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Financial Statement Analysis and Earnings Forecasting

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Financial Statement Analysis and Earnings Forecasting

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ABSTRACT

I synthesize and discuss academic research on financial statement analysis and earnings forecasting. I begin by discussing analytical and empirical evidence that shows that earnings, not dividends or free cash flows, are the payoffs that investors forecast when estimating value. This result is fundamental and it provides clear motivation for studying earnings forecasting and the role that historical accounting numbers play in the earnings-forecasting process. I then provide a detailed discussion of the research design choices that are made when developing and evaluating an earnings-forecasting approach. I describe the tradeoffs involved when making these choices and I review the extant empirical literature. An overarching theme of this discussion is that there are substantial research opportunities. For example:

- The random-walk model performs too well on a relative basis. It is inconsistent with standard economic assumptions, accounting practice and the way financial statement analysis is practiced and taught. Nonetheless, it tends to be as accurate and sometimes more accurate than other extant approaches.

*This monograph is dedicated to Larissa Ignatieva and my parents: Leo John Monahan (deceased) and Mary Eleanor Monahan.

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- Panel-data approaches that use a mix of cross-sectional and time-series data are very flexible in terms of the: (1) choice of earnings metric to predict; (2) choice of predictors; (3) choice of estimator; and (4) choice of estimation sample. At present, these approaches have not been used to their full potential.
 - There is insufficient evidence regarding how to identify peers and the role that peer analysis plays in the forecasting process.
 - There is insufficient evidence regarding approaches for forecasting the higher moments of future earnings, how to evaluate these forecasts and their role in determining value. Moreover, the role that accounting measurement plays in the determination of the higher moments of earnings and how accounting-measurement rules affect the usefulness of historical accounting numbers for predicting the higher moments of future earnings is not well understood.
-

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Introduction

I synthesize and discuss academic research on financial statement analysis and earnings forecasting, which is the process of analyzing historical financial statement data for the purpose of developing forecasts of future earnings. This process is important because it is central to the valuation of companies and the securities they issue.

Valuation is a crucial economic activity. As discussed in Hayek (1945), security prices determine how finite resources are allocated to firms and individuals. Moreover, as discussed in Arrow (1964), when people have access to a broad set of securities, they can form diversified portfolios and share risks. Hence, to fully understand the economic role of accounting, it is imperative that we understand the role that accounting numbers play in valuation.

The above provokes an immediate question: Why earnings? Specifically, given equity values are determined by expected future dividends and enterprise value can be expressed as a function of expected future free cash flows, why study earnings? Aren't dividends and free cash flows the primitive variables that investors forecast? These are valid questions and, if they cannot be answered, the premise underlying this monograph comes into question. With this in mind, in Section 2, I delve into the

question: Why earnings? I focus on dividend policy irrelevance, which implies that forecasting dividends is futile. I describe key analytical results that imply that, assuming dividend policy irrelevance, expected earnings are *the* fundamental determinant of both equity and enterprise value. I then finish the section by discussing key empirical results that imply that: (1) accrual-accounting earnings are more informative about changes in value than either dividends or cash flows and (2) accrual-accounting earnings, not dividends or free cash flows, are what investors forecast when estimating equity value.

Given the primacy of earnings, the motivation for forecasting them is clear. However, to do this, the researcher must first select the earnings metric that she will forecast. In Section 3, I discuss the issues involved in making this decision. As I explain in that section, the choice depends on the research context as well as data availability and the statistical properties of the different earnings metrics. Hence, the decision ultimately involves making a subjective tradeoff. Consequently, best practice is to clearly motivate the research question, describe the logic for selecting a particular metric or metrics, and then discuss the consequent pros and cons.

Once an earnings metric has been chosen, the natural question to ask is: How useful are historical accounting numbers for developing forecasts of that metric? In Sections 4–8, I focus on this question. In Section 4, I discuss the general role of econometric modeling. I make three points. First, when studying earnings forecasting, the goal is not to find the “best” model; rather, it is to identify models that are useful. Second, within the contexts of empirical capital markets research and practical valuation, useful models are those that are objective, replicable, generate accurate forecasts for large samples at a low cost and provide useful guidance regarding best practice. Finally, extant models are too inaccurate and, if taken at face value, extant results lead to seemingly absurd conclusions regarding best practice. Given the central role that earnings forecasting plays in valuation and the importance of valuation, these results imply that further research is necessary.

After discussing econometric modeling in general, I discuss specific types of models. In Section 5, I discuss time-series models, which were the default choice in early research studies. A key result is that, *of*

the various time-series models evaluated, the random-walk model is the best. The superiority of the random-walk model is counterintuitive because, as discussed in Section 5, it is inconsistent with standard economic assumptions and accounting practice. However, as I argue in that section, this result is misleading because time-series models are ill-suited for developing forecasts of earnings. Hence, the fact that the random-walk model is the best time-series model does not imply that it is the best approach.

Given the limitations of time-series models, they are no longer the default choice. Rather, recent studies tend to use panel-data approaches. These approaches allow the researcher to combine cross-sectional and time-series data to arrive at a forecast of earnings. Hence, they are more flexible than time-series models and they have numerous *a priori* advantages vis-à-vis these models. In Section 6, I discuss the choices a researcher makes when using panel-data approaches and I describe the advantages of these approaches. I then discuss the extant empirical evidence. I conclude that, with regards to the usefulness of panel-data approaches, the jury is still out. Although extant results imply that panel-data approaches are not much better than the random-walk model, these studies do not exploit the full potential of panel-data approaches. Hence, in my opinion, further study of panel-data approaches is a promising research agenda.

In Section 7, I discuss the role of accounting measurement in determining the usefulness of historical accounting numbers for developing forecasts of future earnings. I begin by explaining how accounting measurement determines accruals, which, is the non-cash component of earnings. I then discuss two topics that are directly related to accounting measurement: (1) the relative persistence of cash flows and accruals and (2) accounting conservatism. The main point of the section is that, perhaps not surprisingly, accounting measurement matters. Extreme accruals imply less persistent earnings. Moreover, conservative accounting rules can lead to historical trends in profitability ratios that are misleading about future profitability ratios. Hence, colloquially speaking, either too much accounting — that is, extreme accruals — or too little accounting — that is, conservative-accounting rules — lead to historical earnings that are less useful for developing forecasts of future earnings.

In Section 8, I discuss approaches for forecasting the higher moments of future earnings. At present, this issue has not received much attention. Hence, there are ample research opportunities. I explain why higher moments are important and I briefly discuss the extant studies that develop and evaluate forecasts of them. Finally, in Section 9, I provide a summary of the monograph.

Some general caveats are warranted. First, I focus on the academic literature that relates to the pursuit of financial statement analysis for the purpose of developing forecasts of earnings. However, financial statement analysis is a broad topic and developing earnings forecasts is only one of its objectives. Nonetheless, to maintain focus and for the sake of brevity, I ignore other objectives such as the identification of mispriced securities, default prediction, employee performance evaluation, etc.

Second, I concentrate on studies in which the objective is to develop and evaluate different approaches for forecasting earnings. Hence, although I use valuation to motivate my focus on earnings forecasting, I do not attempt to survey and synthesize the large and important capital-markets literature that relates to the association between accounting numbers and security prices. Third, my primary focus is on studies that consider annual earnings. There is a large and important literature that evaluates approaches for forecasting quarterly earnings. However, a thorough treatment of that literature is beyond the scope of this monograph.

Finally, I focus on studies that develop statistical approaches for forecasting earnings. I do not discuss the literature on analysts' forecasts and their properties. My reasons are twofold. First, comprehensive reviews of this literature can be found in Ramnath *et al.* (2008) and Bradshaw *et al.* (2016). Second, my aim is to describe the literature that evaluates the role of historical accounting numbers in the forecasting process. Within this context, analysts' forecasts are a "black box." That is, the process that analysts follow when developing their forecasts and the role that accounting numbers play in that process are not observable.

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