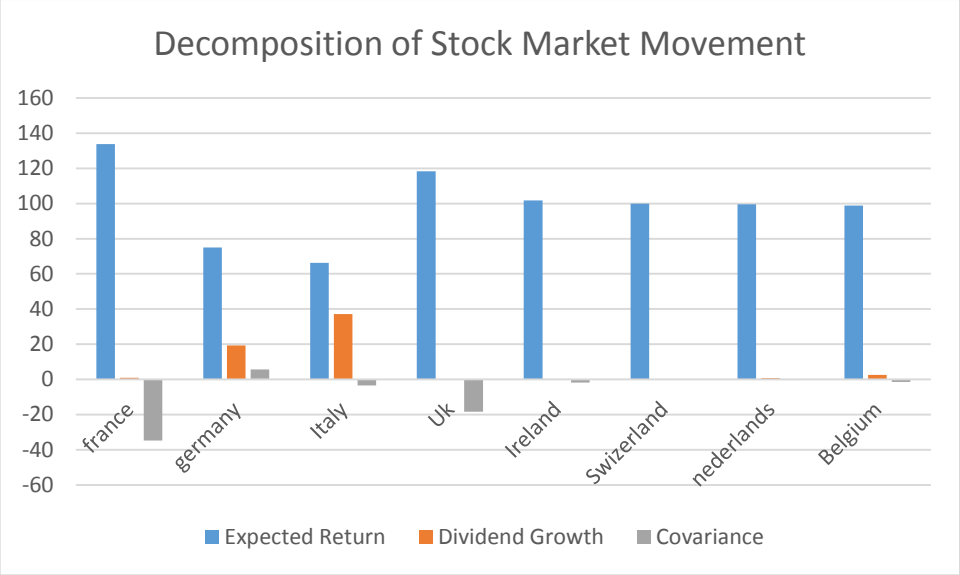

Figure 3: Decomposition of Discount Rates and Dividend Growth News. The figure shows the percentage of movements attributed to discount rates, dividend growth and the covariation between both.

The table shows two strict categories of market movements. In most European countries, it appears that the man movement of the price-dividend ratio can be attributed to discount rates. However their importance vary across countries. Dividend growth news plays only a minor role in influencing movements in the markets, with the exception of Germany and Italy. Statistically, this corresponds to the low persistence in the autoregressive term or/and low volatility of expected dividend growth. If dividend growth is not persistent, then it means that news on dividend growth doesn't persist in the economy. France and UK also witness strong negative covariation between discount rates and dividend growth in stock market decompositions.

Explaining the cross-country results

An attempt was also made to see whether the persistence parameters for expected dividend growth and expected returns were linked to institutional factors such as the "legal origin" of a country. In an influential body of work, La Porta et al. (1997, 1998) developed the proposition that stock market size and consequent economic development were promoted by a legal system in which the interests of shareholders were protected. Their investigation of legal regimes showed that common law countries (such as Ireland and the UK) generally offer stronger legal protection for shareholders than their civil law counterparts (including Belgium, France, Germany, Italy, the Netherlands and Switzerland). Thus, a "rule of law" variable was employed from Levin, et. al. (2015) which is an assessment of the law and order tradition in the country5; this was analysed for the persistence parameters being studied and the results shown in Figure 5. Countries such as Ireland and the UK which do indeed have higher rule of law measures also have a higher level of persistence in expected returns, as shown in Figure X; with the strong protection of shareholder rights within these common law countries, it is not too surprising that persistence in expected returns is present. By contrast, in a country such as Germany where creditor rights are deemed to underpin the legal tradition, persistence in expected returns is relatively lower – presumably because of the prominence given to the rights of debtholders. Therefore, an institutional factor such as "the Rule of Law" appears to shape the habits of companies and the expectations of investors in general according to the findings of the current investigation.

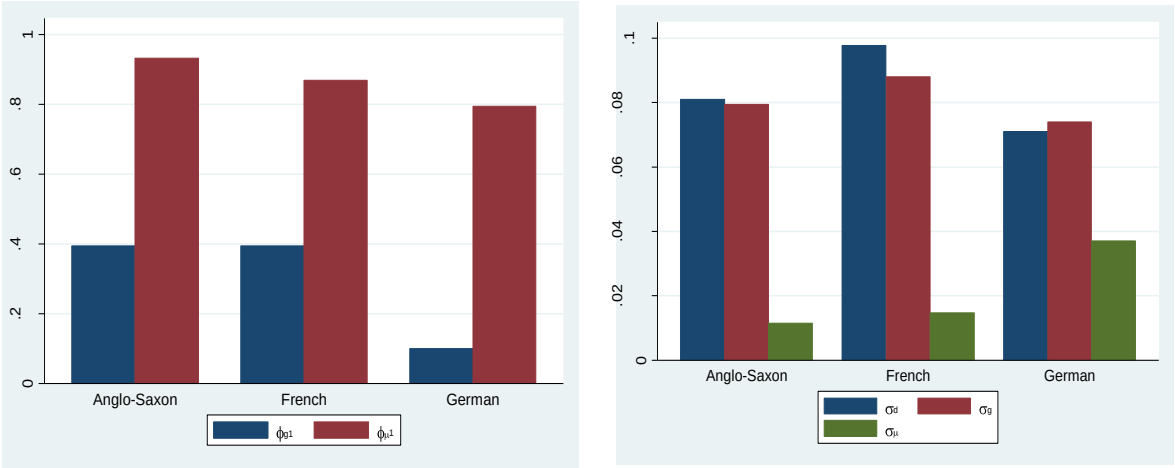

Figure 8: Decomposition of Market Movements. Panel A shows the persistence of expected returns and expected dividend growth according to the type of legal system in the country.

[5] Specifically, it is an average of the monthly index using a scale from 0to 10, with lower scores for where there is less of a tradition for law and order.

Panel B shows the shocks to expected returns, expected dividend growth and unexpected dividend growth.

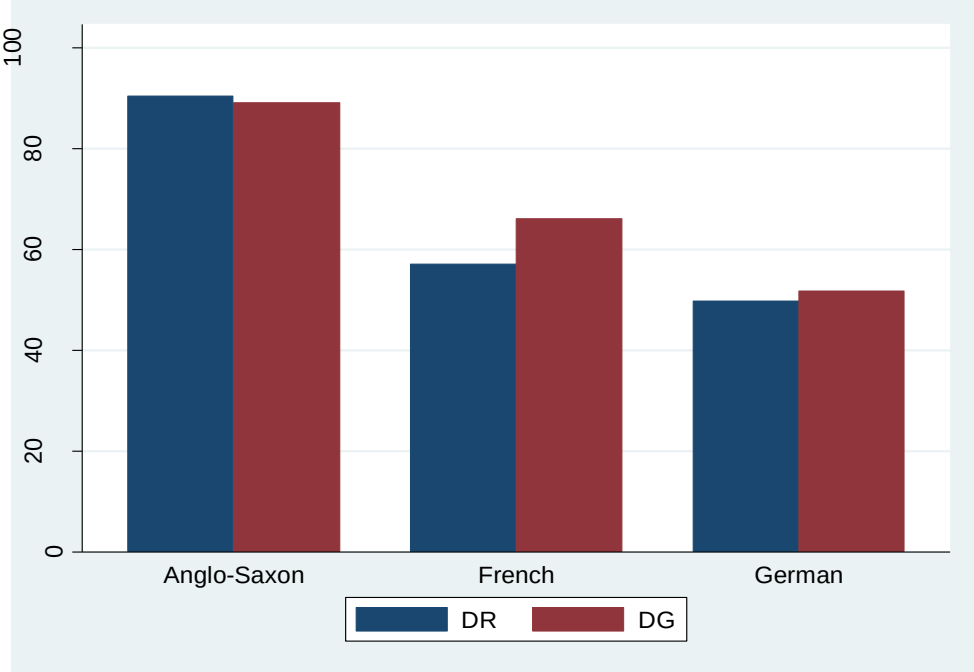

Figure 9: Decomposition of Market Movements. The bar chart shows the average percentage movement due to discount rates and dividend growth according to the type of legal system in the country. The percentage for each category is computed as the average from the countries sharing the same legal system.

On average, the autoregressive parameter in expected returns is slightly higher for Common Law countries of Ireland and the UK. The autoregressive parameter for the expected dividend growth is twice as much in English and French law countries. Shocks to expected dividend growth and realized dividend growth are marginally different according to the different legal systems. However, it is worth noting that expected returns are twice as much in countries with German law.

We also find different patterns of the present value with measures of creditor rights, rule of law and the anti-self dealing index. It is noted that stonger rule of law implies lower persistence of expected dividend growth. It is also noted that better anti-self-dealing index implies a higher correlation between expected returns and expected dividend growth shocks. Meanwhile better creditor rights also imply lower realized dividend growth shocks.

The legal protection and institution index, also shows that a better index implies that stock markets are mostly driven by dividend growth expectations. On the other hand, there appears to be a negative evidence between stock market movements and expected returns.

The impact of the financial architecture is also considered on the time series of expected returns and expected dividend growth. Following the literature on bank-based and market based systems, we construct three variables – size, efficiency and activity ratios for each country to explain the variation in these variables using a panel fixed effect model. . Following Levine (2001), Activity is computed as the logarithm of the total value traded ratio divided by the bank credit ratio. Size measures the size of stock markets relative to banks, and is computed as the logarithm of market capitalization ratio divided by the bank credit ratio. The structure efficiency measures the efficiency of stock markets compared to that of banks. It is measured as the logarithm of the total value traded ratio multiplied by the overhead costs. Larger values of structure efficiency signals more market-based financial systems.

The model considered is the following within effect panel model:

$$y_{it} = \beta_1 \, Efficiency_{it} + \beta_2 \, Size_{it} + \beta_3 \, Activity_{it} + \alpha_i + \epsilon_{it}$$

Where y_{it} is the dependent variable which is ….

The results are illustrated in table

	Expected Returns	Expected Dividend Growth
Efficiency	-0.005	0.015
	(0.521)	(0.236)
Size	-0.049	0.084
	(0.103)	(0.001)
Activity	0.056	0.030
	(0.034)	(0.272)
R^2	0.133	0.282
RSS	0.219	0.552
N	100	100

Table 3: Estimates of the Within Effects panel data model.

An active stock market implies higher expected returns. This is shown by the nonsignificant p-value. Moreover, size has a negative effect on the expected returns. A liquid and large stock market may imply that the channel of distribution is mostly dividend growth. This is reinforced by the high coefficient on expected dividend growth. However, efficiency and activity does not have a strong effect on Expected dividend growth, though they are positive, which is as expected.

We also examined deeper the role of broad corporate profits and gearing ratio in influencing these variables. The role of some corporate factors are also considered towards explaining the variation in expected returns, expected divided growth rate and the price-dividend ratio. The following model is considered :

$$y_{it} = \beta_1 NPM_{it} + \beta_2 NDTA_{it} + \beta_3 ROE_{it} + \beta_4 IC_{it} + \beta_5 PC_{it} + \alpha_i + \epsilon_{it}$$

Where NPM is the net profit margin, $NDTA$ is the net debt to total assets, PV is the volatility of the price index, IC_{it} is the interest cover, and ROE is the return on equity. The results are listed below:

	Expected Returns	Expected Dividend Growth
Net Profit Margin	-0.0009	-0.0138
	(0.860)	(0.109)
Net Debt to total Assets	-0.0012	-0.0015
	(0.039)	(0.005)
ROE	0.0004	0.0103
	(0.860)	(0.007)
Interest Cover	0.0009	0.0035
	(0.686)	(0.307)
Price-Cash Flow	-0.0036	0.0037

	(0.070)	(0.105)
R^2	0.0975	0.1743
RSS	0.6216	1.293
N	262	262

Table 4: Regression of Expected Returns and Expected Dividend Growth on Corporate Finance Variables.

Expected returns appear to be negatively affected by the net debt to total assets and the price-cash flow. The latter relationship can be easily depicted in the present value relationship, where a high discount rate is negatively related to the price. A high price to cash flow may mean that dividend payments are higher that the capital gain element. However stronger result appear to influence the expected dividend growth rate. Strong significance is noticed for the net debt to total assets, which impacts negatively the expected dividend growth, which means that cash is paid through interest payments. A high return to equity means that high expected dividend growth. A high price to cash flow also implies an expected dividend growth. It is interesting to note that most of the corporate finance variables are significant towards explaining expected dividend growth. In terms of explaining the negative coefficient of the net profit margin, it is interesting to note that when either return on equity or net profit margin is dropped, the remaining variable shows a positive impact.

Conclusion

This paper sheds light on the relationship between present value time series and the legal and financial environment. The two main variables considered were expected returns and expected dividend growth. The analysis was conducted on a sample of 8 countries in Europe. Three important conclusions are shown.

Firstly, both expected returns and expected dividend growth rate are persistent across Europe. The determinants from stock fluctuations depend on the autoregressive parameters of both expected returns and expected dividend growth. Expected returns are more persistent than expected dividend growth. While expected returns persistence is similar across countries, expected dividend growth tends to vary more across the different countries. Expected and Unexpected dividend growth shocks are of similar magnitude, and much lower for expected returns shocks. Movements of stock markets can be traced to movements due to discount rates and due to dividend growth, which depend on the autoregressive parameter of expected returns and expected dividend growth.

Legal origins do matter for the persistence for the persistence of expected dividend growth rate, where persistence was higher in countries with German law. Shock to expected returns is twice as high in countries with German laws. The legal origin of the country gives a host of factors which can impacts on the intermediation process either through creditors or shareholders. Examples of such factors include protection of shareholder rights, creditor rights, legal protection and institutional

index. Countries which score a high rating in the latter tend to have their stock markets driven by dividend growth.

Thirdly, corporate factors have some impact on the persistence of both series, but predominantly on expected dividend growth. Expected returns appear to covary negatively with both price to cash flow and net debt to total assets. Both return on equity and the net debt to total assets have a strong impact on the time series of expected dividend growth.

Appendix: Data Sources and sample:

Appendix: Data Sources and sample:

Variable	Sample	Source
Price-Dividend Ratio	1973-2014	Datastream
Dividend Growth	1973-2015	Datastream
Price-Earnings Ratio	1973-2015	Datastream
Net Profit Margin	1981-2014	Datastream
Interest cover	1981-2014	Datastream
ROE	1981-2014	Datastream
Net Debt to total assets	1981-2014	Datastream
Price-Cash Flow ratio	1981-2015	Datastream
Stock Market Capitalization as apercentage of GDP:	1989-2012	Global Financial Development Database
Stock Market value traded as a % of GDP:	1999-2012	Global Financial Development Database
Stock Market turnover:	1989-2012	Global Financial Development Database
Bank Deposits to GDP	1975-2012	Global Financial Development Database.
Bank credit ratio	1975-2012	Global Financial Development Database.
Bank overhead costs	1999-2012	Global Financial Development Database.
Rule of Law	2015	Levine et al. (2015)
Creditor Rights	2007	Djankov et. al. (2007)
Anti self-dealing index	2008	LaPorta et. al. (2008)
Legal Protection and Institution	2015	Levine et al. (2015)