EMPIRICAL RESEARCH: IMPLICATIONS FOR FINANCIAL STATEMENT ANALYSIS

CHAPTER OUTLINE

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CHAPTER OBJECTIVES

The goals of this chapter are:

1. Review the classical approach in accounting theory and the framework that still underlies most accounting standard-setting activities.
2. Survey market-based accounting research that examines the relationship between stock prices and financial reporting.
3. Explain "positive" accounting theory and its emphasis on the effect of financial reporting on management, creditor, and regulatory decision making.
4. Examine the current trend of accounting research.
5. Discuss the relevance of empirical research to financial statement analysis.

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The objectives, methodology, and underlying philosophies of accounting research have changed considerably over the past few decades. To a great extent, these changes mirrored (or, some would argue, merely followed) shifts in financial economic theory. Current trends in accounting research evolved from three major approaches to accounting theory and research. This chapter presents an overview of the research. We will not try to review all this research here but rather:

- Characterize the nature of the research.
- Indicate the relevance of the research for financial analysts and where in the book it is discussed in further detail.
- Summarize important research findings without getting bogged down in detail.

The three approaches to accounting theory are represented schematically in Figure 5-1. The classical approach to accounting theory was prevalent prior to the mid-1960s and is still the framework underlying much of existing accounting regulation. This approach attempts, using a theoretical perspective, to develop an optimal or “most correct” accounting representation of some true (but unobservable) reality.

The second approach is commonly referred to as market-based accounting research. Criticizing the classical approach for its lack of testability, market-based research takes a more empirical, as well as user-oriented, perspective. Its primary focus is the market reaction to (or association with) reported accounting data. Market-based research uses observable relationships between reported earnings and market returns to draw conclusions about the role of accounting information.

The positive accounting theory approach also focuses on observable reactions to accounting numbers, but this is not its primary focus. As Figure 5-1 indicates, it broadens the research perspective in two ways. First, in addition to financial markets, it includes other environments influenced by financial statements: management compensation plans, debt agreements with creditors, and the host of regulatory bodies interacting with the

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1The interested reader can find an excellent review of the literature in Kothari (2001).

2We use the term earnings here and throughout the chapter in a generic sense. It is not meant to preclude other measures of firm performance examined by researchers.
firm. More important, it recognizes that since financial statements impact these other environments, there are incentives for accounting systems to be used not only to measure the results of decisions but, in turn, to influence these decisions in the first place. This feedback interaction can influence both management's operating decisions and account- ing choices.2

These competing approaches evolved over time in response to both research results and new developments in information economics and finance theory. Empirical research began in the 1960s with much fanfare and promise, only to be tempered over time both by the economic (in)effectiveness of the results and by perplexing elements of reality, or what academics euphemistically call anomalies.

This sets the stage for the present direction of accounting research. This trend is charac-
terized by a return to the examination of a priori linkages between financial statements, the analysis thereof, and security valuation. It grew out of extensions of market-based research, on an empirical level and, or a theoretical level, a rediscovery of a valuation paradigm built on fundamental accounting variables and relationships. This underlying structural or funda-
mental analysis,3 in some respects, combines the direction of the classical approach with the empiricism of market-based research.

Discussion of this research is intended to provide a context for the remainder of this book, in two respects. First, the financial reporting system has been shaped by accounting re-
search (especially the classical approach), and users of that system must understand the fac-
tors that influence it. Second, accounting research provides valuable insights into the usefulness of financial statement data.

Classical Approach

Classical accounting theory approaches issues from a normative point of view. Writers such as Edwards and Bell (1961), Chambers (1966), and Sterling (1970) evaluate accounting methods and technologies in terms of how close reported information comes to some precon-
ceived "true" picture of the firm. In this approach, the ideal picture is viewed as determinable within the accounting system itself. Concepts such as economic profit and its relationship to accounting income are a key focus of debate. Thus, much discussion (without consensus) ensues over topics such as current cost versus replacement cost versus historical cost accounting frameworks.

The classical approach is concerned with deducing correct accounting methods from a stated set of concepts, principles, and objectives. Implicit in this approach is the view that fi-
nancial statement users accept (and react to) those statements at face value; thus, great im-
portance is attached to ensuring that statements reflect the firm's true financial status.4 Moreover, as the nature of users' reactions to financial information is deemed predictable, no explicit effort is made to examine, empirically or otherwise, the interrelationships between fi-
nancial statements and users' motivations and/or reaction to the information contained in those statements.

Concurrent with the early development of this approach to accounting theory, the teach-
ings of Graham and Dodd reigned supreme in the academic and professional finance commu-
nities. In their world, stocks have intrinsic value and investors could use ratios and other

1These three approaches view the underlying economic reality of a firm in different ways. In the classical approach, as underlying reality exists, and it is the role of accounting to best describe it. Market-based research, on the other hand, views reality as determined by market value; thus, great im-
portance is attached to ensuring that statements reflect the firm's true financial status.4 Moreover, as the nature of users' reactions to financial information is deemed predictable, no explicit effort is made to examine, empirically or otherwise, the interrelationships between fi-
nancial statements and users' motivations and/or reaction to the information contained in those statements.

2The term "a priori" refers to situations where the facts are known before the analysis. Accounting methods (e.g., FIFO versus LIFO) can be seen as "a priori" decisions, as they are made before the data are available.

3This is equivalent to the concept of imperfection and agency discussed in Chapter 1.

4This is equivalent to the concept of imperfection and agency discussed in Chapter 1.
financial analysis techniques based on financial statement data to develop filter rules that identify stocks as over- or undervalued. 6

The classical approach fell out of favor in academic circles due to its lack of testability. It was argued that the usefulness of accounting information could be evaluated only by observing its effects on financial statement users. The research emphasis turned to empirical investigations of the decision relevance of the information contained in accounting reports. Accounting regulators never fully embraced this new (empirical) approach to accounting theory.7 Whether this was because they did not agree with it philosophically or because they felt that its results had no practical implications is a matter of debate. It is important to note that existing accounting rules, which make up GAAP, are greatly influenced by and are still a product of the classical approach; we return to this issue in the concluding section of this chapter.

MARKET-BASED RESEARCH

Advances in finance theory in the mid- and late 1960s were the primary catalyst for the shift in accounting research described in this section. The two major advances in finance literature that influenced accounting research in this period were the efficient market hypothesis and modern portfolio theory.

Efficient Market Theory

Underlying the new approach to accounting theory and research was the widespread interest in (and increasing acceptance of) the efficient market hypothesis (EMH). In the academic and professional finance community, the EMH, as defined by Fama (1970), states that a market is efficient if asset prices fully reflect the information available. “Fully reflecting” means that knowledge of that information does not allow anyone to profit from it, because prices already incorporate the information. Further, the information is impounded in the prices correctly and instantaneously as soon as it becomes known.

Information is classified into three sets, resulting in three forms of the EMH:

1. The weak form. The information set includes only information about past securities prices.

2. The semi-strong form. The information set includes all publicly available information.

3. The strong form. The information set includes all information, including privately held (insider) information.

Empirical evidence in the accounting and finance literature during this period supported the weak and semi-strong forms. The weak form implies that series of past security prices cannot be successfully used to predict future prices. Hence, charting techniques (head-and-shoulder patterns, double tops, etc.) and other types of technical analysis are deemed meaningless and unprofitable. The information set assumed to be used by financial markets under the semi-strong form includes all publicly available information, such as financial statements, government reports, industry reports, and analysis. Two key implications for accounting research, policy, and analysis flow from the semi-strong form of the EMH.

First, financial statements are not the only source of information for making investment decisions. Second, and more important, no trading advantages accrue to users of financial

6Simultaneously (and, perhaps, paradoxically), it was argued that, although determining a company’s true financial condition was a worthwhile objective, accounting rules did not actually mimic the underlying reality. Thus, financial statements were often seen as meaningless and of little use to investors. Canning (1979) was often quoted in support of this viewpoint.

7What is set out as a measure of net income can never be supposed to be a fact in any sense at all except that it is the figure that results when the accountant has finished applying the procedures which he adopts (John B. Canning, The Economics of Accountancy (New York: Ronald Press, 1929, p. 98).

7There are some exceptions. For example, the change in the current cost disclosure from mandatory to voluntary required by SFAS 33 (see Appendix B-A) was partially a result of empirical evidence indicating that the market ignored the information.
MARKET-BASED RESEARCH

The second trend in finance theory impacting accounting theory and research was modern portfolio theory (MPT), as exemplified in the capital asset pricing model (CAPM). The CAPM characterizes the relationship between a common stock's expected return and risk as:

\[
E(R)_i = R_f + \beta_i (E(R)_m - \bar{R}_f)
\]

where

- \(E(R)_i\) = the expected return on stock \(i\)
- \(E(R)_m\) = the market risk-free rate
- \(\beta_i\) = the beta on stock \(i\) (i.e., the market's sensitivity at beta)
- \(E(R)_m - \bar{R}_f\) = the market risk premium

The realized return on stock \(i\) is then defined (removing the expectation symbol \(E(*)\))

\[
R = R_f + \beta (R_m - R_f) + \varepsilon
\]

where \(\varepsilon\) is the unexpected or abnormal return. In other words, \(\varepsilon\) represents the portion of a stock's realized return that is different from its expected return (given existing market conditions).

Under MPT, higher risks are associated with higher expected returns, but the relationship holds only for that portion of risk that cannot be diversified away. Risk is classified as either systematic or unsystematic. Systematic risk is that portion of uncertainty faced by a firm that is due to common factors facing all firms, the business cycle, interest rates, inflation, and so on. Its measure under CAPM is the beta of the firm, \(\beta_i\).

Unsystematic risk is the uncertainty specific to a given firm. The unsystematic risk is in the return \(\varepsilon\), according to the first after accounting for the systematic effects. The unsystematic risk can be diversified away by investors holding well-diversified portfolios. Because this risk cannot be diversified away, there is no reward to investors (higher returns) for bearing this risk; the expected abnormal return \(E(\varepsilon) = 0\). The systematic risk, on the other hand, which cannot be diversified away, must be rewarded by offering the investor a higher expected return.

MPT and CAPM shaped the development of accounting theory in a number of ways. First, it implied that since the expected return for a given firm does not depend on risks that can be diversified away, information regarding the outlook for a specific firm was largely


\footnote{The single-factor model, less defined provides for systematic risk only or an economy-wide basis. Multifactor models, however, can capture submarket-specific effects.}
irrelevant. The only thing that mattered was the systematic risk of the firm and its relationship to the total portfolio.

The ability of accounting data to predict and provide measures of risk thus became an avenue of accounting research, with the evidence indicating that such data could be used to enhance the prediction of risk measures such as beta.10 What is surprising is that this line of research, although promising, did not originally play a bigger role.

Recent empirical findings, however, have once again brought attention to the area of risk management. Contrary to the relationship predicted by the CAPM, Fama and French (1992) conclude that, during the period 1963 to 1990, beta was not related to average returns on stocks. On the other hand, measures such as company size, the market-to-book ratio, leverage, and the price-earnings ratio were found (by Fama and French as well as others) to be related to average returns. We return to the implications of these findings for risk measurement, the CAPM, and the issue of market inefficiency in the chapter.

Second, the CAPM and MPT influenced accounting theory development by providing a model to measure the reaction of market returns and earnings. Deviations from expected earnings could be shown to influence the realized rate of return or, more specifically, the unexpected portion or abnormal return (e). This led to market-based research studies that can be classified into the following categories:

1. Tests of the EMH versus the classical approach
2. Tests of the informational content of accounting alternatives
3. Tests of the earnings/return relationship

Tests of the EMH versus the Mechanistic Hypothesis

The mechanistic hypothesis, consistent with the classical approach to accounting theory, holds that users of financial statements accept the information provided at face value.11 Implicit in the hypothesis is the assumption that users of financial statements do not access other sources of information nor do they adjust financial statements for the effects of alternative accounting methods. Clearly, the mechanistic hypothesis stands in opposition to the EMH, which holds that current prices reflect all information available.

The mechanistic hypothesis was tested by examining stock market reaction to changes in accounting methods that increase reported income but have no cash flow effect.12 Since such changes increase reported income, the mechanistic hypothesis leads us to expect increases in stock prices. The EMH would argue that the market sees through the change and no stock price reaction should result.

Tests of the mechanistic hypothesis versus the EMH eventually became passé.13 Although there was much disagreement as to the types of information markets reacted to, the general consensus4 was in line with the EMH (i.e., the market does not follow reported earnings blindly and adjusts the information accordingly).15

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10 A detailed review of the research that relates accounting variables to risk is presented in Chapter 18, where overall risk and credit analysis is discussed.

11 The mechanistic view is sometimes referred to as “financial fiction.”

12 For example, firms that changed their depreciation method for financial reporting (but not for tax purposes) from accelerated to straight line were examined by both Archibald (1972) and Kaplan and Roll (1972).

13 In light of some of the anomalies associated with the EMH, however, the mechanistic fiction hypothesis has reemerged in the form of the extended financial fiction hypothesis (see Hod (1990)). Under this guise, it is argued that some unobserved investors on the margin can do affect prices.

14 The General consensus here refers to the academic accounting community and sizable portions of the professional community. However, some accountants and accounting policymakers continued to believe that investors needed to be protected from biasly following reported results.

15 On the other hand, studies of changes in accounting method continued with other objectives in mind. Switches from first-in, first-out (LIFO) to last-in, first-out (FIFO), which have real cash flow effects due to their tax consequences, were studied extensively; these results are discussed in greater detail in Chapter 6. In addition, positive accounting theory discussed later suggested motivations for accounting changes beyond those provided by market-based accounting research.
Beaver (1973) summarized the implications for accounting policy and disclosure:

Report one method, with sufficient footnote disclosure to permit adjustment to the other and let the market interpret implications of the data for security prices. If there are no additional costs of disclosure to the firm, there is prima facie evidence that the item in question should be disclosed.10

The belief that the market does not blindly follow reported numbers led researchers to question how (if at all) markets react to accounting information. The methodology and philosophy underlying this mode of research can be understood best with an analysis of the seminal Ball and Brown (1968) study.

**Ball and Brown Study**

The goal of Ball and Brown was to document the association between the price (returns) of a firm’s securities and the accounting-earnings of the firm. To do so, they partitioned the firms in their sample into good news/bad news groupings. Based on a firm’s reported earnings, a company was classified as reporting good (bad) news if the reported earnings were above (below) those predicted by a time-series forecasting model. Then, acting as if this knowledge was known as far back as March of the year in question, two portfolios were constructed on the basis of the good news/bad news partition.

Ball and Brown’s main finding is reproduced in Figure 5-2, which compares the cumulative abnormal returns over the year for the good and bad news portfolio.11 Good (bad) news firms enjoyed, on average, abnormally positive (negative) returns as measured by ε. Ball and Brown demonstrated a clear (empirical) association between earnings and stock market reaction.

These results, although opening the door to future avenues of research, also raised many questions. As can be seen in Figure 5-2, the abnormal good/bad market reaction began one year prior to the announcement date. Further, there is little information content to the announcement itself. Ball and Brown estimated that 80% to 85% of the abnormal market performance occurred prior to the publication of the annual report. This suggests that although earnings are meaningful measures of a firm’s financial performance, by the time they are published they are redundant and have little or no market impact.

The market anticipation of reported earnings raises questions about the timeliness of annual reports and is a reminder that the annual report is not the sole source of information available to the marketplace. Competing sources of information about the economy as a whole, the industry the firm operates in, and the firm itself are available from the media, government reports, industry associations, financial analyst reports, and management announcements, as well as the firm’s own interim reports.

**Information Content Studies**

Ball and Brown spurred a series of studies intended to examine the “information content” of accounting data, with information content measured by market reaction to the announced earnings and its deviation from expected earnings. The procedure generally involved calculating cumulative abnormal returns resulting from alternative measures of earnings.

For example, Beaver and Dukeit (1972) compared the informational content of earnings with and without the deferral of income taxes. Others examined the information content of segment earnings, unusual items, capitalized leases, alternative accounting methods for oil and gas properties, and so on. These individual studies are discussed in the chapters where the related accounting principles are presented.

At first, researchers argued that, given a choice of accounting alternatives, the most desirable was the one that triggered the greatest market reaction (i.e., had the most information content). In this vein, researchers were led to draw standard-setting implications from their

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11The graph depicts one (EPS, naive model) of the three versions of earnings examined by Ball and Brown.
findings.\(^9\) This notion was soon challenged, not because earnings and market reaction were unrelated, but rather because any transactions (purchase/sale of shares) or change in market prices made some people better off than others. Thus, deciding the best alternative necessarily involved judgments affecting social consequence and the general welfare, which were deemed to be political in nature and beyond the realm of academic research.\(^9\)

The reluctance to prescribe normative solutions did not diminish the quantity of research carried out in this area; it just shifted the emphasis. Recognition was now being given to the implicit cost/benefit trade-offs resulting from any disclosure requirement.

### Relationship Between Earnings and Stock Returns

Studies of the earnings/return relationship were by far the most prevalent form of market-based research. Some research studies were broad in scope; others merely replicated previous studies, with an emphasis on methodological refinements. All in all, the research results were

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\(^9\)See Beaver (1972, p. 321) and Beaver and Tobias (1972).

\(^9\)This view held that intrinsic value, even if it existed, was not necessarily a good standard to measure the choice of accounting alternatives since somebody may "suffer" if the "truth" was known. An extensive rationale for this argument can be found in Goeddes and Dupach (1974). In response to this argument, Beaver (1973, p. 55) reversed his earlier view.
somewhat disappointing, with no major breakthroughs in terms of understanding the role of accounting earnings in the stock-return-generating process. In addition, some of the research began to turn up evidence that contradicted the semistrong form of market efficiency.

Organizing and clarifying the nature of this research is best done by reference to Ball and Brown. Their study included the following interrelated categories:

1. Accounting variable
2. Market-based variable
3. Tests of the relationship between the good news/bad news parameter and abnormal returns

Accounting Variable

Choice of the Appropriate Accounting Variable. Ball and Brown used the sign of the forecast error of annual net income and earnings per share (EPS). Beaver et al. (1979) considered the magnitude of the error, weighting their portfolio by the size of the error. Other researchers [e.g., Foster (1977); Bathe and Lornak (1984)] examined quarterly earnings and found that quarterly reports also possess information content. However, a number of studies [see Ball (1978) and Joy and Jones (1979) for surveys] began to document postannouncement drift, whereby positive (negative) abnormal returns patterns continued for some time after the announcement of good (bad) news quarterly earnings. This phenomenon was contrary to the EMH assertion that information was immediately imputed by prices.

Gonzales (1975, 1978) and Ronen and Sadan (1981), among others, focused on the appropriate definition of income-operating income, income from continuing operations, or net income—by examining whether the inclusion of special, nonrecurring, or extraordinary items had any impact on security returns. The spate of restructuring charges and other write-offs in the 1980s rekindled research in this area.

In line with the focus on cash flows in accounting and finance, researchers examined the informational content of cash flows relative to net income. As discussed in Chapter 2, the results do not generally show that cash flow data provide information that is superior to that found in accrual-based earnings data.

In response to criticisms [such as Lev (1989), discussed shortly] that using a single number such as earnings to explain return behavior was too simplistic, some studies examined the relationship between returns and various components of earnings (Lipe, 1986) and between returns and cash flow components (Livnat and Zarrow, 1990). Finally, the required disclosure of comprehensive income [see Dhillon, Subramanyam, and Trezevant (1999)] to compare the performance of that measure with net income.

Expectations of Accounting Variables. An important byproduct of the earnings/return relationship research, which soon became a major area of research in its own right, lay in the development and construction of earnings-forecasting models. Simple and complex time-series models, using annual and/or quarterly data, were compared against one another and with those generated by financial analysts and management to examine two independent but closely related questions:

1. Which forecasting model or forecast has the best predictive ability?
2. Which forecasting model or forecast most closely mirrors the market’s expectations?

The first issue is discussed in detail in Chapter 19, where various forecasting models are described and compared.

Research into the second issue (also discussed in Chapter 19) suggests that financial analysts’ forecasts are better surrogate for market expectations than models based solely on

3Others (Rebello et al. (1982) carried this a step further by weighting the forecast error by a measure of the overall variability of the estimate.
4Interestingly, Ball and Brown’s original seminal article noted that their data exhibited postannouncement drift.
the historical time series of reported income. This superiority was attributed (Brown et al. (1987)) to the fact that analysts have both more timely information and a broader set of information on which to base forecasts.

The fact that market expectations coincide with those of financial analysts led researchers to examine whether financial analysts in some sense lead the market and the market derives its expectations from analyst forecasts. Such studies found that there is indeed market reaction to changes in analysts' forecasts. Givoly and Lakonishok (1979), however, also indicated that abnormal returns could be earned by trading on revisions of analyst forecasts, again raising questions as to the efficiency of capital markets.

**Market-based Variable**

**Measurement Period (Windows) for Market Performance.** Ball and Brown examined monthly returns over a full year. Other studies, depending on the issue examined, used weekly (or daily) returns in the periods immediately surrounding the announcement. The trade-off between using narrow (short) versus wide (long) windows is that in the former case there is less risk that the market could be reacting to information other than that being tested. Wider windows have the advantage of allowing for the possibility of information leakage, thus implying earlier market reaction. In addition, and perhaps more important, the significance of a piece of information may not be known until a later date. Using too narrow a window would miss this reaction. The emergence of postannouncement drift, alluded to earlier, increased the relevance of this issue.

**Test of the Relationship Between the Good News/Bad News Parameter and Abnormal Returns**

Early studies, as we have discussed, grouped firms into good news/bad news portfolios by the sign and magnitude of the earnings forecast error. There was no explicit theoretical consideration or measurement of the relationship between earnings and returns. Later studies explicitly related the response of stock returns to earnings by the introduction of the earnings response coefficients (ERC). ERC studies tested for differential reactions across firms and for differential reactions to various components of earnings. Moreover, the ERC permitted testing of explicit relationships between prices and earnings as implied by finance valuation models. Collins and Kothari (1989) show that, as predicted by such models, risk and growth variables explain some of the cross-sectional differences in ERCs.

ERCs were typically found to be much lower than expected. This finding led to interest in the "persistence" issue. Namely, which components of earnings were permanent and hence had implications for future valuation and market reaction, and which were transitory and thus had limited implications. Kormendi and Lipe (1987) and Easton and Zmijewski (1989), for example, found that the greater the persistence, the higher the ERC.

The end of the 1980s triggered a number of "20-year" retrospectives of developments since Ball and Brown. The consensus was not complimentary. We shall return to these evaluations and research trends that evolved subsequently in the concluding section(s) of this chapter. First, however, we turn to a discussion of the third major stream in accounting research.

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2V. Brown (1985), however, presents contradictory findings.

2Pettit and Wolthers (1982, 1984) focused on the index of market reaction.

2The ERC is in the coefficient b in the regression equation $R = \alpha + b \Delta E$, where $R$ and $\Delta E$ measure returns and earnings change (growth), respectively. The ERC has strong theoretical underpinnings as it reflects price-earnings capitalization, and extreme parsimony, the coefficient b should equal the firm's P/E ratio.

2Chapter 15 discusses the ERC, issues of persistence, and their relationship to the price/earnings (P/E) ratio in greater detail.
The positive accounting approach is sometimes referred to as "contracting theory" or as the "economic consequences of accounting" literature. This approach assumes that accounting information is not merely a result of a firm's actions, but forms an integral part of the firm and its organizational structure. This information is the basis on which resources are allocated, management is compensated, debt restrictions are measured, and so on. Management, therefore, would be expected to take into consideration financial information effects in making:

- Their operating, investing, and financing decisions
- Their choice of alternative accounting methods

Impetus for this broader approach was once again led by changes in the finance and economics literature.

Disclosure and Regulatory Requirements

Economists examining regulation and its efforts began to question the belief that all regulation was motivated by concern with the public good and regulation necessarily increased social welfare. Politicians and regulators were now viewed as motivated by their own self-interest and, hence, have private incentives to promulgate certain regulations.

Disclosure requirements were also viewed in this light. The benefits from increased disclosure requirements were not automatically assumed to outweigh the costs. Moreover, it was argued (further elaborated on shortly) that firms have private incentives to produce information so long as the cost of disseminating and producing the information does not outweigh its potential rewards. These cost/benefit trade-offs are believed to influence the choice of accounting alternatives. The motivations for accounting choices, however, still required explanation.

Agency Theory

The agency theory literature also took as a starting point the argument that people are motivated by their own self-interest. Thus, managers take steps to maximize the value of the firm only if that is consistent with their own best interests. If managers could, moreover, in the absence of a monitoring device, enhance their well being (1) by appropriating resources for themselves in addition to their agreed-on compensation or (2) by shrinking their duties, equity or debt investors could be reluctant to provide financing to the firm.

Similarly, in the absence of a monitoring device, managers might engage in risk taking and other activities that would hurt the bondholder to the advantage of the equity holder. Thus, a monitoring device is needed to ensure that the agreements (contracts) among managers, shareholders, and creditors are adhered to. This discussion leads to viewing a firm not as an independent entity but rather as a "mosaic of contracts" (explicit or implicit) between parties, each motivated by its own self-interest. The role of accounting in this scenario is to provide one of the monitoring devices enabling the contracting process to function.

This approach to the accounting process views financial statements as the means by which contracting parties measure, monitor, and enforce the objectives of the various contracts. Thus, as mentioned earlier, accounting data do not merely describe reality—they in effect define reality, as real economic consequences flow from the reported numbers.

17 Although both types of research fall into this paradigm, research on the effects of accounting on management's operating decisions preceded the research on the choice of an accounting method. However, the "Rochester School," which popularized (and applied the label of "positive accounting" (see Watts and Zimmerman (1986), focused most of its attention on the second type.

18 This term can be traced to Jensen and McKeeing (1976).

19 Under this view, the choice of accounting policy by management may not necessarily have inferior implications. The various parties view the accounting process as an efficient way to operate the firm. Otherwise, if there were no proper monitoring device, equity shareholders would be reluctant to hire managers (or they would pay them less). Thus, management have an incentive to have a "good" monitoring system in place.
The specific hypotheses flowing from the positive theory approach to accounting thus are most often tested as the:

- Bonus plan hypothesis
- Debt covenant or debt/equity hypothesis
- Political process hypothesis

**Bonus Plan Hypothesis**

The contrast between management and shareholders concerns the performance expected from the manager and his or her level of compensation. Under the bonus plan hypothesis, managers are compensated for how well they manage the firm. The financial statements are used (often explicitly identified by the firm’s executive compensation plans) as the benchmark for the firm’s performance. Thus, it is in the best interest of the firm’s management to choose “liberal” accounting policies to improve their own compensation.

The motivation for choosing liberal accounting policies under this view is not “fooling the market” with all the implications vis-à-vis the efficient market hypothesis. Rather, its driving force is simply the increased management compensation resulting from higher reported earnings.9

However, the implications of the bonus plan hypothesis may be more complex.

A bonus plan does not always give managers incentives to increase earnings. If, in the absence of accounting changes, earnings are below the minimum level required for payments of a bonus, managers have incentives to reduce earnings this year because the bonuses are likely to be paid. Taking such an “earnings push” increases expected bonuses and profits of future years.10

Similarly, when earnings exceed the maximum rewarded under the compensation plan, there is no incentive to increase earnings any further.

Healy (1985), for example, found that managers tend to change accounting policies because of bonus plan incentives and these changes are associated with the initial inception or modification of the plan. However, Healy also reports that managers do not seem to alter accounting policies if they are either below the minimum threshold or over the maximum ceiling for the current period.11

**Debt Covenant Hypothesis**

Bondholders and other creditors want to ensure repayment of their principal and interest. To protect themselves, they impose restrictions on the borrower as to payments of dividends, share repurchases, and issuance of additional debt. These restrictions often take the form of accounting measures and ratios. Typical covenants call for the maintenance of acceptable levels of working capital, interest coverage, net worth, and similar variables.

Accounting choices can greatly affect measures of these variables and consequently define whether a firm is in actual or de facto default of debt covenants. The debt covenant hypothesis states that managers are motivated to choose accounting methods that minimize the likelihood that covenants would be violated. Operationally, this is often expressed as the debt/equity hypothesis that warns firms with higher debt/equity ratios tend to choose accounting policies that increase current income at the expense of future income. More recent research has refined this measure by incorporating explicit debt covenants and estimates of the cost of violation. A more elaborate description of the nature of bond covenants and research in this area is provided in Chapter 19.

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9 As former 29 points out, the management compensation hypothesis is also consistent with an efficiency price of view and not necessarily tied to opportunistic behavior on the part of managers.


11 More recent studies by Holthausen et al. (1995) and Coope et al. (1995) further refined the interrelationships between bonus plans and accounting choices.
Political Cost Hypothesis

Our previous discussion of regulation implied that the political process imposes costs on the firm. When politicians and regulators can enhance their (or their constituents') interests at the expense of others, they will often do so. Financial data, and how they are perceived, play an important role in this process. If it is believed that a firm or an industry is taking advantage of the public and is making "excessive" profits, then reported earnings will be examined to see if profits are excessive. This may result in pressures from companies to reduce prices (drug industry) or for regulators to impose a "windfall profits" tax (oil industry).

Acquisitive firms may be induced to choose accounting methods that reduce reported earnings so as to lower their political risk. For example, in 1991 (when oil prices were high because of the Kuwait crisis) some oil companies reduced reported earnings by (see Halt and Wang (1998)) managing earnings downward and making provisions for environmental costs and asset impairment.

Similarly, as Cloyd, Pratt, and Stock (1996) report, accounting methods that reduce income reported to shareholders can be motivated by the desire to use those same methods on tax returns. Even though alternative methods are permissible, 2 it is less "embarrassing" to be paying little or no taxes if financial statement income is also low.

The political cost hypothesis is often tested in the research literature as a size hypothesis. It is argued that large firms are most susceptible to political costs and pressures. The larger the firm, the more likely it would choose accounting methods that lower profits and hence lessen political pressures. One example is the oil industry. Large firms uniformly use the successful efforts method (see Chapter 7), which minimizes reported earnings; among smaller firms the full cost method is more common.

Summary of the Research

In addition to suggesting incentives for firms to choose income-increasing (or decreasing) accounting methods, the bonus plan, debt covenant, and political cost hypotheses led to studies examining the effects of accounting data on management operating decisions. Thus, for example, the requirement that research and development costs be expensed rather than capitalized (SFAS 2) lowers reported earnings for many firms. This could induce a cutback in the amount of actual research and development work undertaken if managers felt that the lower earnings would hurt their compensation and/or impair the status of the firm's bond covenants. A number of studies examining this issue are discussed in Chapter 7. Similarly, research dealing with the interaction of accounting methods and the incentives for mergers and acquisitions, pension plan terminations, and oil exploration is discussed in the chapters dealing with these topics.

Positive accounting theory also had implications for the debate (alluded to earlier) as to whether standard setters should use the results of information content studies in their deliberations. Proponents argued that using such results hinged on the assumption that the (sole) purpose of accounting data was valuation. However, if accounting data also acted as a monitoring device, it was not clear that the best measure(s) for valuation were the same as those required to optimize the monitoring function.

Finally, positive accounting research expanded the focus of market-based studies that examined market reaction to misstated and voluntary accounting changes. Instead of just viewing returns as a function of earnings, it was now postulated that return reaction may vary across firms as a function of a number of variables in addition to earnings, such as debt, equity, size, and management compensation. Changes that increase earnings, for example,

7 In the United States, only in the case of LIFO (see Chapter 6) must firms use the same accounting method for financial reporting as for tax reporting. However, in many industrial countries, such as Germany and Japan, firms must use the same accounting methods for both purposes, strengthening the motivation to use "conservative" methods.
8 For example, valuation requires forward-looking data in the form of expected earnings and cash flows. The monitoring function, in its stewardship role, on the other hand, is in some sense backward looking (i.e., "What have you done for me lately?"). See Holthausen and Watts (2001) and Barth, Brauher, and Langrand (2001) for a detailed discussion of these issues.
could result in positive market reaction for firms with high debt/equity ratios because the increased income would permit wealth transfers from the firm's existing bondholders to equity shareholders as additional debt could be taken on without affecting the retained debt/equity ratio. On the other hand, for large-sized firms, the increased income could increase the possibility of political costs, thus resulting in negative market reaction.

Empirical Research: A Mid-Course Evaluation

The late 1980s and early 1990s proved to be a turning point in the direction of empirical research in accounting. Lev’s (1989) and Bernard's (1989), in separate papers, detailed many shortcomings and weaknesses of market-based research. In doing so, they voiced the growing concern among academics and practitioners as to the benefits of this research. Similar findings emanated from Watts and Zimmerman’s (1990) ten-year retrospective of positive accounting research. Additionally, cracks began to appear in the efficient market hypothesis (and CAPM), the underpinnings of market-based research. This section reviews these two retrospective papers, followed by a summary of EMN anomalies that have important implications for financial statement analysis. This sets the stage for a discussion of current research trends.

Critical Evaluation of Research Findings

Both Lev and Bernard were critical of poor research and, as Exhibit 5-1 indicates, their views were consistent. They found that although some initial research findings were beneficial, in general, the results contributed to neither:

- An understanding of how and to what extent earnings are used by investors, nor
- The deliberations of accounting policy makers

EXHIBIT 5-1
Summary of Bernard and Lev’s Findings

Lev suggests a number of reasons for the failure of market-based research and directions for future research. Bernard echoes Lev’s suggestions.


1. Researchers used reported earnings and did not adjust for accounting manipulations by managers, year-to-year random occurrences, or the inherent arbitrariness of many accounting measurement and valuation techniques.

2. There is little or no knowledge as to how accounting information is disseminated to the marketplace; that is, what financial analysts do (adjust) with the information.

3. Lev argues for a research emphasis on the quality of earnings that incorporates effects of alternative GAAP measures on earnings and their relationship to valuation models.


1. “Progress will require that we end reliance on simple, naïve models... An injection of knowledge about the accounting system and fundamental analysis is necessary...”

2. “It would frequently be useful to sacrifice large sample sizes and sophisticated statistics for the sake of achieving a deeper understanding of the relations among accounting variables, and between those variables and equity values...”

3. “Further reliance on formal modeling would be fruitless.”


Imagine what our view of the role of accounting information might be if Bell and Brown had found, as many predicted they would, that accounting earnings were completely uncorrelated with the information used by investors! (Ibid., p. 3.)
To a great extent, they attributed this failure to a fixation on the part of the researchers on sophisticated statistical techniques at the expense of model building and specification of fundamental relationships. Studies focused on finding statistical significance even if the results had little or no economic significance. The lack of model building further resulted in researchers focusing on one number—earnings—rather than on the richer information set available to investors. As a result of these criticisms, Lev and Benartzi suggested a research approach incorporating the following elements:

- More careful analysis of valuation models as they relate to accounting and earnings.
- Measuring earnings/returns relationships on an individual rather than portfolio basis (as analysts usually view firms).
- Accurately reported earnings over time and examining longer time horizons as well as future year impacts rather than the immediate effect of a single period's earnings on stock prices.
- Earnings components used in research should incorporate all possible adjustments, not just one at a time, to arrive at a more comprehensive and meaningful analysis.

Watts and Zimmerman's review of the positive accounting literature led to findings and prescriptions similar to the reviews of market-based research. In reviewing the research, they concluded that the results are generally consistent with the homoskedastic and debatable hypotheses. With respect to the political cost hypothesis, however, results appear to hold only for the largest firms and are driven by the oil and gas industry. However, they noted that although results tend to be statistically significant, in many studies, the explanatory power (R²) is economically significant of the models is low.

In their discussion of avenues for further research, Watts and Zimmerman note that most studies were concerned with incentives or management to behave opportunistically, as those tend to be the most observable (and hence testable) phenomena. However, they argue that greater effort is needed to strengthen the relationship between theory and empirical testing in determining whether management choices are purely opportunistic, or are motivated by efficiency considerations inherent in the firm's organizational structure and/or industrial dynamics.

**Market Anomalies**

A number of anomalies have been found that question the validity of the EMH and the conclusions drawn from the research described previously. Some of these anomalies are related to the relationship between earnings and returns, whereas others seem to be purely market-driven.

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1. Lev, for example, notes that studies which examine the earnings/returns relationships tend to report low R² values. (The R² measures the percentage of variation in returns explained by variation in earnings. A high R² implies a strong earnings-returns association.) On average, earnings could explain no more than 5% of the variation in returns. Such results, while statistically significant, do not provide a meaningful explanation of the relationship between earnings and returns.
2. These criticisms suggest an interesting area of accounting research. Although researchers have suggested that fundamental analysis in accounting relies on the market issue being fueled by repriced data, they have argued against using the same data that the market supposedly adapted. The examples offered are that with large amounts of noise resulting from developments, trends would be averaged away. The transaction itself is subject to empirical verification, as it would depend on whether the errors cancel, or are set in such fashion systematically relaxed. Subject to the evidence on this issue, it would seem that many researchers write off a form of functional analysis.
3. To test this, Lev examined the relationship of earnings and returns taken over a five-year period. He argued that over a longer period systematic and smoothing trends in earnings and earnings would flow into the R² over this longer period proved to be 25%—several times the R² by the one-year data.
5. A more recent review of the literature on accounting choice by Fairlie, Lys, and Vennes (2001) concludes that Watts and Zimmerman's prescriptions were not successfully implemented.
6. We conclude that much of the research in the 1990s made little progress in expanding our understanding of accounting choice because of limitations in research design and focus on replication rather than criticism of current knowledge.
January Effect. Empirical evidence suggests that markets perform relatively well during the month of January. This would seem to be a violation of the weak form of the EMH, as knowledge of this pattern could lead to abnormal gains by buying shares at the end of December.

Monday Effect. After the weekend, market prices tend to open at lower levels, suggesting an advantageous strategy of selling short at the Friday close and covering the short position Monday morning.

Size Effect. Smaller firms (measured by total assets or total capitalization) tend to outperform the market even when returns are adjusted for risk. This suggests that investing in a portfolio of smaller-sized firms is a sound investment strategy.

Price-Earnings Ratio. Firms with low P/E ratios tend to outperform the market even when returns are adjusted for risk. This suggests that investing in a portfolio of firms with low P/E ratios is a sound investment strategy.

Book-to-Market Ratios. Fama and French (1992) found that the book-to-market ratio was a strong predictor of average returns. Figure 5-3 (based on Fama and French) shows that firms with higher book-to-market ratios had higher monthly returns than firms with lower ratios. This suggests investing in firms with high book-to-market ratios.

The Brioloff Effect. Professor Abraham Brioloff has periodically criticized the financial reporting practices of some firms in Barron’s. The common stocks of these firms typically suffered large price drops [see Figure 5-4, from Foster (1979)] following publication. Since Brioloff’s analysis is based on publicly available information, it would seem that the market price prior to Brioloff’s analysis did not fully reflect all the available information.5

![Figure 5-3: Evidence of book-market effect. Note that the ranking of book-market equity goes from the lowest (1) to the highest (10) decile. Source: Data based on S. F. Fama and K. R. French, "The Cross-Section of Expected Stock Returns," Journal of Finance (June 1992), Table 2, p. 436.](image)

*5We note that there is anecdotal evidence that Brioloff’s articles continue to have a negative effect on the stock price of companies he criticizes. A recent example is Cisco, whose stock fell approximately 12% in the week that Brioloff’s article, “Pooling and Fooling,” appeared in the October 21, 2000 edition of Barron’s.*
Value Line. Figure 5-5 presents the performance of the stock groupings ranked by Value Line Investment Services. The continued and consistent performance of these groupings, relative to the market, implies that Value Line is able to beat the market.

Postannouncement Drift. The EMH holds that stock prices adjust instantaneously to new information. Empirical evidence, however, suggests that price changes persist for some time after the initial announcement.

Overreactive Market-Contrarian Strategy. DeBondt and Thaler (1985) found that if stocks were ranked by their performance over a previous five-year period (the base period),
those firms with the worst base-period investment performance outperformed those firms with the best base-period performance over the next three years. This suggests that markets overreact and a contrarian investment strategy of buying recent losers and avoiding recent winners will be successful.

Lakonishok et al. (1994) extend this argument to explain the book-to-market phenomenon.23 They argue that when a firm’s earnings decline, the market overreacts, driving the price down (and the book-to-market ratio up) sharply. Similarly, when a firm reports good earnings, the marketises the stock price up (and the book-to-market ratio down). Over time, the extent of the overreaction becomes clear and prices reverse, yielding above-average returns for high (low) book-to-market firms.24 Although all these anomalies have implications for analysts, explanations of the book-market effect, size effect, Brilioff effect, and the Value Line results relate most directly to the role of financial analysts in the capital markets. The results of Lakonishok et al. with respect to the book-market effect justify a (contrarian and) value approach to investments by Graham and Dodd.25 Underpriced securities exist if the market overreacts.

The size effect is often attributed to the fact that fewer analysts follow smaller firms than larger firms. Thus, not all information available about these firms is immediately incorporated in stock prices, leaving room for abnormal returns to be earned by those who trade on the information early enough. The excess returns on small-firm portfolios may also represent compensation for the cost and difficulty of analyzing underfollowed companies.

Some researchers have made similar arguments with respect to postannouncement drift. Bartov, Radhakrishnan, and Krinsky (2000) found the drift to be less pronounced for stocks having large institutional holdings.26 As a possible explanation of the Brilioff effect, Foster noted that Brilioff’s superior accounting knowledge and analytical insights were in a sense nonpublic information, and hence capital market efficiency was not violated per se. This suggests that Brilioff could earn a (competitive) return from using his superior skills. The so-called information market, rather than the capital market, is seen as the explanation for the research results.27 Value Line rankings are based on the performance of variables referred to as “earnings momentum” and “earnings surprise.” The former relates to changes in quarterly earnings over time, whereas the latter relates to the deviation between actual and forecasted earnings. Whether this qualifies as statistical or fundamental analysis is open for debate. The results, however, indicate that superior analysis can lead to results that outperform the market.

In summing up the evidence on efficient markets, Bodie, Kane, and Marcus (1999) state:

The lesson is clear: An overly doctrinaire belief in efficient markets can paralyze the investor and make it appear that no research effort can be justified. This extreme view is probably unwarranted. There are enough anomalies in the empirical evidence to justify the search for underpriced securities that clearly go on. The bulk of the evidence, however, suggests that any supposedly superior strategy should be taken with many grains of salt. The market is competitive enough that only differentially superior information or insight will earn money; the easy pickings have been picked.28

23See also Zarowin (1989, 1990) who argues that the overreaction effect may just be another manifestation of the size effect.
25David Donnan (“Value Will Out,” Forbes (June 17, 1996), p. 146) makes the point that the academic community has finally come around to recognizing the teachings of Graham and Dodd.
26Ali, Sengul, and Trombly (1999), however, found little relationship between investor sophistication and abnormal returns.
28Zvi Bodie, Alex Kane, and Alan J. Marcus, Investments (Homewood IL: Richard D. Irwin, 1990), p. 362.
Market-based and positive accounting research were originally fueled by parallel developments in economics and finance theory (e.g., efficient markets and agency theory) and the desire to find empirical results for testable hypotheses. The current state of accounting research is also driven by the above forces but with a twist. From a theory-perspective, the EMH is no longer taken as a given but has itself become a legitimate area of research. Furthermore, as the survey papers indicated, there was dissatisfaction with the nature of the test designs and results emanating from the research.

Current research involves a return to principles of valuation, fundamental analysis, and as noted, tests of (the degree of) market efficiency. No longer are prices or returns taken as given and accounting data just tested to justify their usefulness. The emphasis is no longer on stock behavior in reaction to accounting information but rather on forecasting future accounting attributes (such as ROE and book values) and their relationship to a firm’s intrinsic or fundamental value. Emphasis has shifted to the information derived from accounting data and its relationship to value. Furthermore, that value may or may not be the same as that reflected in market prices. This shift signals a return to the thinking inherent in the classical approach (i.e., accounting data could yield information about value), however, with a major difference. The relationships posited had to be justified empirically and doing so required building models with stronger theoretical underpinnings.

The current approach, thus, in some sense, synthesizes elements borrowed from both the classical and market-based approaches. Initially, the trend evolved from market-based research; however, it has been sustained to a great degree by the application of theoretical valuation models originally developed close to a half-century ago in the works of the classical writers.

Much of the empirical research was at first, cast as a refinement of earlier information studies. However, eventually a difference set in. Research on the diversity of the earnings response coefficient across firms led to a rethinking of basic price/earnings relationships. Evidence that prices could be used to forecast future earnings led to the (re)awareness (in research design) that prices react not only to changes in current earnings but also to changes in expected earnings. Consistent with these directions in the research were calls for a return to fundamental analysis. As Ou and Penman (1989) noted:

There have been many claims of market efficiency with respect to “publicly available” information, but (astonishingly, when one considers the many tests of technical analysis) little research into the competing claim of fundamental analysis.80

Ball and Brown Revisited

Ou (1990) is indicative of the initial trend in this research. We describe this study in some detail because its research design contrasts with Ball and Brown, discussed earlier in the chapter.

Figure 5-6 captures Ou’s salient results. Similar to Ball and Brown, Ou separates firms into good- and bad-news categories. The graphs marked E+ and E−, in fact, are replications of Ball and Brown’s study and are based on whether a firm’s reported earnings for the year were above (good news) or below (bad news) earnings predicted by a time-series forecasting model.

Ou then extended this analysis by partitioning the firms on the basis of both current-year earnings and a forecast of the next year’s earnings. A model was designed to predict whether the next year’s reported earnings would be above (F+ = good news) or below

(F’ = bad news) the earnings forecast by a time-series model. This resulted in the formation of four portfolios:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Reported This Year</th>
<th>Predicted Next Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>E’ F’</td>
<td>Good news</td>
<td>Good news</td>
</tr>
<tr>
<td>E’ F’</td>
<td>Good news</td>
<td>Bad news</td>
</tr>
<tr>
<td>E’ F’</td>
<td>Bad news</td>
<td>Good news</td>
</tr>
<tr>
<td>E’ F’</td>
<td>Bad news</td>
<td>Bad news</td>
</tr>
</tbody>
</table>

The next-year forecast was in the form of a probability assessment (P_t) as to whether next year’s earnings would be above or below those predicted by a (naive) time-series model. The following eight variables were used in the forecasting model:

1. Percentage growth in the ratio of inventory to total assets
2. Percentage growth in the total asset turnover (net sales/total assets)
3. Change in dividends per share relative to previous year
4. Percentage growth in depreciation expense
5. Percentage growth in the ratio of capital expenditures to total assets
6. Percentage growth in the previous year’s ratio of capital expenditures to total assets
7. Return on equity
8. Change in return on equity relative to the previous year

As the graph indicates, all the E’ portfolios and all the E’ portfolios moved together until year-end. Then, from January on, the F’ portfolio (good-news forecasts) moved upward, whereas the F’ (bad-news forecasts) turned downward. The results indicate that the forecast model could be used successfully to predict (the direction of) future prices.

1) These variables, culled from a list of 65 variables, are characteristic of those commonly used in financial statement analysis.
Ou’s study is characterized by two attributes that differentiate it from previous market-based research. First, the analysis is not motivated to show whether accounting information is associated on an ex post basis with market prices, but rather whether the information can be used ex ante as a basis of valuation. Second and consistent with this ex ante approach, Ou broadly addresses the act of acquiring information by utilizing “tools of fundamental analysis” in her research design.

Subsequent papers by Ou and Penman (1989) and Holthausen and Larcker (1992) using similar tools of fundamental analysis examined whether financial ratios could be used in a successful trading strategy. Ou and Penman (1989) was an extension of Ou (1990). Their purpose was to see whether a trading strategy based on earnings forecasts (Pf) would prove to be fruitful. It was; the average market-adjusted return was 14.5% per annum over a 24-month holding period. Holthausen and Larcker (1992) replicated Ou and Penman with some variation. They did not use ratios to forecast earnings first and then “trade” based on the expected earnings. Rather, they developed a model to forecast abnormal returns directly. Implementation of this model proved to be more successful in earning abnormal returns than Ou and Penman’s strategy.

It is worth noting that we refer to these approaches as utilizing tools of fundamental analysis rather than fundamental analysis itself. All firms and variables were subjected to identical statistical analysis. The utilization of variables in these studies was done in a purely mechanical fashion. Fundamental analysis requires more in-depth analysis, i.e., nature of which varies from firm to firm. Additionally, it needs theoretical underpinnings. Both these attributes are missing from these studies.

Contextual Approaches and Fundamental Analysis

Lev and Thiagarajan (1993) took a step in this direction. Rather than just allowing statistical models to select their predictive variables, they attempted to, a priori, select predictive variables claimed to be useful by financial analysts. The variables they examined are listed in Exhibit 5-2. Additionally, the authors allowed for the possibility that the effects of these variables might vary (contextual approach), depending on the state of the economy or industry. For example, the impact of changes in inventory levels may depend on whether the firm itself increases inventory levels, or the economy as a whole is expanding. They found that the variables were generally value-relevant and could be used to forecast abnormal returns. Moreover, varying economic and industry conditions had the desired effect. The interpretation of the financial variables, however, could be quite subtle and situation-specific.

Specifically, they tested the following trading strategy: if the Pf was greater than 60%, university a least a 60% probability that the earnings change would be positive, a long position in the firm’s stock was taken; if the Pf was less than 40%, equivalent to a greater-than-60% probability that the earnings change would be negative, a short position in the firm’s stock was taken.

There is much debate (see Ball (1992)) as to whether Ou and Penman’s results are an example of market inefficiency as the returns they garnered were abnormal, or whether their model allowed them to predict better than expected earnings relative to the CAPM. Others (Craig (1993) and Stauffer (1992)) argue that the abnormal returns merely compensate for risk. We do not intend to enter that debate. What is important is that under either premise, the variables proved to be valuation-relevant.

If anything, this shortcoming may have biased the results downward; more promising results may be obtainable with more in-depth analyses.

Ou and Penman (1995), in a subsequent paper, attempted to address this shortcoming and test that their approach “was an empirical analysis, without a guiding conceptual foundation” (p. 5). Similarly Holthausen and Larcker viewed their results as somewhat of a puzzle:

We find it surprising that a statistical model, derived without any consideration of any economic foundation, can earn excess returns of the magnitude determined here. Had our trading strategy been based on some new economic insight ... or if it had been based upon hours of diligent investigation of actual reports of the firm’s suppliers, customers, the industry, and/or government documents, we would be more convinced that the trading strategy was earning “true” excess returns. As such, we view the results of our paper as something of a puzzle. [E. W. Holthausen and D. F. Larcker, “The Prediction of Stock Returns Using Financial Statement Information,” Journal of Accounting and Economics, (January–February 1994), p. 410.]

[15]
EXHIBIT 5-2
Fundamental Analysis Variables Used by Lev and Thiagarajan (1993)

<table>
<thead>
<tr>
<th>1. Indications of future growth, for example:</th>
<th>3. Quality of earnings indicators, for example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Levels of investment (capital expenditures and R&amp;D)</td>
<td>a. LIFO versus FIFO earnings</td>
</tr>
<tr>
<td>b. The percentage change in inventory and receivables relative to that of sales</td>
<td>b. Audit qualification</td>
</tr>
<tr>
<td>2. Profitability measures, for example:</td>
<td>4. Leading indicators, for example:</td>
</tr>
<tr>
<td>a. Changes in the gross margin percentage</td>
<td>a. Order backlog</td>
</tr>
<tr>
<td>b. The rate of change in SGA &amp; A expenses</td>
<td>b. Change in labor force indicating changes in future costs</td>
</tr>
</tbody>
</table>

More recently, Abarbanell and Bushee (1997 and 1998) and Pitrowski (2000) also used a priori conceptual arguments in selecting the accounting variables and ratios they studied and found them to be useful in predicting future earnings as well as stock returns.

Other Areas of Research

The shift in emphasis in research paradigms suggested by the contextual approach also influenced other areas of research. The question of whether accrual income or cash flow is a better predictor of future cash flows and/or stock returns has long been a subject of considerable interest to researchers. Dechow (1994), Dechow et al. (1998), and Barth et al. (2001) showed that the relative performance of income versus cash flows could be better examined by taking into account differences caused by environments (industries) where cash flow would have significant timing and matching problems (e.g., shorter windows, volatility of working capital and investing requirements, and longer operating cycles).

In Chapter 4, we noted that factors that affect a firm’s (current and future) profitability include the stage of its life cycle, its competitive strategies, operating leverage, and the competitive environment it faced. Anthony and Ramesh (1992) used the first two factors and Ahmed (1994) the latter two to explain cross-sectional variation in ERCs. In a similar spirit, Teets and Wasley (1996) show that the low ERCs found in previous studies may be a result of using cross-sectional data (one size fits all). By using firm-specific time-series models they were able to estimate substantially larger ERCs.

On an industry level, a number of studies have also taken a contextual approach. Amir and Lev (1996) examined the wireless communication industry and showed that accounting information had relevance only once nonaccounting industry-specific variables were considered. A number of studies (e.g., Beatty et al. (1996), Collins, et al. (1996), and Bishop (1996)) have examined the banking industry. Eccher (1996) examined the computer software industry.

Although many of these latter studies are an improvement insofar as they are based on a priori relationships, they still lack a formal model relating firm value to accounting variables.

Coming Full Circle: From Edwards and Bell to Ohlson

Ohlson’s residual income model filled this gap. With Ohlson (1995) and Feltham and Ohlson (1995), accounting research came full circle. These papers rediscovered and expanded on valuation equations originally put forth by Edwards and Bell (1961) and Pettit and Riech (1938). Ou and Pentman, referring to the valuation relationships emanating from the EBO (Edwards and Bell, and Ohlson) paradigm, note (p. 8) that the equations

"are presumably what traditional fundamental analysis had in mind when they talked of "buying (future) earnings."

9Exhibit 2.2 in Chapter 2 discusses these papers in greater detail.
10These papers were originally completed in 1991 and 1992, respectively, and earlier versions were well-known in the academic community. As noted, it took some time until the work was accepted.
11Hindle, Bowen, and Wallace (1997), in fact, trace the idea of residual income valuation to Hamilton (1777) and Marshall (1800)!
Unlike valuation models in vogue in the finance literature that undo the accounting (accrual) process, using (free) cash flows to arrive at value, these (i.e., Olson's) models express value using basic accounting variables such as earnings, ROE, and book values.97

The efficacy of this model compared to other valuation models and the assumptions inherent in the model have come under close examination.98 Although not all researchers have accepted the appropriateness of (all details of) the model, its introduction has had a major impact on accounting research as the model:

- Provides theoretical underpinnings for some market-based empirical research
- Supplies a framework for future research by directly connecting accounting variables and (intrinsic) value

In doing so, these models have become "hot" and have spawned a number of papers and research directions. For example, 1.00 et al. (1992) show that over long horizons, a pre-specified earnings model can explain price changes. The results of Olson (1989) provide insight as to whether ERCs should be defined in terms of earnings levels or earnings changes (or both). Peisman (1996) analyzes which variables are relevant in differentiating price/book and price/earnings ratios.

Most importantly, from the perspective of financial statement analysis, Frankel and Lee (1998) and Dechow, Patent, and Sloan (1999) used variations of the residual income model combined with analysts' earnings forecasts to determine stocks' intrinsic value. They then determined that abnormal returns could be earned by investing in mispriced securities (on the basis of their intrinsic value).

Market (In)Efficiency and Accounting

Many of the studies listed above and their results implicitly reject market efficiency. They showed that abnormal returns could be earned using accounting data. At the very least, these studies reject the assumption that markets immediately reflect all available information, as it appears that prices take several years to fully reflect accounting information.

Other studies have gone a step further and examined whether firms use earnings management techniques to "fool the market." Rather than manipulate earnings solely (as suggested by the positive account literature) for restructuring purposes, managers do so (see Teoh, Welch, and Wurg) in order to inflate stock prices prior to IPOs as well as seasoned equity offerings.99

Originality (in the 1970s and 1980s), market efficiency was a given and it was deemed futile for managers to engage in income manipulation of this kind unless another motivation could be found. Positive accounting and the implications for debt covenants and management compensation were offered as the answer. Obviously, we have come full circle.

IMPLICATIONS OF EMPIRICAL RESEARCH FOR FINANCIAL STATEMENT ANALYSIS

The empirical studies reviewed in this chapter put to rest a number of beliefs, some of which, with hindsight, may have been overly naive in the first place. Financial markets are not statistical and do not react in knee-jerk fashion to accounting information. On the contrary, the reactions seem to be complex enough that the vast methodological carpet-bombing of the last 30-plus years has not been able to uncork them.

The current state of academic research can be summarized with the following characteristics:

- Further theoretical development and empirical validation of models that relate accounting variables to firm valuation

97These models have their commercial equivalents (e.g., Derr Stewart's EVA™ and McKinsey's Economic Profit Model).

98See Chapter 10 for a more detailed discussion of valuation models and research in this area.

99The technology bubble of the late 1990s and the accounting practices of these companies may be another example of this phenomenon. See Problem 5-14 for further discussion of this issue.
• Development of (forecasting) models that predict future values of those accounting variables deemed relevant by the theoretical models
• Analysis of firm-specific and/or industry-specific valuation models
• Tests of market efficiency with respect to accounting data

These characteristics indicate that research needs to focus on understanding the work of the financial analyst as well as the relationships between accounting variables and market prices. Analysts seem to be the driving force keeping the market intelligent, and there is evidence that they lead the market. Moreover, it is acknowledged that "better" analysts can carve out worthwhile areas of expertise.

Positive theory has pointed out the important contractual considerations that cannot be ignored when examining accounting data. These other considerations need to be included when the foundations of contextual analysis are laid.

Classical theory, at the same time, cannot be discarded for two reasons. Even if one disagrees with the view that theory can dictate "correct" accounting standards, the fact remains that much of GAAP is based on the measurement of theoretical constructs. Thus, in analyzing financial statements, it is important to know the underlying principles that argue for a given treatment before interpreting or adjusting it to the analyst's own view. Second, empirical evidence shows that accounting data generated by the accrual process are value-relevant both ex post and ex ante.

At the same time, the analyst must be aware that the relationships governing accounting information involve complex interactions among investors, managers, and regulators and these interactions may have powerful implications for securities valuation.

In conclusion, accounting research has clearly not proven that financial analysis is a futile exercise. On the contrary, it is trying to get a better understanding of how financial analysis works. Although financial markets have become increasingly sophisticated in recent years, we believe that superior financial analysis is still rewarding. We advance three arguments for this belief:

1. The ability to understand the impact of alternative accounting methods places the investor at a competitive advantage in a world of increasingly complex transactions and sophisticated analytical techniques.
2. Market efficiency cannot be taken for granted, especially for smaller, less intensively researched companies.
3. Recent financial history provides, at least in retrospect, many cases where financial markets ignored warning signals. These left holding the bag suffered significant financial losses. Investors in some technology companies and financial intermediaries are recent examples of this phenomenon.

At the same time, it would be foolish to ignore the lessons learned from the research and theory reviewed. Successful investing cannot simply focus on financial statements themselves. An awareness of the environment of the firm and its management is needed for proper analysis.

As Bernard stated:

There is much groundwork to be laid. Moving to within-industry analyses, explicitly considering how the information conveyed by accounting numbers is conditioned on the accounting context, gaining a better understanding of the relations among accounting numbers before understanding price data, emphasizing economic interpretation more and statistics less—may be useful in laying that groundwork.62

We agree with that point of view and believe that this book can be useful in laying such groundwork. It is with this belief that we continue with the remaining chapters of this book.

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62A more detailed discussion of analysis forecasts and other forecasting models is presented in Chapter 19.
63Bernard, p. 196.