



Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature[☆]

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Abstract

Financial reporting and disclosure are potentially important means for management to communicate firm performance and governance to outside investors. We provide a framework for analyzing managers' reporting and disclosure decisions in a capital markets setting, and identify key research questions. We then review current empirical research on disclosure regulation, information intermediaries, and the determinants and economic consequences of corporate disclosure. Our survey concludes that current research has generated a number of useful insights. We identify many fundamental questions that remain unanswered, and changes in the economic environment that raise new questions for research. © 2001 Published by Elsevier Science B.V.

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1. Introduction

Corporate disclosure is critical for the functioning of an efficient capital market.¹ Firms provide disclosure through regulated financial reports, including the financial statements, footnotes, management discussion and analysis, and other regulatory filings. In addition, some firms engage in voluntary communication, such as management forecasts, analysts' presentations and conference calls, press releases, internet sites, and other corporate reports. Finally, there are disclosures about firms by information intermediaries, such as financial analysts, industry experts, and the financial press.

In this paper we review research on financial reporting and voluntary disclosure of information by management, summarize key research findings, and identify areas for future work. Section 2 examines the forces that give rise to demand for disclosure in a modern capital-market economy, and the institutions that increase the credibility of disclosures. We argue that demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors. The credibility of management disclosures is enhanced by regulators, standard setters, auditors and other capital market intermediaries. We use the disclosure framework to identify important questions for research, and review available empirical evidence.

Section 3 reviews the findings on the regulation of financial reporting and disclosure. Much of this research documents that earnings, book values, and other required financial statement information is "value relevant". However, fundamental questions about the demand for, and effectiveness of, financial reporting and disclosure regulation in the economy remain unanswered.

Research on effectiveness of auditors and information intermediaries is discussed in Section 4. There is evidence that financial analysts generate valuable new information through their earnings forecasts and stock recommendations. However, there are systematic biases in financial analysts' outputs, potentially arising from the conflicting incentives that they face. While theory suggests that auditors enhance the credibility of financial reports, empirical research has provided surprisingly little evidence to substantiate it.

Section 5 reviews the economic determinants of managers' financial reporting and disclosure decisions. Research using the contracting perspective finds that accounting decisions are influenced by compensation and lending contracts, as well as political cost considerations. Research using the capital market perspective documents that voluntary disclosure decisions are related to capital market transactions, corporate control contests, stock-based compensation, shareholder litigation, and proprietary costs. There is also

¹ Corporate disclosure can also be directed to stakeholders other than investors. However, there has been relatively little research on these types of voluntary disclosures. Consequently, we focus in this paper on investor communication.

evidence that investors view voluntary disclosures, such as management forecasts, as credible information. In Section 6, we discuss the capital market consequences of managers' financial reporting and disclosure decisions. Studies document that voluntary disclosures are associated with stock performance, bid-ask spreads, cost of capital, analyst coverage and institutional ownership. However, many of the studies discussed in Sections 5 and 6 suffer from significant endogeneity and measurement error problems, making it difficult to interpret their findings.

We believe that financial reporting and disclosure will continue to be a rich field of empirical enquiry. Throughout the paper, we identify a number of unanswered questions. Further, as we discuss in Section 7, there are significant changes in the economic environment—rapid technological innovation, the emergence of network organizations, changes in the business economics of audit firms and financial analysts, and the globalization of capital markets. These changes have the potential to alter the nature of financial reporting and disclosure, creating rich new opportunities for research.

2. The role of disclosure in capital markets

In this section, we examine the role of disclosure in modern capital markets. Information and incentive problems impede the efficient allocation of resources in a capital market economy. Disclosure and the institutions created to facilitate credible disclosure between managers and investors play an important role in mitigating these problems. The framework for disclosure that we discuss in this section is then used to develop implications for research.

A critical challenge for any economy is the optimal allocation of savings to investment opportunities. There are usually many new entrepreneurs and existing companies that would like to attract household savings, which are typically widely distributed, to fund their business ideas. While both savers and entrepreneurs would like to do business with each other, matching savings to business investment opportunities is complicated for at least two reasons. First, entrepreneurs typically have better information than savers about the value of business investment opportunities and incentives to overstate their value. Savers, therefore, face an “information problem” when they make investments in business ventures. Second, once savers have invested in their business ventures, entrepreneurs have an incentive to expropriate their savings, creating an “agency problem”.

2.1. Information problem

The information or “lemons” problem arises from information differences and conflicting incentives between entrepreneurs and savers. It can potentially

lead to a breakdown in the functioning of the capital market (see Akerlof, 1970). For example, consider a situation where half the business ideas are “good” and the other half are “bad”. Both investors and entrepreneurs are rational and value investments conditional on their own information. If investors cannot distinguish between the two types of business ideas, entrepreneurs with “bad” ideas will try to claim that their ideas are as valuable as the “good” ideas. Realizing this possibility, investors will value both good and bad ideas at an average level. Therefore, if the lemons problem is not fully resolved, the capital market will rationally undervalue some good ideas and overvalue some bad ideas relative to the information available to entrepreneurs.

There are several well-known solutions to the lemons problem. Optimal contracts between entrepreneurs and investors will provide incentives for full disclosure of private information, thus mitigating the misvaluation problem (see Kreps, 1990, Chapters 17 and 18). Another potential solution to the information asymmetry problem is regulation that requires managers to fully disclose their private information. Finally, because of the lemons problem, there is a demand for information intermediaries, such as financial analysts and rating agencies, who engage in private information production to uncover managers’ superior information.

Fig. 1 provides a schematic of the role of disclosure, and information and financial intermediaries in the working of capital markets. The left side of Fig. 1 presents the flow of capital from savers to firms. Capital can flow to business ideas in two ways. First, it can flow directly from savers to businesses.

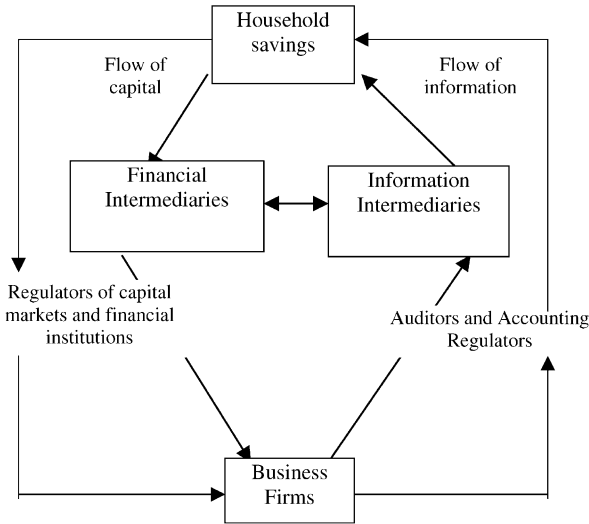


Fig. 1. Financial and information flows in a capital market economy.

Examples include private equity and angel financing. A second and more typical way for capital to flow from savers to businesses is through financial intermediaries, such as banks, venture capital funds, and insurance companies. The right side of the figure presents the flow of information from businesses to savers and intermediaries. Firms can communicate directly with investors through such media as financial reports and press releases. They also communicate with financial intermediaries or through information intermediaries, such as financial analysts.

A variety of economic and institutional factors determine whether contracting, regulation and information intermediaries eliminate information asymmetry, or leave some residual information problem. These factors include the ability to write, monitor, and enforce optimal contracts, proprietary costs that might make full disclosure costly for investors, regulatory imperfections, and potential incentive problems for intermediaries themselves. Research on corporate disclosure, therefore, focuses on cross-sectional variation in these factors and their economic consequences.²

2.2. Agency problem

The agency problem arises because savers that invest in a business venture typically do not intend to play an active role in its management—that responsibility is delegated to the entrepreneur. Consequently, once savers have invested their funds in a business venture, the self-interested entrepreneur has an incentive to make decisions that expropriate savers' funds. For example, if savers acquire an equity stake in a firm, the entrepreneur can use those funds to acquire perquisites, pay excessive compensation, or make investment or operating decisions that are harmful to the interests of outside investors (see Jensen and Meckling, 1976).

Alternatively, if savers acquire a debt stake in a firm, the entrepreneur can expropriate the value of the investment by issuing additional more senior claims, by paying out the cash received from savers as a dividend, or by taking on high risk capital projects (see Smith and Warner, 1979). The issuance of new senior debt and payment of dividends reduces the likelihood that there will be sufficient resources available to fully repay existing or lower priority debt in the event of financial distress, benefiting the entrepreneur. High risk capital projects increase the likelihood of both good outcomes that disproportionately benefit the entrepreneur, and bad outcomes that are disproportionately borne by debtholders.

There are several solutions to the agency problem. Optimal contracts between entrepreneurs and investors, such as compensation agreements and

² A similar approach is used by finance scholars to study corporate finance issues such as capital structure, dividends/stock repurchases and private equity financing (see, for example, Myers and Majluf, 1984).

debt contracts, seek to align the interests of the entrepreneur with those of external equity and debt claimants. These contracts frequently require entrepreneurs to disclose relevant information that enables investors to monitor compliance with contractual agreements and to evaluate whether entrepreneurs have managed the firm's resources in the interests of external owners. A second mechanism for reducing agency problems is the board of directors, whose role is to monitor and discipline management on behalf of external owners. Finally, information intermediaries, such as financial analysts and rating agencies, engage in private information production to uncover any manager misuse of firm resources. The market for corporate control, which includes the threat of hostile takeovers and proxy contests, also mitigates agency problems between corporate insiders and outside shareholders.

Whether contracting, disclosure, corporate governance, information intermediaries, and corporate control contests eliminate agency problems is an empirical question. A variety of economic and institutional factors determine their effectiveness, including the ability to write and enforce optimal contracts, potential incentive problems for corporate boards and intermediaries, and the nature of the corporate control market. As discussed below, empirical research on financial reporting and disclosure has focused primarily on cross-sectional variation in contracting variables to explain management's financial reporting decisions.

2.3. Research implications

The information and agency frameworks raise a number of important questions for financial reporting and disclosure researchers. These include questions on (i) the role of disclosure and financial reporting regulation in mitigating information and agency problems, (ii) the effectiveness of auditors and information intermediaries as a means of increasing the credibility of management disclosures and uncovering new information, (iii) factors affecting decisions by managers on financial reporting and disclosure, and (iv) the economic consequences of disclosure. Table 1 summarizes these questions. The remainder of this paper discusses the findings and limitations of research on these questions, as well as opportunities for future research. We focus on empirical research; analytical research is covered by other papers in this issue (see Verrecchia, 2001; Dye, 2001; Lambert, 2001).

3. Regulation of disclosure and financial reporting

3.1. Regulation of disclosure

There are significant regulations governing corporate reporting and disclosure in all countries around the world. For example, in the US,

Table 1
Research questions implied by disclosure framework

Topic	Questions
Regulation of disclosure	<p>Why is there a need for regulation of disclosure in capital markets? What types of disclosures should be regulated and which should not?</p> <p>How effective are accounting standards in facilitating credible communication between managers and outside investors? What factors determine their effectiveness?</p> <p>Which mandated disclosures should be recognized directly in the financial statements and which should be included as supplemental disclosures?</p>
Auditing/intermediaries and disclosure	<p>How effective are auditors in enhancing the credibility of financial statements? What factors influence auditors' effectiveness?</p> <p>How effective are financial analysts as information intermediaries? What factors influence their effectiveness?</p> <p>How does corporate disclosure affect analyst coverage of firms?</p>
Managers disclosure decisions	<p>What factors affect management's disclosure choices?</p> <p>What is the relation between disclosure, corporate governance, and management incentives? What role do boards and audit committees play in the disclosure process?</p>
Capital market consequences of disclosure	<p>How do investors respond to corporate disclosures? Are firm disclosures made outside the financial statements credible?</p> <p>Do investors evaluate disclosures that are included directly in the financial statements differently from those that are included as supplemental disclosures?</p> <p>What factors influence investors' perception of the quality of capital market disclosures across economies?</p> <p>How does disclosure affect resource allocation in the economy?</p>

companies accessing capital markets are required to follow disclosure rules set by the Securities and Exchange Commission (SEC). A long-standing research question is what economic rationale justifies regulating corporate disclosure. An equally important question is the effectiveness of disclosure regulation in solving the information and agency problems in capital markets.

Absent market imperfections or externalities, firms have incentives to optimally trade off the costs and benefits of voluntary disclosure, and to produce the efficient level of information for investors in the economy. Researchers, therefore, attempted to identify potential market imperfections that might justify the prevalence of disclosure regulations around the world. Leftwich (1980), Watts and Zimmerman (1986), and Beaver (1998) note that accounting information can be viewed as a public good since existing stockholders implicitly pay for its production but cannot charge potential

investors for their use of the information. Prospective investors, therefore, free ride on information paid for by existing shareholders, leading to the potential underproduction of information in the economy.

A second explanation for regulation, also discussed by Leftwich (1980), Watts and Zimmerman (1986), and Beaver (1998), proposes that disclosure regulation is motivated by concerns other than market failures. For example, regulators may be concerned about the welfare of financially unsophisticated investors. By creating minimum disclosure requirements, regulators reduce the information gap between informed and uninformed. This explanation for disclosure implies that the objective of disclosure regulation is to redistribute wealth, rather than to improve economic efficiency. After all, unsophisticated investors could choose to reduce the information gap by investing in financial knowledge or hiring the services of sophisticated intermediaries.

Both the above arguments for regulation leave many unanswered questions. For example, are potential market failures in disclosure significant? Does regulation of disclosure materially improve the situation? Are there potential negative consequences of regulation? For example, Posner (1974) argues that regulators tend to become captured by those they regulate (see also Watts and Zimmerman, 1986). Is this an important problem for disclosure? How critical is disclosure regulation for the development of capital markets? Is disclosure regulation necessary for the functioning of capital markets even when there are sophisticated capital market intermediaries? Finally, if regulation is effective in increasing economic efficiency, what types of disclosure should be required by regulation and what should be left to the discretion of management?

Whether there is a market failure for disclosure and whether it is corrected through regulation are empirical questions. However, empirical research on the regulation of disclosure is virtually non-existent. This is surprising given the central role regulation plays in disclosure, and the limitations of the economic arguments supporting regulation.

3.2. Regulation of financial reporting choices

Accounting standards regulate the reporting choices available to managers in presenting the firm's financial statements. This type of regulation potentially reduces processing costs for financial statement users by providing a commonly accepted language that managers can use to communicate with investors.

Several questions arise about the regulation of financial reporting methods. First, what are standard setters' objectives? How do they decide to examine certain reporting issues and not others? Second, what are optimal forms of organization and due process for standard setting bodies? These issues have become highly relevant in the recent debate on the organizational structure of the IASC. Third, do accounting standards add value for investors or other stakeholders?

Accounting research has largely focused on the third question. This research has taken two forms. In the “capital markets” research, studies examine the relation between accounting information and security prices. This research is extensively reviewed by Kothari (2001). The most significant conclusion is that regulated financial reports provide new and relevant information to investors. Further, this research documents that the informativeness of required accounting varies systematically with firm and country characteristics (see Collins and Kothari, 1989; Easton and Zmijewski, 1989; Alford et al., 1993; Ball et al., 2000a). Several recent studies document a decline in the level of relevance of earnings and other financial statement items over the last 20 years. Using a variety of different research designs, Chang (1998), Lev and Zarowin (1999), and Brown et al. (1999) find that, in the US, the relations between stock returns and earnings, and between stock prices, earnings and book values have deteriorated over time.³

The above evidence suggests that regulated financial information provides valuable information to investors. However, because this research does not compare the relative informativeness of regulated and unregulated financial information, it does not necessarily imply that regulation is superior to a free market approach to disclosure. The finding that the value of regulated accounting data varies systematically based on firm characteristics, time-dependent variables, and country-specific institutions is also subject to alternative interpretations. Do the differences reflect the influence of systematic economic factors that make regulation more or less effective? Or, is the variation driven by correlated omitted variables such as firm- and country-growth, or risk?

Another branch of accounting research examines the value relevance of information presented under proposed new financial reporting standards. This research uses the association between earnings and stock prices or returns as a measure of value relevance. The evidence from this literature indicates that most recent standards generate accounting information that is value relevant. One notable exception is inflation accounting, where no relation to stock prices or returns is observed (see Beaver et al., 1980; Gheyara and Boatsman, 1980; Ro, 1980). A more comprehensive discussion of this literature is provided by Holthausen and Watts (2001), who criticize the use of value relevance as a metric for evaluating accounting standards, and Barth et al. (2001) who offer an alternative viewpoint on the subject.

³ Collins et al. (1997), Francis and Schipper (1999), and Ely and Waymire (1999) examine the relation between returns, earnings and book values. They conclude that the relation between returns and earnings has deteriorated, but that this has been offset by an increase in the value-relevance of book values. However, Chang (1998) argues that these findings are sensitive to the authors' research design choices.

We identify four areas where we believe additional research on the role of standard setting is warranted. First, do current accounting standards provide timely information to investors or simply confirm information that is already available to them through other sources? Event study tests of the information content of particular accounting methods attempt to evaluate the timeliness of alternative methods.

Second, studies that evaluate the benefits of alternative reporting methods under consideration by standard setters are more likely to provide useful evidence if they examine costs and benefits of all of the alternatives considered. This has usually been difficult to accomplish since researchers do not have access to the inside information required to estimate performance under different reporting alternatives. Several studies attempt to mitigate this problem. Barth (1991) evaluates alternative metrics for pension liabilities using public disclosures available prior to the release of the new accounting standard. Healy et al. (1999b) develop a simulation model for a pharmaceutical firm, allowing them to compare the value relevance of alternative measures of R&D performance.

A third area for future research in the standard setting arena is to assess which types of standards are likely to be most useful for investors and other stakeholders. For example, on average do bright-line rules produce information that is more useful than rules that require managers to exercise judgment in selecting reporting methods? Under what conditions do bright-line rules dominate those that require management judgment and vice versa?

Finally, future research on standard setting can examine optimal standards across countries. There is currently heated debate about the merits of global standards. Global standards, however, are only likely to be optimal if the institutions that monitor and enforce adherence to standards work equally well across countries. In the US, auditors provide assurance that the financial statements comply with accounting regulations, and the SEC has enforcement authority. Dechow et al. (1996) and Beneish (1999) find that US companies face a significant stock price penalty if the SEC decides to pursue them for violating accounting standards. However, the magnitude of type one and type two errors in SEC enforcement actions is unclear. The effectiveness of monitoring and the penalties from enforcement of standards in other countries, particularly those that are only beginning to develop capital markets, is even more open to question.⁴ For example, these countries typically lack established financial reporting and auditing standards, and well-trained business professionals required for effective auditing and investment banking.

In summary, surprisingly little is known about why financial reporting and disclosure is regulated in the capital market. Is there a significant market

⁴See DeFond et al. (1999), Ball et al. (2000a, b), and Eccher and Healy (2000) for studies that begin to examine this issue.

imperfection or externality that regulation attempts to resolve? If so, how effective is disclosure regulation in resolving this problem?

4. Role of auditors and intermediaries in the disclosure process

4.1. Auditors

Auditors provide investors with independent assurance that the firm's financial statements conform to GAAP. The fact that stock prices react to earnings announcements (see Kothari, 2001) suggests that overall investors regard accounting information as credible. However, does credibility arise from assurance provided by auditors or from other sources, such as managers' potential legal liability for providing misleading disclosures?

Studies of audit effectiveness examine whether audit qualifications add value for investors and whether auditors' actions are independent of the interests of their clients. Research shows that capital providers require firms to hire an independent auditor as a condition of financing, even when it is not required by regulation. For example, Leftwich (1983) finds that banks require firms to present audited financial information, even for private companies. This implies that capital providers regard auditors as enhancing credibility.

To our knowledge, there is no research that examines directly whether or not auditors significantly enhance the credibility of reported financial statements. Available evidence suggests that auditor qualifications do not provide timely signals to the capital market. For example, studies of the stock market reaction to audit qualifications show that qualified opinions do not provide new information to investors, in part because they can be anticipated (see Dodd et al., 1984, 1986; Dopuch et al., 1986, 1987). This evidence suggests that audit qualifications at best confirm information already available to investors. Choi and Jeter (1992) report that subsequent to qualifications, firms show lower stock price responses to earnings. However, since the study does not control for the unusual performance of firms with qualifications, it is difficult to attribute the decline in earnings response coefficients to reduced credibility.

There are several potential explanations for the paucity of evidence on the value of auditor opinions to investors. Watts and Zimmerman (1981a, b) posit that auditors act in the interest of the managers that hire them, rather than in the interest of the firms' investors. They report evidence that is weakly consistent with this hypothesis using data on auditors' responses to proposed new accounting standards. An alternative explanation is that auditors provide formal assurance only on the annual report, making it difficult for them to provide timely signals to the capital markets. A third explanation is that auditors are concerned about minimizing their legal liability, rather than enhancing the credibility of financial reports. Accordingly, they lobby for

standards that reduce their own risk, even though such standards reduce the value of financial reports to investors. Future research may be able to distinguish between these explanations.

Several additional questions arise about the value of audit opinions. First, how do consulting services provided to audit clients affect auditors' perceived and actual independence, and the value of their audit report? Several large audit firms have recently spun-off their consulting operations, providing an opportunity to examine whether their clients have more credible financial statements than those for clients of competitors that continue to provide both audit and consulting services.

Second, there have been a number of important changes in the audit environment in the late 1990s. Legal and organizational changes have limited auditors' liability for audit failures. Also, several of the large audit firms have recently made significant changes in their audit methodology, focusing on a business audit rather than a transactions audit. What impact do these changes have on audit failures and the credibility of financial statements?

Third, what factors influence the credibility of audit reports and financial statements across countries? Factors that are likely to affect credibility could include differences in audit standards, the legal framework governing the audit profession, enforcement of standards and rules, and differences in professional training requirements. DeFond et al. (1999) examine the effect of new auditing standards that improved auditor independence in China. They find that the new standards increased the frequency of qualified opinions, but that this was accompanied by a "flight from audit quality". However, in general the role of auditors and auditing standards in emerging markets has been unexplored in the literature.

4.2. Intermediaries

Studies of the value of intermediaries largely focus on financial analysts. Financial analysts collect information from public and private sources, evaluate the current performance of firms that they follow, make forecasts about their future prospects, and recommend that investors buy, hold or sell the stock. Academic studies focus on information provided to investors from two summary measures produced by analysts, earnings forecasts and buy/hold/sell recommendations. Overall, this evidence indicates that financial analysts add value in the capital market. Their earnings forecasts are more accurate than time-series models of earnings, presumably in part because they are able to incorporate more timely firm and economy news into their forecasts than time-series models (see Brown and Rozeff, 1978; Brown et al., 1987; Givoly, 1982). Also, analysts' earnings forecasts and recommendations affect stock prices (see Givoly and Lakonishok, 1979; Lys and Sohn, 1990; Francis and Soffer, 1997).

There is also evidence of analyst bias in forecasting and making recommendations. Early evidence on bias indicated that analyst earnings forecasts tended to be optimistic, and that their recommendations were almost exclusively for buys (see Brown et al., 1985). However, recent evidence indicates a change in the pattern of analysts' earnings forecasts in the late 1990s. In this period there has been a marked decline in analyst optimism (see Brown, 1997; Matsumoto, 2000).

Research on the role of financial analysts in capital markets indicates that they play a valuable role in improving market efficiency. For example, Barth and Hutton (2000) find that stock prices for firms with higher analyst following more rapidly incorporate information on accruals and cash flows than prices of less followed firms.

Recent research on analysts attempts to improve our understanding of their cross-sectional performance. Two factors are examined, cross-sectional variation in analysts' incentives and expertise. Studies on incentives note that analysts are rewarded for providing information that generates trading volume and investment banking fees for their brokerage houses. Thus, analysts have incentives to make optimistic forecasts and recommendations when their brokerage house has been hired to underwrite or is being considered to underwrite a new securities issue (see Lin and McNichols, 1998; Dechow et al., 2000).

Studies of the role of analysts' expertise examine factors likely to influence their aptitude, such as experience, brokerage affiliation, and company or industry assignments. Jacob et al. (1999) find that analyst forecast accuracy is affected by innate ability, company assignments, brokerage affiliation, and industry specialization. There appears to be little benefit from experience. Gilson et al. (2000) find that, for focused companies, analysts that specialize by industry issue more precise forecasts than non-specialist analysts.

Academic research on financial analysts also examines whether there is any relation between management's disclosure decisions, and analyst decisions to cover firms. Bhushan (1989a, b) and Lang and Lundholm (1993) argue that voluntary disclosure lowers the cost of information acquisition for analysts and hence increases their supply. However, the effect of voluntary disclosure on demand for analysts' services is ambiguous. Expanded disclosure potentially enables financial analysts to create valuable new information, such as superior forecasts and buy/sell recommendations, thereby increasing demand for their services. However, public voluntary disclosure also pre-empts analysts' ability to distribute managers' private information to investors, leading to a decline in demand for their services.

Lang and Lundholm (1993) find that firms with more informative disclosures have larger analyst following, less dispersion in analyst forecasts, and less volatility in forecast revisions. Healy et al. (1999a) show that firms with

increased analyst ratings of disclosure have lower analyst coverage than their industry peers in the pre-event period. After the increase in disclosure, however, analyst coverage for the sample firms reverts to the same level as other firms in the industry. Finally, Francis et al. (1998) find that there is an increase in analyst coverage for firms making conference calls.

Studies of intermediaries other than financial analysts include tests of the value provided by business journalists that analyze and evaluate companies' financial reporting decisions, and bond-rating agencies. Foster (1979, 1987) examined stock price reactions to the publication by Barrons of articles by Abraham Briloff, an academic accountant who periodically questioned firms' accounting decisions. Foster found that firms whose accounting was challenged by Briloff on average suffered an 8% decline in stock price when the article was released. He concluded that this reaction probably reflected Briloff's superior insights and analysis.

Studies of the value provided by bond-rating agencies (see Holthausen and Leftwich, 1986; Hand et al., 1992) conclude that rating downgrades provide new information to investors, but that upgrades are already reflected in stock and bond prices when they are announced.

In summary, there has been considerable academic research on the value provided by auditors and financial intermediaries in reviewing firm's disclosures and in making their own disclosures on the firm. This evidence shows that at least some of the disclosures made by financial analysts, the business press, and bond-rating agencies affect stock prices. However, there remain important gaps in our knowledge about the incentives of auditors and intermediaries, and the impact on their credibility.

Among all the areas of research reviewed in this paper, we view the research on financial analysts as the most advanced. Nonetheless, there are several opportunities for research in this area. First, how does Regulation Full Disclosure recently issued by the SEC affect financial analysts' forecasting performance? Second, what was the role of financial analysts and other information intermediaries in the recent dramatic run-up and decline in stock prices of US technology stocks?

5. Managers' reporting decisions

Research on managers' reporting decisions has focused on two areas. The first area, often called positive accounting theory, focuses on management's financial reporting choices. We provide a brief review of this literature; Fields et al. (2001) provide a more comprehensive survey of recent research in this area. The second area, the voluntary disclosure literature, focuses on management disclosure decisions.

5.1. Positive accounting theory literature

The positive accounting theory literature focuses on management's motives for making accounting choices when markets are semi-strong form efficient, there are significant costs in writing and enforcing contracts, and there are political costs arising out of the regulatory process (see Watts and Zimmerman, 1978, 1986). The central focus of this literature is to examine the role of contracting and political considerations in explaining management accounting choices when there are agency costs and information asymmetry. Two types of contracts are examined, contracts between the firm and its creditors (debt contracts), and contracts between management and shareholders (compensation contracts). Political considerations include management's concern about attracting explicit or implicit taxes, or regulatory actions.

Contracts are not the only mechanisms for dealing with information asymmetry discussed in the positive accounting literature. For example, Watts and Zimmerman (1983, 1986) discuss the role of reputation as a mechanism for resolving information problems in the context of auditing.

Empirical studies of positive accounting theory test whether managers make accounting method changes or accrual estimates to reduce the costs of violating bond covenants written in terms of accounting numbers, to increase the value of earnings-based bonuses under compensation contracts, or to reduce the likelihood of implicit or explicit taxes. Findings indicate that firms that use accounting methods to accelerate earnings are small and have relatively high leverage. Also, firms' accrual decisions appear to be affected by compensation contracts.

While a majority of positive accounting studies focus on analyzing post-contracting opportunistic accounting choices, some studies view the choice of accounting and disclosure as part of the contracting process itself. Holthausen and Leftwich (1983), Watts and Zimmerman (1990), Smith and Watts (1992), and Skinner (1993) argue that the use of accounting information in lending and compensation contracts should be viewed as endogenous. Consequently, the nature of a firm's assets and its investment opportunity set simultaneously determine its optimal contracting relations and its accounting method choices. Watts and Zimmerman (1983) examine the role of voluntary interim reporting as an ex ante contracting part of corporate governance. The ex ante role of accounting in the contracting process is also examined by Zimmer (1986), Christie and Zimmerman (1994), and Skinner (1993).

Although positive accounting theory studies generated several interesting empirical regularities regarding firms' accounting decisions, there is ambiguity about how to interpret this evidence (see reviews by Holthausen and Leftwich, 1983; Watts and Zimmerman, 1990). For example, size is typically viewed as a proxy for political sensitivity, but is likely to proxy for many other factors. Also, as Palepu (1987), Healy and Palepu (1990), and DeAngelo et al. (1996)

suggest, accounting decisions by managers of highly leveraged firms in financial distress may in part reflect an attempt to conserve cash, or changes in investment opportunities.

5.2. Voluntary disclosure literature

Research on voluntary disclosure focuses on the information role of financial reporting for capital markets (see Healy and Palepu, 1993, 1995). This research supplements the positive accounting literature by focusing on stock market motives for accounting and disclosure decisions.

Disclosure studies assume that, even in an efficient capital market, managers have superior information to outside investors on their firms' expected future performance. If auditing and accounting regulations work perfectly, managers' accounting decisions and disclosures communicate changes in their firm's business economics to outside investors. Alternatively, if accounting regulation and auditing are imperfect, a more likely possibility, managers trade off between making accounting decisions and disclosures to communicate their superior knowledge of firm's performance to investors, and to manage reported performance for contracting, political or corporate governance reasons. Management motives for making voluntary disclosure and their credibility are, therefore, interesting empirical questions. Below, we discuss empirical evidence on these questions. We also separately analyze potential limitations of the research, many of which are shared across studies.

5.2.1. Motives for voluntary disclosure

Researchers discuss six forces that affect managers' disclosure decisions for capital market reasons: capital market transactions, corporate control contests, stock compensation, litigation, proprietary costs, and management talent signaling.

(a) Capital markets transactions hypothesis

Theory. Healy and Palepu (1993, 1995) hypothesize that investors' perceptions of a firm are important to corporate managers expecting to issue public debt or equity or to acquire another company in a stock transaction. Consider a firm whose managers have superior information to outside investors regarding the firm's future prospects. Myers and Majluf (1984) point out that if this information asymmetry cannot be resolved, such firms will view making public equity or debt offers to be costly for existing shareholders. Consequently, managers who anticipate making capital market transactions have incentives to provide voluntary disclosure to reduce the information asymmetry problem, thereby reducing the firm's cost of external financing.

Barry and Brown (1985, 1986) and Merton (1987) reach a similar conclusion by modeling the premium that investors demand for bearing information risk when there is an information asymmetry between managers and outside

investors. Managers can reduce their cost of capital by reducing information risk through increased voluntary disclosure. A corner solution is not possible because of costs associated with credible voluntary disclosure.

Evidence. Several studies provide evidence on voluntary disclosure policies of firms issuing new capital. In a comprehensive study of corporate disclosure, Lang and Lundholm (1993) document that analysts' ratings of disclosures are higher for firms issuing securities in the current or future periods. In a subsequent paper, Lang and Lundholm (1997) analyze disclosures specifically for firms that make equity offerings and find that there is a significant increase in disclosure beginning six months before the offering, particularly for the categories of disclosure over which firms have the most discretion. Finally, Healy et al. (1999a) find that firms with increased analyst ratings of disclosures have an abnormally high frequency of subsequent public debt offers.⁵ However, as discussed below, debt and equity offers are not isolated events, making it difficult to assess whether managers' disclosure strategies are caused by public capital market transactions or by omitted related factors.

(b) *Corporate control contest hypothesis*

Theory. This hypothesis is motivated by evidence that boards of directors and investors hold managers accountable for current stock performance. Warner et al. (1988), and Weisbach (1988) show that CEO turnover is associated with poor stock performance. Poor stock price performance is also associated with the probability of hostile takeovers, which results in high CEO turnover (see Palepu, 1986; Morck et al., 1990). DeAngelo (1988) finds that dissident shareholders who wage a proxy fight for board representation frequently cite poor earnings performance as justification for proposed management changes. Voluntary disclosure theory hypothesizes that, given the risk of job loss accompanying poor stock and earnings performance, managers use corporate disclosures to reduce the likelihood of undervaluation and to explain away poor earnings performance.

One limitation is that this analysis does not take account of multi-period considerations. For example, if managers expect that a commitment to provide extensive disclosure today could be used to hold them more accountable for any subsequent poor performance, managers of firms subject to corporate control actions may not wish to expand disclosure in a period of poor performance.

Evidence. There has been relatively little research on voluntary disclosures accompanying hostile takeovers or for target firms engaged in proxy contests.

⁵Frankel et al. (1995) find that firms that raise new capital are not more likely to provide management forecasts in the period immediately prior to the offering than at other times. However, this finding is not surprising given that securities laws restrict managers from making forward-looking statements prior to equity offerings.

One recent exception is Brennan (1999), who finds that targets are more likely to make management earnings forecasts during contested takeover bids.

(c) *Stock compensation hypothesis*

Theory. Managers are also directly rewarded using a variety of stock-based compensation plans, such as stock option grants, and stock appreciation rights. These types of compensation schemes provide incentives for managers to engage in voluntary disclosures for several reasons.

First, managers interested in trading their stock holdings have incentives to disclose private information to meet restrictions imposed by insider trading rules and to increase liquidity of the firm's stock. Restrictions on insider trading also provide managers with incentives to make voluntary disclosures to correct any perceived undervaluation (relative to their own information set) prior to the expiration of stock option awards.⁶

Second, managers acting in the interests of existing shareholders have incentives to provide voluntary disclosures to reduce contracting costs associated with stock compensation for new employees. Stock compensation is more likely to be an efficient form of remuneration for managers and owners if stock prices are a precise estimate of firm values. Otherwise, managers will demand additional compensation to reward them for bearing any risk associated with misvaluation. Firms that use stock compensation extensively are therefore likely to provide additional disclosure to reduce the risk of misvaluation.⁷

Evidence. Consistent with this hypothesis, Noe (1999) finds that the incidence of management forecasts is positively associated with trading by insiders in the firm's stock. Aboody and Kasznik (2000) show that firms delay disclosure of good news and accelerate the release of bad news prior to stock option award periods, consistent with managers making disclosure decisions to increase stock-based compensation. Miller and Piotroski (2000) find that managers of firms in turnaround situations are more likely to provide earnings forecasts if they have higher stock option compensation at risk.

(d) *Litigation cost hypothesis*

Theory. The threat of shareholder litigation can have two effects on managers' disclosure decisions. First, legal actions against managers for inadequate or untimely disclosures can encourage firms to increase voluntary

⁶ In the absence of insider trading restrictions, managers may benefit from the undervaluation by buying shares rather than making disclosures to enhance the value of their stock options.

⁷ As discussed in Section 2, we use the term misvaluation to refer to the gap between the value of the firm conditional on managers' information set and on investors' information set. This gap arises when there is information asymmetry between managers and investors that is not fully resolved. Throughout our analysis, we assume that both managers and investors are rational, and that stock prices fully incorporate all public information.

disclosure. Second, litigation can potentially reduce managers' incentives to provide disclosure, particularly of forward-looking information.

Skinner (1994) examines the first of these effects and hypothesizes that managers of firms with bad earnings news have an incentive to pre-disclose that information to reduce the cost of litigation. This hypothesis presumes that in the absence of litigation managers have an incentive to time the disclosure of good and bad news symmetrically. Litigants and courts, therefore, rationally focus on whether there were delays in bad news announcements.

One question that arises about the litigation hypothesis is why pre-disclosure of poor performance reduces the risk of litigation. Is it because delaying bad news until a *required* earnings announcement is *prima facie* evidence that management did not *voluntarily* disclose information to investors in a timely manner? Alternatively, some suggest that pre-disclosure of bad news is beneficial because it spreads the stock price decline over multiple dates, thereby reducing the likelihood of being detected in screens used to identify claims. Of course, this presumes that investors do not make an unbiased assessment of the bad news conveyed by a pre-announcement of earnings. The price drop would then occur at the pre-release date rather than the subsequent earnings announcement, and would continue to hit the screen used to identify potential claims.

Litigation potentially reduces incentives to provide disclosure, particularly of forward-looking information, if managers believe that the legal system penalizes forecasts made in good faith because it cannot effectively distinguish between unexpected forecast errors due to chance and those due to deliberate management bias.

Evidence. The empirical evidence on the litigation hypothesis is mixed. Skinner (1994, 1997) finds that firms with bad earnings news are more than twice as likely to pre-disclose the poor earnings performance than are firms with good news. In addition, firms with negative earnings news are more likely to be subject to litigation. Finally, he finds weak evidence that litigation costs are lower for firms that pre-disclose earnings than for those that do not.

In contrast, Francis et al. (1994) find that 62% of the firms in their litigation sample were sued over earnings forecasts or pre-emptive earnings disclosures. In contrast, 87% of their sample of no-litigation firms with comparable stock price declines pre-announced an earnings decline. They concluded that pre-disclosure does not appear to be a deterrent to litigation.

Empirical evidence also suggests that litigation risk is not just relevant for firms with bad news, but also those with good news. For example, Miller and Piotroski (2000) report that managers of turnaround firms in industries subject to high litigation risk are more likely to make management forecasts of positive future earnings information than firms in low risk industries. However, this conclusion should be interpreted with caution because the study only examines the forecasting behavior of firms that *ex post* experienced a turnaround. It is

unclear whether the findings can be extended to firms that were ex ante expected by managers to show a turn around, but failed to do so ex post.

(e) *Management talent signaling hypothesis*

Theory. Trueman (1986) argues that talented managers have an incentive to make voluntary earnings forecasts to reveal their type. A firm's market value is a function of investors' perceptions of its managers' ability to anticipate and respond to future changes in the firm's economic environment. The earlier that investors infer that the manager has received information, the more favorable will be their assessment of the manager's ability to anticipate future changes and the higher will be the firm's market value. To the best of our knowledge, there is no evidence to either support or refute this hypothesis.

(f) *Proprietary cost hypothesis*

Theory. Several researchers hypothesize that firms' decisions to disclose information to investors is influenced by concern that such disclosures can damage their competitive position in product markets. (see Verrecchia, 1983; Darrough and Stoughton, 1990; Wagenhofer, 1990; Feltham and Xie, 1992; Newman and Sansing, 1993; Darrough, 1993; Gigler, 1994). These studies conclude that firms have an incentive not to disclose information that will reduce their competitive position, even if it makes it more costly to raise additional equity. However, this incentive appears to be sensitive to the nature of the competition, in particular whether firms face existing competitors or merely the threat of entry, and on whether firms compete primarily on the basis of price or long-run capacity decisions.

This literature is extensively reviewed in Verrecchia (2001) and Dye (2001). Unlike the previous five hypotheses on voluntary disclosure, the proprietary cost hypothesis assumes there are no conflicts of interest between managers and shareholders. As a result, this literature predicts that voluntary disclosure will always be credible. The focus of this literature, therefore, is on examining the economic forces that constrain full disclosure.

Hayes and Lundholm (1996) argue that proprietary costs induce firms to provide disaggregated data only when they have similarly performing business segments. Firms with widely varying performance across business segments have incentives to conceal these performance differences from competitors by only reporting aggregate performance.

Evidence. There has been relatively little direct evidence on the proprietary cost hypothesis. Piotroski (1999a) examines firms' decisions to provide additional segment disclosures. He concludes that firms with declining profitability and with less variability in profitability across industry segments are more likely to increase segment disclosures, consistent with the proprietary cost hypothesis.

The proprietary cost hypothesis can be potentially extended to include other externalities from information disclosure. For example, Watts and Zimmerman (1986) argue that firms are concerned about potential political and contracting

costs from financial disclosures, which may in turn affect their voluntary disclosure.

5.2.2. Credibility of voluntary disclosure

The extent to which voluntary disclosure mitigates resource misallocation in the capital market depends on the degree of credibility of information on the firm's economics that is not available from other sources, including required disclosures. Because managers have incentives to make self-serving voluntary disclosures, it is unclear whether management disclosures are credible.

There are potentially two mechanisms for increasing the credibility of voluntary disclosures. First, third-party intermediaries can provide assurance about the quality of management's disclosures. Second, there can be validation of prior voluntary disclosures through required financial reporting itself.⁸ For example, managers' forecasts of revenues and earnings can be verified using actual realizations. This mechanism will be effective in making disclosures credible if there are adequate penalties for managers that knowingly make disclosures that are subsequently proven false. The legal system and board monitoring play an important role in imposing such penalties.

Much of the evidence on the credibility of voluntary disclosures focuses on the accuracy and stock price effects of management forecasts. Waymire (1984) and Ajinkya and Gift (1984) show that there are positive stock price reactions to management forecasts of earnings increases, and negative reactions to forecasts of earnings decreases.⁹ Pownall and Waymire (1989) find that the market reaction to unexpected management earnings forecasts is similar in magnitude to the reaction to unexpected earnings announcements themselves. This suggests that management forecasts have comparable credibility to audited financial information.

There is also evidence that investors are justified in viewing management forecasts as providing credible new information. Tests of the accuracy of these forecasts indicate that they are more accurate than contemporaneous analysts' forecasts (see Hassell and Jennings, 1986; Waymire, 1986), and are unbiased (see McNichols, 1989). In addition, financial analysts appear to revise their forecasts in response to information reflected in management's forecasts (see Hassell et al., 1988). Piotroski (1999a) provides evidence that voluntary disclosures other than management forecasts are also credible. He examines a sample of firms that increase segment reporting disclosures, and finds that the

⁸Lundholm (1999) points out that this role of accounting can be exploited to increase disclosures on intangible assets. However, if the legal system cannot distinguish between random forecast errors from deliberate management bias, such disclosures can potentially impose significant litigation costs.

⁹Hutton et al. (2000) find that good news forecasts, however, are only informative if they are accompanied by verifiable forward-looking statements.

expanded disclosure is associated with an increase in analysts' forecast accuracy and a decline in dispersion.

Other evidence on the credibility of voluntary disclosure is provided by Amir and Lev (1996). They report that voluntary disclosures such as market population size (POPS) and market penetration have a more significant relation to stock prices than required financial statement information, indicating that investors view such voluntary disclosures as credible. Finally, Frost (1997) finds evidence that disclosure credibility declines for financially distressed firms.

5.2.3. *Limitations of studies on voluntary disclosure*

One of the major limitations of the above studies is the difficulty in measuring the extent of voluntary disclosure. Researchers use several proxies for this variable, including management forecasts (see Miller and Piotroski, 2000), and metrics based on the AIMR database (see Lang and Lundholm, 1993, 1997; Healy et al., 1999a), and self-constructed measures (see Botosan, 1997; Miller, 1999). However, each approach has its limitations.

There are some significant advantages to using management forecasts as a voluntary disclosure proxy. First, they can be precisely measured. Managers' estimates are typically either point or range estimates for earnings or revenues. Second, the timing of the disclosure is typically known. As a result it is possible to assess whether the forecast preceded or lagged particular changes in variables of interest using daily or weekly data. This enables researchers to conduct more powerful tests of motivations for and consequences of voluntary disclosure.

However, one limitation of management forecasts as a proxy is that their accuracy can be easily verified by outside investors through actual earnings realizations. In contrast, it is more difficult to ex post verify the accuracy of many other types of voluntary disclosures, such as customer satisfaction and human capital. As a result, research using management forecasts as the metric for voluntary disclosure is likely to increase the power of the tests, but these findings may not generalize to other forms of voluntary disclosure.

The AIMR data provides a more general measure of voluntary disclosure than management forecasts. The annual survey produces firm rankings of aggregate voluntary disclosure for each industry covered in the survey, as well as disaggregate rankings for voluntary disclosure published in annual financial statements and 10-Ks, voluntary disclosures published in quarterly financial reports, and voluntary disclosure provided through firms' investor relations. The panels that provide the rankings comprise the leading analysts in each industry, and are therefore likely to be particularly well qualified to judge firms' disclosures. In addition, the metric covers all disclosure, including that through analyst meetings and conference calls. However, it is unclear whether the

analysts on the AIMR panels take the ratings seriously, how they select firms to be included in the ratings, and what biases they bring to the ratings.

Studies with self-constructed measures of disclosure face a different set of problems. Because the authors have developed their own metric of voluntary disclosure, there is increased confidence that the measure truly captures what is intended. However, to the extent that construction of the metrics involves judgment on the part of the researcher, the findings may be difficult to replicate. In addition, these metrics typically rely on disclosures provided in the annual report or other such public documents. As a result any disclosures that firms provide in analysts meetings, conference calls, and other such venues are omitted from the analysis.

Endogeneity is a potentially serious problem for some of the above studies. For example, firms that have public capital market transactions are also likely to be facing changes in their investment opportunity sets. It is then difficult to assess whether the relation between high levels of disclosure and increases in disclosure for these firms is attributable to the public issue per se, or to other changes that the firm is experiencing.

Thus, the analyst ratings and self-constructed proxies are likely to be a noisy measure of disclosure. This is likely to reduce the power of the tests used in examining the motives for voluntary disclosure.¹⁰

6. Capital market consequences of reporting and disclosure

Both the positive accounting theory and the voluntary disclosure literatures have examined the capital market consequences of changes in corporate reporting. Positive accounting theory research has focused on effects of changes in accounting methods and regulatory decisions to change standards. Voluntary disclosure research has examined the capital market effects of changes in corporate disclosure.

6.1. Positive accounting theory literature

As noted above, the major focus of the positive accounting literature has been to document contracting and political factors that explain management financial reporting decisions. However, several studies have examined the economic consequences and shareholder wealth effects of changes in accounting choices. For example, studies of the effects of changes in oil and gas accounting standards find that firms required to change from the full cost

¹⁰In contrast, the measurement problems that we discussed for the positive accounting literature are for the independent variables, leading to a concern about bias in the findings due to correlated omitted variables.

method to successful efforts experienced a decline in stock prices (see Dyckman and Smith, 1979; Collins et al., 1981). There is some evidence that the decline is correlated with contracting variables (see Lys, 1984). However, studies of the stock price effects of other accounting standards report largely insignificant incremental contracting or political cost effects (Leftwich, 1981). Similarly, studies of firms' accounting method changes indicate that there is generally no significant relation between stock returns at announcement of the accounting change and contracting or political cost considerations (see Holthausen, 1981).

There are at least three potential explanations for this finding. First, accounting decisions have no significant shareholder wealth effects. However, there is some evidence that contradicts this explanation. The oil and gas studies themselves find that there is a significant stock price effect associated with the unanticipated change in accounting standard. Also, Foster (1979) documents significant stock price changes for critiques of firms' accounting decisions by analysts such as Abraham Briloff.¹¹

A second explanation is that it is difficult to measure stock price effects for many of the events studied (see Holthausen and Leftwich, 1983; Watts and Zimmerman, 1983). For example, accounting standards are set through a lengthy process, making it difficult to capture shareholder wealth effects of the announcement of the standard itself. Similarly, it is often difficult to identify the date when outside investors first learned of an accounting change. Finally, since accounting changes are often accompanied by other economic changes, it is difficult to isolate the stock price effect of the accounting change itself.

A third explanation for the findings is that contracting and political cost considerations are economically unimportant in explaining wealth effects of reporting changes. Consistent with this explanation, Healy et al. (1987) find that the average annual CEO compensation effects from a change in depreciation accounting method amount to 1.5 percent of their base salary. Since CEO base salary is usually only a small fraction of a firm's market value, this evidence suggests that the CEO compensation effect of depreciation changes on shareholder wealth is likely to be insignificant.¹²

¹¹One potential explanation for the market reaction is that Briloff's analysis provides new information about the validity of managers' forecasts underlying their accounting judgments. Some researchers argue that the "Briloff effect" reflects changes in the firms' economics subsequent to the publication of his articles, such as tax, litigation and regulatory effects. Foster examines this explanation, and concludes that the non-information related economic factors cannot fully explain the observed market reaction to the accounting critiques.

¹²One explanation for the small economic magnitude of compensation and other contracting effects is that investors anticipate such potential costs in writing the contracts. Surviving contracts, therefore, are likely to be efficient, making the observed contracting costs small. However, this does not suggest that the concept of contracting costs is unimportant for managers' accounting decisions.

6.2. Voluntary disclosure literature

A number of studies examine the economic consequences of voluntary disclosure. These studies argue that there are potentially three types of capital market affects for firms that make extensive voluntary disclosures: improved liquidity for their stock in the capital market, reductions in their cost of capital, and increased following by financial analysts. Each of these effects and the relevant empirical evidence is discussed below. Since many of the studies discussed have common limitations, we discussed these limitations together, subsequent to the presentation of their main findings; the findings summarized below, therefore, should be interpreted with these limitations in mind.

(a) *Improved stock liquidity*

Theory. Diamond and Verrecchia (1991), and Kim and Verrecchia (1994) argue that voluntary disclosure reduces information asymmetries among informed and uninformed investors. As a result, for firms with high levels of disclosure, investors can be relatively confident that any stock transactions occur at a “fair price”, increasing liquidity in the firm’s stock. In addition, these studies argue that expanded disclosure and stock liquidity will be associated with increased institutional ownership.

Evidence. Several papers provide evidence that is consistent with this hypothesis. Healy et al. (1999a) find that firms that expand disclosure experience significant contemporaneous increases in stock prices that are unrelated to current earnings performance. Gelb and Zarowin (2000) find that firms with high disclosure ratings have high stock price associations with contemporaneous and future earnings relative to firms with low disclosure ratings. These findings suggest that firms’ disclosure strategies affect the speed with which information gets into prices.

In addition, several studies attempt to measure stock liquidity and to examine its relation to firm disclosure proxies. Welker (1995) documents a significant negative relation between analysts’ ratings of firms’ disclosures and bid-ask spreads. Healy et al. (1999a) find firms with increased analyst ratings of disclosure had significantly higher bid-ask spreads than their industries prior to the disclosure change. After the disclosure increase, bid-ask spreads for the sample firms reverted to the same levels as their industry peers. Finally, Leuz and Verrecchia (2000) examine bid-ask spreads for firms listed on the Neuer Market, which has higher disclosure requirements. They find that these firms have lower bid-ask spreads than firms listed on the Frankfurt Exchange.

(b) *Reduced cost of capital*

Theory. As discussed in Section 2, the lemons problem in capital markets creates an incentive for managers to provide voluntary disclosure to reduce the cost of capital. A similar argument is made by Barry and Brown (1984–1986), who note that when disclosure is imperfect, investors bear risks in forecasting the future payoffs from their investment. If this risk is non-diversifiable,

investors will demand an incremental return for bearing the information risk. As a result, firms with high levels of disclosure, and hence low information risk, are likely to have a lower cost of capital than firms with low disclosure levels and high information risk.

Evidence. Botosan (1997) provides some evidence consistent with the cost of capital hypothesis. She finds that for firms with low analyst following, there is a negative relation between cost of equity capital and the extent of their voluntary disclosures. Piotroski (1999b) finds that firms providing additional segment disclosures have a contemporaneous increase in the market's capitalization of their earnings, consistent with the firm having a lower cost of capital.¹³ Finally, Botosan and Plumlee (2000) find a negative cross-sectional relation between cost of capital and analyst rankings of annual report disclosures. However, they also find that firms' cost of capital is positively related to rankings of quarterly disclosures, and unassociated with investor relations' activities.

(c) *Increased information intermediation*

Theory. Bhushan (1989a, b) and Lang and Lundholm (1996) argue that if management's private information is not fully revealed through required disclosures, voluntary disclosure lowers the cost of information acquisition for analysts and hence increases their supply. However, the effect of voluntary disclosure on the demand for analysts' services is ambiguous. Expanded disclosure enables financial analysts to create valuable new information, such as superior forecasts and buy/sell recommendations, thereby increasing demand for their services. However, public voluntary disclosure also pre-emptly analysts' ability to distribute managers' private information to investors, leading to a decline in demand for their services.

Evidence. Lang and Lundholm (1993) find that firms with more informative disclosures have larger analyst following, less dispersion in analyst forecasts, and less volatility in forecast revisions. Healy et al. (1999a) show that firms with increased analyst ratings of disclosure have lower analyst coverage than their industry peers in the pre-event period. After the increase in disclosure, however, analyst coverage for the sample firms reverts to the same level as other firms in the industry. Finally, Francis et al. (1998) find that there is an increase in analyst coverage for firms making conference calls.

6.3. *Limitations of studies of voluntary disclosure capital market consequences*

Potential endogeneity is the most important limitation of the above findings. For example, firms with the highest disclosure ratings tend to also show the

¹³The increased segment disclosure is potentially endogenous to the changes in the economics of the sample firms, potentially confounding this conclusion. The endogeneity issue is a common concern for many other studies discussed in this section. We discuss this issue further later.

highest contemporaneous earnings performance (see Lang and Lundholm, 1993). This may be caused by a self-selection bias—firms may increase disclosure when they are performing well. As a result the association between capital market variables and disclosure may be driven by firm performance rather than disclosure per se. More generally, disclosure changes are unlikely to be random events: they are likely to coincide with changes in firm economics and governance.

Several studies attempt to control for performance changes to isolate the impact of disclosure. For example, Healy et al. (1999a) control for contemporaneous earnings levels and earnings changes in examining the cross-sectional relation between disclosure increases and variables such as stock performance, analyst following, institutional ownership, and analyst forecast dispersion. However, such controls are likely to be imperfect in the absence of a reliable model of the relation between performance and disclosure. In addition, as noted above, there are likely to be other correlated omitted variables in these analyses.

A related problem with both AIMR and self-constructed measures of voluntary disclosure is that it is difficult to precisely define the timing of any change in disclosure. Typically disclosure is measured for a given year, making it difficult to infer whether disclosure changes followed or preceded changes in variables of interest. Consequently, it is difficult to draw strong conclusions about the direction of causality underlying the documented associations.

7. Where do we go from here?

Empirical research discussed in this paper supports the following broad conclusions: (1) Regulated financial reports are informative to investors, and the degree of informativeness varies systematically with firm and economy characteristics. (2) Financial analysts add value in the capital market through their analysis of firms' financial reporting decisions, forecasts of future earnings, and buy/sell recommendations. (3) There is a market-driven demand for auditing services. (4) Both financial analysts and auditors are imperfect intermediaries, in part because of incentive conflicts. (5) Managers' financial reporting and disclosure choices are associated with contracting, political cost, and capital market considerations. (6) Disclosure is associated with stock price performance, bid-ask spreads, analysts' following, and institutional ownership.

Despite the progress in the last 30 years, many of the questions identified in Table 1 have yet to be fully addressed, or are not yet answered. Some fundamental unanswered questions we identify throughout the paper include: (1) What is the objective of disclosure regulation, and what is its effect on capital market development? (2) What types of accounting standards produce high quality financial reports? (3) Do auditors enhance the credibility of

financial statements? (4) Why are sell-side analysts' forecasts and recommendations credible given their well-documented biases and conflicts of interests? (5) What is the role of analysts in rapid swings in stock prices? (6) Why do firms engage in voluntary disclosure? (7) Does disclosure affect firms' cost of capital?

In addition to these unanswered questions, we believe that recent macro-economic forces create several new opportunities for research. We discuss four forces: rapid technological innovations, the advent of network organizations, changes in business economics of audit firms and financial analysts, and globalization.

(a) *Rapid technological innovation*

There have been phenomenal technological innovations in the last 20 years in areas such as computers, communications, biotechnology, and the internet. The economic consequences of these innovations are typically not reflected in financial statements in a timely manner. Except for software R&D occurring after technological feasibility, US firms expense R&D outlays immediately, regardless of their economic values. As a result, investors that are interested in assessing the potential economic performance of innovative firms in the current period, as well as potential future benefits from innovations-in-progress are forced to look beyond the financial statements.

Chang (1998) and Lev and Zarowin (1999) find that the decline in value relevance of financial statement items is partially explained by an increase in innovation. Further, Amir and Lev (1996) show that for firms in the wireless communications industry non-financial indicators of performance, such as market population size (POPS) and market penetration, have a more significant relation to stock prices than financial statement information.

Technological innovation has also created new channels for investor communication. For example, conference calls and the internet make it easier for firms to communicate rapidly with key investors and financial intermediaries. Conference calls are large-scale telephone conversations between managers and key financial analysts, where managers provide voluntary disclosure by answering analysts' questions about the firm's current and future performance. Tasker (1998) documented that 35% of mid-sized firms hosted a conference call in the period 1995–1996 and that many firms used this channel to mitigate limitations in required financial reporting.

The internet provides management with the opportunity to access all investors and to provide daily updates of important information. Many corporate internet sites provide an overview of the company's performance, a review of performance, press releases, stock quotes, frequently asked investor relations questions, earnings forecasts (by financial analysts), as well as annual reports, SEC reports. The increasing use of the internet by investors is likely to continue, reducing the costs of providing voluntary disclosures and presumably increasing their supply.

(b) *Network organizations*

Innovations in organizational forms, such as closely-coordinated supply chains and strategic alliances, also significantly affect the nature of financial reporting and disclosure. These organizational forms facilitate efficient risk sharing and market-based coordination of activities that were traditionally performed internally. However, by blurring the boundaries of firms, they pose difficult challenges to the entity measurement concept. For example, it is difficult for financial statements to fully reflect the complex relations and implicit commitments that underlie network relations between Coca Cola Company and its bottlers. As a result of its exclusive contracts with bottlers, Coke has been able to outsource the capital-intensive, low margin activities for its business. Consequently, bottlers have reported marginal financial performance while Coke has shown strong earnings performance. However, the reported financial performance of Coke does not fully reflect the complex relationship and implicit commitments between the companies. Reflecting these types of interdependencies in financial statements is challenging for standard setters. Current standards ignore them, potentially reducing the timeliness of accounting information.

(c) *Changes in business economics of audit firms and financial analysts*

A third current phenomenon is changing business economics of audit firms and financial analysts. Audit firms are increasingly reliant on management consulting, rather than assurance services. Regulators and commentators have argued that there is a potential conflict between the two. For example, they question whether an audit firm will challenge management of corporate clients if the same management is responsible for hiring the audit firm for a consulting engagement. To our knowledge there is no large sample empirical evidence of a decline in the credibility of audit reports. However, the issue has prompted the SEC to propose that audit firms divest their consulting practices and disclose consulting fees for each of their clients.

There have also been changes in the business model of financial analysts. The decline in trading costs has reduced soft dollars available for funding research. Therefore, these activities are increasingly linked to investment banking and underwriting activities. In addition, leading financial analysts are beginning to be viewed as strategy advisors to the companies that they are analyzing. For example, the financial press is replete with stories on the increasingly important roles of telecommunication analyst Jack Grubman and internet analyst Mary Meeker in the strategic decisions of their respective industries (see *Business Week*, 2000). These trends are likely to exacerbate potential conflicts of interest that analysts face, raising questions about the effectiveness as information intermediaries.

(d) *Globalization*

Capital markets are becoming increasingly global as a result of a variety of developments. Institutional investors are looking to diversify by investing

around the globe; corporations are seeking capital wherever the terms are most attractive; and internet-based trading is making it easier for individual investors to invest in international capital markets. Financial deregulation is encouraging these activities.

The globalization of capital markets has been accompanied by calls for globalization of financial reporting. This raises several interesting questions. First, is it optimal to have a global accounting standard setter given wide disparities in the development of financial reporting infrastructure across countries? Second, what economic forces will determine the speed with which convergence of financial reporting institutions will take place? Third, what are the political and economic consequences of such a convergence? Fourth, in the absence of convergence, will financial reporting informativeness be enhanced by global accounting standards?

In summary, the increased pace of entrepreneurship and economic change has probably increased the value of reliable information in capital markets. However, the traditional financial reporting model appears to do a poor job of capturing the economic implications of many of these changes in a timely way. There is, therefore, an opportunity for future disclosure research to examine how financial reporting and disclosures adapt to changes in business and capital market environments. In addition, as we note earlier, there are many areas where our understanding of existing disclosure institutions and phenomena are limited. We believe that both opportunities make the disclosure area an exciting area of study for accounting scholars.

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