

Capital markets research in accounting

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Abstract

I review empirical research on the relation between capital markets and financial statements. The principal sources of demand for capital markets research in accounting are fundamental analysis and valuation, tests of market efficiency, and the role of accounting numbers in contracts and the political process. The capital markets research topics of current interest to researchers include tests of market efficiency with respect to accounting information, fundamental analysis, and value relevance of financial reporting. Evidence from research on these topics is likely to be helpful in capital market investment decisions, accounting standard setting, and corporate financial disclosure decisions.

Keywords: Capital markets, financial reporting, fundamental analysis, valuation, market efficiency

1. Introduction

Objective of the review article

My assignment is to review research on the relation between capital markets and financial statements. This is a broad area of research that originated with the seminal publication of Ball and Brown (1968). The literature has grown rapidly with over 1,000 published papers in leading academic accounting and finance journals in the past three decades. The approach I adopt for the review involves a survey of the literature using an economics-based framework. I begin with a discussion of the demand for and supply of research on the relation between financial information and capital markets. This is the organizing framework of my discussion of various areas within capital markets research.

An important objective of the review is to produce a pedagogically valuable document. Toward this end, the review extends at least two previous comprehensive surveys of the capital markets research in accounting by Lev and Ohlson (1982) and Bernard (1989). Because they provide in-depth summaries of research in the 1970s and 1980s, the bulk of the research examined in my study is from the late 1980s and 1990s. In addition to offering a fairly detailed summary of research in the past 10-15 years, I discuss the genesis of important ideas in the literature and the concurrent developments that stimulated many of the ideas. I also critically evaluate the research findings and research designs employed in past research. The main objective is to offer competing hypotheses and explanations for the observed findings. This naturally leads to unresolved issues and

directions for future research noted throughout the review. I hope doctoral students (and their instructors) find the study useful in preparing themselves for successful careers in research.

I review almost exclusively empirical capital markets research. However, empirical research is (or should be) informed by theory, since interpretation of empirical analysis is impossible without theoretical guidance. Therefore, I refer to the underlying theory and alternative hypotheses that bear on the analysis, some of which Verrecchia (2001) reviews.

While I attempt to be thorough, my own tastes and interests as well as my differential expertise in various areas within capital markets research influence the review's contents. In addition, within the empirical capital markets area, there are at least three topics that are examined extensively elsewhere. Holthausen and Watts (2001) present a critical assessment of the research on value-relevance in the context of standard-setting.

2. Demand for capital markets research in accounting

A large fraction of published research in leading academic accounting journals examines the relation between financial statement information and capital markets, referred to as capital markets research. This voluminous published research is an indication of the demand for capital markets research.¹ There are at least four sources of the demand for capital markets research in accounting that explain its popularity: i) fundamental analysis and valuation; ii) tests of capital market efficiency; iii) role of accounting in contracts and in the political process; and iv) disclosure regulation. I discuss the four sources of demand for capital markets research below, and list the types of research studies I subsequently summarize in the review. While I believe the four sources account for a large fraction of the demand for capital markets research in accounting, these sources are neither mutually exclusive nor collectively exhaustive.

Shareholders, investors and lenders have an obvious interest in the value of a firm. In an efficient market, firm value is defined as the present value of expected future net cash flows, discounted at the appropriate risk-adjusted rate of return. A firm's current performance as summarized in its financial statements is an important, but not the only input to the market's assessment of the firm's future net cash flows and thus into the firm's market valuation. This is consistent with the Financial Accounting Standard Board's (FASB's) conceptual framework that financial statements should help investors and creditors in "assessing the amounts, timing, and uncertainty" of future cash flows (FASB Statement of Financial Accounting Concepts, No. 1, 1978). Therefore, a temporal association between current financial performance and future cash flows, as well as a contemporaneous association between financial performance and security prices or price changes is expected. An important goal of capital markets research is to provide evidence on these relations.

The principal focus of fundamental analysis is on valuation aimed at identifying mispriced securities. This has been popular at least since Graham and Dodd published their book *Security Analysis* in 1934.² A large fraction of the nearly \$5 trillion currently invested in U.S. mutual funds is actively managed, with fundamental analysis as the guiding principle of most mutual fund managers. Fundamental analysis entails the use of information in current and past financial statements, in conjunction with industry and macroeconomic data to arrive at a firm's intrinsic value. A difference between the current price and the intrinsic value is an indication of the expected rewards for investing in the security.

3. Capital markets research in the 1980s and 1990s

Early capital markets research demonstrates that accounting reports have information content and that financial statement numbers reflect information that influences security prices, although not on a timely basis. The decades following the early research witnessed an explosive growth in capital markets research. I categorize the demand of this research into five main areas: i) methodological capital markets research, ii) evaluation of alternative accounting performance measures, iii) valuation and fundamental analysis research, iv) tests of market efficiency, and v) value relevance of disclosures according to various financial accounting standards and economic consequences of new accounting standards. (Since Holthausen and Watts, 2001, and Healy and Palepu, 2001, examine item v in great detail, I do not discuss this item).

3.1 Methodological capital markets research

Capital markets research seeks to answer a wide range of questions. A sample of the questions examined in previous research includes:

Do current-cost earnings have incremental information content over historical cost earnings?

Do differences in corporate governance structures affect the degree of information asymmetry in capital markets and, in turn, influence the timing and strength of the relation between security returns and earnings information?

Does managerial ownership affect the informativeness of accounting numbers because of the separation of corporate ownership and control?

Does the perceived quality of an auditor affect the relation between corporate earnings and security returns?

How does the reporting of transitory gain as part of ordinary income and transitory loss as an extraordinary item affect prices?

How do we test for the capital market effects of accounting method changes?

Are disclosures about other post-retirement employee benefits (OPEB) value relevant?

Does an EVA[®] (Economic Value Added) performance measure correlate more highly with stock returns and prices than historical cost accounting earnings?

What would be the consequence of the Securities and Exchange Commission discontinuing the requirement of reconciliation between the U.S. GAAP and the foreign- or the International Accounting Standards-GAAP for the non-U.S. firms seeking to list their shares on the U.S. exchanges and raise capital in the U.S.?

Would financial statements be more informative about current economic income (i.e., change in the market value) if GAAP were changed to permit managers to capitalize R&D outlays?

To answer these questions, a researcher must control for the “normal” relation between financial statement information and security returns to isolate the treatment effect of interest. The normal relation obviously varies with the research setting, and could mean any relation other than the treatment effect. For example, in examining the effect of managerial ownership on the informativeness of accounting numbers, the investigator must control for the influence of growth opportunities on earnings’ informativeness because managerial ownership percentage is likely to be correlated with growth opportunities, which affect earnings’ informativeness. This effect of growth might be unrelated to the potential agency effect of ownership control on earnings’ informativeness.

I review methodological research in four sub-sections.

- (i) Earnings response coefficients research (section 4.1.1)
- (ii) Properties of time series, management, and analysts’ forecasts of earnings and earnings growth rates (section 4.1.2)
- (iii) Methodological issues in drawing statistical inferences from capital markets research (section 4.1.3)
- (iv) Models of discretionary and non-discretionary accruals (section 4.1.4). Additional details on this issue are deferred to section 4.4 on tests of market efficiency because in the capital markets context, the models of discretionary and non-discretionary earnings are frequently used in tests of market efficiency.

4. Analysts’ forecasts

There is a huge empirical and theoretical literature on analysts’ forecasts. I focus on the properties of analysts’ forecasts and some determinants of these properties. I do not review the research that examines why analysts forecast earnings, the determinants of the number of analysts following a firm, and the consequences of analysts’ following on the properties of security returns. Some of these issues are examined in Verrecchia (2001) and Healy and Palepu (2001). I recognize

that the issues not examined here also affect the properties of analysts' forecasts, but nevertheless I consider those beyond the scope of my review of the capital markets research.

Buy-side and sell-side analysts issue earnings forecasts. Most research in accounting examines sell-side analysts' forecasts because these are publicly available. Analysts from brokerage houses and investment banking firms in the financial services industry issue sell-side forecasts. Buy-side analysts are typically employed by mutual funds and pension funds and issue forecasts primarily for internal investment decision-making purposes. Like most of the research on analysts' forecasts, I review the research on sell-side analysts' forecasts.

Analysts' forecasts research can be broadly divided into two categories. The first category examines properties of consensus analysts' forecasts. A consensus forecast is the mean or median of the analysts' forecasts of (either quarterly or annual or long-term) earnings of an individual firm. An example of research in this category would be "Are analysts' forecasts optimistic?" The second category focuses on the properties of individual analysts' forecasts either in the cross-section or temporally. This category examines questions like "What are the determinants of an individual analyst's forecast accuracy?" and "Does skill affect the accuracy of an analyst's forecast?" There is overlap between these two areas of research, so the discussion is sometimes applicable to both.

Analysts' forecasts compared to time-series forecasts

Early research examines the accuracy of analysts' forecasts and their association with security returns, and compares these properties with time-series forecasts of earnings. Brown and Rozeff (1978) were the first to document superior accuracy of analysts' forecasts over time-series forecasts of quarterly earnings. Subsequent research offers conflicting evidence (see Collins and Hopwood, 1980, and Fried and Givoly, 1982, for confirming the evidence in Brown and Rozeff, 1978, whereas Imhoff and Pare, 1982, for contradictory evidence) and also raises the question of whether analysts' superiority stemmed from their timing advantage (i.e., access to more recent information) over time-series models. Brown, Griffin, Hagerman, and Zmijewski (1987a and b) test for both accuracy and association with security returns in comparing the quality of analysts' forecasts against time-series forecasts of quarterly earnings. They show that, even after controlling for the timing advantage, analysts' forecasts are more accurate and modestly more highly associated with stock returns than time-series forecasts. O'Brien (1988), however, documents conflicting evidence in which an autoregressive model forecast is more highly associated with returns than I/B/E/S forecasts. The conflicting evidence notwithstanding, in recent years it is common practice to (implicitly) assume that analysts' forecasts are a better surrogate for market's expectations than time-series forecasts. The issues of current interest are whether analysts' forecasts are biased, the

determinants of the biases, and whether the market recognizes the apparent biases in pricing securities.

Optimism in analysts' forecasts

Many studies report evidence that analysts' forecasts are optimistic⁴⁶, although the optimism appears to be waning in recent years (see Brown, 1997 and 1998, Matsumoto, 1998, and Richardson et al., 1999). There are at least three hypotheses consistent with the decline in analyst optimism: (i) analysts are learning from evidence of past biases (see Mikhail, Walther, and Willis, 1997, Jacob, Lys, and Neale, 1999, and Clement, 1999, for mixed evidence on the effect of experience on learning); (ii) analysts' incentives have changed; and (iii) the quality of data used in the research

examining analysts' forecast properties has improved (e.g., suffers less from survivor biases or selection biases).

Estimating bias in analysts' forecasts

Forecast optimism is inferred from a systematic positive difference between the forecast and actual earnings per share. The optimism has been documented using Value Line, I/B/E/S, and Zacks data sources for analysts' forecasts (Lim, 1998). The estimates of analyst optimism vary across studies in part because of differences in research designs, variable definitions, and time periods examined. Consider, for example, the following three recent studies that report properties of I/B/E/S analysts' forecasts: Lim (1998), Brown (1998), and Richardson et al. (1999). Each uses over 100,000 firm-quarter observations and analyzes I/B/E/S forecasts from approximately the same time period from 1983 or 1984 to 1996 or 1997.

Lim (1998, pp. 9-10) uses "the median of the unrevised estimates of a quarter's earnings across all brokerage firms," although the use of the mean of analysts' forecasts is not uncommon in the literature (see, for example, Chaney, Hogan, and Jeter, 1999).⁴⁷ Richardson et al. (1999) use individual analyst's forecast and average the forecast errors each month, whereas Brown (1998) reports results using only the most recent analyst forecast. Lim (1998) calculates forecast errors as the difference between the earnings forecast and actual earnings per share as reported on Compustat, based on the evidence in Philbrick and Ricks (1991) that actual earnings reported by I/B/E/S suffers from an "alignment problem." In contrast, Brown (1998) and Richardson et al. (1999) use I/B/E/S actual earnings "for comparability with the forecast" (Richardson et al., 1999, p. 7).

Previous research also differs in its treatment of outliers. Lim (1998) excludes absolute forecast errors of \$10 per share or more, while Brown (1998) winsorizes absolute forecast errors greater than 25 cents per share and DeGeorge, Patel, and Zeckhauser (1999) delete absolute forecast

errors greater than 25 cents per share. Richardson et al. (1999) delete price-deflated forecast errors that exceed 10% in absolute value. Brown (1998), DeGeorge et al. (1999), and Kasznik and McNichols (1997) do not use a deflator in analyzing analysts' forecast errors, whereas Lim (1998) and Richardson et al. (1999) deflate forecast errors by price.

4.1 Models of discretionary and non-discretionary accruals

Motivation

I review methodological research on models of discretionary and non-discretionary accruals because of their preeminent role in researchers' ability to draw correct inferences in capital markets and other research in accounting. Discretionary accruals and earnings management are used synonymously in the literature. Schipper (1989) defines earnings management as "purposeful intervention in the external reporting process, with the intent of obtaining some private gain to managers or shareholders". The discretionary accrual models split total accruals into a discretionary component, which serves as a proxy for earnings management, and a non-discretionary portion. The non-discretionary accrual together with operating cash flows is the non-discretionary portion of reported earnings. At least three streams of research use discretionary accrual models.

First, discretionary accrual models are used in tests of contracting- and political-cost-based hypotheses about management's incentives to manipulate accounting numbers (i.e., opportunistic use of accruals). Alternatively, this research hypothesizes that firms choose accounting policies or include discretionary accruals in earnings to convey management's private information about the firm's prospects or to more accurately reflect the firm's periodic performance, i.e., the efficient contracting use of accruals (see Holthausen and Leftwich, 1983, Watts and Zimmerman, 1990, Holthausen, 1990, and Healy and Palepu, 1993). This body of research is usually not in the capital markets area.

Second, using market efficiency as a maintained hypothesis, many studies test the efficient contracting and opportunism hypotheses by correlating earnings components with stock returns. This research is frequently aimed at testing the information content or association with security returns of new mandated recognition or disclosure standards of accounting. Examples of this research include studies examining whether banks' disclosures of fair values of investments and loans contain value-relevant information (see, e.g., Barth, 1994, Barth, Beaver, and Landsman, 1996, and Nelson, 1996). Alternatively, research examines properties of voluntarily disclosed accounting data to test the efficient contracting and opportunism hypotheses (e.g., Beaver and Engel, 1996, and Wahlen, 1994). Beaver and Venkatachalam (1999) is an example of research that

simultaneously tests the information content and opportunism hypotheses, i.e., it allows for both non-strategic noise and opportunistic accrual manipulation.

Third, a recent popular area of research tests the joint- hypothesis of market inefficiency and accrual manipulation with a capital market motivation, e.g., an incentive to manipulate accruals upward in periods prior to stock issues (see Dechow, Sloan, and Sweeney, 1996, and Jiambalvo, 1996). Recent developments in financial economics and accounting, which are suggestive of informational inefficiency of the capital markets, have fueled this research. The research tests whether there is a positive association between current manipulated (or discretionary) accruals and subsequent risk-adjusted abnormal stock returns. Examples of research in this area include Sloan (1996), Teoh, Welch and Wong (1998a, and b), Teoh, Wong, and Rao (1998), Rangan (1998), and Ali, Hwang, and Trombley (1999).

4.2 Discretionary accrual models

There are five well-known time-series models of discretionary accruals in the literature.⁵³ These are: the DeAngelo (1986) model, the Healy (1985) model, the industry model used in Dechow and Sloan (1991), the Jones (1991) model, and the modified-Jones model by Dechow, Sloan, and Sweeney (1995). Of these only the Jones and modified-Jones models are commonly used in research in part because they outperform the rest in terms of specification and power (see Dechow, Sloan, and Sweeney, 1995). Thomas and Zhang (1999) dispute Dechow et al.'s finding and conclude "Only the Kang-Sivaramakrishnan model, which is coincidentally the least popular model, performs moderately well." Kang and Sivaramkrishnan (1995) employ an instrumental variable approach to estimate discretionary accruals.

Moreover, cross-sectional estimation of the Jones model (see DeFond and Jiambalvo, 1994, and Subramanyam, 1996b) has replaced the original time-series formulation of the model in terms of recent application. DeFond and Jiambalvo (1994), Subramanyam (1996b) and other studies have legitimized the cross-sectional estimation. Their evidence suggests the performance based on cross-sectional estimation is no worse than that using time-series estimation of the Jones and modified-Jones models. Cross-sectional estimation imposes milder data availability requirements for a firm to be included for analysis than time-series estimation. This mitigates potential survivor bias problems. The precision of the estimates is also likely higher in cross-sectional estimation because of larger sample sizes than the number of time-series observations for an individual firm. The downside of cross-sectional estimation is that cross-sectional variation in the parameter estimates is

sacrificed. However, conditional cross-sectional estimation is a good remedy for the problem (see previous discussion in the context of time-series properties of annual earnings forecasts in section 4.1.2, and Fama and French, 1998, and Dechow, Hutton, and Sloan, 1999).

4.3 Evaluation of discretionary accruals models

An influential study by Dechow, Sloan, and Sweeney (1995) evaluates the power and specification of alternative discretionary accrual models. Their conclusion that the “modified version of the model developed by Jones (1991) exhibits the most power in detecting earnings management” (Dechow et al., 1995, p. 193) serves as the basis for the widespread use of the modified-Jones model. Dechow et al. (1995, p. 193) also conclude that, while “all of the models appear well specified when applied to a random sample”, “all models reject the null hypothesis of no earnings management at rates exceeding the specified test levels when applied to samples of firms with extreme financial performance.” Finally, Dechow et al. (1995, p. 193) find that “the models all generate tests of low power for earnings management...”

Since earnings management studies almost invariably examine samples of firms that have experienced unusual performance, the most relevant conclusion from Dechow et al. (1995) is that the discretionary accrual models are seriously misspecified. The misspecification arises because the magnitude of normal accruals, i.e., non-discretionary or expected accruals, is correlated with past (and contemporaneous) firm performance. The dependence arises for two reasons. First, as discussed in section 4.1 on the time-series properties of earnings, firm performance conditional on past performance does not follow a random walk. Second, both operating accruals and operating cash flows are strongly mean reverting (see Dechow, 1994, for evidence, and Dechow, Kothari, and Watts, 1998, for a model that explains the correlation structure), which means these variables are not serially uncorrelated. However, none of the five discretionary accrual models used in the literature explicitly captures accruals’ serial correlation property, so estimated discretionary accruals are biased and contaminated with non-discretionary accruals. Evidence in Guay, Kothari, and Watts (1996), who use market-based tests, and Hansen (1999), who examines the behavior of future earnings, suggests that the extent of the non-discretionary accrual component in estimated discretionary accruals is large. Thomas and Zhang’s (1999) conclusion is still stronger. They infer that the commonly used models “provide little ability to predict accruals.”

5. Summary and Conclusions

In this paper I review research on the relation between capital markets and financial statement information. I use an economics-based framework of demand for and supply of capital markets research in accounting to organize the paper. The principal sources of demand for capital markets research are fundamental analysis and valuation, tests of market efficiency, the role of accounting in contracts and in the political process, and disclosure regulation. In summarizing past research, I critique existing research as well as discuss unresolved issues and directions for future research. In addition, I offer an historical perspective of the genesis of important ideas in the accounting literature, which have greatly influenced future accounting thought in the area of capital markets research. An exploration of the circumstances, forces, and concurrent developments that led to significant breakthroughs in the literature will hopefully guide future accounting researchers in their career investment decisions.

Ball and Brown (1968) heralded capital markets research into accounting. Key features of their research, i.e., positive economics championed by Milton Friedman, Fama's efficient markets hypothesis, and the event study research design in Fama, Fisher, Jensen, and Roll (1969), were the cornerstones of the economics and finance research taking place concurrently at the University of Chicago. History repeated itself with Watts and Zimmerman's positive accounting theory research in the late 1970s. While the above are just two examples, many other developments in accounting are also influenced by concurrent research and ideas in related fields. The important conclusion here is that rigorous training in and an on-going attempt to remain abreast of fields beyond accounting will enhance the probability of successful, high impact research.

Section 4 surveys empirical capital markets research. The topics include methodological research (e.g., earnings response coefficients, time series and analysts' forecasts, and models of discretionary accruals); research examining alternative performance measures; valuation and fundamental analysis research; and finally, accounting research on tests of market efficiency. The areas of greatest current interest appear to be research on discretionary accruals, influence of analysts' incentives on the properties of their forecasts, valuation and fundamental analysis, and tests of market efficiency. The revival of interest in fundamental analysis is rooted in the mounting evidence that suggests capital markets might be informationally inefficient and that prices might

take years before they fully reflect available information. Fundamental valuation can yield a rich return in an inefficient market. A large body of research demonstrates economically significant abnormal returns spread over several years by implementing fundamental analysis trading strategies. Evidence suggesting market inefficiency has also reshaped the nature of questions addressed in the earnings management literature. Specifically, the motivation for earnings management research has expanded from contracting and political process considerations in an efficient market to include earnings management designed to influence prices because investors and the market might be fixated on (or might overreact or under-react to) reported financial statement numbers.

Evidence of market inefficiency and abnormal returns to fundamental analysis has triggered a surge in research testing market efficiency. Such research interests academics, investors, and financial market regulators and standard setters. The current rage is examination of long- horizon security price performance. However, this research is methodologically complicated because of skewed distributions of financial variables, survival biases in data, and difficulties in estimating the expected rate of return on a security. Progress is possible in testing market efficiency if attention is paid to the following issues. First, researchers must recognize that deficient research design choices can create the false appearance of market inefficiency. Second, advocates of market inefficiency should propose robust hypotheses and empirical tests to differentiate their behavioral- finance theories from the efficient market hypothesis that does not rely on investor irrationality. The above challenges in designing better tests and refutable theories of market inefficiency underscore the need for accounting researchers trained in cutting-edge research in economics, finance, and econometrics.

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