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Accounting for Risk

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Accounting for Risk

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ABSTRACT

This monograph reports on developing research that assesses the risk of equity investing from financial statements. The relevant information is conveyed by accounting numbers generated under accounting principles that respond to risk and its resolution, namely the realization principle and conservative accounting for investment. The recognition of this information leads to a financial statement analysis that extracts the risk information, to a reevaluation of performance metrics, and to revisions in risk factor models in asset pricing that utilize accounting information. The research also has implications for accounting-based valuation and for accounting standards that provide information for valuation and equity investing.

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1

Introduction

This monograph is about using accounting information to assess risk and the required return for bearing that risk. The focus is on investing in firms and the equity claims on firms: How much should an investor discount the price of a share in a firm for risk, and how can accounting information help to answer that question? That discount is variously called the required return, the expected return, or (from the firm's viewpoint) the cost of capital.

The monograph links two strands of research.

The first is accounting-based valuation research, where value is assessed from expected cash flows, earnings, or residual earnings. The focus has been on forecasting those payoffs, with financial statement analysis providing the information to make those forecasts. However, forecasting payoffs is only one part of valuation, sometimes referred to as the numerator feature of a valuation model. The other issue is how those expected payoffs should be discounted for risk, the denominator feature. Can accounting information aid in the determination of risk and the discount rate? This monograph engages with this question.

The second research area is asset pricing, an endeavor in financial economics rather than among accountants. While "asset pricing" might

suggest this research is involved in determining prices, it is actually in pursuit of the required return to investing, the risk discount to price. That is what comes out of the well-known Capital Asset Pricing Model (CAPM), for example. So, with that same orientation in this manuscript, asset pricing research is necessarily engaged. Can accounting information about risk and return be utilized in building operational pricing models?

Valuation research in accounting and asset pricing research have been working in separate silos. The two areas need to be unified, put on the same platform. That is tentatively done here by bringing the discount rate question into accounting-based valuation and integrating accounting into the determination of the expected return in asset pricing. That serves the investor who needs to evaluate both expected payoffs and the discount rate to reach a valuation; it deals comprehensively with the investor's valuation problem. This monograph does not provide the final answer; indeed, the research to date is preliminary. Its objective is help researchers along the road to a solution.

Accounting research has progressively dealt with the question of assessing risk from financial statements. Traditional financial statement analysis offered risk measures such as debt-to-equity ratios, coverage ratios, and current and quick (liquidity) ratios. However, these measures largely apply to credit analysis; they have been somewhat successful in predicting debt default with bankruptcy prediction models. The financial statement analysis for equity risk has been less explored. But there has been some progress. The advent of modern finance turned attention to accounting information that informs about CAPM return betas. Beaver *et al.* (1970) was the seminal paper, followed by Rosenberg and McKibben (1973) that developed the initial risk-measurement product for the BARRA firm. Subsequently accounting betas have been estimated, with ROE betas in Nekrasov and Shroff (2009), "cash flow betas" in Cohen *et al.* (2003), and earnings and earnings growth betas in Ellahie (2021), for example. A further line of research, in Konstantinidi and Pope (2016) and Chang *et al.* (2021) applies quantile regressions to anticipate the dispersion of future earnings outcomes. However, the dominant thrust in accounting research has been the extraction of the so-called Implied Cost of Capital (ICC) by reverse engineering accounting-based valuation models. The Easton (2007) *Foundations*

and Trends monograph provides a review. This monograph critiques and adds to those endeavors.

In finance, the pursuit of the required return has been guided by no-arbitrage asset pricing theory. According to that theory, the absence of arbitrage opportunities (and some other assumptions) implies that the expected return is determined by exposure to risk that is common to all investments, risk that cannot be diversified away in portfolios. The original insight is in Markowitz (1952) on diversification and priced risk. Empirical estimation involves identifying those "common factors," with the expected return for a given asset then determined by sensitivity to those factors in a so-called factor model. The CAPM is one example of a factor model, with one factor, the market factor. But here's the rub: What are these common factors operationally? Interestingly, most of the identified factors to date involve accounting numbers such as book value, investment, return on equity (ROE) and other profitability measures. These are often "discovered" by data dredging, as in the ubiquitous Fama and French factor models, or by equating the accounting numbers with economic constructs, as in production-based models. But there is little understanding of why the data-mined numbers covey risk and expected return (or why not). Nor is it understood whether accounting measures correspond to economic constructs (or not). Here lies an opportunity: An understanding of how accounting numbers convey risk and expected return can be exploited in building factor models. The monograph pursues this.

It is fair to say that the endeavors in accounting and finance to estimate the required return have not been particularly successful. Researchers have had difficulty showing that estimates of the Implied Cost of Capital align with actual returns out of sample. Factor models, while successful in explaining returns in-sample, also have failed to deliver fitted expected returns out of sample that align with actual returns. Neither approach has been very helpful to the investor investing in real time, out of sample. The investor asks: What is my expected return for bearing risk at the point of making an investment? To be honest, despite 70 years since Markowitz, academic research has not satisfactorily answered that question. Yet, enticingly, many accounting numbers

predict returns that investors earn on average. That is something to be explored.

Though by no means providing a definitive answer to the question, the monograph takes steps in that direction. It does so by laying out how accounting numbers convey risk. That is a matter of theory and supporting empirical validation. The theory combines accounting theory with asset pricing theory, tying the principles underlying the generation of accounting numbers to priced risk. That instructs how accounting numbers in factor models do or do not capture risk and return and what other numbers might be the relevant ones. And it instructs reverse-engineering for ICC calculations.

The monograph also enhances financial statement analysis. While traditional financial statement analysis—ratio analysis—was conducted without much reference to finance theory, modern financial statement analysis derives from accounting-based valuation models that are based on the no-arbitrage theory on the pricing of expected dividends. That brings accounting and finance closer together. However, the financial statement analysis largely deals with the "numerator" in a valuation, providing information for the prediction of payoffs. Relatively little attention has been given to the "denominator," the rate at which those predicted payoffs are to be discounted. For that, accounting professors usually send their students to finance classes where it is not clear they get the desired answer. The financial statement analysis in this monograph deals with the denominator question and so complements the financial statement analysis for the numerator. That brings accounting and finance even closer together.

The key is an understanding of the accounting principles underlying the recognition and measurement in the financial statements. This requires an appreciation of how accounting handles risk, thereby generating accounting numbers that convey information about risk and expected return. These principles are the subject of Section 1, followed by Section 2 on how the accounting principles tie to priced risk with which asset pricing theory is concerned. Section 3 validates with empirical analysis. Application to financial statement analysis, expected return estimation, and factor investing follow. There is little new research in the document, just a review and synthesis of research to date with some

suggestions of how it might continue in the future. That synthesis is largely from my personal exploration of the subject with coauthors.

The aim of research is to provide tools for practice, in this case for the analyst and investor. So the monograph strives to be practical, offering (out-of-sample) indicators of expected returns for investors in real time. However, the reader looking for a model that supplies a point estimate of the cost of capital—is it 10% or 10.5%?—will not find it here. I am inclined to believe that such precision is an elusive target, for reasons that will become apparent. But the monograph provides some direction for finessing the issue.

The empirical analysis in the monograph assumes efficient pricing of risk in observed prices, a standard assumption in asset pricing research. That may not always be true, though with the connection of accounting information to risk, there is plenty here to support it. With an understanding of how accounting numbers convey risk and "normal" returns for risk, the monograph may be of help to accounting arbitragers who wish to understand their risk exposures when investing for "abnormal returns" or alpha in the parlance of investing; it helps sort out alpha from beta. So, the document reports that many accounting return "anomalies" on which investors trade for alpha—the accrual anomaly, the asset growth anomaly, the investment anomaly, to name a few—involve risk. It explains returns associated with earning-to-price (E/P) and book-to-price (B/P) and to "value" versus "growth" trading strategies; these strategies, trolled many times by investors, involve risk and that risk is understood through the accounting.

One further issue surfaces in the monograph. If investors are to rely on accounting information to understand risk, that has implications for how the accounting can best be done to serve those investors. In formal terms, that is an issue of accounting policy on which today's standard setters focus: What is good accounting and what is bad accounting for users? Both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have investors in mind. Under their evolving Conceptual Framework, a stated objective of financial reporting is to provide information to investors about the "amount, timing, *and uncertainty* of future cash receipts" (italics added).

So, this document turns to accounting policy: What is the implication of the analysis for "good" accounting that aids the investor?

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