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The implied cost of capital: A new approach ☆

Kewei Hou [a,*], Mathijs A. van Dijk [b], Yinglei Zhang [c]

[a] Fisher College of Business, The Ohio State University, 2100 Neil Avenue, Columbus, OH 43210, United States
[b] Rotterdam School of Management, Erasmus University, 3000 DR Rotterdam, The Netherlands
[c] School of Accountancy, Chinese University of Hong Kong, Shatin, N.T., Hong Kong

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ABSTRACT

We use earnings forecasts from a cross-sectional model to proxy for cash flow expectations and estimate the implied cost of capital (ICC) for a large sample of firms over 1968–2008. The earnings forecasts generated by the cross-sectional model are superior to analysts' forecasts in terms of coverage, forecast bias, and earnings response coefficient. Moreover, the model-based ICC is a more reliable proxy for expected returns than the ICC based on analysts' forecasts. We present evidence on the cross-sectional relation between firm-level characteristics and ex ante expected returns using the model-based ICC.

1. Introduction

Estimating a firm's expected stock return (or cost of equity capital) is essential for studying the relation between firm-level (risk) characteristics and expected returns—a central theme in finance and capital markets research in accounting. Expected returns also play a key role in firm valuation, capital budgeting, and other corporate finance settings, and are

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* Corresponding author. Tel.: +1 614 292 0552; fax: +1 614 292 2418.
E-mail address: hou.28@osu.edu (K. Hou).

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important to investment management practices such as portfolio allocation, performance evaluation, active risk control, and style/attribution analysis.

Prior academic studies almost exclusively rely on ex post realized returns to measure ex ante expected returns. However, as many researchers (e.g., Blume and Friend, 1973; Sharpe, 1978; Froot and Frankel, 1989; Elton, 1999) have pointed out, realized returns are a noisy proxy for expected returns. For example, Elton (1999) demonstrates that average realized returns can deviate significantly from expected returns over prolonged periods of time. Expected returns can also be estimated using asset pricing models such as the CAPM and the Fama and French (1993) three-factor model, but those estimates too are based on realized returns. Moreover, they are notoriously imprecise (see, e.g., Fama and French, 1997).

To address the deficiencies of the expected return estimates based on realized returns, recent accounting and finance studies (e.g., Gordon and Gordon, 1997; Claus and Thomas, 2001; Gebhardt et al., 2001; Easton, 2004; Ohlson and Juettner-Nauroth, 2005) propose an alternative approach to estimate expected returns: the implied cost of capital (ICC).[1] The ICC of a firm is the internal rate of return that equates the firm's stock price to the present value of expected future cash flows. In other words, the ICC is the discount rate that the market uses to discount the expected cash flows of the firm. The main advantage of the ICC is that it does not rely on noisy realized returns or on any specific asset pricing model. Instead, it derives expected return estimates directly from stock prices and cash flow forecasts.

The idea behind the ICC is simple and intuitively appealing. As a result, the ICC has been widely used in both finance and accounting research.[2] The common approach in this literature is to use analysts' earnings forecasts to proxy for cash flow expectations.[3] However, recent empirical evidence suggests that the performance of the analyst-based ICC as a proxy for expected returns is less than fully satisfactory. A priori, a reliable expected return proxy should positively predict future realized returns.[4] Several studies (e.g., Gebhardt et al., 2001; Easton and Monahan, 2005; Guay et al., 2011) examine the relation between the analyst-based ICC and future realized returns and find only mixed results. For example, Easton and Monahan (2005) show that the analyst-based ICC has little predictive power for future realized returns after controlling for cash flow news and discount rate news. They conclude that the analyst-based ICC is not a reliable proxy for expected returns and attribute the lack of reliability to the quality of analysts' earnings forecasts.

There are other concerns about the analyst-based ICC. One such concern is that even though analysts' forecasts are widely used by researchers and practitioners, they also exhibit important biases. A large body of research (e.g., Francis and Philbrick, 1993; Dugar and Nathan, 1995; McNichols and O'Brien, 1997; Lin and McNichols, 1998; Easton and Sommers, 2007) documents that analysts tend to be overly optimistic in their forecasts, likely the result of the conflicts of interest they are subject to. Furthermore, Abarbanell and Bushee (1997) and Francis et al. (2000) find large valuation errors when analysts' forecasts are used in valuation models.

A second major concern is coverage. The IBES analyst data are only available after the late 1970s, and small firms and financially distressed firms are underrepresented (La Porta, 1996; Hong et al., 2000; Diether et al., 2002). In addition, for many firms with analyst data, earnings forecasts beyond the second year or long-term growth forecasts (which are required by some of the commonly used ICC models) are not available. This is especially true in the earlier years. As a result, the analyst-based ICC has limited cross-sectional and time-series coverage, which can impede the investigation of questions that require a long time-series of expected return estimates or expected return estimates for small and distressed firms.

In this paper, we propose a new approach to estimate the ICC. We use earnings forecasts generated by a cross-sectional model instead of analysts' forecasts to proxy for cash flow expectations. Previous studies (e.g., Fama and French, 2000, 2006; Hou and Robinson, 2006; Hou and van Dijk, 2011) show that cross-sectional models are able to explain a large fraction of the variation in expected profitability across firms. We estimate model-based earnings forecasts for up to five years into the future and then use those earnings forecasts to compute the ICC for more than 170,000 firm-year observations over the period 1968–2008.

A major advantage of our model-based approach is that it uses the large cross-section of individual firms to compute earnings forecasts and therefore generates statistical power while imposing minimal survivorship requirements. Our approach allows us to compute the earnings forecasts and ICC for any firm with publicly traded equity and information on a limited number of accounting variables. Hence, the cross-sectional coverage of our model-based earnings forecasts and ICC is much larger than the coverage of analysts' forecasts and the analyst-based ICC. In addition, we are able to estimate the model-based earnings forecasts and the model-based ICC for earlier periods during which the IBES analyst data are not available.

We show that our cross-sectional earnings model captures significant variation in earnings performance across firms. The average R^2's of the regressions forecasting one-, two-, and three-year ahead earnings are 86%, 81%, and 78%,

[1] See Easton (2007) and Richardson et al. (2010) for reviews of this literature.

[2] For example, the ICC has been used to test the tradeoff between risk and return (Gebhardt et al., 2001; Pástor et al., 2008; Chava and Purnanandam, 2010; Lee et al., 2009) and to study the impact of corporate governance and disclosure (Botosan, 1997; Botosan and Plumlee, 2002; Francis et al., 2005b; Ashbaugh-Skaife et al., 2009), legal institutions and market regulations (Hail and Leuz, 2006), cross-listings (Hail and Leuz, 2009), taxes (Dhaliwal et al., 2005), earnings smoothness (Francis et al., 2004), accruals quality (Francis et al., 2005a; Core et al., 2008), and accounting restatements (Hribar and Jenkins, 2004) on a firm's cost of capital.

[3] One exception is Allee (2010), who uses time-series earnings forecasts based on an exponential smoothing method to estimate the ICC.

[4] Lee et al. (2010) formally derive this property using a simple return decomposition framework based on Campbell (1991).