Analysts' Optimism in Earnings Forecasts and Biases in Estimates of Implied Cost of Equity Capital and Long-run Growth Rate

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Abstract

Using a value-weighted rather than an equally weighted regression, Easton and Sommers (2007) show that the upward bias in the risk premium implied by analysts' earnings forecasts falls to 1.6%, but remains statistically and economically significant. In this paper, we argue that any estimation of a forward risk premium implies a joint test of analysts' optimism and the implied cost of capital model applied. Employing the recent model developed by Ashton and Wang (2010), we first find that the impact of any bias attributable to analysts' forecasts can be reduced to a statistically insignificant 0.4%. Second, we show that our estimates of the implied equity risk premium after removing the effect of this bias are between 3.57% and 3.62%. Third, we show that the real estimates of earnings growth from their model seem more plausible.

Keywords: Cost of equity capital, risk premia, growth, earnings forecast

1. Introduction

A number of accounting based valuation models build a fundamental link between equity prices and discounted expected earnings (See, Edwards and Bell (1961), Peasnell (1982), Ohlson (1995), Ohlson and Juettner-Nauroth (2005)). Over the past decade or so, a considerable number of studies have reverse-engineered these valuation models to estimate the implied cost of equity capital, or expected return on equity, by using the consensus analysts' forecast of earnings as a proxy of expected earnings in these models.[2] Not only do such estimates have important implications for investors, and the corporate sector in general, but they are now being employed in a regulatory context in many countries.[3]

Assuming that capital markets are efficient, and that forecast earnings and long run growth are rationally priced, any analysts' optimism or pessimism in earnings forecasts will lead to an upwardly/downwardly biased estimate of the implied cost of equity capital.[4] For example, Claus and Thomas (2001) and Williams (2004) find that the estimates of equity risk premium are upwardly biased when they use I/B/E/S forecast earnings. Using a model developed by Easton et al (2002), Easton and

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[2] See, for example, Claus and Thomas (2001), Gebhardt, Lee and Swaminathan (2001), Easton, Taylor, Shroff and Sougiannis (2002), Baginski and Wahlen (2003), Gode and Mohanram (2003), Easton (2004, 2006), Botosan and Plumlee (2005), Easton and Monahan (2005), Easton and Sommers (2007), and Ashton and Wang (2010).

[3] For a review of regulatory procedures in the US, UK, Germany, Australia and New Zealand see Sudarsanam et al (2011).

[4] Whether optimism/pessimism is shared by the market and captured in current price is an open question.

Sommers (2007) estimate these upward biases to be in the range 2.75% and 2.84%, when using an equally weighted regression analysis and depending on how bias is defined. When deflating by book values and employing a value-weighted regression, they show that the bias is reduced to 1.6%, which is still statistically and economically significant.

Easton and Sommers (ES 2007) and Ashton and Wang (AW 2010) provide us with two competing models for the simultaneous estimation of the cost of equity capital and the long-term growth rate. Both of these models use forecasts of earnings, current market prices and accounting variables available to the market at the time of the forecasts. However, they differ in the precise specification of the relationship between accounting fundamentals and value. The simultaneous estimation of the implied cost of equity capital and long-term growth is critical in this literature since 'error will almost inevitably arise when the expected growth rate is assumed' (ES). Nonetheless, ES recognize the problems that bias in analysts' forecasts give rise to, and conclude that the challenge is to mitigate the effects of such bias and to reduce the measurement error in implied cost of capital. In this paper, we show that by employing the AW model, which includes information in current earnings, (lagged) prices and book values, we can indeed mitigate the effects of such bias.

Following ES, analysts' forecasts are defined to be optimistic if the forecasts of earnings are greater than the realizations of the earnings being forecasted. To examine the effect of any optimism or pessimism in these forecasts, we first estimate the implied cost of equity capital and the growth rate based on I/B/E/S analysts' consensus forecasts of one year ahead (t+1) earnings together with contemporaneously observable prices, earnings, book values and lagged book values. We then estimate the implied cost of equity capital and the growth rate based on earnings realizations at time t+1 (i.e. assuming perfect foresight of next-period's earnings) and the historically observable prices and accounting variables, and compare the implied returns and long run growth rates from these alternative estimation procedures. We refer to the differences in these return and growth rates as our measures of biases. [5]

The main purpose of this paper is to examine whether, by fully utilizing information available to the market at the time forecasts are made, the impact of any bias in analysts' forecasts on both the implied cost of equity and the implied long run growth rate can be reduced. The ES model uses only current book values and current prices to predict one year ahead earnings, whereas the AW model also utilizes information embedded in current earnings, lagged book values and lagged prices. Furthermore, if including this additional information reduces the impact of such biases, then the

[5] Easton and Sommers (2007) also employ a model developed by O'Hanlon and Steele (2000) and define an *ex ante* measure of bias based on current earnings rather than earnings realizations at time t+1. Although they point out that the *ex post* measure is affected by events having an effect on earnings that happen between the time of the forecast and the date of the earnings announcement, they find the estimates of the implied cost of capital based on realized earnings at t+1 and those based on current earnings are very similar. The difference of -0.09% between two estimates is not significantly different from zero.

associated estimates of the long-term growth should be reasonably stable relative to analysts' short-term earnings forecasts.

We also examine whether the bias in estimates of the implied equity premium can be reduced by employing the value-weighted regressions in AW. The weights in a value-weighted regression are calculated as individual firm's equity prices multiplied by numbers of shares outstanding divided by the total market capitalization of all firms in the market. A natural question that arises is whether the choice of deflators has an impact on the results. The evidence in Barth and Clinch (2009) would suggest that this is a potentially important issue. Related to this, AW argue that deflating by prices may mitigate potential effect of endogeneity when using current prices to predict one period ahead earnings, since current prices of equity may incorporate future earnings information.

Based on available US data over the period 1974-2006, we show that I//B/E/S earnings forecasts tend to be optimistic, leading to an upwardly biased estimate of the implied cost of capital of between 1.69% and 2.82%, depending on the models applied when we use equally weighted regressions.[6] When we use value-weighted regressions with book values as the deflator, we get a significant upward bias in estimates of the cost of capital of 1.16% on the ES model. In contrast, this bias is an insignificant 0.4% when we apply the AW model. The estimates of the implied long-

[6] The optimistic bias in analysts' earnings forecasts is well established, for example: O'Brien (1988); Mendenhall (1991); Abaranall and Bernard (1992); Capstaff, Rees and Paudyal (1995); Das, Levine and Sivaramakrishnan (1998); Lin and McNicholls (1998).

term growth rates when applying the ES model are also upwardly biased in a range between 1.84% and 3.31%, and all are statistically significant. However, the bias in estimates of the growth rate reduces to less than 0.36%, (which is not statistically significant) applying the AW model when using price as the deflator or in a value-weighted regression.

In general, the magnitudes and significance of biases in estimates of the cost of capital and the growth rate are not only model specific but also deflator specific. Biases in estimates are smaller when using prices as the deflator than those when using book values as the deflator within the same model. Overall, the AW model out-performs the ES model in terms of yielding smaller biases in the estimates of both implied equity returns and implied growth rates, whilst also having greater explanatory power in forecasting earnings. Consistent with ES, value-weighted regressions generate smaller biases than those from an equally weighted regression. Our estimates of the implied equity risk premium from value-weighted regressions, after removing the effect of bias in analysts' forecasts, is around 3.6% in real terms.

When we adjust for inflation, we find that the estimates of real expected return, real growth and the real risk premium from the value-weighted AW model seem entirely plausible when anchored on other research in finance on long-run outcomes, and this is the case whether we use forecasts or earnings realizations over our sample period in the analysis. By contrast, the ES model appears to give rise to some implausibly large estimates of earnings growth when forecast earnings are used to estimate the model. Our conclusion is that the AW model may give more reliable estimates of the expected return and the risk premium, particularly when estimated on the basis on analysts' forecasts.

The rest of the paper proceeds as follows. In section 2, we outline the models used in estimating the expected cost of equity capital and long-term growth rate implied by market prices, book values, current earnings and one year ahead forecasted earnings. Section 3 describes the data used in our analysis. In section 4, we present our results on biases in estimates of implied cost of capital and growth rate by comparing and contrasting those generated from deflating by book values and by prices, and using value-weighted regressions. In section 5, we discuss inflation-adjusted costs of equity capital, growth rates and risk premia, together with their implications for corporate and regulatory costs of capital. Section 6 concludes the paper.

2. Models of Estimating the Implied Cost of Equity Capital and Growth Rate

Based on the residual income valuation model, and assuming abnormal earnings grow at a rate of g^{ES} after time t+1, Easton and Sommers (2007) truncate the valuation model at time t+1 and express the relationship between the value of equity and expected earnings as:

$$P_t = b_t + \frac{E_t[e_{t+1}] - (R^{ES} - 1)b_t}{R^{ES} - 1 - g^{ES}},\ \text{or}\ E_t[e_{t+1}] = (R^{ES} - 1 - g^{ES})P_t + g^{ES}b_t,$$

where P_t and b_t are respectively price and book value of equity at time t; $E_t[e_{t+1}]$ is one year ahead expected earnings. R^{ES} and g^{ES} are respectively the implied cost of equity capital and long-run growth of abnormal earnings. R^{ES} and g^{ES} can then be estimated by regressing the forecasted earnings on prices and book values as equation:

$$e_{j,t+1} = \mu_{j1} P_{jt} + \mu_{j2} b_{jt} + \varepsilon_{j,t+1}. \tag{1}$$

Specifically, the implied cost of equity capital and growth rate of abnormal earnings are:

$$R_j^{ES} = 1 + \mu_{j1} + \mu_{j2}, \text{ and } g_j^{ES} = \mu_{j2}. \tag{2}$$

More recently, Ashton and Wang (2010) develop an alternative model that also simultaneously estimates the implied cost of equity capital and long-run growth rate of a firm. In addition to the ES variables, they incorporate the additional information available in lagged prices and book values and current earnings by regressing the forecasted earnings on prices, earnings, book values, lagged book values and lagged prices as follows:[7]

$$e_{j,t+1} = \delta_{j1} P_{jt} + \delta_{j2} e_{jt} + \delta_{j3} b_{jt} + \delta_{j4} b_{jt-1} + \delta_{j5} P_{jt-1} + \varepsilon'_{j,t+1}. \tag{3}$$

The long-term growth rate and the implied cost of equity capital can then be written as:

$$1 + g_j^{AW} = \frac{1 + \delta_{j2} + \delta_{j3} - \delta_{j5} + \sqrt{(1 + \delta_{j2} + \delta_{j3} - \delta_{j5})^2 - 4(\delta_{j2} - \delta_{j4} - \delta_{j5})}}{2}, \tag{4}$$

and

[7] The Ashton and Wang (2010) model relies on three assumptions: capital markets are free of arbitrage opportunities; the clean surplus accounting identity holds, and dividends displace current prices dollar-for-dollar.

$$R_j^{AW} = (1+g_j)(1+\frac{\delta_{j1}+\delta_{j5}}{1+g_j-\delta_{j2}}). \tag{5}$$

As we have noted, in contrast to equation (1), earnings forecasts in equation (3) uses information embedded in current earnings, book values and prices, together with lagged book values and lagged prices, whereas the ES model confines itself to the use of information in current prices and book values. This is important as equation (3) considers both the timing of explanatory variables and the potential impact of accounting conservatism, as explained in Ashton and Wang (2010).

3. Sample Description

Our sample consists of prices and accounting data in the intersection of the Center for Research in Security Prices (CRSP) and Compustat over the period 1974-2006 and the Institutional Brokers Estimate System (I/B/E/S) between 1975 and 2007. The adjusted numbers of shares outstanding, adjusted dividends at the end of the fiscal year, as well as adjusted prices of equity 3-months after the fiscal year end are collected from CRSP. Relevant accounting data is collected from Compustat. Firms with negative book values (#60) are deleted. Earnings are measured as net income before extraordinary items (#18). We use median consensus forecasts of earnings per share at the first month after the corresponding I/B/E/S-reported prior-year earnings announcements. All accounting variables used in our estimations are divided by the adjusted number of shares in issue to reduce heteroskedasticity and increase comparability across time.

In constructing our data set, consistent with earlier research, we omit firms in the extreme percentile of earnings, book values, prices, and numbers of shares outstanding. Firms without an earnings forecast and firms with a price per share less than $1 are deleted (Ball et al (2000), Khan and Watts (2009)). We also Winsorize earnings forecasts at the 1% level. For each set of tests, firms with any of the dependent or independent variables in the top or bottom 1% of observations are removed to reduce the effects of outliers. We provide summary statistics of the dependent and independent variables after deletions and Winsorization in our analysis in Table 1.

< Insert Table 1 about here>

Panel A reports the sample statistics of the price deflated variables in our analysis, whilst Panel B reports the Pearson correlations for these variables. Forecast earnings here are earnings realizations at time t+1 ($reps_{t+1}$, or 'perfect' forecasts) or I/B/E/S forecasts of earnings ($feps_{t+1}$); Price is the price three months after fiscal year end to ensure that the relevant accounting information should have been available to the market at the time the price is sampled.[8] Panels C and D show the summary statistics and Pearson correlations for book value deflated dependent and independent variables.

4. Impact of Deflators and Weighted Least Square Regressions on Estimates of Cost of Equity Capital and Growth Rate

[8] The results are not sensitive if we change to fiscal year end price. This is consistent with findings in Easton and Sommers (2007) that changing the time period for discounting price back to the fiscal year-end has no statistically or economically significant effect.

We note that ES use book value as a deflator when they apply equation (1), while AW use price as a deflator when implementing equation (3). This section examines the possible impact of deflators used on estimates of cost of equity capital and growth rate. We also investigate whether a value-weighted regression reduces biases in estimates when we apply the AW approach.

4.1. Deflation by price

When deflated by prices, the ES model based on realizations of earnings at t+1 (or 'perfect' forecasts) is:[9]

$$\frac{reps_{t+1}}{P_t} = \mu_1 + \mu_2 \frac{b_t}{P_t} + \varepsilon_{t+1}, \tag{6}$$

and the AW model based on realizations of earnings at t+1 (or 'perfect' forecasts) is:

$$\frac{reps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1}. \tag{7}$$

When we deflate variables by prices, our annual sample size varies over the 31 years from a low of 286 firms in 1975 to a high of 2275 firms in 1997. The average number of annual observations is 1453. To implement these models, first, we regress realized one year ahead earnings yields ($\frac{reps_{t+1}}{P_t}$) on book values, and on earnings, book values, lagged book values, and lagged prices all deflated by prices to obtain the coefficients, μ_i (i=1,2) and δ_i (i=1-5) in equations (6) and (7). The descriptive

[9] Since the error terms in our regression equations may be heteroskedastic, we use White (1980) corrections to the standard errors in our estimations.

statistics for the parameter estimates in the regressions are shown in Panel A of Table 2.

<Insert Table 2 about here>

We observe that both δ_1 and μ_1 are highly significant in explaining one year ahead earnings, confirming that current prices lead earnings after controlling for other accounting variables. For the AW model, we observe that the current earnings (coefficient δ_2) is an important predictor of future earnings. While the book value b_t (coefficient μ_2) is significant for the ES model, the book value (coefficient δ_3) is not significant for the AW model and lagged book value (coefficient δ_4) is only marginally significant (t = 1.70). We also note that lagged price P_{t-1} (coefficient δ_5) is significantly negatively related to earnings yield. The means of the adjusted R-squareds for the ES and AW models are respectively 4.2% and 28.8%, suggesting that the AW model has considerably more power to explain earnings realizations.[10]

When deflated by prices, the ES model based on analysts' forecasted earnings is:

$$\frac{feps_{t+1}}{P_t} = \mu_1 + \mu_2 \frac{b_t}{P_t} + \varepsilon_{t+1}, \tag{8}$$

and the AW model based on analysts' forecasted earnings is:

$$\frac{feps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1}. \tag{9}$$

[10] The lower adjusted R-squared on the ES model is not inconsistent with findings in Easton and Sommers (2007).

Using equations (8) and (9), we regress one year ahead forward earnings yields ($\frac{feps_{t+1}}{P_t}$) on book values, and on earnings, book values, lagged book values, and lagged prices all deflated by prices to obtain the coefficients, μ_i (i=1,2) and δ_i (i=1-5). The descriptive statistics for the parameter estimates in the regressions are shown in Panel B of Table 2.

We observe that μ_1 and μ_2 are both highly significant in explaining one year ahead earnings in the ES model, and so consistent with the earnings realizations regressions, current prices and book values are important predictors of forecast earnings. However, in the AW model current prices (δ_1) are only marginally significant (t = 1.71) in explaining forecast earnings and current book values (δ_3) are insignificant. Lagged book values (δ_4) and lagged prices (δ_5) provide important explanatory power of the return on equity, when using the AW model. This may reflect the fact that one-year ahead earnings forecasts we used are a few months ahead of published financial statements for the current fiscal year. Again, we observe that current earnings (δ_2) are an important predictor of future earnings. The averages adjusted R-squared for the ES model and for the AW model are respectively 20.48% and 37.76%, again suggesting that the AW model has greater power to explain forecast earnings yield. The *minimum* adjusted R-squared from the AW model comfortably exceeds both the median and mean adjusted R-squareds from the ES model.

In Table 3, we detail the estimates of cost of capital and growth rates on a year-by-year basis based in the ES model deflated by prices. Additionally, we show estimates of the market risk premium (RP) which are obtained by subtracting the U.S mid-year 5-year Treasury Bond yield from the cost of equity estimates. Panel A of Table 3 reports the results, in which realizations of earnings at t+1 are used as 'perfect' forecasts in equation (6). We observe that the mean of estimate of the cost of equity capital is 7.99% with t-statistic of 13.88. The mean of estimate of the growth rate is 3.41% with t-statistic of 13.22. However, the risk premium estimate of 0.5% is not significantly different from zero.

<Insert Table 3 about here>

Panel B of Table 3 reports the results when I/B/E/S analysts' forecasts at t of t+1 earnings are used in equation (8). The mean of estimate of the cost of equity capital is now 10.16% (t-statistic 26.51) and the risk premium is a significant 2.67% (t = 9.40). The mean estimate of the growth rate is 5.27% (t = 33.42).

Panel C of Table 3 reports biases in estimates of the cost of equity capital and the growth rate that result by subtracting the estimates using 'perfect' forecasts (realizations of earnings) from those that use I/B/E/S earnings forecasts. The mean difference between the estimates of cost of capital from equation (8) and equation (6) is 2.17% (t-statistic 5.76) and mean difference between the estimates of growth rate from equation (8) and equation (6) is 1.86% (t-statistic 7.17). Thus the ES model exhibits economically and statistically significant upward biases in both the cost of equity and long run growth parameters which result from over-optimism in the short run earnings forecasts of analysts.

We now compare these results with the estimates of cost of capital and growth rates from the AW model deflated by price. Table 4 details these estimates on a year-by-year basis. Panel A of Table 4 reports the results when realizations of earnings at t+1 are used as ‘perfect’ forecasts in equation (7). The mean of cost of capital is 8.87% (t-statistic 13.02) and the mean of growth rate is 4.03% (t-statistic 8.66), whilst the mean risk premium estimate is a marginally significant 1.38% (t-statistic = 1.88).

<Insert Table 4 about here>

Panel B of Table 4 reports the results when analysts’ forecasts at time t of earnings at t+1 are used in equation (9). Here, the mean estimates of cost of capital and growth rate are 10.56% (t-statistic 26.73) and 4.39% (t-statistic 29.71) respectively. The risk premium estimate is now a significant 3.07% (t = 10.62).

Panel C of Table 4 then reports the resultant biases in estimates of the cost of equity capital and the growth rate by comparing the estimates from analysts’ earnings forecasts to those from the realizations of earnings (or ‘perfect’ forecasts). The mean difference between the estimates of cost of capital from equation (9) and equation (7) is 1.69% (t-statistic 3.26) and mean difference between the estimates of growth rate from equation (9) and equation (7) is 0.36% (t-statistic 0.75).

While both the ES model and the AW model confirm that the estimated implied cost of equity capital yields upwardly biases estimates based on analysts' optimistic earnings forecast, the bias is reduced applying the AW model. In addition, the bias in the growth rate from the AW model is much smaller and not statistically significant. In other words, results from the AW model confirm that the estimates of the long-term growth rate are less affected by over optimism in short-term I/B/E/S analysts' earnings forecasts.

4.2. Deflation by book value

When deflated by book values, the ES model based on realizations of earnings, or 'perfect' forecasting, takes the form:

$$\frac{reps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}, \tag{10}$$

and the AW model based on realizations of earnings, or 'perfect' forecasting, takes the form:

$$\frac{reps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1}. \tag{11}$$

When we deflate variables by book values, our annual sample size varies over the 31 years from a low of 313 firms in 1975 to a high of 2204 firms in 1997. The average number of annual observation is 1468. We start with the 'perfect forecast' model and regress one year ahead accounting return on book equity ($\frac{reps_{t+1}}{b_t}$) on book value deflated prices (the ES model), and on book value deflated prices, earnings, lagged book values, and lagged prices (the AW model), to obtain the coefficients, μ_i (i=1,2) and δ_i (i=1-5) in equations (10) and (11). The descriptive statistics for the parameter estimates in the regression are shown in Panel A of Table 5.

<Insert Table 5 about here>

We observe that both δ_1 and μ_1 are highly significant with regard to explaining one year ahead realized earnings, confirming that current prices lead earnings after controlling for other accounting variables. We also observe that current earnings (δ_2) and lagged book value (δ_4) are important predictors of future earnings. While the book value, b_t (coefficient μ_2), is significant in the ES model, book value (δ_3) is not significant in the AW model, and lagged price (δ_5) is only marginally significant (t = -1.73). The means of the adjusted R-squareds for the ES model and the AW model are 7.14% and 34.58% respectively. For both models, these mean R-squareds are higher than those reported for the price-deflated 'perfect forecast' regressions in Table 2, Panel A.

When deflated by book values, the ES model based on I/B/E/S analysts' forecasted earnings is:

$$\frac{feps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}, \tag{12}$$

and the AW model based on analysts' forecasted earnings is:

$$\frac{fesp_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1}. \tag{13}$$

In equations (12) and (13), we regress one year ahead forecasts of the return on equity ($\frac{fesp_{t+1}}{b_t}$) on book value deflated prices, and on book value deflated prices, earnings, lagged book values, and lagged prices to obtain the ES coefficients, μ_i (i=1,2) and the AW coefficients δ_i (i=1-5) respectively. The descriptive statistics of the parameter estimates in the regression are shown in Panel B of Table 5.

Both μ_1 and μ_2 are significant with regard to explaining one year ahead return on equity in the ES model, but the mean adjusted R-squared, at 12.96%, is lower than it was in the price deflated model (Table 2, Panel B). Turning to the AW model, as was the case of using price as a deflator, neither current book values (δ_3) nor current prices (δ_1) are significant. Lagged book values (δ_4) and lagged prices (δ_5) again provide important explanatory power when forecasting returns on equity in the AW model, and as in the price-deflated model we observe that current earnings (δ_2) are an important predictor of future earnings. The mean of the adjusted R-squared for the AW model is 37.29%, which is very similar to the mean for the price deflated model in Table 2 Panel B.

In Table 6, we detail the annual estimates of the cost of capital and the growth rates from the ES model deflated by book values. Panel A of Table 6 reports the results when realizations of earnings at t+1 are used as 'perfect' forecasts as equation (10). The mean estimate of the cost of capital is 8.67% (t = 15.41), whilst the mean estimate of the growth rate is 6.04% (t = 14.18). The mean estimate of the risk premium is marginally significant and only 1.18% (t = 1.93).

<Insert Table 6 about here>

Panel B of Table 6 reports the results when analysts' forecasted earnings at t+1 are used in equation (12). We note that the mean of estimate of the cost of capital is 11.49% (t-statistic 33.89), and the mean of estimate of the growth rate is 9.35% (t-statistic 30.91). The mean risk premium is 4.0% (t = 13.58).

Panel C of Table 6 then reports biases in the estimates of the cost of equity capital and the growth rate by comparing realized earnings with analysts' forecasts. The mean difference between the estimates of the cost of capital from equation (12) and equation (10) is 2.82%, with a t-statistic of 5.87 and the mean difference between the estimates of the corresponding growth rates is 3.31% with a t-statistic of 7.05. Comparing these figures with those from Table 3 we see that biases in the estimates of both the cost of capital and the growth rate are larger when book value is used as the deflator than when price is used as the deflator.

Table 7 then details the annual estimates of the cost of capital and the growth rates based on the AW model deflated by book values. Panel A of Table 7 reports the results when 'perfect' forecasts are used in equation (11). We observe that the mean cost of capital is 9.02%, (t-statistic = 14.71), and the mean growth rate is 6.45% (t-statistic = 10.97). The risk premium is verging on significant at the 5% level but is only 1.53% (t = 1.95).

<Insert Table 7 about here>

Panel B of Table 7 reports the results when analysts' forecasts are used as in equation (13). The mean cost of capital is 11.54%, (t-statistic = 38.39), and the mean growth rate is 7.9%, with a t-statistic of 32.3. The risk premium is a significant 4.05% (t = 13.39).

As before, Panel C of Table 7 reports biases in estimates of the cost of equity capital and the growth rate by comparing the results using analysts' forecasts of earnings with the results using realized earnings. The mean difference between the estimates of cost of capital using equation (13) and equation (11) is 2.52%, with a t-statistic of 4.24, and the mean difference between the estimates of growth rate from equation (13) and equation (11) is 1.45%, with a t-statistic of 2.28. In contrast with the results based on price as the deflator reported in Table 4, the biases in both estimates of the cost of capital and the growth rate are larger when deflated by book values. This may be because, as AW argue, deflating by prices in the regressions may mitigate the effects of endogeneity, since current price of equity may incorporate future earnings information.

While both the ES model and the AW model confirm that the estimated implied cost of equity capital yields upward biases based on analysts' optimistic earnings forecasts, the biases are again smaller using the AW model, as are the biases in estimates of the growth rates.

4.3. Equally weighted regressions versus value-weighted regressions

The above results and analysis are based on equally weighted regressions. However, a value-weighted regression as advocated by ES could be used to reduce the effects of small firms in parameter estimations. ES argue that small firms have a greater propensity to be loss-making and are also associated with greater analysts forecast errors. Accordingly, we repeat our analysis weighting each of the observations by equity market capitalization when deflating by book values.[11] We expect that these value-weighted regressions will have a similar effect to deflating by prices and consequently reduce biases in estimates of the cost of capital and the growth rate.

Similar to the previous analysis, we run value-weighted book-deflated regressions first using realizations of earnings at t+1 as 'perfect' forecasts, regressing one year ahead return on book equity ($\frac{reps_{t+1}}{b_t}$) on prices in the case of the ES model, and on prices, earnings, lagged book values, and lagged prices in the case of the AW model to obtain the coefficients, μ_i (i=1,2) and δ_i (i=1-5) in equations (10) and (11). The descriptive statistics for the parameter estimates in the regression are shown in Panel A of Table 8.

<Insert Table 8 about here>

Again, we observe that both δ_1 and μ_1 are highly significant with regard to explaining one year ahead earnings, confirming that current prices lead earnings after

[11] When using a value weighted regression, price information has taken into account in the construction of the weights. For this reason, we do not run value-weighted regressions with price as a deflator.

controlling for other accounting variables. We also observe that current earnings (δ_2) are an important predictor of future earnings. Whilst the book value b_t (coefficient μ_2) is significant in the ES model, it is not significant in the AW model, and furthermore both current and lagged book values (δ_3 and δ_4) have no explanatory power. Neither do lagged prices (δ_5) forecast one year ahead earnings. The means of the adjusted R-squared for the ES model and the AW model are respectively 17.94% and 41.04%. These R-squareds from the weighted regressions are considerably higher than those from the unweighted regression in Table 5.

When we run value-weighted book-deflated regressions employing analysts' forecasts of earnings, regressing one year ahead forecasts of returns on equity ($\frac{feps_{t+1}}{b_t}$) on prices, and on prices, earnings, lagged book values, and lagged prices to obtain the ES coefficients, μ_i (i=1,2) and the AW coefficient, δ_i (i=1-5) from equations (12) and (13), we obtain the parameter estimates shown in Panel B of Table 8.

As before, we observe that both μ_1 and μ_2 are significant with regard to explaining one year ahead return on equity in the ES model. The mean R-squared for the ES model is 27.87%, compared to only 12.96% from the unweighted regressions in Table 5 Panel B. Consistent with the unweighted regression in Table 5, Panel B, for the AW model neither current book values (δ_3) nor current prices (δ_1) are significant, but lagged book values (δ_4),lagged prices (δ_5) and current earnings (δ_2) are all important predictors of future earnings. The mean of the adjusted R-squareds with the AW model is now 55.86% compared to 37.29% on an unweighted basis.

In Table 9, we detail the resulting estimates of the cost of capital and the growth rates on a year-by-year basis for the ES model deflated by book values using value-weighted regressions. As before, Panel A of Table 9 reports the results when realizations of earnings at t+1 are used as 'perfect' forecasts in equation (10). We now observe that the mean estimate of the cost of capital is 11.26% (t = 25.95), whilst the mean risk premium is 3.77% (t = 6.50). The mean estimate of the growth rate is 8.01% (t = 19.65).

<Insert Table 9 about here>

Panel B of Table 9 reports the results when analysts' forecast of earnings at t+1 are used in equation (12). The mean estimates of the cost of capital is 12.42% with a t-statistic of 43.7, and the mean risk premium is 4.93% (t = 13.86). The mean growth rate is 9.85% with a t-statistic of 29.92.

Panel C of Table 9 reports biases in estimates of the cost of equity capital and the growth rate by comparing realized earnings and analysts forecasts of those earnings. The mean difference between the estimates of the cost of capital from equation (12) and equation (10) is 1.16% (t-statistic 2.57) and mean difference between the estimates of the growth rate from equation (12) and equation (10) is 1.84% (t-statistic 3.86). If we compare the results reported in Table 9 with those in Tables 3 and 6, we observe that the bias in estimates of cost of capital obtained from value-weighted regressions is less than those obtained from equally weighted regressions, whether deflated by book values and prices. Similarly, we observe that the bias in estimates of growth rate in value-weighted regressions is also less than those obtained from equally weighted regressions based on the ES model.

Table 10 now details the equivalent estimates of the cost of capital and the growth rates from the AW model deflated by book values using value-weighted regressions. Panel A of Table 10 reports the results using 'perfect' forecasts of earnings as the dependent variable, and we see that the mean of the estimates of the cost of capital is 11.18% with a t-statistic of 14.44, whilst the mean risk premium estimate is 3.70% (t = 3.87). The mean of the growth rate is 7.42% with a t-statistic of 11.22.

<Insert Table 10 about here>

Panel B of Table 10 reports the results when analysts' forecasts are used as the dependent variable. The mean estimate of the cost of capital is now 11.59% (t-statistic of 39.69), with a mean risk premium estimate of 4.10% (t = 12.31). The mean growth estimate is 7.57% (t-statistic of 30.83).

Finally, Panel C of Table 10 reports biases of the estimates of the cost of equity capital and the growth rate by comparing realized earnings and analysts' forecasts. The mean difference between the estimates of the cost of capital from equation (13) and from equation (11) is 0.4% with a t-statistic of 0.48, and the mean difference between the estimates of the growth rate from equation (13) and equation (11) is 0.15% with a t-statistic of 0.20.

In marked contrast to the results based with book values and prices as deflators as reported in Tables 4 and 7, the bias in estimates of the cost of capital from a value-weighted regression is much smaller and not statistically significant when applying the AW model, while the bias in estimates of the growth rate is not statistically significant and is slightly less than the 0.36% obtained from deflating by prices and much smaller than that obtained from deflating by book values.

The superiority of value-weighted regressions compared to equally weighted regressions in our analysis can also be seen from the increase in the adjusted R-squared. For example, when deflating by book values, the adjusted R-squared for the AW model on I/B/E/S analysts' forecast earnings increases from 37.29% to 55.86%, an increase of about 50%. The adjusted R-squared for the ES model using realized earnings increases from 7.14% to 17.94%, an increase of 151%.

While the ES model generates statistically significant upward biases in estimates of the cost of capital and the growth rate when using analysts' forecast earnings, the upward biases are much smaller and not statistically significant when applying the AW model and using value-weighted regressions. In effect we have conducted a joint test of the impact of analysts' over optimism and the choice of valuation models on biases in the estimation of the cost of equity capital and the growth rate.

5. Real Growth Rates, Cost of Equity and the Implications for Corporate and Regulatory Costs of Capital

The formulation of the ES and AW models is necessarily in nominal terms. However, given the variation in CPI inflation over the period of our study ranges from under 2% to more than 13%, with a mean of 4.82% and a standard deviation of 3.13%,[12] cost of capital and growth rates are more meaningfully expressed in real terms. Worldwide, most regulators tend to think of either a cost of equity capital or an equity risk premium expressed in real terms (Sudarsanam et al (2011)). Whilst inflation may not have a dramatic impact of the equity risk premium,[13] there are sound arguments for considering the expected return on the market directly when estimating the cost of capital, rather than relying on an equity risk premium (e.g. Wright, Mason and Miles (2003), Gregory (2011)). In addition, analyses of either historical realized returns, or historically expected returns, are invariably conducted in real terms (Dimson, Marsh and Staunton (2007, 2011), Fama and French (2002), Vivian (2007)).

Accordingly, in Tables 11 and 12 we present estimates of the real expected return on equity, the real equity risk premium, and the real growth rate in earnings implied by the price deflated and value-weighted book deflated nominal estimates from the ES and AW models reported in Tables 3 and 4, and 9 and 10. Any attempt to turn our nominal estimates into inflation-adjusted equivalents does, of course, require an

[12] Based on mid year US Department of Labor Bureau of Labor Statistics estimates.

[13] To be precise, since the expected real return on equities and the expected real risk free return can be expressed as *Expected Real return* = (1 + *Nominal return*)/(1 + *Expected inflation*) - 1, the real expected risk premium will be: *Expected Nominal Premium*/(1 + *Expected Inflation*).

estimate of the expected inflation rate, since the expected nominal growth rate is in a compound sum of the expected real growth rate and the expected inflation rate. We note that researchers who use an estimate of inflation in terminal growth forecasts often calculate an expected inflation rate as the long run risk free rate less 3% (for example, Claus and Thomas (2001)). However, that seems to imply a very high estimate of the long-run risk free rate on Treasury Bonds, which is clearly out of line with both recently observed rates and the long run averages observed for the US and globally. Dimson et al (2011) show an annualized long run real return on US government bonds of only 1.8% per annum for the period 1900-2010, which compares with a World average of 1.6%. Accordingly, we adopt the long run US estimate of 1.8% real return on bonds here, calculating expected inflation as the 5-year T-bond rate less 1.8%. However, we also investigate the alternative of using the geometric mean of the prior 5-year CPI inflation rate.

Table 11 shows the real estimates that result from employing the price deflated regressions used to derive the nominal returns and growth rates reported in Tables 3 and 4. Turning to the figures in Table 11 first, for the full period we see that mean returns and growth rates are around the order of 0.7% lower when we use the 5-year T-bond rate less 1.8% as our estimate of inflation compared to using the past 5-year geometric mean. However, as would be expected, changing the inflation assumption makes little difference to the risk premium estimates. Note also that the use of the 5-year average inflation rate yields estimates of expected returns and growth rates that have a lower standard deviation. We report two sets of summary statistics, an overall mean, standard deviation and median from 1975-2005, and the same statistics for the period 1993-2005. We chose this second period to coincide with the start date in ES, who cite Zitzewitz (2002) as describing the importance of not relying on forecast dates in the I/B/E/S database prior to 1993.[14]

Turning to the mean estimates, we see that the "perfect forecast" version of the ES model gives real expected returns on equity of between 2.21% and 2.92%, depending on how inflation is estimated and which periods are averaged. The equivalent risk premium is between 0.48% and 0.8%, with a growth estimate that varies between a maximum of 0.1% and a minimum of -2.1%. The corresponding analysts' forecast numbers show an expected real return of between 4.26% and 5.3%, with a risk premium varying between 2.55% and 3.17%. The equivalent growth estimates are between -0.34% and 2.21%. In all cases, the higher estimates are associated with the 1993-2005 sub-periods.

For the AW model, the "perfect forecast" estimates of real return on equity are between 3.05% and 3.93%, with a risk premium of between 1.32% and 1.80%. The real growth estimates range from -1.49% to 0.89%. On a forecast basis, the expected real return on equity ranges from 4.63% to 5.62%, with a risk premium of between

[14] Footnote 19 in ES cites Zitzewitz (2002) as explaining the problem is due to potential errors in forecast dates. Since 1993, forecasts are entered directly by analysts "generally within 24 hours of making them available to clients".

2.93% and 3.48%, whilst the growth estimates vary between -1.16% and 1.56%. Once again, the highest estimates are from the 1993-2005 sub-period.

Before we can make any meaningful comparisons of these estimates, we need to find a way of anchoring them. Two papers by Fama and French (2002) and Dimson et al (2006) provide estimates of *ex ante* risk premia by using versions of the dividend discount model, whilst Claus and Thomas (2002) employ a residual income approach. Estimates of a risk premium of around 3% or somewhat less do not seem out of line with any of these papers, although the lower estimates that we get from the realized earnings version of the model may be viewed as troubling. Anchoring the growth estimates can be done either by reference to realized earnings growth or by reference to GDP growth. With regard to the latter, Claus & Thomas (2002) note that forecasts of US GDP growth have averaged 2.71%, whilst realized GDP growth has averaged 2.81%. It seems unlikely that earnings growth could exceed GDP growth, and indeed earnings growth amongst listed firms may well be less than GDP growth, for exactly the same reasons dividends have grown by less than GDP growth around the world (Dimson et al. (2006), Cornell (2010)). To measure real earnings growth, we use two measures which we obtain from Robert Shiller's data.[15] We first calculate the compound growth in his 10-year real earnings measure between June 1975 and June 2005 which gives a growth rate of 1.39%. Alternatively, we estimate the realized real

[15] Available from http://www.econ.yale.edu/~shiller/data.htm

annual earnings growth from June 1975 to June 2010, which gives us a growth estimate of 2.1%.

Set in this context, the Table 11 estimates based on realized earnings yield rather low estimates, especially from the ES model. Whilst it is tempting to focus on the post 1993 numbers, it must be borne in mind that the rationale for using 1993 on data applies solely to the *forecast* version of the model. There is no reason to favor the short run estimates in the realized version of the model.

The estimates of real cost of equity, growth rates and risk premia from the book-value deflated and value-weighted regressions are given in Table 12. Estimates of the real cost of equity from the "perfect forecast" or realized earnings ES model range from 5.33% to 7.53%, with an associated risk premium of between 3.62% and 5.40%. The real growth estimates are between 2.27% to 5.45%. In particular, the 1993-2005 mean growth figures seem implausibly high from this model and, of course, the bias in analysts' forecasts exacerbates the problem when forecast estimates are employed, when growth rates range from 3.99% to 6.98% real. That said, as we note above, for the 'perfect' forecast model there is no reason to use post 1993 data. If we confine ourselves to the full period estimates, for the forecast version of the ES model we still have an expected return on equity of 6.41% to 7.13%, a risk premium of 4.71% to 4.73%, and growth rates of 3.99% to 4.69%. The latter still seem implausibly high compared to our "anchoring" estimates.

The estimates from the AW "perfect forecast" model give a real return on equity ranging from 5.28% to 7.32%, giving a real risk premium of between 3.55% and 5.19%. Again, confining ourselves to the full period, estimated real returns range between 5.28% and 5.95% with a risk premium of between 3.55% and 3.57%. Growth rates range from 1.73% to 2.38% for the whole period. Using the forecast version of the model, and once again confining ourselves to the full period estimates, we see that return on equity is estimated at between 5.62% and 6.33%, with the risk premium being between 3.92% and 3.93% and real growth rates of between 1.84% and 2.52%.

Comparing the real rates of return and real growth rates across models, the AW results seem to result in somewhat more plausible estimates than the ES model, and as we show above, the biases in forecast estimates are reduced. Critically, by comparing the results from alternative specifications of the regressions, it seems clear that deflating by book-value and value-weighting the regressions results in particularly plausible real estimates of growth and return from the AW model.

6. Conclusion

We argue in this paper that any model which attempts to simultaneously solve for growth rates and cost of equity capital based on analysts' forecasts it is always a joint test of analysts' over optimism about earnings and the valuation model applied.

However, we can quantify the impact of these biases by making use of realized earnings as a benchmark for ‘perfect forecasts’. Perhaps because the model developed by Ashton and Wang (2010) considers the persistence of earnings in earnings forecasts, the timing of explanatory variables and the potential impact of accounting policy, their model generates smaller and statistically insignificant biases in estimates of the cost of capital and the long-term growth than the (statistically significant) biases using of Easton and Sommers (2007).   In addition, biases in both the estimates of the implied cost of equity capital and the growth rate can be reduced by using price as a deflator instead of book value in equally weighted regressions. This is because deflating by prices may mitigate the effects of endogeneity.

As in Easton and Sommers (2007), we show that value-weighted regressions are superior to equally weighted regressions in our analysis, since the weights in a value-weighted regression takes into account of price related information as well as any undue influence of small firms.

Ashton and Wang (2010) show that any bias in earnings forecasts will lead to a bias in cost of capital and growth estimates. In this paper we estimate that analysts’ optimism leads to an upwardly biased implied cost of capital in a range of 0.40% and 2.82%. Using a value-weighted regressions and the AW model with book value as the deflator, the bias of 0.4% is not statistically significant. Our estimate of the implied equity risk premium from value-weighted regressions, after removing the effect of bias in analysts' forecasts, is around 3.6% in real terms. Importantly, we show that in real terms, the growth and return on equity estimates that result from the Ashton and Wang (2010) model seem to be in line with other research evidence, whilst the forecast version of the Easton and Somers (2007) model appears to yield estimates of earnings growth to be implausibly high.

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Table 1: Sample Statistics of the Dependent and Independent Variables

Panel A:	$\frac{feps_{t+1}}{P_t}$	$\frac{reps_{t+1}}{P_t}$	$\frac{e_t}{P_t}$	$\frac{b_t}{P_t}$	$\frac{b_{t-1}}{P_t}$	$\frac{P_{t-1}}{P_t}$
N	45053	45053	45053	45053	45053	45053
Mean	0.079	0.061	0.054	0.691	0.656	0.993
Stdev	0.055	0.090	0.094	0.422	0.428	0.426
Quartile -1	0.049	0.028	0.031	0.392	0.351	0.729
Median	0.074	0.068	0.063	0.604	0.563	0.910
Quartile -3	0.106	0.106	0.096	0.881	0.846	1.143
Panel B:						
$reps_{t+1}/P_t$	0.364	1				
e_t/P_t	0.399	0.532	1			
b_t/P_t	0.509	0.227	0.222	1		
b_{t-1}/P_t	0.465	0.139	0.030	0.949	1	
P_{t-1}/P_t	0.225	-0.181	-0.234	0.212	0.272	1

Panel C:	$\frac{feps_{t+1}}{b_t}$	$\frac{reps_{t+1}}{b_t}$	$\frac{P_t}{b_t}$	$\frac{e_t}{b_t}$	$\frac{b_{t-1}}{b_t}$	$\frac{P_{t-1}}{b_t}$
N	45499	45499	45499	45499	45499	45499
Mean	0.124	0.096	1.993	0.085	0.939	1.834
Stdev	0.086	0.145	1.509	0.151	0.192	1.318
Quartile -1	0.087	0.046	1.073	0.054	0.856	0.996
Median	0.126	0.119	1.585	0.114	0.921	1.473
Quartile -3	0.165	0.176	2.408	0.159	0.992	2.217
Panel D:						
$reps_{t+1}/b_t$	0.409	1				
P_t/b_t	0.184	0.143	1			
e_t/b_t	0.459	0.562	0.108	1		
b_{t-1}/b_t	-0.148	-0.295	-0.153	-0.619	1	
P_{t-1}/b_t	0.213	-0.023	0.691	-0.095	0.067	1

Panel A reports sample statistics of price deflated dependent and independent variables: analysts' forecast earnings ($feps_{t+1}$), realized earnings ($reps_{t+1}$), current earnings (e_t), book value (b_t) and lagged book value (b_{t-1}) and lagged price (P_{t-1}). Panel B shows the annual cross-sectional Pearson correlations for price deflated dependent and independent variables. Panel C reports statistics of book value deflated dependent and independent variables: analysts' forecast earnings ($feps_{t+1}$), realized earnings ($reps_{t+1}$), price (P_t), current earnings (e_t), lagged book value (b_{t-1}) and lagged price (P_{t-1}). Panel D shows the annual cross-sectional Pearson correlations for book value deflated dependent and independent variables. Firms with any of the dependent or independent variables in the top or bottom 1% of observations are deleted. The number of observations (N), the mean, standard deviation (stdev), median, first and third quartiles are reported.

Table 2: The Descriptive Statistics for Regressing Forward Earnings on Price and Accounting Variables Using Price as a Deflator, Year-by-Year

Panel A: Use Perfect Forecast Earnings

AW model: $$\frac{reps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1} \qquad (7)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1453	569	286	1030	1326	2022	2275
δ_1	0.044	0.018	0.007	0.031	0.042	0.053	0.093
	(5.21)	(1.91)	(1.35)	(3.74)	(5.08)	(6.48)	(8.88)
δ_2	0.503	0.134	0.298	0.415	0.493	0.568	0.908
	(8.90)	(2.95)	(1.99)	(6.78)	(8.30)	(11.22)	(13.84)
δ_3	-0.023	0.043	-0.118	-0.046	-0.021	-0.007	0.099
	(-0.79)	(1.36)	(-2.98)	(-2.07)	(-0.76)	(-0.20)	(2.38)
δ_4	0.044	0.038	-0.049	0.020	0.043	0.070	0.140
	(1.70)	(1.31)	(-1.04)	(0.56)	(1.54)	(2.62)	(4.41)
δ_5	-0.022	0.015	-0.051	-0.031	-0.023	-0.012	0.010
	(-2.92)	(2.11)	(-8.28)	(-4.33)	(-2.70)	(-1.60)	(0.64)
R^2-adj	28.78%	8.10%	17.17%	21.90%	28.26%	33.11%	51.10%

ES model: $$\frac{reps_{t+1}}{P_t} = \mu_1 + \mu_2 \frac{b_t}{P_t} + \varepsilon_{t+1} \qquad (6)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.046	0.025	0.021	0.031	0.036	0.056	0.102
	(8.53)	(3.25)	(4.32)	(5.92)	(8.19)	(9.20)	(15.96)
μ_2	0.034	0.014	0.003	0.025	0.033	0.042	0.068
	(4.62)	(2.14)	(0.34)	(3.27)	(4.20)	(5.96)	(9.29)
R^2-adj	4.20%	6.01%	-0.06%	1.23%	1.92%	4.83%	28.91%

Panel B: Use Analysts' Forecast Earnings

AW model: $$\frac{feps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1} \qquad (9)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1453	569	286	1030	1326	2022	2275
δ_1	0.009	0.012	-0.012	-0.001	0.009	0.015	0.033
	(1.71)	(2.46)	(-4.43)	(-0.31)	(1.74)	(3.34)	(6.72)
δ_2	0.251	0.093	0.147	0.177	0.224	0.285	0.526
	(7.56)	(2.18)	(3.22)	(6.02)	(7.46)	(8.64)	(14.50)
δ_3	-0.011	0.020	-0.045	-0.024	-0.013	0.001	0.033
	(-0.79)	(1.20)	(-2.62)	(-1.87)	(-0.87)	(0.05)	(1.68)
δ_4	0.048	0.023	-0.012	0.033	0.045	0.065	0.096
	(3.32)	(1.72)	(-0.46)	(2.15)	(3.98)	(4.23)	(6.59)
δ_5	0.038	0.018	0.001	0.026	0.039	0.047	0.071
	(8.00)	(3.55)	(0.22)	(6.07)	(7.53)	(10.89)	(14.90)
R^2-adj	37.76%	9.97%	23.64%	30.24%	37.31%	42.88%	70.49%

ES model: $$\frac{feps_{t+1}}{P_t} = \mu_1 + \mu_2 \frac{b_t}{P_t} + \varepsilon_{t+1} \qquad (8)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.049	0.019	0.023	0.034	0.043	0.061	0.088
	(16.26)	(3.55)	(8.47)	(13.99)	(16.32)	(18.49)	(23.88)
μ_2	0.053	0.009	0.035	0.047	0.053	0.061	0.066
	(13.11)	(3.12)	(7.95)	(10.40)	(13.69)	(15.63)	(18.75)
R^2-adj	20.48%	8.59%	6.15%	15.16%	18.82%	25.92%	40.20%

Table 2 reports the descriptive statistics for the 31 regression coefficients of δ_i (i=1-5) and μ_i

(i=1,2) based on the 31 annual estimates between 1975-2005, together with descriptive statistics of their t-values (in brackets). N is annual numbers of observations, Stdev is standard deviation, Q1 and Q3 are respectively lower quartile and upper quartile, R^2-adj is adjusted R-squared. Panel A uses earnings realizations at t+1 as perfect forecast earnings. Panel B use I/B/E/S forecasts of earnings.

Table 3: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, ES Model Deflated by Price

	Panel A				Panel B					Panel C	
	ES model: $\frac{reps_{t+1}}{P_t}=\mu_1+\mu_2\frac{b_t}{P_t}+\varepsilon_{t+1}$				ES model: $\frac{feps_{t+1}}{P_t}=\mu_1+\mu_2\frac{b_t}{P_t}+\varepsilon_{t+1}$					difference	difference
year	R_1^{ES} -1	RP_1	g_1^{ES}	R^2-adj	R_2^{ES} -1	RP_2	g_2^{ES}	R^2-adj	N	(R_2^{ES} - R_1^{ES})	(g_2^{ES} - g_1^{ES})
1975	13.84%	6.06%	6.81%	28.91%	11.23%	3.45%	4.83%	33.76%	286	-2.61%	-1.98%
1976	13.41%	6.23%	5.23%	18.22%	11.63%	4.45%	4.68%	26.36%	524	-1.79%	-0.55%
1977	15.26%	8.27%	5.02%	13.40%	13.42%	6.43%	4.67%	24.49%	595	-1.84%	-0.35%
1978	14.36%	6.04%	4.29%	7.14%	12.64%	4.32%	3.85%	18.82%	821	-1.72%	-0.44%
1979	13.33%	3.82%	3.35%	4.20%	13.56%	4.05%	5.59%	32.65%	884	0.23%	2.24%
1980	12.32%	0.87%	3.96%	5.25%	13.57%	2.12%	6.64%	40.20%	839	1.25%	2.68%
1981	9.55%	-4.70%	3.01%	2.74%	13.34%	-0.91%	6.22%	38.74%	910	3.79%	3.22%
1982	10.52%	-2.49%	4.21%	5.30%	13.70%	0.69%	6.06%	28.20%	939	3.18%	1.85%
1983	9.38%	-1.41%	5.88%	7.17%	10.39%	-0.40%	6.13%	23.82%	1121	1.01%	0.24%
1984	7.24%	-5.02%	3.65%	1.85%	11.54%	-0.72%	6.43%	25.47%	1194	4.30%	2.78%
1985	6.66%	-3.46%	3.92%	1.96%	11.70%	1.58%	5.99%	20.27%	1226	5.04%	2.06%
1986	6.03%	-1.27%	2.29%	0.73%	9.68%	2.38%	4.83%	16.89%	1250	3.66%	2.54%
1987	6.91%	-1.03%	3.30%	1.89%	9.33%	1.39%	5.36%	15.06%	1294	2.42%	2.06%
1988	7.69%	-0.79%	3.19%	1.68%	10.41%	1.93%	4.79%	13.03%	1274	2.72%	1.60%
1989	5.13%	-3.37%	0.33%	-0.06%	10.20%	1.70%	5.08%	15.27%	1326	5.07%	4.74%
1990	6.51%	-1.86%	2.73%	1.66%	11.60%	3.23%	6.16%	28.71%	1285	5.09%	3.43%
1991	6.48%	-0.89%	2.77%	1.92%	9.60%	2.23%	4.09%	14.92%	1371	3.12%	1.32%
1992	6.15%	-0.04%	2.55%	1.26%	8.68%	2.49%	4.50%	14.99%	1467	2.53%	1.95%
1993	6.69%	1.55%	3.32%	2.06%	8.76%	3.62%	5.38%	15.28%	1642	2.07%	2.06%
1994	7.38%	0.69%	4.20%	2.87%	9.37%	2.68%	5.89%	18.60%	1957	1.99%	1.68%
1995	7.84%	1.46%	5.69%	5.45%	9.58%	3.20%	6.19%	20.84%	2109	1.74%	0.50%
1996	7.18%	1.00%	4.98%	4.41%	9.44%	3.26%	6.13%	21.51%	2128	2.26%	1.16%
1997	4.74%	-1.48%	2.66%	1.10%	8.05%	1.83%	4.94%	16.47%	2275	3.31%	2.29%

1998	5.28%	0.13%	2.18%	0.80%	9.35%	4.20%	6.02%	20.21%	2174	4.06%	3.84%
1999	5.88%	0.33%	2.48%	1.12%	9.04%	3.49%	5.32%	15.67%	2013	3.16%	2.84%
2000	4.71%	-1.45%	2.50%	1.63%	9.41%	3.25%	6.18%	26.40%	1879	4.70%	3.68%
2001	5.42%	0.86%	3.25%	2.64%	8.90%	4.34%	5.26%	16.69%	1906	3.49%	2.01%
2002	4.90%	1.08%	0.77%	0.07%	7.17%	3.35%	4.16%	9.09%	2033	2.26%	3.39%
2003	6.13%	3.16%	2.46%	1.20%	6.50%	3.53%	3.61%	7.43%	2073	0.37%	1.15%
2004	4.92%	1.49%	1.50%	0.32%	6.08%	2.65%	3.52%	6.15%	2227	1.16%	2.01%
2005	5.81%	1.76%	3.18%	1.45%	7.02%	2.97%	4.75%	8.77%	2031	1.21%	1.57%
mean across years	7.99%	0.50%	3.41%	4.20%	10.16%	2.67%	5.27%	20.48%	1453	2.17%	1.86%
t-stat	13.88	0.88	13.22	3.90	26.51	9.40	33.42	13.28		5.76	7.17

Table 3 reports the implied cost of capital (R^{ES}), growth rates (g^{ES}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The ES model is deflated by price. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (6) using subsequent earnings realizations (perfect foresight forecasts) and regression (8) using I/B/E/S consensus forecasts.

Table 4: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, AW Model Deflated by Price

	Panel A				Panel B					Panel C	
	AW model: $\frac{reps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1}$				AW model: $\frac{feps_{t+1}}{P_t} = \delta_1 + \delta_2 \frac{e_t}{P_t} + \delta_3 \frac{b_t}{P_t} + \delta_4 \frac{b_{t-1}}{P_t} + \delta_5 \frac{P_{t-1}}{P_t} + \varepsilon'_{t+1}$					difference	difference
year	R_1^{AW} -1	RP_1	g_1^{AW}	R^2-adj	R_2^{AW} -1	RP_2	g_2^{AW}	R^2-adj	N	(R_2^{AW} - R_1^{AW})	(g_2^{AW} - g_1^{AW})
1975	13.95%	6.17%	9.04%	43.53%	10.83%	3.05%	4.07%	70.49%	286	-3.12%	-4.97%
1976	13.96%	6.78%	5.31%	40.47%	13.07%	5.89%	4.12%	44.77%	524	-0.89%	-1.19%
1977	20.64%	13.65%	8.56%	51.10%	13.24%	6.25%	4.47%	43.00%	595	-7.40%	-4.09%
1978	16.24%	7.92%	5.71%	32.26%	13.39%	5.07%	2.79%	38.90%	821	-2.85%	-2.92%
1979	12.84%	3.33%	1.23%	28.14%	13.84%	4.33%	3.99%	42.75%	884	1.00%	2.75%
1980	14.95%	3.50%	-1.01%	32.77%	14.58%	3.13%	4.28%	54.92%	839	-0.37%	5.29%
1981	7.84%	-6.41%	-1.27%	31.75%	13.66%	-0.59%	5.13%	48.70%	910	5.82%	6.40%
1982	12.26%	-0.75%	7.07%	39.12%	14.38%	1.37%	6.12%	42.43%	939	2.12%	-0.96%
1983	9.05%	-1.74%	7.29%	36.74%	13.29%	2.50%	4.45%	44.45%	1121	4.24%	-2.83%
1984	6.40%	-5.86%	2.58%	25.03%	11.43%	-0.83%	6.17%	41.67%	1194	5.02%	3.59%
1985	7.61%	-2.51%	6.55%	21.97%	12.22%	2.10%	5.41%	34.84%	1226	4.61%	-1.14%
1986	7.00%	-0.30%	5.25%	22.41%	10.51%	3.21%	4.34%	26.85%	1250	3.51%	-0.91%
1987	7.78%	-0.16%	4.63%	19.13%	9.54%	1.60%	3.59%	30.87%	1294	1.77%	-1.04%
1988	8.51%	0.03%	3.69%	28.86%	9.22%	0.74%	3.84%	30.30%	1274	0.71%	0.15%
1989	4.08%	-4.42%	-1.38%	21.08%	11.03%	2.53%	4.06%	31.67%	1326	6.95%	5.44%
1990	6.73%	-1.64%	3.42%	17.17%	10.45%	2.08%	3.55%	44.97%	1285	3.72%	0.13%
1991	7.52%	0.15%	4.09%	21.82%	10.52%	3.15%	2.98%	32.16%	1371	3.00%	-1.11%
1992	7.21%	1.02%	4.66%	21.29%	9.15%	2.96%	4.29%	23.64%	1467	1.94%	-0.37%
1993	7.52%	2.38%	3.54%	18.64%	9.29%	4.15%	4.65%	27.26%	1642	1.77%	1.11%
1994	8.11%	1.42%	3.92%	23.77%	9.21%	2.52%	4.79%	35.09%	1957	1.10%	0.86%
1995	8.38%	2.00%	6.11%	28.26%	9.71%	3.33%	4.37%	36.44%	2109	1.33%	-1.75%
1996	8.55%	2.37%	6.31%	33.37%	9.62%	3.44%	4.65%	39.24%	2128	1.07%	-1.66%

1997	4.55%	-1.67%	2.90%	20.77%	8.50%	2.28%	4.71%	25.48%	2275	3.94%	1.82%
1998	6.55%	1.40%	3.13%	21.09%	8.93%	3.78%	4.96%	37.31%	2174	2.37%	1.83%
1999	6.97%	1.42%	3.42%	24.34%	8.27%	2.72%	3.37%	37.58%	2013	1.30%	-0.05%
2000	3.71%	-2.45%	1.92%	23.09%	9.21%	3.05%	4.65%	48.87%	1879	5.49%	2.73%
2001	7.44%	2.88%	4.90%	30.85%	9.95%	5.39%	5.90%	26.94%	1906	2.51%	1.00%
2002	6.97%	3.15%	2.27%	34.05%	7.95%	4.13%	4.72%	27.05%	2033	0.98%	2.46%
2003	8.67%	5.70%	4.58%	32.57%	7.54%	4.57%	3.87%	30.18%	2073	-1.13%	-0.70%
2004	5.37%	1.94%	1.28%	34.02%	6.80%	3.37%	3.25%	29.99%	2227	1.44%	1.97%
2005	7.49%	3.43%	5.39%	32.84%	7.92%	3.87%	4.65%	41.72%	2031	0.43%	-0.74%
mean across years	8.87%	1.38%	4.03%	28.78%	10.56%	3.07%	4.39%	37.76%	1453	1.69%	0.36%
t-stat	13.02	1.88	8.66	19.79	26.73	10.62	29.71	21.09		3.26	0.75

Table 4 reports the implied cost of capital (R^{AW}), growth rates (g^{AW}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The AW model is deflated by price. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (7) using subsequent earnings realizations (perfect foresight forecasts) and regression (9) using I/B/E/S consensus forecasts.

Table 5: The Descriptive Statistics for Regressing Forward Earnings on Price and Accounting Variables Using Book Value as a Deflator, Year-by-Year

Panel A: Use Perfect Forecast Earnings

AW model: $$\frac{reps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1} \quad (11)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1468	550	313	1083	1344	2009	2204
δ_1	0.022	0.012	-0.003	0.014	0.022	0.029	0.053
	(3.57)	(1.66)	(-1.38)	(2.93)	(3.34)	(4.45)	(7.30)
δ_2	0.568	0.138	0.184	0.491	0.569	0.642	0.854
	(10.44)	(4.20)	(1.22)	(7.71)	(10.68)	(13.86)	(18.14)
δ_3	-0.036	0.042	-0.135	-0.059	-0.032	0.000	0.027
	(-1.32)	(1.55)	(-4.59)	(-2.02)	(-1.45)	(-0.02)	(1.06)
δ_4	0.069	0.033	0.008	0.041	0.070	0.090	0.136
	(2.51)	(1.47)	(0.39)	(1.23)	(2.47)	(3.39)	(5.73)
δ_5	-0.011	0.010	-0.042	-0.017	-0.008	-0.004	0.007
	(-1.73)	(1.73)	(-7.60)	(-2.30)	(-170)	(-0.51)	(1.63)
R^2-adj	34.58%	7.08%	22.36%	29.56%	33.29%	38.92%	55.60%

ES model: $$\frac{reps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1} \quad (10)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.026	0.015	-0.003	0.017	0.023	0.035	0.059
	(5.95)	(3.01)	(-1.43)	(4.31)	(5.61)	(7.40)	(13.16)
μ_2	0.060	0.024	0.019	0.045	0.058	0.080	0.100
	(8.51)	(4.21)	(2.55)	(5.18)	(7.58)	(12.11)	(17.28)
R^2-adj	7.14%	7.19%	0.15%	2.33%	4.76%	8.39%	25.39%

Panel B: Use Analysts' Forecast Earnings

AW model: $$\frac{feps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1} \quad (13)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1468	550	313	1083	1344	2009	2204
δ_1	-0.001	0.007	-0.010	-0.005	-0.002	0.000	0.028
	(-0.57)	(2.15)	(-5.98)	(-1.45)	(-0.51)	(0.12)	(6.15)
δ_2	0.317	0.091	0.171	0.245	0.297	0.366	0.530
	(8.76)	(3.41)	(2.93)	(6.56)	(8.84)	(10.51)	(15.76)
δ_3	-0.010	0.030	-0.078	-0.028	-0.011	0.017	0.040
	(-0.56)	(1.52)	(-4.01)	(-1.69)	(-0.77)	(0.65)	(2.43)
δ_4	0.074	0.032	0.000	0.060	0.073	0.088	0.138
	(4.048)	(1.77)	(-0.01)	(3.05)	(4.51)	(5.52)	(6.31)
δ_5	0.027	0.013	-0.004	0.019	0.029	0.035	0.063
	(6.26)	(2.77)	(-0.78)	(4.43)	(6.40)	(7.38)	(12.72)
R^2-adj	37.29%	11.01%	25.26%	30.63%	33.58%	42.40%	78.25%

ES model: $$\frac{feps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1} \quad (12)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.021	0.013	0.000	0.013	0.019	0.028	0.052
	(7.34)	(3.85)	(0.00)	(5.15)	(6.61)	(9.21)	(16.61)
μ_2	0.094	0.017	0.053	0.084	0.095	0.106	0.121
	(20.76)	(6.27)	(9.63)	(15.66)	(20.37)	(24.27)	(32.66)
R^2-adj	12.96%	10.88%	-0.05%	5.00%	11.28%	16.17%	37.66%

Table 5 reports the descriptive statistics for the 31 regression coefficients of δ_i (i=1-5) and μ_i (i=1,2) based on the 31 annual estimates between 1975-2005, together with descriptive statistics of their t-values (in brackets). N is annual numbers of observations, Stdev is standard deviation, Q1 and Q3 are respectively lower quartile and upper quartile, R^2-adj is adjusted R-squared. Panel A uses earnings realizations at t+1 as perfect forecast earnings. Panel B use I/B/E/S forecasts of earnings.

Table 6: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, ES Model Deflated by Book Value

	Panel A				Panel B					Panel C	
	ES model: $\frac{reps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}$				ES model: $\frac{feps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}$					difference	difference
year	R_1^{ES} -1	RP_1	g_1^{ES}	R^2-adj	R_2^{ES} -1	RP_2	g_2^{ES}	R^2-adj	N	(R_2^{ES} - R_1^{ES})	(g_2^{ES} - g_1^{ES})
1975	13.81%	6.03%	9.29%	25.39%	11.10%	3.32%	6.87%	37.66%	313	-2.71%	-2.42%
1976	14.30%	7.12%	9.48%	24.02%	12.23%	5.05%	8.49%	31.73%	538	-2.07%	-0.99%
1977	15.94%	8.95%	10.03%	25.25%	13.83%	6.84%	8.66%	35.12%	631	-2.11%	-1.38%
1978	15.11%	6.79%	9.23%	19.07%	13.28%	4.96%	8.16%	37.06%	864	-1.83%	-1.07%
1979	13.70%	4.19%	8.71%	14.94%	14.13%	4.62%	10.39%	27.92%	934	0.43%	1.68%
1980	12.99%	1.54%	9.69%	11.18%	14.18%	2.73%	12.06%	14.69%	913	1.19%	2.37%
1981	9.58%	-4.67%	6.89%	5.35%	14.03%	-0.22%	11.16%	20.81%	955	4.45%	4.28%
1982	9.81%	-3.20%	6.30%	5.96%	14.38%	1.37%	11.64%	12.79%	1032	4.57%	5.34%
1983	10.42%	-0.37%	9.11%	2.24%	11.73%	0.94%	10.19%	10.13%	1133	1.30%	1.08%
1984	7.47%	-4.79%	5.61%	1.97%	13.02%	0.76%	11.19%	9.48%	1211	5.55%	5.58%
1985	6.94%	-3.18%	4.81%	2.42%	13.40%	3.28%	11.11%	12.01%	1228	6.46%	6.29%
1986	6.91%	-0.39%	4.69%	4.24%	11.59%	4.29%	9.59%	14.53%	1243	4.68%	4.90%
1987	7.61%	-0.33%	4.78%	8.34%	10.85%	2.91%	8.94%	11.28%	1272	3.24%	4.16%
1988	7.19%	-1.29%	3.12%	7.27%	11.57%	3.09%	8.31%	17.22%	1294	4.38%	5.19%
1989	6.02%	-2.48%	2.50%	8.44%	11.79%	3.29%	9.24%	14.61%	1313	5.78%	6.74%
1990	5.80%	-2.57%	1.94%	8.90%	12.56%	4.19%	9.73%	17.01%	1344	6.77%	7.80%
1991	6.78%	-0.59%	4.40%	5.83%	11.39%	4.02%	9.49%	12.51%	1420	4.61%	5.09%
1992	6.48%	0.29%	4.08%	4.76%	9.90%	3.71%	7.60%	15.32%	1477	3.42%	3.52%
1993	7.92%	2.78%	5.86%	4.15%	10.34%	5.20%	8.73%	6.59%	1619	2.42%	2.87%
1994	8.62%	1.93%	6.86%	2.89%	10.89%	4.20%	9.38%	6.32%	1911	2.27%	2.52%
1995	9.12%	2.74%	7.90%	1.67%	11.31%	4.93%	10.08%	5.34%	2080	2.20%	2.18%
1996	9.03%	2.85%	8.09%	1.47%	11.99%	5.81%	11.35%	2.03%	2072	2.96%	3.26%
1997	6.02%	-0.20%	4.74%	2.11%	10.55%	4.33%	9.54%	4.38%	2204	4.53%	4.80%

1998	6.37%	1.22%	4.37%	4.58%	11.25%	6.10%	9.82%	7.49%	2128	4.87%	5.45%
1999	6.96%	1.41%	5.77%	1.60%	11.35%	5.80%	10.85%	0.89%	2033	4.39%	5.08%
2000	5.67%	-0.49%	6.01%	0.15%	11.60%	5.44%	11.60%	-0.05%	1973	5.93%	5.59%
2001	4.74%	0.18%	2.86%	3.41%	10.28%	5.72%	9.26%	2.24%	1985	5.54%	6.40%
2002	5.13%	1.31%	2.49%	5.34%	7.31%	3.49%	5.34%	6.60%	2105	2.18%	2.85%
2003	7.07%	4.10%	4.77%	5.35%	7.75%	4.78%	6.75%	1.99%	2127	0.68%	1.98%
2004	7.04%	3.61%	5.38%	2.70%	7.41%	3.98%	5.99%	4.65%	2191	0.37%	0.61%
2005	8.26%	4.21%	7.64%	0.38%	9.10%	5.05%	8.35%	1.30%	1956	0.84%	0.72%
mean across years	8.67%	1.18%	6.04%	7.14%	11.49%	4.00%	9.35%	12.96%	1468	2.82%	3.31%
t-stat	15.41	1.93	14.18	5.53	33.89	13.58	30.91	6.63		5.87	7.05

Table 6 reports the implied cost of capital (R^{ES}), growth rates (g^{ES}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The ES model is deflated by book value. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (10) using subsequent earnings realizations (perfect foresight forecasts) and regression (12) using I/B/E/S consensus forecasts.

Table 7: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, AW Model Deflated by Book value

	Panel A				Panel B					Panel C	
	AW model: $\frac{reps_{t+1}}{b_t}=\delta_1\frac{P_t}{b_t}+\delta_2\frac{e_t}{b_t}+\delta_3+\delta_4\frac{b_{t-1}}{b_t}+\delta_5\frac{P_{t-1}}{b_t}+\varepsilon'_{t+1}$				AW model: $\frac{fesp_{t+1}}{b_t}=\delta_1\frac{P_t}{b_t}+\delta_2\frac{e_t}{b_t}+\delta_3+\delta_4\frac{b_{t-1}}{b_t}+\delta_5\frac{P_{t-1}}{b_t}+\varepsilon'_{t+1}$					difference	difference
year	R_1^{AW} -1	RP_1	g_1^{AW}	R^2-adj	R_2^{AW} -1	RP_2	g_2^{AW}	R^2-adj	N	(R_2^{AW} - R_1^{AW})	(g_2^{AW} - g_1^{AW})
1975	13.62%	5.84%	9.62%	28.69%	10.68%	2.90%	6.67%	78.25%	313	-2.93%	-2.96%
1976	14.67%	7.49%	9.44%	35.79%	12.60%	5.42%	7.82%	43.47%	538	-2.07%	-1.62%
1977	17.98%	10.99%	13.85%	55.60%	13.05%	6.06%	7.78%	53.71%	631	-4.93%	-6.07%
1978	15.68%	7.36%	10.41%	43.83%	13.38%	5.06%	6.17%	55.30%	864	-2.29%	-4.24%
1979	12.15%	2.64%	5.51%	37.33%	13.89%	4.38%	6.87%	47.48%	934	1.74%	1.37%
1980	12.78%	1.33%	9.47%	29.88%	14.25%	2.80%	9.80%	33.00%	913	1.46%	0.34%
1981	6.12%	-8.13%	4.06%	33.87%	13.99%	-0.26%	9.55%	35.76%	955	7.87%	5.49%
1982	11.14%	-1.87%	8.35%	42.65%	14.42%	1.41%	10.23%	32.63%	1032	3.27%	1.89%
1983	10.07%	-0.72%	10.76%	36.38%	13.15%	2.36%	8.15%	33.50%	1133	3.08%	-2.61%
1984	3.98%	-8.28%	-0.49%	32.83%	12.32%	0.06%	9.98%	31.16%	1211	8.34%	10.48%
1985	7.57%	-2.55%	6.74%	22.36%	13.24%	3.12%	9.39%	25.26%	1228	5.67%	2.65%
1986	8.24%	0.94%	8.44%	28.62%	12.26%	4.96%	8.85%	28.53%	1243	4.02%	0.41%
1987	8.54%	0.60%	6.31%	25.90%	11.01%	3.07%	7.76%	26.64%	1272	2.47%	1.44%
1988	7.75%	-0.73%	3.19%	35.95%	10.77%	2.29%	7.54%	33.36%	1294	3.02%	4.35%
1989	5.01%	-3.49%	0.37%	30.54%	12.04%	3.54%	6.93%	33.58%	1313	7.02%	6.56%
1990	5.44%	-2.93%	0.26%	28.47%	11.46%	3.09%	6.82%	35.32%	1344	6.02%	6.56%
1991	8.07%	0.70%	5.11%	33.73%	11.84%	4.47%	7.55%	36.87%	1420	3.78%	2.44%
1992	7.53%	1.34%	5.91%	32.14%	10.52%	4.33%	7.41%	32.82%	1477	2.99%	1.50%
1993	9.25%	4.11%	6.30%	33.29%	10.69%	5.55%	7.30%	30.11%	1619	1.44%	1.00%
1994	9.23%	2.54%	7.56%	29.53%	10.53%	3.84%	7.85%	32.27%	1911	1.30%	0.29%
1995	9.72%	3.34%	8.92%	29.59%	11.08%	4.70%	7.54%	33.65%	2080	1.37%	-1.38%
1996	9.50%	3.32%	7.80%	37.49%	11.35%	5.17%	8.43%	29.86%	2072	1.85%	0.63%

1997	5.21%	-1.01%	3.96%	29.58%	11.00%	4.78%	9.13%	28.21%	2204	5.79%	5.17%
1998	7.38%	2.23%	5.25%	27.74%	10.68%	5.53%	8.31%	26.48%	2128	3.30%	3.06%
1999	6.64%	1.09%	5.56%	29.85%	9.85%	4.30%	6.90%	37.61%	2033	3.21%	1.33%
2000	2.25%	-3.91%	2.84%	28.31%	10.98%	4.82%	9.02%	34.83%	1973	8.74%	6.18%
2001	8.47%	3.91%	7.47%	41.35%	11.98%	7.42%	10.72%	26.32%	1985	3.52%	3.24%
2002	8.16%	4.34%	5.53%	44.76%	8.63%	4.81%	6.15%	41.33%	2105	0.47%	0.61%
2003	9.38%	6.41%	4.50%	41.22%	8.55%	5.58%	5.35%	46.57%	2127	-0.83%	0.86%
2004	8.15%	4.72%	6.23%	44.33%	8.07%	4.64%	5.55%	43.80%	2191	-0.07%	-0.69%
2005	9.93%	5.88%	10.61%	40.34%	9.38%	5.33%	7.30%	48.37%	1956	-0.54%	-3.31%
mean across years	9.02%	1.53%	6.45%	34.58%	11.54%	4.05%	7.90%	37.29%	1468	2.52%	1.45%
t-stat	14.71	1.95	10.97	27.19	38.39	13.39	32.30	18.86		4.24	2.28

Table 7 reports the implied cost of capital (R^{AW}), growth rates (g^{AW}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The AW model is deflated by book value. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (11) using subsequent earnings realizations (perfect foresight forecasts) and regression (13) using I/B/E/S consensus forecasts.

Table 8: The Descriptive Statistics for Regressing Forward Earnings on Price and Accounting Variables Using Value-Weighted Regression and Book Value as a Deflator, Year-by-Year

Panel A: Use Perfect Forecast Earnings

AW model: $$\frac{reps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1} \quad (11)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1468	550	313	1083	1344	2009	2204
δ_1	0.024	0.015	0.002	0.012	0.021	0.030	0.058
	(3.16)	(1.76)	(0.32)	(1.94)	(2.96)	(4.34)	(7.65)
δ_2	0.620	0.148	0.289	0.521	0.590	0.736	0.987
	(7.99)	(2.85)	(3.17)	(6.29)	(8.03)	(9.65)	(14.26)
δ_3	-0.022	0.049	-0.145	-0.053	-0.007	0.012	0.060
	(-0.49)	(1.19)	(-3.48)	(-1.24)	(-0.17)	(0.32)	(2.19)
δ_4	0.056	0.043	-0.011	0.027	0.045	0.082	0.175
	(1.42)	(1.07)	(-0.45)	(0.72)	(1.15)	(1.94)	(4.28)
δ_5	-0.010	0.014	-0.044	-0.018	-0.007	0.000	0.010
	(-1.15)	(1.47)	(-4.05)	(-2.14)	(-0.92)	(0.01)	(1.11)
R^2-adj	41.04%	11.53%	18.91%	33.69%	38.18%	47.75%	66.49%

ES model: $$\frac{reps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1} \quad (10)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.032	0.013	0.002	0.024	0.031	0.041	0.064
	(6.47)	(2.72)	(0.68)	(4.77)	(6.18)	(7.75)	(12.84)
μ_2	0.080	0.023	0.037	0.067	0.078	0.100	0.119
	(7.65)	(3.09)	(2.53)	(5.58)	(7.84)	(10.27)	(15.00)
R^2-adj	17.94%	10.51%	0.17%	10.74%	17.09%	23.26%	47.01%

Panel B: Use Analysts' Forecast Earnings

AW model: $$\frac{feps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1} \quad (13)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
N	1468	550	313	1083	1344	2009	2204
δ_1	-0.003	0.005	-0.013	-0.006	-0.004	-0.001	0.013
	(-0.87)	(1.53)	(-4.50)	(-1.54)	(-0.83)	(-0.16)	(3.13)
δ_2	0.371	0.105	0.243	0.299	0.366	0.413	0.765
	(7.98)	(2.06)	(3.85)	(6.47)	(8.35)	(9.25)	(13.09)
δ_3	-0.024	0.033	-0.084	-0.043	-0.030	-0.008	0.056
	(-1.06)	(1.43)	(-3.19)	(-2.07)	(-1.42)	(-0.42)	(3.06)
δ_4	0.082	0.041	-0.010	0.054	0.090	0.106	0.152
	(3.67)	(2.03)	(-0.34)	(2.21)	(3.81)	(4.79)	(8.66)
δ_5	0.029	0.010	-0.003	0.025	0.029	0.034	0.049
	(6.26)	(2.09)	(-0.78)	(5.36)	(6.61)	(7.35)	(10.54)
R^2-adj	55.86%	9.32%	39.83%	49.82%	54.95%	59.33%	89.24%

ES model: $$\frac{feps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1} \quad (12)$$

	Mean	Stdev	Minimum	Q1	Median	Q3	maximum
μ_1	0.026	0.010	0.003	0.019	0.026	0.030	0.048
	(7.36)	(2.57)	(1.21)	(5.95)	(7.17)	(8.52)	(14.54)
μ_2	0.099	0.018	0.063	0.085	0.095	0.108	0.135
	(14.35)	(4.20)	(8.35)	(11.54)	(13.31)	(15.37)	(26.23)
R^2-adj	27.87%	12.66%	0.98%	22.65%	25.63%	35.05%	50.62%

Table 8 reports the descriptive statistics for the 31 regression coefficients of δ_i (i=1-5) and μ_i (i=1,2) based on the 31 annual estimates between 1975-2005, together with descriptive statistics of their t-values (in brackets). N is annual numbers of observations, Stdev is standard deviation, Q1 and Q3 are respectively lower quartile and upper quartile, R^2-adj is adjusted R-squared. Panel A uses earnings realizations at t+1 as perfect forecast earnings. Panel B use I/B/E/S forecasts of earnings.

Table 9: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, ES Model in Value-Weighted Regression and Deflated by Book Value

	Panel A				Panel B					Panel C	
	ES model: $\frac{reps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}$				ES model: $\frac{feps_{t+1}}{b_t} = \mu_1 \frac{P_t}{b_t} + \mu_2 + \varepsilon_{t+1}$					difference	difference
year	R_1^{ES} -1	RP_1	g_1^{ES}	R^2-adj	R_2^{ES} -1	RP_2	g_2^{ES}	R^2-adj	N	(R_2^{ES} - R_1^{ES})	(g_2^{ES} - g_1^{ES})
1975	13.32%	5.54%	9.22%	47.01%	11.05%	3.27%	6.99%	50.62%	313	-2.27%	-2.24%
1976	13.39%	6.21%	9.70%	33.95%	11.70%	4.52%	8.17%	46.52%	538	-1.69%	-1.54%
1977	14.71%	7.72%	8.26%	39.23%	13.44%	6.45%	8.64%	48.22%	631	-1.26%	0.37%
1978	16.52%	8.20%	10.97%	28.25%	13.42%	5.10%	9.35%	43.73%	864	-3.10%	-1.63%
1979	16.03%	6.52%	10.38%	29.39%	13.69%	4.18%	9.50%	41.88%	934	-2.33%	-0.87%
1980	15.23%	3.78%	11.87%	18.85%	14.73%	3.28%	12.50%	23.23%	913	-0.51%	0.64%
1981	11.38%	-2.87%	7.22%	23.59%	15.37%	1.12%	12.63%	25.63%	955	3.99%	5.41%
1982	12.19%	-0.82%	8.52%	11.20%	15.36%	2.35%	12.21%	22.74%	1032	3.17%	3.69%
1983	12.43%	1.64%	10.34%	9.13%	12.61%	1.82%	10.59%	23.24%	1133	0.18%	0.25%
1984	9.83%	-2.43%	7.14%	5.93%	13.26%	1.00%	10.63%	25.94%	1211	3.43%	3.49%
1985	9.95%	-0.17%	6.16%	11.19%	13.47%	3.35%	10.65%	22.56%	1228	3.52%	4.49%
1986	9.57%	2.27%	5.14%	22.37%	12.23%	4.93%	9.55%	34.40%	1243	2.66%	4.41%
1987	11.31%	3.37%	7.60%	22.92%	10.96%	3.02%	8.34%	33.65%	1272	-0.36%	0.74%
1988	11.06%	2.58%	6.43%	17.09%	12.25%	3.77%	8.57%	38.67%	1294	1.19%	2.14%
1989	7.99%	-0.51%	3.72%	22.56%	12.97%	4.47%	10.08%	31.16%	1313	4.98%	6.36%
1990	8.29%	-0.08%	4.60%	17.75%	13.32%	4.95%	10.39%	33.15%	1344	5.03%	5.79%
1991	7.97%	0.60%	3.82%	28.46%	11.17%	3.80%	8.17%	35.70%	1420	3.19%	4.34%
1992	9.28%	3.09%	6.63%	17.86%	10.31%	4.12%	7.28%	49.93%	1477	1.03%	0.65%
1993	10.86%	5.72%	7.77%	23.86%	11.27%	6.13%	8.86%	24.95%	1619	0.42%	1.10%
1994	11.80%	5.11%	8.84%	14.84%	11.74%	5.05%	9.10%	29.27%	1911	-0.06%	0.26%
1995	12.95%	6.57%	10.70%	11.29%	12.78%	6.40%	10.65%	24.24%	2080	-0.17%	-0.05%
1996	12.93%	6.75%	11.14%	10.40%	14.19%	8.01%	12.93%	13.72%	2072	1.26%	1.79%
1997	8.87%	2.65%	6.81%	10.78%	12.01%	5.79%	10.19%	24.39%	2204	3.14%	3.38%

1998	10.17%	5.01%	7.74%	16.36%	12.70%	7.55%	10.92%	23.49%	2128	2.53%	3.18%
1999	11.69%	6.14%	10.38%	5.60%	13.18%	7.63%	12.34%	6.70%	2033	1.49%	1.96%
2000	8.74%	2.58%	8.52%	0.17%	13.76%	7.60%	13.48%	0.98%	1973	5.02%	4.96%
2001	6.82%	2.26%	4.34%	10.69%	12.49%	7.93%	11.01%	10.30%	1985	5.67%	6.67%
2002	9.80%	5.98%	7.51%	9.71%	10.39%	6.57%	8.46%	15.59%	2105	0.59%	0.94%
2003	10.36%	7.39%	7.46%	17.79%	9.94%	6.97%	8.24%	13.50%	2127	-0.43%	0.78%
2004	10.73%	7.30%	8.15%	13.58%	8.78%	5.35%	6.34%	28.26%	2191	-1.95%	-1.81%
2005	12.81%	8.76%	11.33%	4.22%	10.45%	6.40%	8.62%	17.70%	1956	-2.36%	-2.71%
mean across years	11.26%	3.77%	8.01%	17.94%	12.42%	4.93%	9.85%	27.87%	1468	1.16%	1.84%
t-stat	25.95	6.50	19.65	9.51	43.70	13.86	29.92	12.26		2.57	3.86

Table 9 reports the implied cost of capital (R^{ES}), growth rates (g^{ES}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The ES model is deflated by book value and use value-weighted regressions. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (10) using subsequent earnings realizations (perfect foresight forecasts) and regression (12) using I/B/E/S consensus forecasts.

Table 10: Comparison of Implied Cost of Capital and Growth Rate Based on Perfect Forecasts of Earnings and Those on I/B/E/S Forecasts of Earnings, AW Model in Value-Weighted Regression and Deflated by Book value

Panel A — AW model: $\frac{reps_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1}$

Panel B — AW model: $\frac{fesp_{t+1}}{b_t} = \delta_1 \frac{P_t}{b_t} + \delta_2 \frac{e_t}{b_t} + \delta_3 + \delta_4 \frac{b_{t-1}}{b_t} + \delta_5 \frac{P_{t-1}}{b_t} + \varepsilon'_{t+1}$

	Panel A				Panel B					Panel C	
year	R_1^{AW} -1	RP_1	g_1^{AW}	R^2-adj	R_2^{AW} -1	RP_2	g_2^{AW}	R^2-adj	N	difference (R_2^{AW} - R_1^{AW})	difference (g_2^{AW} - g_1^{AW})
1975	13.68%	5.90%	10.28%	66.49%	8.57%	0.79%	4.92%	89.24%	313	-5.11%	-5.37%
1976	12.01%	4.83%	9.76%	65.56%	11.22%	4.04%	6.38%	69.26%	538	-0.79%	-3.38%
1977	28.86%	21.87%	4.96%	63.43%	11.90%	4.91%	8.10%	64.13%	631	-16.96%	3.14%
1978	17.99%	9.67%	14.68%	46.29%	12.70%	4.38%	7.52%	59.28%	864	-5.30%	-7.15%
1979	14.61%	5.10%	8.30%	49.85%	12.89%	3.38%	6.25%	63.29%	934	-1.72%	-2.04%
1980	11.40%	-0.05%	9.68%	46.70%	13.75%	2.30%	8.47%	53.79%	913	2.36%	-1.21%
1981	8.83%	-5.42%	-0.06%	46.13%	14.47%	0.22%	9.26%	56.22%	955	5.64%	9.32%
1982	12.13%	-0.88%	11.30%	35.58%	15.06%	2.05%	10.47%	45.35%	1032	2.93%	-0.82%
1983	12.56%	1.77%	9.63%	46.22%	13.49%	2.70%	7.65%	49.65%	1133	0.93%	-1.99%
1984	5.35%	-6.91%	0.54%	28.97%	12.18%	-0.08%	8.87%	48.18%	1211	6.83%	8.33%
1985	10.06%	-0.06%	7.91%	26.03%	13.54%	3.42%	9.08%	49.30%	1228	3.48%	1.17%
1986	9.43%	2.13%	5.60%	35.99%	12.71%	5.41%	8.69%	49.64%	1243	3.28%	3.09%
1987	11.72%	3.78%	9.49%	32.10%	11.52%	3.58%	7.28%	52.60%	1272	-0.20%	-2.21%
1988	10.53%	2.05%	4.82%	33.74%	10.44%	1.96%	6.90%	60.25%	1294	-0.09%	2.08%
1989	6.32%	-2.18%	0.57%	36.01%	12.99%	4.49%	7.88%	53.86%	1313	6.67%	7.30%
1990	7.08%	-1.29%	2.97%	31.26%	11.74%	3.36%	7.19%	55.06%	1344	4.65%	4.22%
1991	8.65%	1.28%	3.94%	53.63%	11.62%	4.25%	7.25%	53.82%	1420	2.97%	3.31%
1992	9.83%	3.64%	8.71%	34.44%	10.15%	3.96%	6.02%	68.89%	1477	0.32%	-2.69%
1993	11.24%	6.10%	7.33%	41.90%	10.83%	5.69%	7.13%	54.95%	1619	-0.41%	-0.19%
1994	12.65%	5.95%	10.54%	33.64%	10.34%	3.65%	6.74%	60.89%	1911	-2.30%	-3.80%
1995	12.75%	6.37%	10.22%	34.03%	11.78%	5.40%	7.85%	56.76%	2080	-0.96%	-2.37%
1996	10.71%	4.53%	8.44%	50.53%	11.85%	5.67%	8.08%	58.36%	2072	1.14%	-0.36%

1997	6.32%	0.10%	3.94%	29.97%	11.41%	5.19%	8.25%	58.19%	2204	5.09%	4.30%
1998	9.87%	4.72%	6.76%	34.72%	10.94%	5.79%	7.89%	49.99%	2128	1.07%	1.13%
1999	9.15%	3.60%	6.62%	28.38%	9.60%	4.05%	6.09%	59.38%	2033	0.45%	-0.53%
2000	5.62%	-0.54%	5.42%	18.91%	11.14%	4.98%	9.00%	39.83%	1973	5.52%	3.57%
2001	8.33%	3.77%	5.62%	48.80%	12.58%	8.02%	10.27%	40.67%	1985	4.25%	4.65%
2002	11.68%	7.86%	9.63%	39.94%	10.03%	6.21%	7.71%	47.07%	2105	-1.65%	-1.92%
2003	11.15%	8.18%	7.25%	45.11%	9.57%	6.60%	6.34%	54.22%	2127	-1.58%	-0.91%
2004	11.83%	8.40%	10.02%	49.61%	8.51%	5.08%	4.46%	57.58%	2191	-3.33%	-5.56%
2005	14.39%	10.34%	15.15%	38.18%	9.66%	5.61%	6.79%	51.85%	1956	-4.73%	-8.36%
mean across years	11.18%	3.70%	7.42%	41.04%	11.59%	4.10%	7.57%	55.86%	1468	0.40%	0.15%
t-stat	14.44	3.87	11.22	19.81	39.69	12.31	30.83	33.38		0.48	0.20

Table 10 reports the implied cost of capital (R^{AW}), growth rates (g^{AW}), risk premia (RP) and adjusted R-squared computed on annual basis based on subsequent earnings realization, which are used as perfect forecasts, and those on I/B/E/S forecasts of earnings. The AW model is deflated by book value and use value-weighted regressions. Observations with any of the dependent or independent variables in the top and bottom 1% of observations are removed to reduce the effects of outliers. Summary means across the annual regressions and the related Fama and MacBeth (1973) t-statistics are provided. The risk premium is calculated relative to the yield on a 5-year US government bond. Panel C reports the difference between estimates of expected return and growth rate from the estimation of regression (11) using subsequent earnings realizations (perfect foresight forecasts) and regression (13) using I/B/E/S consensus forecasts.

Table 11. Estimates of the Implied Real Cost of Equity, the Real Growth Rate, and the Real Risk Premium from the ES and AW Price-Deflated Regressions

	ES Model Realized earnings Inflation-adjusted		ES Model Forecast earnings Inflation-adjusted		AW Model Realized earnings Inflation-adjusted		AW Model Forecast earnings Inflation-adjusted		ES Model Real risk premia		AW Model Real risk premia	
	R_1^{ES} -1	g_1^{ES}	R_2^{ES} -1	g_2^{ES}	R_1^{AW} -1	g_1^{AW}	R_2^{AW} -1	g_2^{AW}	RP_1^{ES}	RP_2^{ES}	RP_1^{AW}	RP_2^{AW}
Panel A: Inflation RF-1.8%												
Full period, price deflated												
Mean	2.21%	-2.10%	4.26%	-0.34%	3.05%	-1.49%	4.63%	-1.16%	0.51%	2.55%	1.35%	2.93%
SD	2.94%	2.44%	1.51%	2.19%	3.80%	3.67%	1.55%	2.44%	2.92%	1.48%	3.78%	1.52%
Median	2.05%	-1.76%	4.67%	-0.49%	3.10%	-0.76%	4.64%	-1.10%	0.32%	2.91%	1.36%	2.92%
1993-2005, price deflated												
Mean	2.54%	-0.27%	4.90%	1.83%	3.54%	0.51%	5.22%	1.18%	0.80%	3.16%	1.80%	3.48%
SD	1.19%	1.03%	0.62%	0.59%	1.97%	1.67%	0.84%	1.18%	1.18%	0.62%	1.95%	0.83%
Median	2.68%	-0.12%	4.85%	1.86%	3.68%	0.20%	5.09%	1.27%	0.96%	3.13%	1.91%	3.32%
Panel B: Inflation 5 year												
Full period, price deflated												
Mean	2.88%	-1.45%	4.96%	0.32%	3.72%	-0.85%	5.33%	-0.51%	0.48%	2.56%	1.32%	2.93%
SD	2.12%	1.98%	1.41%	2.18%	2.91%	3.08%	1.06%	2.22%	2.92%	1.47%	3.78%	1.50%
Median	2.81%	-0.95%	5.04%	1.04%	3.82%	-0.18%	5.43%	-0.05%	0.32%	2.90%	1.36%	2.98%
1993-2005												
Mean	2.92%	0.10%	5.30%	2.21%	3.93%	0.89%	5.62%	1.56%	0.79%	3.17%	1.79%	3.48%
SD	0.68%	0.99%	1.04%	0.82%	1.35%	1.42%	0.79%	0.82%	1.18%	0.61%	1.95%	0.81%
Median	2.87%	0.12%	5.08%	2.15%	4.41%	0.39%	5.48%	1.53%	0.97%	3.17%	1.93%	3.34%

Table 11 reports the implied real cost of equity from the ES model (R_1^{ES}) and AW models (R_1^{AW}), the real growth from the ES model (g_1^{ES}) and the AW model (g_1^{AW}) and the real risk premium from the ES model (RP_1^{ES}) and AW models (RP_1^{AW}) when the parameters are estimated on the realized earnings, or 'perfect forecast' versions of the price deflated regressions, and the implied real cost of equity from the ES model (R_2^{ES}) and AW models (R_2^{AW}), the real growth from the ES model (g_2^{ES}) and the AW model (g_2^{AW}) and the real risk premium from the ES model (RP_2^{ES}) and AW models (RP_2^{AW}) when the parameters are estimated on the realized analysts' forecast versions of the price deflated regressions. Panel A shows the results when the expected inflation rate is estimated as the risk free rate less 1.8%, whilst Panel B shows the results when the expected inflation rate is estimated as the geometric mean of the prior 5-year actual CPI inflation rate.

Table 12: Estimates of the Implied Real Cost of Equity, the Real Growth Rate, and the Real Risk Premium from the ES and AW Book-Value Deflated Value-Weighted Regressions

	ES Model Realized earnings Inflation-adjusted		ES Model Forecast earnings Inflation-adjusted		AW Model Realized earnings Inflation-adjusted		AW Model Forecast earnings Inflation-adjusted		ES Model Real risk premia		AW Model Real risk premia	
	R_1^{ES} -1	g_1^{ES}	R_2^{ES} -1	g_2^{ES}	R_1^{AW} -1	g_1^{AW}	R_2^{AW} -1	g_2^{AW}	RP_1^{ES}	RP_2^{ES}	RP_1^{AW}	RP_2^{AW}
Panel A: Inflation RF-1.8%												
Full period, BV deflated and value weighted												
Mean	5.33%	2.27%	6.41%	3.99%	5.28%	1.73%	5.62%	1.84%	3.62%	4.71%	3.57%	3.92%
SD	3.06%	3.33%	1.96%	2.51%	4.99%	4.81%	1.83%	2.36%	3.03%	1.93%	4.96%	1.79%
Median	5.09%	2.48%	6.38%	3.28%	5.26%	2.76%	5.73%	1.59%	3.45%	4.67%	3.56%	4.03%
1993-2005, , BV deflated and value weighted												
Mean	7.13%	5.06%	8.25%	6.57%	6.93%	4.79%	7.11%	4.01%	5.39%	6.51%	5.19%	5.36%
SD	1.91%	1.89%	0.91%	1.43%	2.99%	3.24%	1.06%	1.41%	1.90%	0.91%	2.97%	1.05%
Median	7.63%	5.39%	8.21%	6.31%	7.39%	3.89%	7.16%	3.67%	5.86%	6.44%	5.68%	5.43%
Panel B: Inflation 5 year												
Full period, BV deflated and value weighted												
Mean	6.01%	2.94%	7.13%	4.69%	5.95%	2.38%	6.33%	2.52%	3.62%	4.73%	3.55%	3.93%
SD	2.36%	2.80%	2.09%	2.72%	4.05%	4.11%	1.82%	2.35%	3.03%	1.93%	4.93%	1.79%
Median	6.66%	3.01%	6.89%	4.36%	6.14%	2.89%	6.86%	3.05%	3.50%	4.74%	3.64%	4.06%
1993-2005, , BV deflated and value weighted												
Mean	7.53%	5.45%	8.67%	6.98%	7.32%	5.17%	7.51%	4.40%	5.40%	6.53%	5.19%	5.38%
SD	1.57%	1.85%	1.55%	2.09%	2.24%	2.71%	1.10%	1.51%	1.88%	0.94%	2.95%	1.03%
Median	7.42%	5.04%	8.82%	6.76%	7.35%	4.83%	7.40%	4.14%	5.84%	6.41%	5.72%	5.45%

Table 12 reports the implied real cost of equity from the ES model (R_1^{ES}) and AW models (R_1^{AW}), the real growth from the ES model (g_1^{ES}) and the AW model (g_1^{AW}) and the real risk premium from the ES model (RP_1^{ES}) and AW models (RP_1^{AW}) when the parameters are estimated on the realized earnings, or 'perfect forecast' versions of the value-weighted book-value deflated regressions, and the implied real cost of equity from the ES model (R_2^{ES}) and AW models (R_2^{AW}), the real growth from the ES model (g_2^{ES}) and the AW model (g_2^{AW}) and the real risk premium from the ES model (RP_2^{ES}) and AW models (RP_2^{AW}) when the parameters are estimated on the realized analysts' forecast versions of the value-weighted book-value deflated regressions. Panel A shows the results when the expected inflation rate is estimated as the risk free rate less 1.8%, whilst Panel B shows the results when the expected inflation rate is estimated as the geometric mean of the prior 5-year actual CPI inflation rate.