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Peter Easton

Center for Accounting Research and Education
The University of Notre Dame
Notre Dame, IN 46556-5646
USA
peaston@nd.edu

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Estimating the Cost of Capital Implied by Market Prices and Accounting Data*

Peter Easton

Center for Accounting Research and Education, The University of Notre Dame, Notre Dame, Indiana 46556-5646, peaston@nd.edu

Abstract

Estimating the Cost of Capital Implied by Market Prices and Accounting Data focuses on estimating the expected rate of return implied by market prices, summary accounting numbers, and forecasts of earnings and dividends. Estimates of the expected rate of return, often used as proxies for the cost of capital, are obtained by inverting accounting-based valuation models. The author describes accounting-based valuation models and discusses how these models have been used, and how they may be used, to obtain estimates of the cost of capital.

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Contents

1

Introduction

The focus of this survey is on estimating the expected rate of return implied by market prices, summary accounting numbers (such as book value and earnings), and forecasts of earnings and dividends. Estimates of the expected rate of return, which are often used as proxies for the cost of capital, are obtained by inverting accounting-based valuation models. I begin by describing accounting-based valuation models and then I discuss the way these models have been used, and how they may be used, to obtain estimates of the cost of capital.

The re-introduction of the residual income valuation model by Ohlson (1995) and the development of the abnormal growth in earnings model by Ohlson and Juettner-Nauroth (2005) have been the driving force behind the burgeoning empirical literature that reverse engineers these models to infer markets expectations of the rate of return on equity capital. The obvious advantage of this reverse-engineering approach is that estimates of the expected rate of return are based on forecasts rather than extrapolation from historical data. Prior to the development of these approaches, researchers and valuation practitioners relied on estimates based on historical data (estimated via the market model, the empirical analogue of the Sharpe–Lintner Capital

Asset Pricing Model, or variants of the Fama and French (1992) three/four-factor model). As a practical matter the usefulness of these estimates is very limited. Fama and French (1997, 2002) conclude that these estimates, based on historical return data are "unavoidably imprecise" and empirical problems "probably invalidate their use in applications."

The practical appeal of accounting-based valuation models, particularly the abnormal growth in earnings model, is that they focus on the two variables that are most commonly at the heart of valuations carried out by practicing equity analysts; namely, forecasts of earnings and forecasts of earnings growth. The question at the core of this survey is: How can these forecasts be used to obtain an estimate of the cost of capital? After addressing this question, I will examine the empirical validity of the estimates based on these forecasts and then I will explore possible means of improving these estimates.

The later part of the survey details a method for isolating the effect of any factor of interest (such as cross-listing, fraud, disclosure quality, taxes, analyst following, accounting standards, etc.) on the cost of capital.[1]

If you are interested in understanding the key ingredients of the academic literature on accounting-based estimates of expected rate of return this survey is for you. My aim is to provide a foundation for a deeper comprehension of this literature and to give a jump start to those who may have an interest in extending this literature.

I have deliberately chosen to introduce the key ideas via examples based on actual forecasts, accounting information, and market prices for listed firms. I have found that people exposed to this literature for the first time find this a useful way to gain a sound intuitive understanding of the essential elements of the models and methods. I then show how the numerical examples are based on sound algebraic relations.[2]

[1] I do not review the large literature that examines the effect of various factors on the cost of capital. This literature developed very shortly after the first accounting based empirical estimates of the cost of capital were developed. I expect that the reader of this survey may conclude that many of these studies should be re-visited after more refined estimates of the cost of capital have been developed.

[2] Many readers of this survey have observed that these numerical examples have been critical to their understanding. Some have underscored the importance of these examples when

The survey proceeds as follows:

Section 2: Valuing the firm

The survey begins by reviewing, in Section 2, the discounted cash flow valuation model and the closely related accounting-based valuation model; namely, the residual operating income valuation model. These models are used to value the operations of the firm. I have chosen to use the discounted cash flow valuation model as the starting point because most readers have at least some familiarity with the use of this valuation model.

The theoretical papers that underpin this survey are, by and large, based on the dividend capitalization model, which is a model of equity valuation, rather a model for the valuation of the firm. The key papers are Ohlson (1995) and Ohlson and Juettner-Nauroth (2005). The empirical literature has also focused on the valuation of equity. My sense is that this emphasis is primarily driven by the availability of data. The models used in the valuation of equity are discussed in Sections 3 and 4. I will discuss the related empirical literature in the later sections. There is still a great deal of room for research that focuses on the operations of the firm rather than the portion of those assets that are owned by equity shareholders. I return to this point at the end of the survey.

I demonstrate valuation of the firm in Section 2 by means of a simple example similar to those used in introductory accounting and finance courses.[3] In this example, there are forecasts of free cash flow from operations for the next four years, together with forecasts of expected growth beyond this four-year horizon. The forecasted free cash flows are discounted to determine the present value of the firm, which is often referred to as the enterprise value. Other terms used include firm value, asset value, and value of operations.

Next, I illustrate the residual operating income valuation model using the same example. Again, the focus is on valuing the operations. I show, through the example, that free cash flow from operations is

telling me that they have undertaken the exercise of setting up the related spreadsheets and repeating the calculations; this ensures a thorough understanding of the valuation models because all of the algebraic relations are implicit in the set up of the spreadsheets.

[3] The example is the same as that in Easton et al. (2008).

equal to net operating profit after taxes (NOPAT) adjusted for the accrual components, which may also be referred to as non cash-flow components, of operating income. I use this equality to show how the residual operating income valuation model is derived from the free cash flow valuation model.

Section 3: Changing the focus to the valuation of equity and introducing reverse engineering

The structure of Section 3 closely parallels Section 2. Focus is shifted from valuation of the firm to valuation of equity. Most of the remaining sections focus on valuing equity and, in turn, on calculating the implied expected rate of return on equity capital. The parallels between Sections 2 and 3 should be borne in mind when reading the remainder of the survey. I begin Section 3 by introducing the dividend capitalization model from which I derive the residual income valuation model. The parallels between: (1) the valuation of the firm based on the discounted cash flow valuation model and the valuation of equity based on the dividend capitalization model; and (2) the derivation of the residual operating income valuation model from the discounted cash flow valuation model and the derivation of the residual income model from the dividend capitalization model, become apparent.

This survey is on estimating the cost of capital implied by market prices and accounting data. The empirical literature that estimates the cost of capital based on market prices and accounting data reverse engineers the accounting-based valuation models to obtain estimates of the implied expected rate of return, which, in turn is used as a proxy for the cost of capital. The concept of reverse engineering is introduced at the end of Section 3. Reverse engineering to obtain the implied expected rate of return depends critically on the maintained assumption about the growth rate beyond the period for which forecasts are available. The effect of the growth-rate assumption on estimates of the implied expected rate of return becomes evident in the example.

Although the term cost of capital is commonly used to describe the implied expected rates of return, they are not the cost of capital unless the market prices are efficient and the earnings forecasts are the market's earnings expectations. A more precise term would be

"the internal rate of return implied by market prices, accounting book values and analysts' forecasts of earnings." Since many of the earnings forecasts used in the extant literature are made by analysts who are in the business of making stock buy/sell recommendations, estimates of the expected rate of return implied by these analysts' forecasts and market prices are, arguably, not estimates of the cost of capital. It would seem reasonable to suggest, for example, that analysts may base their recommendations on the difference between the internal rate of return implied by market prices, accounting book values and analysts' forecasts of earnings and the cost of equity capital.

Section 4: Reverse engineering the abnormal growth in earnings valuation model: PE ratios and PEG ratios

The residual income valuation model anchors the valuation of equity on book value of equity and makes adjustments to this valuation via future expected residual income. The abnormal growth in earnings model, which is also derived from the dividend capitalization model, anchors the valuation of equity on capitalized future earnings and then makes adjustments to this value via future expected abnormal growth in earnings.

In Section 4, I derive and illustrate the abnormal growth in earnings valuation model, focusing on the meaning of abnormal growth in earnings. Reverse engineering the abnormal growth in earnings valuation model to obtain estimates of the expected rate of return and expected growth beyond the earnings forecast horizon is also illustrated. Valuations based on the price-earnings (PE) ratio and on the PEG ratio (the PE ratio divided by short-term earnings growth) are special cases of the abnormal growth in earnings valuation model. I show in Section 4 that reverse engineering these ratios to obtain estimates of the expected rate of return may rely on assumptions that are not descriptively valid. I illustrate modifications that may improve these estimates of the expected rate of return.

Section 5: Reverse-engineering accounting-based valuation models to obtain firm-specific estimates of the implied expected rate of return

Section 5 focuses on reverse engineering the residual income valuation model and the abnormal growth in earnings valuation model to obtain

firm-specific estimates of the implied expected rate of return on equity, which, in turn, may be used as estimates of the cost of equity capital. I present a critical assessment of the most commonly used reverse-engineering methods.

Sections 6 and *7: Reverse engineering the valuation models to obtain portfolio-level estimates of the implied expected rate of return*

Section 6 describes methods of reverse engineering the *abnormal growth in earnings* valuation model to obtain *portfolio-level* estimates of the implied expected rate of return. Section 7 describes two methods for reverse engineering the *residual income* valuation model to obtain *portfolio-level* estimates of the expected rate of return. The clear advantage of these methods is that they simultaneously estimate the expected rate of return *and* the expected growth rate implied by the data. Estimating both of these rates avoids the need for making inevitably erroneous assumptions about the expected growth rate beyond the earnings forecast horizon. The growth rates are the expected rate of change in abnormal growth in earnings and the expected residual income growth rate.

Section 8: Methods for assessing the quality/validity of firm-specific estimates

Section 8 describes and evaluates two approaches to assessing the validity/reliability of firm-specific estimates of the expected rate of return on equity capital. The first method asks: Do the estimates of *ex ante* expected return explain *ex post* realized return? The second method, which is more common in the literature, asks: What is the correlation between the estimates of the expected rate of return and commonly used risk proxies? I show that the second method has serious shortcomings and conclude that the method that relies on explanatory power for *ex post* realized returns, after controlling for omitted correlated variables, is the best extant method for evaluation of the estimates.

Section 9: Measurement error in firm-specific estimates of the expected rate of return

Section 9 focuses on the *firm-specific* estimates of the implied expected rate of return in the extant literature and summarizes results of

analyses of their quality and validity. Unfortunately, the news is bad; the *firm-specific* estimates are quite poor, and thus unreliable. I hasten to add, however, that this is not a reason to abandon the use of these estimates. The lack of reliability is a reflection of the fact that the research literature is in its infancy; there are significant opportunities for research that has the aim of improving these estimates. Section 11 provides some suggestions.

Section 10: Bias in estimates of the expected rate of return due to bias in earnings forecasts

Evidence of bias, that is systematic or nonzero average error, in estimates of the implied expected rate of return is presented and discussed in this section. This evidence complements the evidence of error at the firm-specific level discussed in Section 9.

Section 11: Dealing with shortcomings in firm-specific estimates

Section 11 suggests ways of dealing with the shortcomings in firm-specific estimates of the implied expected rate of return and ways of mitigating the effects of bias in portfolio-level estimates. Possible directions for future research are also discussed.

Section 12: Methods for determining the effect of a phenomenon of interest on the cost of capital

Much of the research literature asks the question: What is the effect of a phenomenon of interest (for example, disclosure quality, cross-listing, adoption of IFRS) on the cost of equity capital? Section 12 describes a method for determining these effects. The method compares estimates of the implied expected rate of return among groups of stocks, which differ in the phenomenon of interest. The method also permits introduction of control variables to deal with differences among the groups of stocks.

Section 13: Data Issues

Section 13 describes data issues that are often, in fact usually, encountered when estimating rates of return implied by accounting data and market prices. These issues are often overlooked even though they may be important as a practical matter. Ways of dealing with these issues

are discussed. The main focus is on developing a method that facilitates daily estimation of the implied expected rate of return using only publicly available information at the estimation date.

Section 14: Some thoughts on future directions

Section 14 provides a brief summary and speculates on possible directions for future research.

References

Abarbanell, J. (1991), 'Do analysts' earnings incorporate information in prior stock price changes?'. *Journal of Accounting and Economics* **14**, 147–166.

Ali, A., A. Klein, and J. Rosenfeld (1992), 'Analysts' use of information about permanent and transitory earnings components in forecasting annual EPS'. *The Accounting Review* **67**(January), 183–199.

Barth, M. (1991), 'Relative measurement errors among alternative pension asset and liability measures'. *The Accounting Review* **66**(July), 433–463.

Berger, P., H. Chen, and F. Li (2006), 'Firm specific information and cost of equity'. Working Paper, University of Chicago.

Berk, J., R. Green, and V. Naik (1999), 'Optimal investment, growth options, and security returns'. *Journal of Finance* **54**(October), 1553–1607.

Botosan, C. (1997), 'Disclosure level and the cost of equity capital'. *The Accounting Review* **72**, 323–349.

Botosan, C. and M. Plumlee (2005), 'Assessing alternative proxies for the expected risk premium'. *The Accounting Review* **80**, 21–54.

Botosan, C., M. Plumlee, and Y. Xie (2004), 'The role of information precision in determining the cost of equity capital'. *Review of Accounting Studies* **9**, 233–259.

Bradshaw, M. (2004), 'How do analysts use their earnings forecasts in generating stock recommendations?'. *The Accounting Review* **79**, 25–50.

Brav, A., R. Lehavy, and R. Michaely (2005), 'Using expectations to test asset pricing models'. *Financial Management* **34**, 31–64.

Brown, L. (1993), 'Earnings forecasting research: It's implications for capital markets research'. *International Journal of Forecasting* **9**, 295–320.

Brown, L. (1997), 'Earnings surprise research: Synthesis and perspectives'. *Financial Analysts Journal* **53**, 13–19.

Brown, L. (2001), 'A temporal analysis of earnings surprises: Profits versus losses'. *Journal of Accounting Research* **39**, 221–242.

Brown, L. (2003), 'Small negative surprises: Frequency and consequences'. *International Journal of Forecasting* **19**(January–March), 149–159.

Brown, L., R. Hagerman, P. Griffin, and M. Zmijewski (1987), 'An evaluation of alternative proxies for the market's assessment of unexpected earnings'. *Journal of Accounting and Economics* **9**, 159–193.

Brown, L. and M. Rozeff (1978), 'The superiority of analyst forecasts as measures of expectations: Evidence from earnings'. *Journal of Finance* **33**, 1–16.

Capstaff, J., K. Paudyal, and W. Rees (1998), 'Analysts' forecasts of German firms' earnings: A comparative analysis'. *Journal of International Financial Management and Accounting* **9**, 83–116.

Claus, J. and J. Thomas (2001), 'Equity risk premium as low as three percent? Evidence from analysts' earnings forecasts for domestic and international stocks'. *Journal of Finance* **56**, 1629–1666.

Cochrane, J. (2001), *Asset pricing*. Princeton, NJ: Princeton University Press.

Collins, W. and W. Hopwood (1980), 'A multivariate analysis of annual earnings forecasts generated from quarterly forecasts of financial analysts and univariate time series models'. *Journal of Accounting Research* **18**, 390–406.

Conroy, R. and R. Harris (1987), 'Consensus forecasts of corporate earnings: Analysts' forecasts and time series methods'. *Management Science* **33**(June), 725–739.

Das, S., B. Levine, and K. Sivaramakrishnan (1998), 'Earnings predictability and bias in analysts' earnings forecasts'. *The Accounting Review* **73**, 277–294.

Das, S. and S. Saudagaran (1998), 'Accuracy, bias, and dispersion in analysts' earnings forecasts: The case of cross-listed foreign firms'. *Journal of International Financial Management and Accounting* **9**, 16–33.

Daske, H. (2006), 'Economic benefits of adopting IFRS or US-GAAP — Have the expected costs of equity capital really decreased?'. *Journal of Business, Finance, and Accounting* **33**, 329–373.

Daske, H., G. Gebhardt, and S. Klein (2006), 'Estimating the expected cost of equity capital using analysts' consensus forecasts'. *Schmalenbach Business Review* **58**(January), 2–36.

Dhaliwal, D., L. Krull, O. Li, and W. Moser (2005), 'Dividend taxes and implied cost of capital'. *Journal of Accounting Research* **43**, 675–715.

Dugar, A. and S. Nathan (1995), 'The effect of banking relations on financial analysts' earnings investment recommendations'. *Contemporary Accounting Research* **12**, 131–160.

Easton, P. (2001), 'Discussion of: "When capital follows profitability: Non-linear residual income dynamics"'. *Review of Accounting Studies* **6**(June–September), 267–274.

Easton, P. (2004), 'PE ratios, PEG ratios, and estimating the implied expected rate of return on equity capital'. *The Accounting Review* **79**, 73–96.

Easton, P. (2006), 'Use of forecasts of earnings to estimate and compare cost of capital across regimes'. *Journal of Business, Finance, and Accounting* **33**, 374–394.

Easton, P., T. Harris, and J. Ohlson (1992), 'Aggregate earnings can explain most of security returns: The case of long event windows'. *Journal of Accounting and Economics* **15**(2/3), 119–142.

Easton, P. and S. Monahan (2005), 'An evaluation of accounting-based measures of expected returns'. *The Accounting Review* **80**, 501–538.

Easton, P. and G. Sommers (2007), 'Effects of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts'. *Journal of Accounting Research* **45**(December), 983–1015.

Easton, P., G. Taylor, P. Shroff, and T. Sougiannis (2002), 'Using forecasts of earnings to simultaneously estimate growth and the rate of return on equity investment'. *Journal of Accounting Research* **40**(June), 657–676.

Easton, P., J. Wild, R. Halsey, and M. McAnally (2008), *Financial Accounting for MBAs*. Chicago, IL: Cambridge Business Publishers.

Elton, E. (1999), 'Expected return, realized return, and asset pricing tests'. *Journal of Finance* **54**(August), 1199–1220.

Fama, E. and K. French (1992), 'The cross-section of expected returns'. *Journal of Finance* **47**(June), 427–465.

Fama, E. and K. French (1997), 'Industry costs of equity'. *Journal of Financial Economics* **43**, 154–194.

Fama, E. and K. French (2002), 'The equity premium'. *Journal of Finance* **58**(April), 609–646.

Feltham, G. and J. Ohlson (1996), 'Uncertainty resolution and the theory of depreciation measurement'. *Journal of Accounting Research* **34**(Autumn), 209–235.

Francis, J., I. Khurana, and R. Periera (2005), 'Disclosure incentives and effects on cost of capital around the world'. *The Accounting Review* **80**, 1125–1163.

Francis, J., R. LaFond, P. Olsson, and K. Schipper (2004), 'Costs of capital and earnings attributes'. *The Accounting Review* **79**, 967–1011.

Frankel, R. and C. Lee (1998), 'Accounting valuation, market expectations, and cross-sectional stock returns'. *Journal of Accounting and Economics* **35**, 283–319.

Fried, D. and D. Givoly (1982), 'Financial analysts' forecasts of earnings: A better surrogate for market expectations'. *Journal of Accounting and Economics* **4**(October), 85–108.

Garber, S. and S. Klepper (1980), 'Administrative pricing or competition coupled with errors of measurement?'. *International Economic Review* **21**(June), 413–435.

Gebhardt, W., C. Lee, and B. Swaminathan (2001), 'Towards an ex-ante cost of capital'. *Journal of Accounting Research* **39**, 135–176.

Givoly, D. and J. Lakonishok (1984), 'Aggregate earnings expectation and stock market behavior'. *Journal of Accounting, Auditing, and Finance* **2**(Spring), 117–137.

Gode, D. and P. Mohanram (2003), 'What affects the implied cost of equity capital?'. *Review of Accounting Studies* **8**, 399–431.

Guay, W., S. Kothari, and S. Shu (2005), 'Properties of implied cost of capital using analysts' forecasts'. Working Paper, University of Pennsylvania, Pennsylvania, Wharton School.

Hail, L. and C. Leuz (2006), 'International differences in the cost of equity capital: Do legal institutions and securities regulation matter?'. *Journal of Accounting Research* **44**, 485–532.

Hribar, P. and N. Jenkins (2004), 'The effect of accounting restatements on earnings revisions and the estimated cost of capital'. *Review of Accounting Studies* **9**, 337–356.

Huang, R., R. Natarajan, and S. Radhakrishnan (2005), 'Estimating firm-specific long-term growth rate and cost of capital'. Working Paper. University of Texas at Dallas.

La Porta, R. (1996), 'Expectations and the cross-section of stock returns'. *Journal of Finance* **51**, 1715–1742.

Lynch, P. (2000), *One Up on Wall Street*. New York, NY: Simon and Schuster, p. 199.

Lys, T. and S. Sohn (1990), 'The association between revisions of financial analysts' earnings forecasts and security-price changes'. *Journal of Accounting and Economics* **13**(December), 341–364.

Makridakis, S. and R. Winkler (1983), 'Averages of forecasts: Some empirical results'. *Management Science* **29**(September), 987–997.

Mendenhall, R. (1991), 'Evidence on the possible underweighting of earnings information'. *Journal of Accounting Research* **29**, 170–179.

Modiglaini, F. and M. Miller (1958), 'The cost of capital, corporation finance, and the theory of investment'. *American Economic Review* **48**(June), 261–297.

Nissim, D. and S. Penman (2001), 'Ratio analysis and equity valuation: From research to practice'. *Review of Accounting Studies* **6**, 109–154.

O'Brien, P. (1988), 'Analysts' forecasts as earnings recommendations'. *Journal of Accounting and Economics* **10**, 53–83.

Ogneva, M., K. R. Subramanyam, and K. Raghunandan (2007), 'Internal control weakness and cost of equity: Evidence from SOX section 404 disclosures'. *The Accounting Review* **82**(October), 1255–1298.

O'Hanlon, J. and A. Steele (2000), 'Estimating the equity risk premium using accounting fundamentals'. *Journal of Business Finance and Accounting* **27**, 1051–1084.

Ohlson, J. (1995), 'Earnings, book values, and dividends in equity valuation'. *Contemporary Accounting Research* **11**(Spring), 661–688.

Ohlson, J. and Z. Gao (2006), 'Earnings, earnings growth and value'. *Foundations and Trends in Accounting*.

Ohlson, J. and B. Juettner-Nauroth (2005), 'Expected EPS and EPS growth as determinants of value'. *Review of Accounting Studies* **10**(June–September), 349–365.

Penman, S. (2007), *Financial Statement Analysis and Valuation*. McGraw-Hill.

Peters, D. (1993a), 'Are earnings surprises predictable?'. *Journal of Investing* **2**(Summer), 47–51.

Peters, D. (1993b), 'The influence of size on earnings surprise predictability'. *Journal of Investing* **2**(Winter), 54–59.

Richardson, S., S. Teoh, and P. Wysocki (2004), 'The walk-down to beatable analyst forecasts: The role of equity issuances and insider trading incentives'. *Contemporary Accounting Research* **21**, 885–924.

Stober, T. (1992), 'Summary financial statement measures and analysts' forecasts of earnings'. *Journal of Accounting and Economics* **15**(June–September), 347–373.

Vuolteenaho, T. (2002), 'What drives firm-level stock returns?'. *Journal of Finance* **57**(October), 233–264.

White, H. (1980), 'A heteroscedasticity-consistent covariance estimator and a direct test for heteroscedasticity'. *Econometrica* **48**, 817–838.

Williams, M. (2004), 'Discussion of "The role of information precision in determining the cost of equity capital"'. *Review of Accounting Studies* **9**, 261–264.

Zhang, X. (2000), 'Conservative accounting and equity valuation'. *Journal of Accounting and Economics* **29**(February), 125–149.