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The role of information and financial reporting in corporate governance and debt contracting[☆]

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ABSTRACT

We review recent literature on the role of financial reporting transparency in reducing governance-related agency conflicts among managers, directors, and shareholders, as well as in reducing agency conflicts between shareholders and creditors, and offer researchers some suggested avenues for future research. Key themes include the endogenous nature of debt contracts and governance mechanisms with respect to information asymmetry between contracting parties, the heterogeneous nature of the informational demands of contracting parties, and the heterogeneous nature of the resulting governance and debt contracts. We also emphasize the role of a commitment to financial reporting transparency in facilitating informal multiperiod contracts among managers, directors, shareholders, and creditors.

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1. Introduction

Financial capital is a key factor of production that gives rise to an array of complex contracting relationships among owners, managers, and creditors. When structuring these contracting arrangements, divergent interests among managers, boards, equity investors, and lenders create a demand for monitoring and bonding mechanisms that help alleviate various agency conflicts (Jensen and Meckling, 1976). The information environment plays a central role both in determining the extent of these conflicts and in designing the mechanisms to mitigate them. Specifically, the fact that certain contracting parties possess superior firm-specific information at various times before and/or during the contracting relationship either create or exacerbate a wide range of agency conflicts. Further, even when all contracting parties are equally informed, more

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efficient contracts can be written when there is less uncertainty about current and future business conditions. We review recent literature on the role of financial reporting in resolving agency conflicts among a firm's managers, directors, and capital providers.¹

We divide our survey into two main sections: governance contracting and debt contracting. We view governance as the set of contracts that help align the actions of managers with the interests of shareholders, and we focus on the role information asymmetry plays in agency conflicts between these parties. In terms of the firm-specific information hierarchy, the literature typically views management as the best informed, followed by outside directors, followed by shareholders. We discuss the large volume of research that predicts and finds that financial reporting helps mitigate these information asymmetries, and that the role financial reporting plays in this regard depends on how firms choose to structure monitoring and bonding mechanisms (the role of outside directors, active investors, management incentives, etc.). With respect to debt contracting, information asymmetries between borrowers and lenders are important, both at the time of the lending decision and at the point of technical or cash-flow default, when lenders must decide whether to exercise their state-contingent control rights. Even in the absence of information asymmetry, information uncertainty poses problems in debt contracting. That is, even when managers and lenders enter into contracts with the same information, the incomplete nature of debt contracts creates a demand for mechanisms that allocate decision rights in the future, conditional on the realization of certain events, both foreseen and unforeseen.

Our review discusses both formal and informal contracting relationships. Although formal, explicit contracts, such as written employment contracts or debt contracts, are relatively straightforward to research, these contracts are often quite narrow in scope. Informal contracts, on the other hand, comprise implicit multiperiod relationships that allow contracting parties to engage in a broad set of activities where a formal contract is not practical or feasible. As an example, consider the contracting relationship between the CEO and the board of directors. The CEO's duties, abilities, and incentives are extremely complex, and it is impractical to construct a state-contingent contract that specifies appropriate actions under every possible scenario the firm could face. As a result, although some CEOs do have formal employment contracts, these contracts are necessarily incomplete and relatively narrow in scope, allowing the board and the CEO to develop informal rules and understandings that guide the behavior of both parties over time.

In the context of financial reporting research, considering informal contracts allows for a much richer analysis of governance-related working relationships among executives, directors, and shareholders. If one were to consider only formal contracts involving these parties, one might conclude that financial reporting plays a relatively limited role in governance-related contracts. As we discuss, however, researchers have uncovered a wide array of important contracting roles for financial reporting. With respect to governance, much of the literature emphasizes informal contracting based on signaling, reputation, and certain incentive structures, whereas in the debt-contracting literature, research is more balanced across formal and informal contracts. The general conclusion in this literature is that financial reporting is useful because more efficient contracts are possible when contracting parties commit to a more transparent information environment.

Another key theme of our review is the notion that a firm's contractual arrangements and its corporate information environment evolve together over time to resolve agency conflicts. That is, certain contractual arrangements and financial reporting choices work more efficiently within certain business environments. As a result, one does not expect to see firms converging to a single dominant type of corporate governance structure, compensation contract, debt contract, or financial reporting system. Instead, one expects to observe heterogeneity in these mechanisms that is a function of firms' economic characteristics. Although the literature on debt contracts tends to accept this notion, the governance literature seems more burdened by the idea that some governance structures are unconditionally "good" or "bad" (for example, governance structures frequently asserted as unconditionally "bad" include a board with a high proportion of inside directors, a CEO that also serves as chairman of the board, a CEO with relatively low equity incentives, and a firm with relatively weak shareholder rights).

Our review builds on the surveys of Bushman and Smith (2001), Lambert (2001) and Fields et al. (2001), and we strive to limit our overlap with those papers by focusing on research that has evolved since the time of those surveys. Specifically, in the governance area, papers have begun to explore how a commitment to financial reporting quality influences both board structure and ownership structure, although the causality of this relation is likely to go in both directions. In the executive compensation area, although literature on the role of accounting-based performance measures has noticeably waned, a large literature on the relation between executives' equity incentives and financial reporting quality has emerged. Finally, in large part because of increased data availability, empirical research on the role of financial reporting in debt contracting has grown rapidly in recent years. Throughout our discussion, we critique various aspects of these literatures, as well as provide ideas for future research.

In Section 2, we briefly discuss the firm as a nexus of contracts, the general nature of contracts related to governance and debt, and properties of the information environment and financial reports that are relevant to various contracting settings. Section 3 discusses the role of information asymmetry and a commitment to transparent financial reporting in corporate governance, with an emphasis on corporate boards and executive compensation arrangements. In Section 4, we discuss the relation between financial reporting and ownership structure, with an emphasis on agency conflicts between majority and

¹ Certainly, financial reporting provides valuable information in other contracting relationships beyond those involving capital providers (suppliers, customers, auditors, regulators, tax authorities, etc.). In this survey, we confine our discussion to contracts involving capital providers for three reasons: (1) these areas are major focal points in the literature, (2) the literature on agency conflicts between managers and capital providers constitutes a natural, interconnected subset of papers that lend themselves to a relatively cohesive discussion, and (3) we wish to keep the scope of our review manageable.

minority shareholders. In Section 5, we discuss the role of financial reporting in the design of debt contracts. Section 6 provides a synthesis of the main themes in our review and a discussion of what we consider to be fruitful areas for future research.

2. A brief discussion of contracts and their reliance on financial reporting

In this survey, we adopt the perspective of the firm as a nexus of contracts among the various factors of production, where contracts serve to mitigate agency conflicts between those parties (Coase, 1937; Alchian and Demsetz, 1972; Jensen and Meckling, 1976; Fama and Jensen, 1983; Watts and Zimmerman, 1986). Although formal contracts, such as debt contracts and employment contracts, might be the first things that come to mind when one considers the role of financial reporting in contracting, informal contracts also play an important role in mitigating agency conflicts. Watts and Zimmerman (1986, p. 180) emphasize this point in their description of the economic theory underlying their contracting arguments²:

In that [economic] theory, accounting is an integral part of the contracts that define the firm. These contracts include formal contracts, such as debt contracts between the firm's managers and debt holders, and informal contracts, such as unwritten working arrangements between managers. Those contracts also include the firm's organizational chart and its evaluation and compensation schemes.

Formal contracts tend to be quite narrow in scope, covering agreements between contracting parties that specify certain responsibilities, quantities, and prices, as well as what to do in the event of certain foreseeable contingencies. Informal contracts constitute a broad set of (usually) unwritten or implicit arrangements that allow the firm to engage in activities that are otherwise non-contractible in the sense that it is either prohibitively costly or impractical to write a formal contract. Examples of informal contracts include a wide array of working relationships among managers, directors, shareholders, lenders, customers, suppliers, regulators, investment bankers, analysts, and the financial press. (Of course, formal contracts can cover portions of these working relationships as well.) As we discuss below, the qualities of financial reporting play a key role in both formal contracts (in part because these contracts are sometimes written over financial reporting numbers) and in informal contracts (because of the importance of financial reporting and credible disclosure in establishing reputation and working relationships).

When thinking about formal and informal contracts, it is important to recognize differences in the enforcement mechanisms that facilitate the viability of these contracts. Parties to formal contracts can often rely on the legal and regulatory systems as enforcement mechanisms. Parties to informal contracts, on the other hand, typically rely only in part on these systems because such contracts are often not legally enforceable. Instead, contracting parties are often discouraged from renegeing on informal contracts because of concerns, in a repeated game setting, about loss of reputational capital, costly signaling, costly commitment or investment, or the threat of retaliation.³

In this survey, we emphasize the role of financial reporting and accounting information in formal and informal contracts related to capital providers (shareholders and creditors). In doing so, we recognize the exclusion of a wide array of contractual arrangements with customers, suppliers, regulators, tax authorities, investment bankers, analysts, auditors, and other institutions.⁴ Further, we restrict our survey to contracts that serve to resolve agency conflicts, as opposed to contracts that serve other purposes, such as the valuation role of financial reporting.⁵

2.1. Contracts addressing agency conflicts among managers, boards, and shareholders

We view corporate governance as the subset of a firm's contracts that help align the actions and choices of managers with the interests of shareholders. That is, one can think of a hierarchy within the corporation that includes shareholders, the board of directors, and managers. Shareholders supply the firm's equity capital, hold the ultimate control rights, and are the residual claimants on the firm's cash flows. Typically, however, they are not involved in the organization's day-to-day decision-making processes, at least in widely held firms. Instead, they delegate these responsibilities (i.e., control rights) to a

² The economics and finance literatures generally use the terms "explicit" and "implicit" in place of "formal" and "informal" in reference to contracts. One might also think of an informal contract as being akin to an unwritten working relationship that allows the parties to the relationship to take certain actions or engage in certain transactions.

³ As an example, consider an airline that offers a frequent-flier customer loyalty program. The fine print in such programs often includes a clause that allows the airline to change, dilute, or eliminate the program at any time with little or no requirement to directly compensate the customers participating in the program. Such programs are extremely popular, however, with customers who go to great lengths to accumulate "points" that the company could decide to erase at any time. Such an action would, of course, damage the airline's reputation, and so the airline and customers are able to establish a very functional and important informal contract.

⁴ For reviews of contracting relationships with financial intermediaries and taxing authorities (IRS), see Beyer et al. (this issue) and Hanlon and Heitzman (this issue), respectively.

⁵ A large literature examines investors' valuation demands for financial reporting information. This valuation role for financial information exists even in the absence of agency conflicts between managers and shareholders (i.e., even if shareholders' and managers' interests were perfectly aligned, shareholders would still require financial information about the firm to facilitate a liquid market for buying and selling shares). For a review of this literature, see Kothari (2001) or Lee (2001).

board of directors, most of whom are also not involved in the organization's day-to-day activities. Rather, they delegate these responsibilities to a management team.

Corporate governance consists of the mechanisms by which the shareholders ensure that the board of directors, in turn, sees to it that managers' interests are aligned with those of shareholders. This definition is broadly consistent with the views of authors such as Jensen (1993), Mehran (1995), Shleifer and Vishny (1997), Core et al. (1999, 2003a), Holderness (2003). We also view this definition to be broad enough to encompass *all* of the firm's contracts that assist in aligning the incentives of the firm's shareholders, directors, and managers. For example, and as we discuss in more detail in Section 3.2.8, a debt contract under which creditors monitor a firm's financial reporting constitutes a governance mechanism to the extent that creditor monitoring helps to align the interests of managers and shareholders.

Corporate governance research typically focuses on one of two types of agency problems in the linking of managers' and shareholders' interests. The first type arises when the interests of shareholders and the board of directors are assumed to be aligned (i.e., the board of directors is composed of individuals who make decisions in the best interests of shareholders) but managers' interests are not aligned with those of shareholders. Examples include papers examining executive compensation plans, incentive structures, and other monitoring mechanisms that boards use to ensure that managers take actions beneficial to shareholders (see, for example, Ahmed and Duellman, 2007; Carcello and Neal, 2003; Francis and Martin, 2010; LaFond and Roychowdhury, 2008; Adut et al., 2003).

The second type of agency problem arises when boards' and managers' interests are assumed to be aligned with each other (i.e., the board consists of individuals that are assumed to be beholden to the CEO) but are not completely aligned with the interests of shareholders. Examples include papers examining board independence, entrenched CEOs, and shareholder actions to influence or overturn board decisions (shareholder proxy contests, class action lawsuits, "say-on-pay" proposals, etc.) (see, for example, Klein, 2002b; Zhao and Chen, 2008; Duchin et al., 2008).

Corporate governance structures include both formal and informal contracts. Formal contracts include corporate charters, exchange-listing requirements, employment contracts, board independence regulations, executive stock ownership guidelines, bonus clawback provisions, blackout windows for executive stock trading, and so on. With informal contracts, shareholders and boards retain considerable discretion in carrying out many of their monitoring activities. Boards establish reputations regarding their independence from management, their expertise in advising management, and their work. This reputation develops over time, in part, based on characteristics such as the proportion of inside versus outside directors, the size of the board, the expertise of directors, and the number of board meetings, as well as by the consistency of the board's decision-making processes and its stewardship of shareholder value. Although formal contracts – such as SEC rules and regulations, exchange-listing requirements, and the corporate charter – influence some of these characteristics and decisions, there is considerable cross-sectional variation in the qualities of board reputation that formal contracts seem unlikely to fully explain.

The importance of both formal and informal contracting is also apparent in the relationship between boards and executives. For example, Gillan et al. (2009) document that many CEOs have no formal written employment agreement. They also find that CEOs are more likely to have a formal contract, which these authors refer to as an "explicit contract," in settings where the CEO and board face less uncertainty about the sustainability of their working relationship (e.g., in more stable business environments and when the CEO is promoted from within the firm). Further, even when the CEO has a formal employment contract, it does not cover or only generally describes most of the CEO's responsibilities with respect to operating, investing, and financing activities, as well as overall compensation and incentive levels, the length of employment, performance expectations, and conditions for termination.

2.2. Contracts addressing agency conflicts between shareholders and creditors

The role of contracts in resolving agency conflicts between managers/shareholders and creditors is well known and widely researched. (see, for example, a recent survey by Roberts and Sufi, 2009a). Although a detailed discussion of the agency conflicts between managers/shareholders and creditors is beyond the scope of this paper, we summarize these conflicts broadly as creditors' concerns with actions by owner/managers that increase the risk or probability that the creditors will not see their investment returned. Common examples include actions by managers to increase firm leverage by making cash payouts to shareholders in the form of dividends or share repurchases, or increasing the riskiness of the firm's assets through various investment decisions (e.g., Jensen and Meckling, 1976; Myers, 1977). Creditors will rationally anticipate such actions and will either price protect their claims to account for potential losses (and monitoring costs), or choose not to lend. Because shareholders bear the costs of these agency conflicts, they have incentives, *ex ante*, to use contracting mechanisms that reduce the manager's ability to expropriate wealth from creditors, *ex post*. Such contracts can reduce agency costs and increase the efficiency of the contracting process.

When a firm chooses to raise debt capital, it enters into formal and, to some extent, informal contractual arrangements with its creditors to resolve agency conflicts. Formal contracts with creditors include details on the amount that is (or can be) borrowed, the interest rates charged, covenant thresholds, and the maturity date of the loan. Informal relationships, however, can also influence lending and borrowing decisions because financing decisions, in part, depend on the reputation the firm has established with respect to financial transparency, corporate governance, risk management, and other strategic and operating policies. (For example, see Rajan (1992), for a discussion of the costs and benefits of relationship lending.) Further, how creditors choose to exercise decision-making rights over the life of the contract (e.g., at the time of a covenant violation) depends on both the terms of the formal contract as well as the informal relationships that have been established between lenders and borrowers.

2.3. Contracting role of information and financial-accounting reports

This survey highlights the important role that the corporate information environment plays in contracts that serve to mitigate governance- and debt-related agency conflicts. With respect to governance, we emphasize research on the role of financial reporting in reducing information asymmetries that exist between managers and both outside directors and shareholders. This asymmetry occurs in large part because managers typically have better firm-specific information than outside directors and shareholders but do not always report information detrimental to their personal interests, such as information indicating poor performance, or extraction of private benefits (Verrecchia, 2001). Boards, which largely consist of outside directors, and shareholders, are therefore typically assumed to be at an informational disadvantage when monitoring managers. Jensen (1993, p. 864) describes these informational problems as follows:

Serious information problems limit the effectiveness of board members in the typical large corporation. For example, the CEO almost always determines the agenda and the information given to the board. This limitation on information severely hinders the ability of even highly talented board members to contribute effectively to the monitoring and evaluation of the CEO and the company's strategy.

Indeed, in the absence of information asymmetries, boards can likely mitigate many, or most, agency conflicts with managers, particularly since boards retain considerable discretion in their monitoring of managers and can therefore take immediate action upon receiving new information. Thus, one potential role for the financial reporting system is to provide outside directors and/or shareholders with relevant and reliable information that aids in the effective monitoring of management and/or directors. Further, to the extent that financial reporting serves as a mechanism to reduce information asymmetries, one expects to observe cross-sectional variation in other governance mechanisms that covary with financial reporting characteristics.

With respect to debt contracting, the financial reporting system can play at least two important roles in reducing agency costs. First, similar to the governance setting, financial reports can reduce information asymmetries with existing and potential creditors (Watts, 2003). When firms seek to raise or renegotiate the terms of debt capital, lenders demand assurance that the firm is committed to providing timely information about its financial condition. Thus, managers and shareholders have incentives to develop a reputation or otherwise commit to providing high quality financial reports. Second, outputs from the accounting system can serve as inputs (or parameters) in the formal contract between the firm and its lenders (Smith and Warner, 1979). For example, managers typically agree to debt contracts containing accounting-based covenants that prohibit the managers from taking certain actions, such as paying out large amounts of cash to shareholders. Debt contracts may also contain performance-pricing provisions that specify adjustments to interest rates based on outputs of the accounting system (Asquith et al., 2005). Accounting-based covenants and performance-pricing provisions can reduce agency conflicts and renegotiation costs even in the absence of information asymmetries. For example, even if creditors and managers have the same information at the time the debt contract is executed, covenants can reduce agency costs, *ex ante*, by transferring certain decision rights to creditors in states of the world (e.g., deteriorating financial performance) in which owner/managers have greater incentives to take actions detrimental to creditors. Similarly, performance-pricing provisions allow the firm to commit, *ex ante*, to adjust interest rates on the debt contract when there are changes in the borrower's credit quality, thereby reducing the potential for hold-up problems, renegotiation costs, and other agency conflicts.

The role of financial-accounting information in both governance and debt contracts is likely to depend on whether the contracting setting is informal or formal (and recognizing that many contracting relationships have both formal and informal components). With respect to formal contracts, the literature frequently emphasizes audited financial statement numbers explicitly included in the contract (e.g., accounting numbers used in executive compensation contracts or in structuring debt covenants as in Beatty et al., 2008c). Informal contracts, on the other hand, rely more generally on a commitment to information content and quality, as opposed to a mechanical reliance on specific numbers in the financial reports (e.g., Bushman et al., 2004). Further, formal contracts typically have a limited duration, and so the transitioning of one formal contract to the next is also part of an informal strategic relationship. In this survey, we focus on financial-accounting information as a mechanism that managers, boards, shareholders, and creditors use to reduce agency costs that arise through the firm's informal and formal contracting relationships.

3. The role of financial-accounting information in corporate governance

3.1. The role of information in structuring corporate boards

The board of directors plays a key role in monitoring management and in constructing mechanisms that align executives' objectives with shareholders' interests. It is not surprising, therefore, that a substantial proportion of the literature on governance has emphasized board characteristics and decision-making. For example, Hermalin and Weisbach (2003) and Adams et al. (2009) survey research on the role of corporate boards. A key theme in their surveys is how heterogeneity in the firms' agency conflicts is expected to give rise to heterogeneity in board structure and other governance mechanisms that firms use to resolve these agency conflicts. And, of particular relevance to this survey, a large proportion of this literature on board structure emphasizes the importance of transparency in the information environment between management and

directors. Before discussing the growing body of accounting research on the relations between financial reporting and board structure, however, it is helpful to first briefly consider the tasks the board faces, the strengths and weaknesses of the types of directors that typically sit on boards, and the information each type of director needs to efficiently carry out his or her charge.

A large theoretical and empirical literature examines the role of boards in serving two broad functions: (1) advising senior management, and (2) monitoring senior management.^{6,7} Fulfilling the first of these roles requires a board with sufficient expertise and firm-specific knowledge to be helpful in guiding management. Fulfilling the second of these roles again requires a skilled and knowledgeable board, but also requires directors that are sufficiently independent of management to effectively act as monitors. The ways in which firms structure their boards to achieve these goals has been the subject of considerable research, with the distinction between outside and inside directors being the dimension of board structure researchers most commonly examine.

Corporate boards typically consist of both outside and inside directors.⁸ For example, Linck et al. (2008) document that in a broad sample of firms between 1990 and 2004, the median board consisted of roughly 67% outside directors. Outside directors are typically experienced professionals, such as CEOs and executives of other firms, former politicians and regulators, university deans and presidents, and successful entrepreneurs. The value of having outside directors on the board derives, in part, from the directors' broad expertise in areas such as business strategy, finance, marketing, operations, and organizational structure. Further, outside directors bring an independence that carries with it an expectation of superior objectivity in monitoring management's behavior. Their diligence in this respect may stem partially from monetary incentives attached to being a board member (Yermack, 2004) but possibly even more importantly from their desire to protect significant personal reputational capital.

Inside directors, who are often executives of the firm, can facilitate effective decision-making because they are a valuable source of firm-specific information about constraints and opportunities (e.g., see Raheja, 2005; Harris and Raviv, 2008; Adams et al., 2009). As Jensen and Meckling (1990) discuss, the allocation of decision rights within an organization is a fundamental building block of organizational structure. And because it is costly to transfer information in a timely manner across individuals, there is merit to collocating decision rights with the individuals who possess the information necessary to best make decisions. In addition to their decision-making roles, inside directors can also be particularly helpful in educating outside directors on the firm's activities (Fama and Jensen, 1983). Inside directors, who typically have large holdings of firm stock and options as well as more human capital tied to the firm, may also have stronger incentives than outside directors to exert effort and to maximize shareholder value.

At the same time, however, inside directors are potentially conflicted in their incentives to monitor because of their lack of independence from the CEO, as well as a desire to protect their own private benefits.⁹ Further, even though better informed outside directors are likely to more effectively advise the CEO, insiders may be reluctant to share their information if well-informed outside directors are also more likely to interfere with the CEO's strategic decisions (Adams and Ferreira, 2007). This scenario is particularly true if the information could be used to discipline the executives or to take away their private benefits.

Holmstrom (2005, pp. 711–712) provides a helpful characterization of the issues related to information flow between management and outside directors:

Getting information requires a trusting relationship with management. If the board becomes overly inquisitive and starts questioning everything that the management does, it will quickly be shut out of the most critical information flow—the tacit information that comes forward when management trusts that the board understands how to relate to this information and how to use it. Management will keep information to itself if it fears excessive board intervention. A smart board will let management have its freedom in exchange for the information that such trust engenders. Indeed, as long as management does not have to be concerned with excessive intervention, it wants to keep the board informed in case adverse events are encountered. Having an ill-informed board is also bad for management, since the risk of capricious intervention or dismissal increases.

⁶ For example, see Fama and Jensen (1983), Raheja (2005), Boone et al. (2007), Drymotes (2007), Lehn et al. (2008); Linck et al. (2008), and Harris and Raviv (2008).

⁷ Brickley and Zimmerman (this issue) discuss the important function of the board in ratifying management's strategic initiatives. Specifically, shareholders delegate decision-making authority to the board, some of which the board, in turn, delegates to managers, and some of which the board retains so as to ratify certain corporate activities. We view this ratification role as a subset of the board's broadly construed monitoring function, since the board is likely to retain decision-making authority over strategic activities where agency conflicts with managers are of greatest concern.

⁸ Pursuant to Item 470(a) of Regulation S–K, firms must disclose whether each director is “independent” within the definition prescribed by the exchange on which the firm's shares are traded. Directors are typically classified as insiders, outsiders, and affiliates (or gray directors). Insiders are those the firm currently employs, such as the CEO, CFO, president, and vice presidents. Outsiders have no affiliation with the firm beyond their membership on its board of directors. Affiliates are former employees, relatives of the CEO, or those who engage in significant transactions and business relationships with the firm as defined by Items 404(a) and (b) of Regulation S–K. Directors on interlocking boards are also considered to be affiliated, where interlocking boards are defined by Item 402(j)(3)(ii) of Regulation S–K as “those situations in which an inside director serves on a non-inside director's board.”

⁹ However, see Drymotes (2007) for a setting where more inside directors might actually improve the efficiency of the board's monitoring role. In his model, outside directors have an incentive to shirk their monitoring duties and to shortchange the CEO with respect to his performance *ex post*. Inside directors, who represent the CEO's interests, can commit to expending monitoring effort *ex post*, thereby increasing the CEO's incentives to exert productive effort.

Thus, a key advantage of inside directors is also a key disadvantage of outside directors: the differential costs and difficulty in ensuring that the director has adequate information with which to make decisions. Such information transfer between insiders and outsiders is not trivial, and it is the focus of much of the literature on corporate governance. Outside directors are typically busy individuals who already have other demands on their time. It is unrealistic to expect that an outside director can or will invest the time and effort necessary to become as informed as the executives of the firm they govern. Further compounding these informational problems is that outside directors must largely rely on the executives they are monitoring and advising to provide them with the information necessary to achieve effective corporate governance, although auditors, regulators, analysts, the media, and other information intermediaries also assist outside directors in this regard. These executives are unlikely to be entirely forthcoming with information that might have a detrimental effect on the way outside directors view the executives' effort, performance, and ability (e.g., see Section 3 of Verrecchia, 2001).

Bushman et al. (2004, p. 179) summarize the tradeoffs between inside and outside directors:

An important question of board composition concerns the ideal combination of outside and inside members. Outsiders are more independent of a firm's CEO, but are potentially less informed regarding firm projects than insiders. Insiders are better informed regarding firm projects, but have potentially distorted incentives deriving from their lack of independence from the firm's CEO.

Thus, a board composed of entirely insiders may not be effective because of the potential for allowing managerial entrenchment, just as a board with no insiders may not be effective if the board members have a limited understanding of the firm they are governing and cannot readily overcome this information asymmetry.

So how does a firm decide on the proportion of outside versus inside directors to have on its board? Although researchers have constructed a variety of hypotheses to answer these and related questions (Hermalin and Weisbach, 2003; Adams et al., 2009), we focus our discussion on hypotheses related to the information environment. In general, these information-based hypotheses predict that when outside directors face greater information acquisition and processing costs, they will be less effective advisors and monitors and are less likely to be invited to sit on boards.

Regarding the board's advisory role, a common prediction is that in firms with substantial investment opportunities and complex investments (substantial R&D, intangible assets, etc.), considerable firm-specific knowledge may be necessary to effectively advise management. In these settings, the informational advantage insiders have over outsiders may impede the advisory role of outside directors and lead to a greater proportion of inside directors (e.g., Coles et al., 2008). With respect to the board's monitoring function, hypotheses frequently emphasize how the firm's information and operating environment influence the monitoring costs and benefits of certain board structures. Specifically, it is argued that firms in noisy business environments, such as high growth firms with substantial R&D, intangible assets, and volatility, are more difficult and costly to monitor, in large part because of greater information asymmetries between managers and outside directors in such firms (e.g., Demsetz and Lehn, 1985; Gillan et al., 2006; Coles et al., 2008). Because it is costly for outside directors to acquire the information necessary to effectively monitor managers, firms characterized by greater information asymmetry between managers and outsiders are predicted to have a higher proportion of inside directors.

A growing literature empirically examines the relation between information processing costs and board structure.¹⁰ Information acquisition and processing costs are generally predicted to increase with information asymmetry, where information asymmetry (and monitoring difficulty in general) is measured using proxies such as the market-to-book ratio (or Tobin's Q), R&D expenditures, stock-return volatility, firm size, number of analysts, and analyst forecast errors.

Across a variety of research designs and samples, empirical evidence generally supports the idea that the proportion of outside directors is smaller at firms with greater information asymmetry between insiders and outsiders, and where firm-specific knowledge is likely to be most important. For example, Linck et al. (2008) examine the hypothesis that outside directors face information acquisition and processing costs when transforming their general expertise into firm-specific expertise. Using a broad sample from 1990 to 2004, they document a negative cross-sectional relation between proxies for information acquisition costs and the proportion of outside directors. Lehn et al. (2008) draw a similar conclusion using a time-series research design on an interesting board structure dataset from 1935 to 2000 (Boone et al. (2007), however, find no evidence of such a time-series relation when following the evolution of IPO firms' governance structures). Duchin et al. (2008) examine the effects of information acquisition costs on the effectiveness of outside directors and find that an exogenous increase in the proportion of outside directors reduces firm performance when information acquisition costs are high. They also find, similar to Linck et al. (2008) and Lehn et al. (2008), that the proportion of outside directors is negatively related to proxies for information acquisition costs.

Cai et al. (2009) explore hypotheses similar to Linck et al. (2008) but with greater emphasis on the role of information asymmetry in simultaneously shaping multiple aspects of governance. Specifically, in addition to testing for a relation between information asymmetry and board structure, they also examine the relation between information asymmetry and both CEO equity incentives and antitakeover provisions. Their results are generally consistent with the prediction that direct monitoring through a greater proportion of outside directors is decreasing in the degree of information asymmetry between management and outside directors (as in Linck et al., 2008). The authors also give consideration to potential endogeneity in the negative relation between information asymmetry and board monitoring (i.e., to address the question of whether lower

¹⁰ See, for example, Boone et al. (2007), Coles et al. (2008); Linck et al. (2008), Lehn et al. (2008), and Cai et al. (2009).

information asymmetry allows firms to use more outside directors, or instead whether a greater proportion of outside directors spurs decisions that lead to lower information asymmetry). Toward this end, they show that their inference is robust to a simultaneous equations approach that examines an exogenous shock to information asymmetry, namely Regulation FD. Finally, Cai et al. find that firms implementing lower direct monitoring in the form of board structure choose greater indirect monitoring in the form of more CEO equity incentives and fewer antitakeover provisions. Although it is not surprising that various governance structures would complement or substitute for each other, there is relatively little research on these relations. We return to this point throughout this review.

Note that the causality of the predicted positive relation discussed above runs from information transparency to the proportion of outside directors. That is, these authors predict that firms with higher (lower) information asymmetry will find it beneficial to have a (lower) higher proportion of outside directors. This direction of causality is distinctly different from the frequent prediction in the accounting literature that boards with a higher percentage of outside directors facilitate “better” governance than boards with a lower percentage of outside directors, and that “better” boards proactively take actions to ensure low information asymmetry with management. We return to this issue in Section 3.2.1 and note here that we find the issue of establishing the direction of causality in this relationship to be one of the more interesting unanswered questions in the board structure literature.

Another dimension of board structure that has received attention in the literature is the CEO’s role on the board, as well as the CEO’s bargaining power in influencing board characteristics. Regarding the CEO’s role on the board, the most commonly examined issue is whether the CEO is also the chairman of the board, as is the case in about half of large U.S. corporations. Brickley et al. (1997) argue that the prospect of becoming the chairman of the board acts as an incentive mechanism for CEOs, suggesting that more successful and talented CEOs are likely to be awarded the chairman role. A prediction more closely related to this survey is that because CEOs typically have the most detailed firm-specific information, firms with greater information asymmetry are more likely to afford the CEO greater control (Brickley et al., 1999).

The literature also predicts that CEO ability influences the evolution of board independence. CEOs with superior ability and a history of strong performance may develop significant bargaining power, which they can use to surround themselves with loyal directors, thereby reducing the independence of the board (Hermalin and Weisbach, 1998). At the same time, shareholders may decide that more board independence is necessary to monitor a powerful CEO, particularly when information asymmetry has the potential to lead to agency conflicts (although the feasibility of implementing a strongly independent board in this setting is an empirical question). Collectively, these CEO-related hypotheses do not lead to a clear prediction about the relation between information transparency and the combined roles of CEO and chairman. It may not therefore be surprising that Linck et al. (2008) fail to find a significant relation between information asymmetry and the combined roles of CEO and chairman.

Before moving on, we point out a trend in board structure that we believe warrants further investigation by accounting researchers: the proportion of outside directors has steadily increased over time. For example, Linck et al. (2008) document that in 1990, the typical percentage of outside directors was about 60–65%, whereas by 2004, the percentage appears to have grown to about 70%. Lehn et al. (2008) document a similar increase in the proportion of outside directors over the substantially longer period from 1935 to 2000, with the sharpest increase occurring over the last three decades of their sample period.

Beyond examining why this trend has occurred lies the question of how the trend relates to changes in the corporate information environment over time. We consider four possible scenarios. First, as previously noted, outside directors require a transparent information environment to govern and advise effectively. Therefore, it may be that the quality of the corporate information environment has improved over time (because of some trend in firm characteristics, accounting standards, or other regulation that is exogenous to governance), thereby reducing information asymmetry and enabling firms to invite more outside directors to sit on the board. Second, perhaps the increase in outside directors is due to regulatory pressure stemming from a belief, justified or not, that firms’ boards have too few outside directors to ensure socially optimal decision-making (see McConnell, 2003). A third possibility is that certain regulatory actions or other economic forces removed frictions that, for whatever reason, prevented shareholders from instituting their desired proportion of outside directors. A final explanation is that, for some unrelated reason, transparency in the corporate information environment has, or is believed to have, declined over time, and firms add outside directors to improve monitoring and actively reduce information asymmetries.

Note that the four potential explanations given here for the trend toward a greater proportion of outside directors can likely be differentiated by testable predictions. For example, the first explanation (i.e., that the increased proportion of outside directors is caused by an improving trend in information transparency) suggests a positive relation between the quality of the information environment and the proportion of outside directors, but possibly with a lag, because a greater proportion of outside directors follows improvements in information transparency. The regulatory explanation (i.e., that the increased proportion of outside directors is a result of regulatory pressure to increase board independence) also suggests a positive relation between the quality of the information environment and the proportion of outside directors, but possibly with a lag in the opposite direction. That is, regulation drives an increase in the proportion of outside directors, which, in turn, creates a demand for more information transparency. The cost reduction explanation suggests an increase in the strength of the positive relation between board independence and information transparency, because it is now easier for firms to align board structure with information transparency. The final explanation (i.e., that outside directors are used as a mechanism to cause improvements in information transparency) suggests a more complex relation between

the quality of the information environment and the proportion of outside directors. Specifically, an increase in the proportion of outside directors is predicted to follow a decline in information quality, which should then lead to a future improvement in information quality. The reasons for changes in board structure over time, and the expected simultaneous changes (or, possibly, an unintended mismatch) in corporate information environments is an interesting area for future research.

3.2. Mechanisms to commit to a transparent information environment

If we accept that outside directors require high quality information to effectively perform their monitoring and advisory roles, the next question that arises is *how* managers commit (or are compelled by outside directors, shareholders, and other parties) to more fully convey their private information about the firm's activities and financial health. That is, because outside directors are unlikely to know precisely the extent of their information disadvantage, they require commitment mechanisms to gain comfort that the information environment is transparent. Leuz and Verrecchia (2000) provide a good discussion of the importance of a commitment to disclosure as compared with voluntary disclosure. A commitment to disclosure is an *ex ante* decision to provide information regardless of its content, whereas voluntary disclosure is an *ex post* decision to provide information after observing its content. Although Leuz and Verrecchia discuss a commitment to disclosure in the context of cost of capital, their arguments are equally applicable to a governance setting, where boards require mechanisms to compel managers to disclose information regardless of whether doing so is detrimental to the manager's interests.

The accounting literature on board structure has identified several financial reporting commitment mechanisms, including:

- committing to reporting timely financial-accounting information in general (e.g., earnings timeliness);
- making a more specific commitment to report information about losses in a timely manner (e.g., conservative accounting);
- hiring a high-quality auditor and having an independent audit committee;
- inviting financially sophisticated outside directors to sit on the board;
- maintaining or encouraging more active investors as monitors;
- submitting to creditor monitoring by raising debt capital, and;
- providing executive incentive structures to resolve information-related agency problems.

We discuss each of these mechanisms in further detail below.

Of course, one might question whether mechanisms that keep information private (i.e., within the firm) could instead reduce information asymmetry between management and outside directors. That is, outside directors do not necessarily need to, and typically do not, obtain all of their information from public channels such as financial reports. For example, directors have access to annual budgets, quarterly variance reports, and a wide array of other internal reports, many of which are more detailed and timely than public financial statements. And, *ceteris paribus*, the private transfer of information between managers and directors would seem to be preferable to public disclosure of information, as competitors, regulators, and other parties can use public information to the firm's detriment.

Although outside directors undoubtedly receive a substantial amount of information from managements' internal reports and presentations, it seems unlikely that outside directors rely *solely* on information supplied by, and filtered through, managers (Adams et al., 2009). Agency conflicts exist between managers and shareholders, and although managers will be forthcoming in sharing a considerable amount of information with outside directors, as discussed by Verrecchia (2001), they are less likely to voluntarily share information with outside directors that is detrimental to their own interests (e.g., information about bad projects, poor performance, perquisite consumption, and accounting irregularities). In other words, managers are likely to be forthcoming only with information that is relatively unhelpful in assisting outside directors with their monitoring activities.¹¹

In light of this concern, it seems plausible that financial reporting systems and public disclosures provide board members with information that aids their monitoring activities. As Bushman et al. (2004) note, public disclosures can carry greater credibility than private communications, in part because such disclosures are subject to SEC rules and enforcement and, in the case of financial reports, to the oversight of an auditor. Further, information intermediaries such as analysts and the business press can scrutinize and assimilate public disclosures. For example, Cai et al. (2009) find that the extent of analyst coverage influences board structure and monitoring intensity. These parties can also uncover distortions in various pieces of information (e.g., Miller, 2006). Finally, other parties beyond boards play a role in corporate governance (regulators, blockholders, institutional investors, auditors, the market for corporate control, executive labor markets, etc.), and these parties, in part, consider public disclosures in monitoring managers' strategic decisions. We conclude from the various

¹¹ With respect to the board's advising activities, there is less reason for directors to question the information management provides internally. In the absence of agency conflicts, management is expected to keep the board well informed to facilitate the board's decision-making and to reduce the likelihood that the board will interfere with management's decisions. Of course, if information is distorted because of monitoring-related agency problems that interfere with the board's advisory role (e.g., approving a negative NPV acquisition), the board's efficacy in advising management is also likely to suffer.

arguments above that the nature and extent of the role of financial reports in governance is ultimately an empirical issue, and we dedicate the next several sections of this review to the literature exploring this question.

We also recognize the possibility that outside directors can be, in and of themselves, a commitment to a transparent reporting environment. That is, under the assumptions that shareholders recognize outside directors' demands for transparent reporting, and that outside directors can effectively elicit transparent reporting from managers, the appointment of outside directors to the board can serve as a commitment mechanism for financial transparency. The merit of this argument depends, in part, on whether financial transparency is necessary to facilitate the effectiveness of outside directors, or instead whether outside directors can proactively facilitate financial transparency. We refer back to this issue of identifying the direction of causality several times in the sections that follow.

3.2.1. Timeliness of financial reports

Bushman et al. (2004) note that outside directors require timely information to assist them in carrying out their monitoring and advising responsibilities, and that timely financial reporting in general, and earnings in particular, have the potential to help satisfy these informational needs. Bushman et al. measure timeliness as “the extent to which current earnings capture the information set underlying contemporaneous changes in stock price.” The authors acknowledge that measuring timeliness using the relation between earnings and stock returns raises the question of whether directors and other outside monitors could not simply observe the stock return directly and use that as a source of information to carry out their monitoring activities. They also reasonably point out, however, that earnings and its components might help directors ascertain the detailed information set underlying stock returns. (We return to this disaggregation feature of earnings in our discussion of accounting-based performance measures.) Further, earnings timeliness may be a reasonable proxy for the overall informational properties of financial reports that boards would find valuable.

With respect to predicting the relation between earnings timeliness and board structure, however, the authors note that constructing a straightforward hypothesis is more difficult than it at first appears. On one hand, the theoretical arguments above suggest that outside directors are unlikely to be effective unless they are governing a firm that has made a commitment to low information asymmetry between insiders and outsiders. Thus, one might expect to find a positive relation between the proportion of outside directors and timely financial reporting (as a proxy for low information asymmetry).¹² Alternatively, Bushman et al. argue that low transparency can increase the scope for agency conflicts between shareholders and managers, thereby requiring a greater proportion of outside board members to monitor management in settings characterized by low earnings timeliness. (Such an alternative argument could also be made in the studies discussed above in Section 3.1 that examine the relation between board structure and information asymmetry more generally.)

With regard to the latter hypothesis, one might consider how outside directors can be effective monitors when there is low transparency. One possibility might be that low transparency is “correctable” and that outside directors will work to improve transparency so that they can more effectively carry out their monitoring and advising roles. If this were true, however, the negative relation between earnings timeliness and outside directors should be temporary (i.e., it will be observed only until the outside directors correct the transparency problems). Possibly as a result of these conflicting hypotheses, Bushman et al. (2004) fail to find a significant relation between earnings timeliness and the proportion of outside directors. In related papers, Vafeas (2000) fails to find a significant relation between the proportion of outside directors and earnings informativeness, whereas Petra (2007) and Ferreira et al. (forthcoming) find a positive relation between the proportion of outside directors and earnings informativeness and accounting quality, respectively.

A manifestation of extreme distortion and lack of timeliness in financial reporting is the incidence of accounting fraud or accounting misstatements. In addition to distorting the information environment in which outside directors make decisions, accounting fraud and misstatements subject the firm to regulatory, litigation, and other costs (Karpoff et al., 2008). Given that inside directors are typically executives of the firm, and that executives are typically knowledgeable parties to fraudulent or irregular accounting activities, inside directors are unlikely to be effective monitors of fraudulent accounting activities. Outside directors, on the other hand, seem less likely to participate in these perverse activities.¹³ Such directors, however, are at an informational disadvantage relative to inside directors, since management is unlikely to voluntarily inform outside directors that they are committing accounting fraud. However, causality may also run in the opposite direction, whereby outside directors are not invited to sit on the board, or choose not to sit on a board, unless the firm has committed to a high

¹² Note that financial-accounting properties such as earnings timeliness may or may not be good proxies for information asymmetry between managers and outside directors. Earnings timeliness is expected to be influenced by both firm- and industry-specific effects, as well as manager-specific effects. For example, even when managers are doing their best to convey their private information, a high growth firm in an uncertain business environment may still have general difficulty in conveying relevant and reliable information about the firm through the financial reporting process. In other words, low earnings timeliness does not imply that a company has substantial information asymmetry between managers and outside directors.

¹³ In most cases, the potential costs to directors from being complicit in a fraud would seem to outweigh the expected benefits. A typical outside director receives a relatively modest annual fee (\$50,000–200,000), does not receive bonuses tied to accounting performance, and usually does not hold a large fraction of wealth in firm stock (Yermack, 2004). At the same time, most outside directors have substantial reputational capital to protect, and public revelation of accounting fraud and misstatements result in significant reputational costs to outside directors. Gerety and Lehn (1997) document that the number of other directorships held by the directors of firms charged with accounting fraud declines significantly compared with a control sample. In a related study, Srinivasan (2005) documents that, following restatements, director turnover is greater and the number of other directorships declines. Finally, Fich and Shivdasani (2007) find that outside directors at firms facing lawsuits alleging financial misrepresentation bear costs in the form of lost directorships at other firms.

quality, transparent information environment where fraudulent activities are unlikely to occur. One implication from this line of thought is that for accounting fraud or irregularities to go undetected by outside board members requires substantial information asymmetry between insiders and outsiders, under the assumption that outside directors are not complicit in the fraud. An interesting area for future research would be to examine the relation between information asymmetry and fraud or accounting irregularities, or to use the existence of fraud and irregularities to develop a measure of such information asymmetry.

The empirical evidence on the relation between board structure and the incidence of financial-accounting fraud and misstatements is mixed. Beasley (1996) documents that the incidence of SEC accounting enforcement actions is lower for firms with a higher proportion of outside directors. Dechow et al. (1996), Gerety and Lehn (1997), and Farber (2005) conduct similar studies but use a matched-pair research design. Dechow et al. (1996) and Farber (2005) find a lower incidence of SEC accounting enforcement actions for firms with a greater proportion of outside directors. Further, Farber finds that following an SEC enforcement action, firms appear to increase the proportion of outside directors, suggesting that the incidence of an enforcement action causes firms to improve their information transparency, thereby facilitating the increase in outside directors. (It may also suggest that firms use the appointment of outside directors as a commitment mechanism to induce improvements in information transparency.) Gerety and Lehn (1997) and Agrawal and Chadha (2005), however, find no significant relation between the proportion of outside directors and enforcement actions or earnings restatements, respectively. Finally, Masulis et al. (2010) argue that foreign independent directors add value through their international expertise, but at a cost of weaker monitoring. Consistent with this prediction, they find that foreign independent directors are associated with poor board meeting attendance and a greater incidence of financial misreporting.

Beasley (1996), Dechow et al. (1996), and Agrawal and Chadha (2005) also examine the relation between accounting irregularities and the combined role of CEO and chairman. *Ex ante*, the expected relation is unclear. As noted above, in settings with greater information asymmetry where the CEO has substantial private information, it may be efficient to combine the CEO and chairman roles. The combination of greater information asymmetry and greater CEO power, however, may lead to a greater propensity for accounting irregularities. Alternatively, the appointment of CEO as chairman may be more likely when the CEO has established a reputation, or adopted commitment mechanisms, for being forthcoming with high quality information. The empirical evidence reflects these conflicting predictions: Dechow et al. find that SEC accounting enforcement actions are more frequent for firms where CEO is also chairman, but neither Beasley nor Agrawal and Chadha find a significant relation. Similarly, Petra (2007) fails to find a relation between earnings informativeness and the duality of the CEO and chairman positions.

3.2.2. Conservative financial reporting

Similar to Bushman et al. (2004), Ahmed and Duellman (2007) recognize that outside directors require high-quality timely information to effectively monitor and advise managers, but that managers have better information than outside directors and also may have incentives to distort and conceal their private information. In contrast to Bushman et al.'s focus on the general timeliness of earnings, Ahmed and Duellman emphasize the timeliness of “bad news.” It seems reasonable to view “bad news” as central to the informational conflict between management and outside directors. Managers are likely to be quite forthcoming with information about “good news,” since such information will paint their performance in a favorable light. For much the same reason, however, managers are expected to be less forthcoming about “bad news,” both with their disclosures to outside directors and to outside parties generally (see, for example, discussions by Watts, 2003; Ball and Shivakumar, 2005; Kothari et al., *this issue*).

Within the accounting literature, the term “conservatism” is ascribed to the property of accounting reports that subjects bad news to a lower verification standard than good news and thereby results in more timely recognition of bad news than good news in earnings. The more timely recognition of bad news in accounting reports is operationalized through a variety of reporting rules and choices that commit managers to recognizing and disclosing difficult-to-verify information about losses more quickly than gains. For example, negative changes in the value of inventory, goodwill, and other long-lived assets are recognized in a timely manner, but positive changes in difficult-to-verify values are recognized only when they become easy to verify (e.g., when they are realized in cash). Thus, it seems reasonable to interpret conservatism as a set of financial-accounting rules and conventions that facilitate more complete and timely corporate disclosure by committing managers to report bad news sooner than it might otherwise surface (Guay and Verrecchia, 2007).

Ahmed and Duellman (2007) measure conservatism using three variables: (1) the market-to-book ratio, (2) a three-year measure of persistent negative accounting accruals, and (3) the Basu (1997) stock-returns-based measure of the asymmetric timeliness of earnings. None of these measures, however, seems to capture the essence of the argument above that outside directors require timely information about bad news to enhance their understanding of the firm's operations and performance. The market-to-book ratio and three-year negative accounting accruals appear to be measures of a cumulative downward bias in earnings, as opposed to information-based measures of timely financial reporting about bad news. The Basu (1997) measure begins with a regression of earnings on contemporaneous stock returns, where stock returns are used as the proxy for “news” about the firm in a given period. In addition to the main effect coefficient on returns, the regression also allows the coefficient on returns to vary according to whether returns are negative. The incremental coefficient on negative returns is typically viewed as a measure of conservatism, or the asymmetric timeliness with which earnings captures bad news in comparison with good news. However, if managers have strong incentives to disclose good news about the firm, then it is unlikely that the disclosure of good news is particularly problematic to the efficacy of the monitoring and advising roles of outside directors. Rather, the timely disclosure of bad news is the key informational problem. This suggests that the *overall* timeliness of bad

news in the Basu (1997) regression is the relevant measure to study (i.e., the sum of the coefficient on returns and the coefficient on negative returns), rather than simply the *incremental* timeliness of bad news as compared with good news.¹⁴

As an illustration, consider two firms, one with very untimely earnings, but where bad news is reflected in earnings somewhat more quickly than good news, and another firm with very timely earnings, where both good and bad news are reflected very quickly in earnings. The first firm will have more conservative earnings according to the asymmetric timeliness measure, but it is the second firm's earnings that are likely to be more helpful to outside directors in fulfilling their monitoring and advising roles (see Guay and Verrecchia (2006), for a discussion of this point, as well as its application to contracting settings beyond governance). However, it is also possible that the incremental timeliness of bad news in the Basu (1997) regression is fairly highly correlated with the total timeliness of bad news recognition, particularly if timeliness of good news recognition does not vary substantially across firms. Regardless, however, we encourage researchers to more carefully consider whether their hypotheses speak to a firm's commitment to *asymmetric* recognition of good and bad news, or rather to a commitment to timely recognition of bad news. The latter, more than the former, seems more consistent with a wide array of economic hypotheses in the disclosure, contracting, and governance literatures.

Measurement issues aside, and noting that these measurement issues are not unique to their paper, Ahmed and Duellman (2007) find that the degree of conservatism in accounting earnings is greater for firms with a higher proportion of outside directors. This result is consistent with the hypothesis that timely recognition of bad news is complementary in assisting these directors in carrying out their monitoring and advisory roles. Note that this result leaves open the issue of causality—that is, whether firms choose to appoint more outside directors when bad news recognition is timely (i.e., when management provides the timely information necessary for outside directors to effectively govern), or instead whether outside directors serve to actively improve the timely recognition of bad news (i.e., outside directors serve to elicit timely bad news from management). The authors also find that conservatism is greater when outside directors hold greater equity incentives in the firm (i.e., that conservatism and directors' equity incentives are complements). This result is consistent with demands from outside directors for more timely information about bad news when they have stronger incentives to expend effort in their monitoring and advisory roles, but again, the issue of causality is not fully resolved. The authors find no consistent relation between conservatism and whether the CEO is also chairman, or whether outside directors hold a greater number of additional directorships.

In a related study, LaFond and Watts (2008) note the importance of financial statements in facilitating a variety of informal contracts between managers and shareholders, and argue that shareholders demand timelier financial reporting when they are concerned that managers will withhold information. Their evidence is consistent with firms committing to greater conservatism in financial reporting when greater information asymmetry exists between insiders and outside investors. They also provide evidence that changes in information asymmetry lead to a greater commitment to conservative accounting. These results appear consistent with the hypothesis that when there is greater information asymmetry between insiders and outsiders, managers and/or boards commit to reporting rules that convey timely disclosure about bad news.

As with many papers in the conservatism literature, LaFond and Watts (2008) emphasize the asymmetry between good news and bad news recognition. As noted above, however, the timely recognition of gains in accounting reports is less likely to be necessary to achieve full disclosure, since managers are expected to be more forthcoming with good news irrespective of accounting rules and conventions. Thus, the asymmetry, *per se*, in the timeliness of gain and loss recognition may be less important than simply the commitment to timely loss recognition.

In general, if information asymmetry between insiders and outsiders stems primarily from insiders' reluctance to convey timely information about bad news, a commitment to timely disclosure of bad news naturally leads to lower information asymmetry between insiders and outsiders. An interesting and important implication of this perspective is that when one views conservative accounting as a commitment to more complete disclosure, as opposed to an asymmetric accounting practice for recognizing good news more slowly than bad news, the potential economic benefits of conservative reporting can be considered in a broad array of contracting and governance settings as well as a valuation setting.¹⁵ Further, we note that the potential for conservative accounting to assist investors in valuation is an interesting area for future research, given the common perception (or, possibly, misperception) that although conservative accounting may assist firms in contracting and governance settings, such benefits come at the expense of accounting's role in valuation.

¹⁴ More formally, the basic Basu (1997) regression is $NI = \beta_0 + \beta_1 NEG + \beta_2 RET + \beta_3 NEG \times RET + \varepsilon$, where "NI" is (annual) net income, "RET" is contemporaneous stock returns, which is the proxy for news, and "NEG" is an indicator variable that equals 1 for negative returns and 0 otherwise. In the most common interpretation of this regression, β_2 indicates how news, in general, is reflected in NI, where a larger coefficient indicates that earnings exhibit a greater response for a given amount of news in returns. β_3 indicates whether this mapping is incrementally different for bad news (i.e., the differential timeliness of bad news). When $\beta_3 > 0$, bad news is reflected in net income in a more timely manner than good news, and accounting is considered to be conservative. Note that although β_2 is sometimes interpreted as "good news" sensitivity, this labeling is misleading because other things being equal, when β_2 is smaller, both good news and bad news are less timely. Therefore, the overall (or absolute) timeliness of bad news in earnings, presumably what outside directors are concerned about knowing, is captured by the sum of β_2 and β_3 .

¹⁵ In a valuation setting, investors require timely information about expected future cash flows and risk. If managers' reluctance to report timely information about "bad news" hinders transparent reporting for outside investors, then conservative financial reporting that commits managers to timely reporting of "bad news" can aid investors in efficient valuation of their claims (e.g., see LaFond and Watts, 2008; Kothari et al., this issue).

3.2.3. The auditing process

Watts and Zimmerman (1986) note that the efficacy of the accounting system in reducing agency conflicts depends, at least in part, on contracting parties' assurances that the financial reports have been prepared in accordance with the provisions of the contract. Broadly viewed, the auditing process is a set of mechanisms that provides this assurance to contracting parties by monitoring the financial reporting system. As such, managers, shareholders, directors, and other contracting parties all have an interest, *ex ante*, in structuring an auditing process that provides external parties with confidence that the financial reporting system produces timely, relevant, and credible information about the firm's current and future cash flows and their riskiness.

Many papers document that the choice of a high quality auditor can influence the quality of the financial reporting process, where a high quality auditor is typically considered to be a large audit firm that puts substantial reputational and financial capital at risk when conducting an audit. For example, Francis et al. (1999) argue that managers have incentives to choose high quality auditors as a bonding mechanism to credibly constrain their ability to opportunistically manipulate the financial reporting process. They argue that managers of firms with large accruals are likely to have a greater opportunity to manipulate their financial reports, and predict that such firms are more likely to select a high quality auditor. Consistent with this prediction, the authors find that Big 6 auditors are more common at firms with longer operating cycles and greater capital intensity, both of which are proxies for the propensity to use accruals. They also document that Big 6 auditors are associated with lower discretionary accruals, a result that Becker et al. (1998) corroborate.

Other papers in this literature document that a high quality auditor is associated with higher earnings response coefficients (Teoh and Wong, 1993), a lower incidence of litigation (Palmrose, 1988), a lower incidence of accounting errors and irregularities (DeFond and Jiambalvo, 1991), and more informative audit reports (Weber and Willenborg, 2003). However, Dechow et al. (1996), Gerety and Lehn (1997), and Agrawal and Chadha (2005) find no relation between Big 5 (or 6 or 8) auditors and the incidence of SEC accounting enforcement actions and earnings restatements. (However, Farber (2005), finds a negative relation between Big 4 auditors and SEC enforcement actions). A more comprehensive review of the auditing literature is beyond the scope of this survey.

3.2.4. The audit committee of the board of directors

Outside directors on the audit committee are likely to bring greater independence in monitoring managements' financial reporting activities. Further, outside directors on the audit committee, like outside directors in general, are expected to require more transparency in the information environment to carry out their responsibilities. At the same time, regardless of their efforts, outside directors on the audit committee are unlikely to understand the firm's financial reporting process as well as inside directors do.

Early research on the role of audit committees finds mixed results on the audit committee's role in monitoring fraudulent accounting activities. For example, Beasley (1996) and Gerety and Lehn (1997) find no relation between the existence of an audit committee and accounting fraud, but Dechow et al. (1996) find that the incidence of SEC accounting enforcement actions is lower for firms with a formal audit committee. In more recent research, Klein (2002a, 2002b) examines hypotheses similar to those in Bushman et al. (2004, discussed in Section 3.2.1), but in the context of outside directors on the audit committee as opposed to outside directors on the overall board. Klein (2002a) predicts and finds that more complex firms, and firms with greater uncertainty and growth opportunities, are less likely to have outside directors on the audit committee. This result is consistent with outside directors being asked to serve only in settings where there is sufficient information transparency to allow the outsiders to effectively fulfill their advising and monitoring roles.

Klein (2002b) documents a negative relation between discretionary accruals and the proportion of outside directors on the audit committee. (The relation also holds using a changes specification.) She also documents that discretionary accruals are negatively related to the proportion of outside directors on the overall board.¹⁶ Under an assumption that discretionary accruals proxy for undesirable earnings management activity by managers, Klein draws an inference that outside directors constrain undesirable earnings management activity. We note, however, that some earnings management activities are in the interests of shareholders (e.g., avoiding the violation of debt covenants, avoiding regulatory scrutiny, and reducing taxes). Such earnings management may be acceptable to both inside and outside directors and so would not necessarily be related to proxies for board monitoring (e.g., the proportion of outside directors). Managers may also manage earnings to improve the informativeness of the earnings process, in which case, earnings management would be a poor proxy for distortions in financial reporting transparency.

In a similar vein to Klein (2002b), Krishnan (2005) documents that the proportion of outside directors on the audit committee is negatively related to the incidence of internal control problems, as publicly disclosed on the Form 8-K when a change of auditor occurred. The results in these two papers are consistent with outside directors' having both an incentive and the ability to monitor the financial reporting process, and outside directors' reduction of earnings management activity that is not in shareholders' interests. (As we note below, however, the causality could go the other way; that is, firms with low earnings management may appoint or attract more outside directors.) The findings in this literature, however, are not all consistent with those in Klein (2002b) and Krishnan (2005). For example, Farber (2005) fails to find a relation between the proportion of outside directors on the audit committee and SEC enforcement actions. Additionally, Karamanou and Vafeas (2005) find little evidence that the frequency

¹⁶ Klein (2002b) also hypothesizes that because a large blockholder frequently retains the ability to intervene in the firm's strategic decisions, such a large shareholder has incentives to ensure an information environment sufficiently transparent so as to remain well informed about the firm's activities. Accordingly, she examines the relation between blockholders and earnings management but finds no evidence of an association.

or accuracy of managements' earnings forecasts are associated with either (1) the proportion of outside directors on the audit committee, (2) the proportion of audit committee members with financial expertise, or (3) the size of the audit committee.

Returning to the important issue of causality, Klein (2002b) indicates that her results "suggest that boards structured to be more independent of the CEO are more effective in monitoring the corporate financial-accounting process." This interpretation emphasizes a direction of causality running from the actions of outside directors to the accounting process; that is, outside directors actively constrain earnings management. An alternative interpretation consistent with the collective evidence, however, is that management and shareholders recognize the need for their corporate financial reporting process to be transparent when they invite more outside directors to sit on the board (or that outside directors will agree to join the board only when the firm has made a commitment to transparent financial reporting). This alternative interpretation emphasizes shareholders' (and, potentially, management's) incentives to proactively mitigate agency conflicts that arise when financial reporting is not transparent. Empirical evidence also indicates that firms recognize the difficulties that directors face in monitoring the financial reporting process and compensate audit committee members more highly when monitoring demands are greater (Engel et al., 2010).

These two interpretations give rise to a host of interesting questions. For example, how do outside directors ensure that the financial reporting process is transparent and that information is accurate and timely? And how do managers and/or shareholders commit to provide outside directors with accurate and timely information, recognizing that directors may not know whether any specific piece of information is accurate or timely? Does the relation between outside directors and financial reporting depend on how the outside directors come to the firm—i.e., whether management and shareholders actively seek out the outside directors, or whether some largely exogenous influence, such as regulatory or exchange-listing requirements, instead "impose" them on the firm?

Research on audit committee structure has also focused on the subsample of firms in financial distress. Carcello and Neal (2000) find that the probability that a financially distressed firm will receive a going-concern audit report is higher when there are more outside directors on the audit committee. The authors interpret this result as evidence that outside directors on the audit committee of financially distressed firms facilitate the auditor's independence and freedom to issue a going-concern report. This is an interesting implication, because it suggests that outside directors take actions to protect the integrity of the financial reporting system even when it might be against the shareholders' interests to do so. An alternative interpretation of this finding, however, is that insiders on the audit committee are in a better position to provide the auditor with information that reduces uncertainty about the firm's ability to return to financial health, thereby reducing the frequency of going-concern reports.

In a follow-up paper, Carcello and Neal (2003) examine whether audit committee characteristics influence the likelihood that an auditor is dismissed following the issuance of a going-concern report. The authors' underlying presumption is that management will attempt to dismiss an auditor who issues a going-concern report, either in an attempt to find a more "pliable" auditor, to punish the auditor (presumably to establish a reputation that will influence the next auditor), or to end a management-auditor relationship that has become irreparably damaged because of the conflict. The authors argue that the audit committee can be structured to commit *ex ante* not to dismiss the auditor, thereby encouraging the auditor to remain independent and improving the quality of the auditing process. The authors predict a lower probability that the auditor will be dismissed following a going-concern report when the audit committee has the following properties: (1) a greater proportion of outside directors, (2) directors who sit on a greater number of other boards (as a proxy for reputational capital), (3) directors with greater financial expertise (as a proxy for the ability of directors to understand the reasons for the going-concern report), and (4) directors who hold less company stock (as a proxy for the directors' incentives to be concerned about the market effects of the going-concern report). The authors' empirical work is taken to support all of the predictions except the relation with financial expertise of audit committee directors.

The predictions and findings regarding the number of additional directorships and stock holdings are interesting, because of their contrast with other predictions in the literature. Specifically, additional directorships, which the literature also uses as a proxy for "busy" board members (e.g., Fich and Shivdasani, 2007), are frequently considered to impair directors' monitoring ability, whereas the results in Carcello and Neal (2003) are consistent with additional directorships measuring reputational capital, a seemingly reasonable alternative interpretation. Another interesting prediction relates to stock holdings of directors, which, it is frequently argued, align directors' interests with those of shareholders (Ryan and Wiggins, 2004; Kumar and Sivaramakrishnan, 2002). In Carcello and Neal (2003), however, stock holdings are assumed to impair board members' monitoring role by aligning their interests with shareholders and compromising their commitment to protect the auditor from being dismissed, *ex post*, in the event of a going-concern report.

3.2.5. Financial expert directors

In the wake of several high-profile accounting scandals in the early 2000s and the passage of disclosure rules in the 2002 Sarbanes–Oxley Act (SOX), the role of financial experts on boards of directors became a topical issue in accounting research. Financial expert directors, it is thought, should have better capabilities than non-financial expert directors with respect to monitoring and advising on financial reporting and disclosure issues.

We are aware of no well-accepted definition of a financial expert director within the academic community.¹⁷ It seems intuitive that a director with a background in public accounting, auditing, or financial operations (CFO, controller, etc.) would

¹⁷ Regulation S–K Item 401 defines an audit committee financial expert as a person with various attributes, including an understanding of GAAP and financial statements; experience in preparing, auditing, or analyzing financial statements; an understanding of internal control over financial reporting; and an understanding of audit committee functions.

be considered a “financial expert.” However, SOX uses a broader definition of how a director can obtain financial expertise. The definition includes, for example, experience in managing individuals that carry out financial reporting and financial operations. As a result, the SOX definition of “financial expert” includes individuals such as CEOs and company presidents who may or may not have detailed skills in analyzing financial reports or accounting practices.

Absent regulatory requirements, a firm will presumably invite a financial expert to sit on the board for one of two reasons: (1) when management requires advice with respect to corporate finance or financial reporting strategy, or; (2) when management or shareholders want to commit to more intense monitoring of corporate finance or financial reporting strategies. In the former case, the outside financial expert director can perform this advisory role only if the firm’s financial reporting and information environment are transparent. Thus, one might expect a positive relation between information transparency and financial expert directors on the board. In the latter case, the outside financial expert director may be asked to sit on the board when shareholders or regulators believe that its financial reporting and information environment are not transparent, but that additional monitoring and advice from the financial expert will make it more transparent. In this case, one might expect to initially observe a negative relation between information transparency and financial expert directors on the board. Over time, however, information transparency will improve as the financial expert carries out his or her duties such that in a cross-sectional test one could find a negative relation, a positive relation, or no relation between information transparency and financial experts.

Empirical research on these hypotheses is mixed but generally supports a positive (non-causal) relation between information transparency and financial experts on the board. Xie et al. (2003) document that board and audit committee members with corporate or financial expertise are associated with lower discretionary accruals (where the authors assume that managers use discretionary accruals to reduce transparency). Agrawal and Chadha (2005) find that the frequency of an earnings restatement is lower in companies with an outside financial expert director on either the board or the audit committee. Further, Farber (2005) finds that firms subject to an SEC enforcement action have fewer financial experts on their audit committees than a group of control firms, and Krishnan (2005) and Hoitash et al. (2009a) document that the financial expertise of audit committee members is negatively related to the incidence of internal control problems. There are, however, several studies that fail to find significant results. Karamanou and Vafeas (2005) find no consistent relation between the proportions of financial experts on the audit committee and the frequency, accuracy, or bias in management earnings forecasts. Ashbaugh et al. (2006) find no evidence that having a financial expert on the audit committee is associated with credit ratings, and Anderson et al. (2004) find no relation between the cost of debt and having financial experts serving on the audit committee. Finally, Carcello and Neal (2003) find no significant relation between the proportion of audit committee members with financial expertise and the frequency of auditor dismissals following going-concern reports.

Note, however, that a positive relation between financial expert presence on the board and transparency in financial reporting does not necessarily imply that financial experts actively *cause* greater transparency. Having a financial expert sit on the board can act as a signal that the firm believes its corporate finance and financial reporting practices are of high quality. In other words, a financial expert director may investigate the firm’s financial reporting practices before joining the board and accept the invitation to sit on the board only if such practices are of acceptable quality. In addition, or simultaneously, having a financial expert sit on the board can act as a signal that the firm is committed to assuring transparency in its corporate finance or financial reporting practices and is actively seeking advice and monitoring to achieve such objectives. (Of course, the financial expert may be reluctant to accept a position that requires significant effort to ensure or establish transparency.) Consistent with this signaling hypothesis, DeFond et al. (2005) find that the stock market reacts positively when a director with accounting expertise is appointed to the audit committee, although this result does not hold for the non-accounting experts that meet the broader SOX definition of a financial expert (see also Engel, 2005).

In a related vein, recent research explores how the role of the chief financial officer can serve as a commitment to greater transparency in financial reporting. The CFO is a key individual with substantial decision rights over financial reporting, and therefore it seems reasonable that a high quality CFO with appropriate incentives could have a positive influence on the quality of financial reporting.¹⁸ Bedard et al. (2010) provide evidence that financial reporting quality is stronger when the CFO holds a seat on the board of directors, suggesting either that board membership by CFOs allows other directors to better monitor the financial reporting process, or that strong financial reporting quality is indicative of a high quality CFO who is likely to be valuable serving on the board. Li et al. (2010) document that firms with SOX Section 404 internal control weaknesses have CFOs with weaker professional qualifications, and that newly hired CFOs with stronger qualifications are associated with more favorable improvements in auditor opinions on internal control weaknesses.

3.2.6. Outside directors as a bonding mechanism to mitigate agency conflicts with creditors and other contracting parties

A set of recent papers explores the notion that in addition to mitigating agency costs between managers and shareholders, outside directors can also help control agency conflicts between managers/shareholders and other stakeholders, such as creditors. Outside directors have reputational capital that may constrain their willingness to take *ex post* opportunistic financial reporting actions, and actions more generally, that benefit shareholders, but are potentially detrimental to other

¹⁸ As evidence supporting the incentives of CEOs to maintain high quality financial reporting systems, Hoitash et al. (2009b) and Wang (2010) document that CFOs of firms with weak internal controls receive lower compensation. Further, Wang (2010) and Li et al. (2010) document that CFOs with internal control weaknesses experience a higher rate of forced turnover.

stakeholders, such as bondholders, employees, and suppliers. (See Fama and Jensen, 1983; Gerety and Lehn, 1997; Srinivasan, 2005.) Further, outside directors and other external parties are largely aligned in their demand for high quality information. For example, firms that use transparent financial reporting to credibly convey timely and reliable information to outside directors simultaneously convey this information to other outside investors and contracting parties. At the same time, inside directors, most being firm executives with substantial equity stakes, may have greater difficulty convincing stakeholders that management will not distort financial reports when it would be beneficial to themselves or to shareholders. The noteworthy point here is that while outside directors are commonly viewed as champions of shareholders' interests in their monitoring of managers, it may be the case that outside directors are also more willing, *ex post*, to take actions *counter* to shareholders' interests when such actions conflict with the interests of other contracting parties.¹⁹ This, of course, does not mean that outside directors are detrimental to shareholders, *ex ante*. Rather, shareholders may maximize value *ex ante* by committing to a board that will look out for other contracting parties' interests, *ex post*, thereby reducing agency conflicts and contracting costs with these other parties.

Carcello and Neal (2000, 2003) allude to this role for outside directors by arguing that outside directors take actions to protect the independence of the auditor and the integrity of the financial reporting system even when it might be against the shareholders' interests to do so. Bhojraj and Sengupta (2003) explicitly examine the role of outside directors in reducing agency conflicts with creditors. They document that firms are able to borrow at lower rates when they have a higher proportion of outside directors on the board. Anderson et al. (2004) also document this relation between the cost of debt and overall board independence, as well as a negative relation between the independence of the audit committee and the cost of debt. These results are consistent with two non-mutually exclusive explanations. One possibility is that causality runs from outside directors to the cost of debt. Specifically, the independence and personal reputational concerns of outside directors induce these individuals to monitor and constrain managers' ability to engage in self-interested actions. If these self-interested actions are detrimental to either firm value in general or to the firm's creditors in particular, the proportion of outside directors is expected to be negatively related to the cost of debt. A second possibility is that because outside directors require timely information to perform their monitoring and advising roles, more informationally transparent firms ask a greater proportion of outside directors to sit on the board. And if a more transparent information environment facilitates less costly contracting with creditors, one expects to find a negative relation between the proportion of outside directors and the cost of debt. (Note, however, that this latter possibility does not imply that outside directors *cause* a lower cost of debt.)

Ashbaugh et al. (2006) extend the work of Bhojraj and Sengupta (2003) to a broader set of financial reporting and governance variables. They document a similar positive relation between credit ratings and the proportion of outside directors on the board. They also find that credit ratings are positively related to the proportion of directors who hold company stock and the proportion of directors who hold directorships at other firms (which may proxy either for expertise or, more likely, reputational capital). However, they find no evidence that the proportion of outside directors on the audit committee is related to the cost of debt.

3.2.7. Active investors

Jensen (1993, p. 867) argues the merits of active investors as a governance mechanism:

Active investors are individuals or institutions that simultaneously hold large debt and/or equity positions in a company and actively participate in its strategic direction. Active investors are important to a well-functioning governance system because they have the financial interest and independence to view firm management and policies in an unbiased way. They have the incentives to buck the system to correct problems early rather than late when the problems are obvious but difficult to correct.

To make efficient investing decisions, active investors require timely and reliable information that allows them to monitor management's actions and to participate in the firm's strategic direction. Further, as Jensen (1993) notes, active investors have the financial incentives and clout to influence managements' decisions regarding the timeliness and reliability of the information conveyed to outsiders. These arguments suggest that information transparency and the presence of active investors are complementary and should be positively correlated. An alternative hypothesis, articulated by Demsetz and Lehn (1985) and Bushman et al. (2004), is that effective monitors, such as active investors, are most important in settings characterized by low information transparency, leading to the hypothesis that transparency and the presence of active investors might be negatively correlated. Shleifer and Vishny (1997) offer a competing view of active investors, suggesting that concentrated ownership can allow blockholders to influence management and secure private benefits detrimental to

¹⁹ Adding to the richness of this perspective is the legal view that directors are generally regarded as having a primary fiduciary responsibility to shareholders rather than to the firm's other contracting parties. Huebner and McCullough (2008) highlight that in *North American Catholic Educational Programming Foundation, Inc. v. Gheewalla*, 930A.2d 92 (Del. 2007), the Delaware Supreme Court recently summarized the duties of directors as follows: "It is well established that the directors owe their fiduciary obligations to the corporation and its shareholders. While shareholders rely on directors acting as fiduciaries to protect their interests, creditors are afforded protection through contractual agreements, fraud and fraudulent conveyance law, implied covenants of good faith and fair dealing, bankruptcy law, general commercial law and other sources of creditor rights. Delaware courts have traditionally been reluctant to expand existing fiduciary duties. Accordingly, 'the general rule is that directors do not owe creditors duties beyond the relevant contractual terms.'"

fragmented shareholders and creditors. And if timely and reliable disclosures constrain the ability of blockholders to secure such private benefits, one expects to find a negative relation between blockholders and information transparency. Therefore, in the event that one finds a negative relation between active investors and information transparency, further tests may be necessary to determine the underlying cause of this relation. Specifically, do active investors gravitate to low transparency firms because this is where their monitoring ability is most valuable, or instead do these investors seek out low transparency firms in an attempt to secure private benefits to the detriment of fragmented shareholders?

Perhaps as a result of these conflicting effects, the empirical evidence is mixed on the relation between various types of active investors and the degree of information transparency:

1. [Bushman et al. \(2004\)](#) document a negative relation between earnings timeliness and concentrated ownership, where concentrated ownership is a composite measure constructed using institutional ownership, blockholders, and average holdings per shareholder. The authors interpret this result as being consistent with earnings timeliness and concentrated ownership serving as substitute monitoring mechanisms.
2. [Ajinkya et al. \(2005\)](#) also find a negative relation between concentrated institutional ownership and information transparency, as measured by the frequency of voluntary earnings forecasts. Their argument, however, is not that active investors provide a substitute monitoring function (as in [Bushman et al., 2004](#)) but rather that concentrated institutional owners do not require transparent disclosure because they have access to private information, and/or that these concentrated owners prefer to maintain an information advantage over other investors.
3. [Dechow et al. \(1996\)](#) and [Farber \(2005\)](#) find that SEC accounting enforcement actions are less frequent for firms with outside blockholders. However, [Beasley \(1996\)](#) and [Agrawal and Chadha \(2005\)](#) find no significant relation between blockholders and SEC enforcement actions and earnings restatements, respectively.
4. [Ajinkya et al. \(2005\)](#) and [Karamanou and Vafeas \(2005\)](#) document that greater institutional holdings are associated with more frequent voluntary earnings forecasts and more accurate forecasts. However, [Farber \(2005\)](#) finds no relation between institutional holdings and SEC enforcement actions.
5. [Bhojraj and Sengupta \(2003\)](#) find that institutional investor ownership is associated with lower interest rates and higher credit ratings, a result they take to mean that institutions monitor both the information environment and managers' self-interested actions. However, [Ashbaugh et al. \(2006\)](#) find no relation between credit ratings and institutional ownership.
6. [Bhojraj and Sengupta \(2003\)](#) find that concentrated institutional ownership, as opposed to dispersed institutional ownership, is associated with higher borrowing rates.
7. [Ashbaugh et al. \(2006\)](#) document that blockholders are negatively related to credit ratings.
8. [Katz \(2009\)](#) finds that firms backed by private equity report more conservatively and engage in less earnings management, results interpreted as being consistent with tighter monitoring and greater reputational concerns of private equity sponsors.

The wide array of predictions and findings in this literature do not lead to a clear inference on the relation between active investors and the information environment. We also emphasize that many of these studies estimate reduced-form models and struggle with how to credibly address the issue of causality. Although we are sympathetic to this difficulty, it does highlight the need for clever research designs and credible instruments to more convincingly establish the direction of causality, which, in turn, is also likely to resolve some of the problems with mixed results in this literature. We suggest further research be conducted in this area to better understand the economic forces at play.

We also use this set of findings to illustrate the importance of considering the full set of results on a particular economic hypothesis. It is often the case that, for the sake of brevity, authors highlight their significant findings but may not allocate much, if any, discussion to their insignificant results. This is true for many of the papers discussed in this subsection. From examining the tables in these papers, however, we are able to draw inferences by considering both the significant and insignificant results. This more comprehensive process of drawing inferences can often lead one to conclude that results are inconclusive for a given research question. For example, if 10 studies test a certain hypothesis, and only one or two find results consistent with the hypothesis while the others find no results, what should one conclude from this line of research? We do not attempt to answer this question here, but simply emphasize that failing to find results should be factored into inferences when accumulating results within a body of literature.

A variant on the active investor setting is the market for corporate control, where active investors may choose to acquire a controlling interest in a firm in an attempt to resolve extreme agency conflicts. Beginning with [Manne \(1965\)](#), researchers have recognized that the market for corporate control can serve as a mechanism for disciplining management. [Williamson \(1983\)](#) makes a similar argument, noting that the market for corporate control can act as a substitute for board (or internal) monitoring. [Ferreira et al. \(forthcoming\)](#) emphasize the role of the information environment in facilitating the substitution effect between the market for corporate control and board monitoring. They find that price informativeness, as measured by the probability of informed trade, is negatively associated with board independence, and that this result is stronger for firms that are more exposed to institutional investors and the market for corporate control. These findings suggest that monitoring from outside directors is less necessary when stock price reflects sufficient information to enable investors to act as effective monitors.

The role of financial reporting in facilitating activity in the market for corporate control has recently gained attention from researchers, the basic research question being to better understand how potential acquirers obtain the information necessary to make efficient investment decisions. Zhao and Chen (2008) advance a so-called “quiet life” hypothesis to explain why a weakening in the market for corporate control might be associated with greater financial reporting transparency. Specifically, they argue that when managers are protected from discipline from the market for corporate control, there is less reason to engage in earnings management to distort the information environment. Consistent with this hypothesis, they find that firms with staggered boards, which serve as a takeover deterrent, have a lower incidence of accounting fraud and smaller absolute abnormal accruals.

Armstrong et al. (2010a) use the passage of state antitakeover laws as an exogenous shock that weakens the efficacy of the market for corporate control. They examine whether firms improve their financial reporting quality following passage of these laws as a way to either offset some of the weakening effect on the market for corporate control, or to facilitate other substitute monitoring mechanisms. Consistent with this hypothesis, they document a decline in information asymmetry following passage of these laws, where information asymmetry is measured as the adverse selection component of the bid-ask spread, the probability of insider trade, net insider purchases, and idiosyncratic volatility.²⁰ They also explore whether financial reporting decisions may be responsible for at least some of this decline in information asymmetry, and they find evidence that the return-earnings relation strengthened and the absolute value of discretionary accruals declined following passage of the laws.

Although the results in Armstrong et al. (2010a) suggest that high quality accounting might be one way for firms to commit to more active monitoring from the market for corporate control, their study does not examine precisely how higher quality information facilitates efficiency in the takeover market. Francis and Martin (2010) take a step in this direction and explore Ball and Shivakumar's (2005) argument that timely loss recognition serves as a disciplining mechanism that forces managers of acquiring firms to make better *ex ante* investment decisions and better *ex post* divestiture decisions. Francis and Martin find that firms with more timely loss recognition make more profitable acquisitions (measured using the acquiring firm's announcement returns) and have more profitable post-acquisition operating performance. They also find that acquirers with more timely loss recognition are less likely to make post-acquisition divestitures but, conditional on a divestiture, do so more quickly.

The results in Francis and Martin (2010), like most studies of acquisitions, are conditional on the occurrence of an acquisition. Their arguments, however, also suggest that timely loss recognition should affect not only the *profitability* but also the *probability* of an acquisition. In other words, *ceteris paribus*, potential acquirers that are more timely in recognizing losses might also be expected to undertake fewer acquisitions. Future research should consider modeling the first-stage acquisition decision to shed light on this issue, as well as to document the full effect of any benefit of timely loss recognition in a corporate control setting.

The hypotheses and results in Francis and Martin raise several questions about how the timely recognition of losses interacts with other sources of timely information that boards have at their disposal in monitoring management. In particular, Ball and Shivakumar (2005) argue that timely loss recognition provides a signal that the market, the board, and other stakeholders can use to learn about the profitability of an investment. And, recognizing that this signal will identify unprofitable investments, managers are disciplined to avoid such investments. With respect to acquisitions, however, the stock market also provides a timely signal (even timelier than accounting earnings) about the expected profitability of the investment when it reacts to the announcement, terms, and completion of the acquisition. And, analogous to the argument about timely loss recognition, the market reaction to an unprofitable acquisition should act as a disciplining mechanism. Thus, it seems that the value of timely loss recognition as a disciplining mechanism in acquisitions would be a function of the precision of the earlier signal stemming from the market's announcement reaction. For example, when the market's response to an acquisition is characterized by substantial uncertainty, timely loss recognition may provide an important signal to boards about whether the acquisition has turned out profitably. On the other hand, when the market has already reacted negatively to an acquisition, timely loss recognition might be a less valuable signal to the board.

Recent studies have also begun to examine whether *target* firms' financial reporting influences the characteristics and profitability of acquisitions (see, for example, Raman et al., 2008; McNichols and Stubben, 2009; Martin and Shalev, 2009). Broadly speaking, these studies hypothesize that when potential targets have more transparent financial reporting, acquirers will make more efficient acquisitions because of better estimation of potential synergies or more efficient auction outcomes (e.g., lower uncertainty about target value reduces the scope for winner's curse problems). Overall, these studies provide evidence suggesting that acquisitions are more efficient, in terms of acquirer announcement returns, *ex post* profitability, and synergies, when the target firm has greater financial reporting transparency. We note, however, that even though these studies explore the implications of target firms' financial reporting transparency, they do so from the acquirers' perspective. In other words, they emphasize how a target firm's financial reporting can influence the acquiring firm's decisions. It would

²⁰ In a related paper, Ferreira and Laux (2007) examine the relationship between firm-specific antitakeover provisions and idiosyncratic volatility, which is argued to reflect private information being produced and impounded in stock price (Ross, 1989; Roll, 1988). They find that firms with fewer antitakeover provisions have higher idiosyncratic volatility, suggesting that lower takeover costs in the market for corporate control encourages the collection of and trading on private information. In sensitivity analyses, Ferreira and Laux show that this result is robust to controlling for accounting transparency (measured using absolute abnormal accruals), which they interpret as evidence that corporate “openness” with respect to takeovers is distinct from a general corporate “openness” that may be reflected in reporting transparency, among other corporate policies.

also be interesting to consider how target firms' financial reporting influences the characteristics and decisions of the target firms. For example, for reasons discussed in detail above, targets with higher quality financial reporting may have fewer governance problems, implying less opportunity for an acquirer to benefit from eliminating agency problems following the acquisition (e.g., ousting an entrenched management team). Thus, future research may benefit from considering the endogenous role of target firm financial reporting on target firm characteristics and agency conflicts. Such analysis may lead to a distinction between the role of financial reporting in strategic acquisitions as compared to its role in acquisitions where elimination of agency problems plays a key role in unlocking shareholder value.

3.2.8. *The role of debt as a commitment to financial transparency*

The presence of debt in a firm's capital structure introduces a complex array of costs and benefits. Examples of the costs of debt include distress costs, various stockholder–bondholder agency conflicts (Jensen and Meckling, 1976), and potential holdup costs in the case of relationship lending (Rajan, 1992). Examples of the benefits of debt include lower taxes (MacKie-Mason, 1990), reduction of agency costs stemming from free cash flow (Jensen, 1986), and reduction of agency costs via monitoring by lending institutions and credit rating agencies. In this section, we briefly emphasize monitoring of the financial reporting process by lenders and the potential role of debt as a mechanism to commit to greater financial transparency.

Shleifer and Vishny (1997) discuss the research establishing creditors' role in resolving agency problems through their expertise as monitors. Although most of this literature is beyond the scope of our review, we emphasize here the monitoring role of creditors as it relates to the outputs of the firm's financial reporting system. As we discuss in greater detail in Section 5, creditors require timely financial information to make lending decisions and require reliable and timely measures of financial performance to monitor existing capital investments. Similarly, for firms that access public debt markets (and, to a lesser extent, private debt markets), credit rating agencies also demand access to timely information as a basis for their ratings decisions.²¹ Thus, the decision to obtain debt financing requires managers to commit to accounting choices that allow the firm to obtain the desired form and structure of debt financing (in terms of public versus private, covenants, maturity, security, etc.) and to reduce the cost of such financing.

Bharath et al. (2008) compare financial reporting differences between firms that obtain private versus public debt. They contrast the private debt setting, where bank lenders are presumed to have superior information access and information processing abilities, with the public debt setting, where creditors rely more extensively on public financial reports. Controlling for firm characteristics, they find that firms with poor accounting quality are more likely to choose private debt and also tend to pay higher interest rates, obtain shorter-term debt, and post more collateral. Taken together, these results suggest that firms preparing to access the debt markets have incentives to commit to higher quality financial reporting and thereby obtain lower cost financing. These results also suggest that firms with poor accounting quality may use the monitoring expertise in private debt markets to bond against taking actions detrimental to financial reporting transparency.

In addition to the choice of debt market, borrowers may also select features of the debt contract based on the demand for monitoring. For example, Gul and Goodwin (2010) argue that short-term debt subjects the firm to more frequent monitoring from creditors than does long-term debt, and thus the decision to finance investments using short-term debt can simultaneously influence the “quality” of the firm's financial statements.²² They provide evidence that firms with a greater proportion of short-term debt have lower audit fees, reflecting the increased monitoring that lenders perform in these firms. This result is consistent with the findings in Bharath et al. (2008) that firms with poor accounting quality are more likely to choose shorter-term debt, as they stand to benefit more (with respect to better contract terms) from the increased monitoring that short-term lenders provide. Finally, Chava et al. (2010) examine how debt covenants influence financial reporting issues related to manager/shareholder conflicts. They highlight that investment restrictions and payout restrictions in public debt contracts can reduce agency costs that arise when senior management is entrenched. They also provide evidence that these debt covenants reflect both the potential costs associated with managerial entrenchment and the quality of the firm's accounting system, and they find that firms with relatively poor accounting quality are more likely to have dividend payout restrictions.

Section 5 of this paper expands the discussion of the relation between debt choice and the outputs of the firm's accounting system. We note here, however, that there is relatively little research on whether and how creditors' monitoring of financial reporting influences information asymmetry between directors and managers, and/or whether board monitoring of financial reporting substitutes or complements monitoring by the firm's creditors.

3.2.9. *The role of management incentives in facilitating the information environment*

Another tool that boards have at their disposal to ensure a transparent information environment is managerial incentive structures. That is, they can give managers economic incentives to provide reliable and timely information about their activities.

²¹ Because credit rating agencies are exempt from Regulation FD, firms are allowed to, and often do, share with them proprietary information. In the United States, rating agencies rate almost every public debt issue. If the firm pays the agency to rate the issuance, then the firm can share proprietary information with the rating agency. If the firm does not pay the agency, however, the agency makes its rating based solely on public information. Since fee information is not disclosed, it is difficult to gauge the extent to which rating agencies make their ratings based on public or private information.

²² See also Barclay and Smith (1995) and Rajan and Winton (1995).

One approach is for boards to commit to remove executives from office if they are shown to have distorted the information environment. On this point, a number of researchers have examined senior executive turnover as a penalty for engaging in accounting irregularities. Early research by Beneish (1999) and Agrawal et al. (1999) generally failed to find an increase in turnover frequency following accounting irregularities, specifically GAAP violations and the revelation of corporate fraud, respectively. In a more recent study, Desai et al. (2006) examine the frequency of managerial turnover following accounting restatements. They find that 60% of the firms in their restatement sample experienced turnover of at least one top manager within the 24 months following the restatement, compared with 35% among their year-size-industry-matched counterparts. They also find that the released managers bear poorer subsequent employment prospects. They conclude that corporate boards and the labor market impose significant discipline on financial reporting. An interesting area for future research would be to construct sharper hypotheses of the types of earnings management that influence turnover decisions. For example, perhaps it is the case that there is an increased frequency of CEO turnover following earnings management that was detrimental to the firm's shareholders, but no change in frequency relating to earnings management that was beneficial to the firm's shareholders (e.g., earnings management to avoid violating covenants in an attempt to buy more time from creditors, or earnings management to meet analysts' forecasts).

Another incentive-based approach to promoting a transparent information environment is to tie executive compensation to performance measures that are sensitive to the quality of the information environment. For example, Nagar et al. (2003) argue that the stock price is increasing in the quality of the information environment, and providing executives with equity-based incentives should therefore promote a commitment to high quality disclosure. They find a positive relation between executives' equity incentives and proxies for the quality of firms' disclosures. As we discuss in much more detail in Section 3.3.3, however, there is considerable debate among researchers about whether equity incentives encourage executives to improve or instead distort the quality of accounting information.

3.2.10. Discussion of mechanisms to commit to a transparent information environment

The empirical work discussed above generally supports the prediction that outside directors are more likely to be observed in settings characterized by greater transparency in the corporate information environment. This literature also shows how firms, boards, and managers employ a variety of mechanisms to commit to information transparency. We know relatively little, however, about how firms select among the various mechanisms available to them, or how the various mechanisms interact and serve as complements to and/or substitutes for each other. For example, consider a firm that wants to increase the proportion of outside directors on the board to improve the quality of the board's advisory role. Recognizing that information transparency is critical for such directors to perform their roles, the firm decides to implement certain mechanisms to commit to lower information asymmetry between managers and outsiders. Which mechanism or combination of mechanisms should they choose? Do some mechanisms work better, or worse, when implemented together (i.e., are there interactive effects)? We recommend more research into the relations among these mechanisms. And to illustrate the types of directions that we envision such research might take, we now discuss an example of links identified in the literature related to information asymmetry, conservative financial reporting, and executive equity incentives.

To begin, consider the positive relation documented between information asymmetry and conservative financial reporting (LaFond and Watts, 2008), a result consistent with firms' committing to timelier reporting of losses when they suffer from low information transparency. At the same time, LaFond and Roychowdhury (2008) document that conservative reporting and CEO equity incentives are substitute monitoring mechanisms. The idea here is presumably that when a firm suffers from low information transparency and cannot employ, or chooses not to employ, more conservative reporting that would reduce information asymmetry and thereby allow more direct board monitoring, then the firm resorts to indirect monitoring via equity incentives. This result is similar conceptually and empirically to Bushman et al.'s (2004) finding that earnings timeliness is negatively related to the equity incentives of both executives and outside directors. In fact, if variation in earnings timeliness is driven largely by timely recognition of bad news, then the result in LaFond and Roychowdhury may simply be a recharacterization of the Bushman et al. (2004) result. To the extent that these are separate results, one might ask how firms choose between a commitment to overall timely earnings (i.e., timely good-news and bad-news recognition) and a commitment to just timely recognition of bad news. It is also reasonable to ask whether this is even a choice. For example, do some firms operate in business environments in which the accounting rules simply do not allow for very timely recognition of either gains or losses (e.g., firms with value stemming mainly from growth opportunities)?

The results in LaFond and Watts (2008) and LaFond and Roychowdhury (2008) seem closely related to Cai et al.'s (2009) finding that information asymmetry is positively associated with executive equity incentives. This positive relation is consistent with firms choosing equity incentives as an indirect monitoring mechanism when information asymmetry makes direct monitoring more difficult. Collectively, these results suggest that while both conservatism and equity incentives may be employed in settings characterized by greater information asymmetry, firms with a given level of information asymmetry trade off the costs and benefits of using conservative reporting and equity incentives to resolve informational problems. However, an explicit test of how and when conservatism resolves information asymmetry would be useful for advancing this literature.

Some other links between various commitment mechanisms have recently been identified. For example, Hui et al. (2009) document that a commitment to more frequent and timely earnings forecasts is a substitute for conservative financial reporting. Bushman et al. (2004) find that the presence of active investors is a substitute for the timely reporting of earnings. A more complete understanding of the tradeoffs among these various mechanisms, as well as among alternative monitoring

mechanisms when information transparency is not achievable (equity incentives, monitoring by creditors, regulatory monitoring, etc.), could significantly advance the literature on this topic.

3.3. The use of accounting information in assessing management

In this section, we discuss recent research on how information in financial reports is used to guide, assess, and reward the actions, performance, and quality of senior management. We also discuss the growing literature on the relationship between executives' equity incentives and earnings management, which the literature views to some extent as one of the costly "side effects" associated with strong performance-based incentives.

A large body of literature examines the role of financial reporting and accounting-based performance measures in the design of executive compensation contracts, incentive structures, and turnover. This contract design literature is rooted in the information economics and mechanism design literatures and has produced a rich set of theoretical models that have guided empirical researchers (see [Lambert \(2001\)](#) and [Bushman and Smith \(2001\)](#) for excellent reviews of this literature).

The theoretical agency literature in accounting can be broadly categorized into models of moral hazard and models of adverse selection. Both types of models emphasize information asymmetries between the principal (e.g., the board or shareholders) and the agent (e.g., the CEO).²³ In moral hazard models, which constitute the bulk of the accounting agency theory, the principal and agent are typically assumed to have homogeneous information at the inception of the contract. During the period covered by the contract, however, the principal cannot cost effectively observe all of the agent's actions. The principal, recognizing its inability to obtain perfect information about the agent's actions, identifies performance measures that can be observed *ex post* and that it can use to design an efficient incentive contract, *ex ante*, that will induce the agent to take the desired action(s). By conditioning the executive's compensation (or, more broadly, the executive's wealth) on these performance measures, the board attempts to align the executive's incentives and actions with the interests of shareholders.

[Bushman and Smith \(2001\)](#) identify two primary roles for accounting information in these moral hazard models: (1) creating incentives for the agent to take actions, possibly across multiple activities, and (2) filtering noise from other performance measures (e.g., stock price) to avoid imposing unnecessary (and, therefore, costly) risk on the agent. As we discuss below, the second role appears to be the most promising for future accounting research, although using somewhat different research designs from what is typically observed in the literature.

Adverse selection models, which are relatively rare in the executive compensation literature, relax the homogeneous information assumption and allow one or both of the contracting parties to possess private information at some stage of the contracting process. In these models, the compensation contract becomes a mechanism by which the informationally disadvantaged party can induce the informationally advantaged party to reveal its private information. For example, at the inception of the contracting relationship between a board and a newly hired outside CEO, it seems more likely that the board would have the informational advantage regarding firm operations. Over time, however, the new CEO is likely to obtain an informational advantage over the board regarding firm operations, thereby altering the contracting problem in subsequent contract negotiations. Thus, to the extent that financial reporting can reduce information asymmetry between boards and managers at various points in the contracting process, adverse selection problems may be reduced.

3.3.1. Accounting-based performance measures in executive compensation contracts

[Lambert \(2001\)](#) and [Bushman and Smith \(2001\)](#) discuss in detail the large body of accounting literature on executive compensation contracting that analyzes accounting-based performance measures, such as earnings, in contracting relationships characterized by moral hazard. Across a wide range of settings, this literature explores why, how, and when accounting-based performance measures play a role in executive compensation. In particular, much of this literature examines the relative merit of accounting-based performance measures as compared with other performance measures, such as stock price performance (e.g., settings where accounting performance is a relatively less noisy measure of CEO effort than stock price performance). In this section, we briefly discuss the theoretical and empirical research undertaken on this topic since the [Lambert \(2001\)](#) and [Bushman and Smith \(2001\)](#) survey papers were published. In general, there has been relatively little recent work in this area, especially when compared with the period leading up to those surveys, and for reasons we discuss below, we expect that this area of literature will continue to wane.

One recent strand of accounting-based compensation research relates to multiperiod contracting. Most empirical studies of the determinants of executive pay are inspired by predictions from single-period agency models (e.g., [Holmstrom, 1979](#); [Banker and Datar, 1989](#)). However, as [Demski and Sappington \(1999\)](#) note, executive compensation contracts are typically multiperiod arrangements where the executive is responsible for taking multiple actions at different points in time, and where these actions are also captured by the performance measures at different points in time. Because cash flows are equivalent to net income in a single-period model (e.g., see [Lambert, 2001, pp. 9 and 77](#)), a multiperiod setting is necessary for a meaningful discussion of the role of accrual accounting in contracting.

²³ Since the principal's problem is to induce the agent to take an unobservable action in a moral hazard model and to induce the agent to reveal his or her private information in an adverse selection model, these models are sometimes referred to as models of "hidden action" and "hidden information," respectively ([Arrow, 1985](#)).

Recent literature on multiperiod models examines settings in which leading indicators of managerial performance, such as stock price and accrual accounting numbers, convey information about managerial actions and decisions (e.g., investment policy) at an early stage, and where the actual results (e.g., realized cash flows from an investment) can be used as a performance measure at a later stage. These papers argue that both types of performance measures have advantages: Leading performance measures reflect timely expectations of the market or accounting system as to how the manager's actions will affect cash flows and firm value, whereas trailing performance measures reflect the actual result of the manager's actions. Although both types of performance measures capture the manager's actions with error, the types of error are expected to be different. Further, differences in the time horizons and risk preferences of principals and agents, as well as differences in the costs of contracting over leading versus trailing information, may also affect the tradeoffs to contracting over a leading performance measure as compared with a trailing performance measure.

Dikolli (2001) and Dutta and Reichelstein (2003, 2005) examine multiperiod issues related to inducing a risk- and effort-averse agent to exert personally costly effort affecting firm value, as well as to undertake an investment that has a payoff in a future period. In these models, the agent has a shorter time horizon and greater risk aversion than the principal and therefore discounts the future payoff from the investment more heavily than the principal. This gives rise to an additional agency problem, which requires the principal to provide the agent with incentives to undertake the appropriate level of investment, in addition to taking personally costly actions. Although the setup differs in these three papers, the performance measures available to the principal are generally realized cash flows at the end of every period, plus some leading indicator that captures future performance with noise (e.g., stock price, accruals, and customer satisfaction surveys) that is available at the end of the first period. These papers find that the optimal contracting weights depend on the agent's employment horizon so that the contract will place more weight on the forward-looking performance measures the shorter the manager's horizon. In addition, Dutta and Reichelstein (2005) find that, absent long-term commitment, the leading indicator becomes the only performance measure to motivate the manager to undertake any investment, since it allows the principal to separate the investment problem from the periodic moral hazard problem.

Dutta and Zhang (2002) also examine a multiperiod setting to study how various accounting principles (e.g., historical cost, lower of cost or market, and mark-to-market accounting) affect the incentive properties of accounting-based performance measures (e.g., net income). They show that when revenues are recognized when realized (i.e., the realization principle), residual income provides "optimal" effort and productive incentives (within the class of linear incentive schemes), where optimality is defined relative to compensation schemes based on disaggregated accounting information. They also show that mark-to-market accounting generally fails to provide efficient aggregation of raw information for stewardship purposes. This is because market-to-market accounting is based on only public information, whereas the manager's actions are also based on private information.

Before moving on, we raise a concern that most recent theoretical incentive compensation research adopts the following set of modeling assumptions, employed first by Holmstrom and Milgrom: (1) linear contracts, (2) negative exponential utility for the agent (effectively imposing constant absolute risk aversion), and (3) normally distributed performance measures. These assumptions, commonly called the "LEN framework," enable researchers to explore otherwise difficult-to-analyze contracting problems, such as the use of multiple performance measures and multiperiod contracting settings.²⁴ The enhanced tractability that the LEN framework affords, however, is not without costs. One cost is that it precludes the analysis of nonlinear contracts, such as stock options, bonus contracts with performance thresholds, and termination and promotion decisions. Further, the assumption of negative exponential utility effectively imposes constant absolute risk aversion on the agent and precludes analysis of wealth effects (see Core and Guay (2010), for a discussion of the importance of contracting over an executive's wealth). Finally, the assumption of normally distributed outcomes, where the agent's action represents a mean shift in outcome, but with exogenous variance, makes the LEN framework unsuitable for analyzing managerial risk-taking incentives, which are often thought to be a central feature of incentive contracting. Hemmer (2004, 2007) also raises a more fundamental concern that by restricting the contract space to consist of only linear contracts, the LEN framework precludes the researcher from identifying the second-best contract from the outset.²⁵ Instead, the researcher must be content to settle for the "third-best" contract, which might entail a substantial welfare loss relative to the second-best outcome and therefore would not be expected as an equilibrium outcome.^{26,27} In summary, we encourage researchers to heed Dye's (2001, p. 197) suggestion that "theorists should build models based on how they believe the world works, and not be confined by what constitutes current measurement technology."

²⁴ Lambert (2001, Section 3.1) provides an excellent discussion of the features of the LEN framework.

²⁵ Hemmer (2007) describes how the purpose of the original Holmstrom and Milgrom (1987, 1991) analysis was to "facilitate *second-best* analysis of interesting institutional and organizational phenomena by developing a very tractable model that could be easily analyzed and solved. It was not to legitimize the study of contracts restricted to be linear." (Emphasis original.)

²⁶ Of course, it is possible for a linear contract to emerge as the optimal second-best contract when the contract space is unrestricted. However, this seems to occur in only highly stylized settings (e.g., Holmstrom and Milgrom, 1987; Hellwig and Schmidt, 2002). Hemmer (2007) underscores this point, noting that "for every (interesting) problem formulation, there is only one second-best (in allocations), in information economics analysis there are infinitely many third bests."

²⁷ Lambert (2001, p. 29) makes a similar point, noting that "agency theory's intellectual roots lie in information economics, where information systems are based on the *optimal* use of information generated by the system. Restricting the contract to be linear is a very significant philosophical departure because ... in single-period models linear contracts are rarely optimal."

Another area that has received recent attention in the empirical literature on accounting-based performance measures is the distinction between stewardship and valuation roles of accounting information. A key issue in this literature is whether financial reports that are best suited to aid investors in valuing the firm are also best suited to aid shareholders and directors in contracting with executives to mitigate agency conflicts. (See, for example, [Lambert \(2001\)](#), for a theoretical discussion of this issue, and [Lambert's \(this issue\)](#) discussion of [Kothari et al. \(this issue\)](#), for a recent overview of this literature). At first glance, it is easy to see the overlap between the valuation and contracting roles of accounting reports. Market price aggregates a variety of valuation relevant sources of accounting and other information to provide what is likely to be the best available estimate of shareholder value. And since maximization of shareholder value is the key objective of shareholders, stock price is an obvious choice for a performance measure that can serve to align the interests of managers with those of shareholders.

Beginning with [Gjesdal \(1981\)](#), however, the literature has noted that that the relative ranking of an accounting system for contracting purposes need not coincide with its ranking for valuation purposes. [Lambert \(1993\)](#) makes the related point that valuing the firm is not the same as evaluating the manager's marginal contribution to firm value. Under the information structure of most moral hazard models (e.g., [Paul, 1992](#)), the principal, agent, and investors have homogeneous information, so the market and the principal perfectly anticipate the agent's actions, in equilibrium. Therefore the realization of a performance measure is composed of the agent's perfectly anticipated action plus noise, and, consequently, neither the market nor the principal learns anything about the agent's actions from the realization of the performance measures. Thus, the valuation weight placed on the performance measures (e.g., earnings) does not depend on the sensitivities of the performance measures to the agent's actions. In contrast, a real shock to the firm's cash flows, which is noise from a performance measurement perspective, is relevant for valuation because the market does not anticipate it.

[Bushman et al. \(2006\)](#) empirically examine [Paul's \(1992\)](#) prediction that the weight investors place on earnings when valuing the firm (or the valuation earnings coefficient, VEC), and the weight assigned to earnings in CEO annual cash compensation (or the compensation earnings coefficient, CEC), should be unrelated. They reject the null hypothesis of no relationship between the VEC and the CEC and instead find that the weight on earnings in the cash bonus is greater when investors place a higher valuation weight on earnings.

They develop two alternative models that predict a positive correlation between the VEC and the CEC. Their first model assumes that the manager's actions have multiperiod effects that the current period's earnings do not entirely capture. This implies that the VEC is included in the incentive coefficient to motivate the manager to internalize the discounted value of his or her current period actions. In other words, since the value of the firm is a function of future expected earnings, contracting over value provides a way for the principal to indirectly contract over future earnings, since the agent's current period actions will affect both current and future earnings. The second model assumes that the manager's marginal productivity and the sensitivity of earnings to the manager's actions are correlated random variables, with parameters that are common knowledge. In this case, the valuation role of earnings is to infer the true marginal product of the agent's effort. Since the contracting role of earnings is to motivate the agent to take actions consistent with the true marginal product of effort, this can be accomplished by including the VEC in the incentive coefficient. Thus, both valuation and contracting roles of earnings exploit the correlation between earnings and the marginal product of the manager's effort. Banker, [Huang and Natarajan \(2009\)](#) extend the analysis of [Bushman et al. \(2006\)](#) by offering a noise filtering explanation for the positive relationship between the pay-for-performance sensitivity of earnings and its value relevance.

Although there has been relatively little recent empirical work on the role of accounting-based performance measures in executive pay, the role of accounting information in boards' decisions regarding executive turnover has received some recent attention in the literature. A number of authors, such as [Gibson \(2002\)](#), contend that one of the primary purposes of corporate governance mechanisms is to ensure that poorly performing managers are removed. This view is consistent with [Jensen and Ruback \(1983\)](#), who argue that poorly performing managers who resist removal are arguably the costliest manifestation of agency problems in the firm. Thus, the decision to terminate an unwanted executive can have a large impact on shareholder value and is a very important board decision.

Both incentive and matching objectives can motivate turnover decisions. Regarding the former, the threat of termination can give managers an incentive to take the appropriate actions, or suffer from the disutility that typically accompanies a termination. Regarding the latter, turnover can facilitate a better match between firms and CEOs on the basis of some characteristic such as CEO leadership qualities, risk preferences, or expertise with the firm's production technology.

Early research on executive turnover documented that both accounting and stock price performance factor in the turnover decision. For example, [Hermalin and Weisbach \(1998\)](#) show that the historical nature of accounting earnings makes it useful in the turnover decision because stock price reflects both the market's expectations of the CEO's continued employment and the anticipated effect of his or her replacement, with only the former being useful in motivating the CEO. More recently, [Bond et al. \(2010\)](#) extend this result to a more general setting and note that learning from price is often difficult because two or more fundamentals may be associated with the same equilibrium price (or, technically, that price is not necessarily monotonic with respect to fundamentals). For example, in the case of the board's decision whether to replace the CEO, a moderate price could either indicate that (1) the market expects the board to replace the CEO and impounds the replacement CEO's actions, or (2) the CEO is not performing poorly enough to justify replacement. [Bond et al. \(2010\)](#) show that whenever a decision maker such as the board takes a "corrective action" (e.g., replacing the CEO) on the basis of information inferred from the market price of the firm's securities, there is a complementarity between market information and the decision maker's

other information.²⁸ If the decision maker's other information is not sufficiently precise, then market price is not fully revealing, and the corrective action is thus impaired. Their analysis therefore suggests a role for accounting information to facilitate the board's learning from price in order to make a more informed turnover decision.²⁹

In another recent study, Engel et al. (2003) examine the relationship between the weight placed on accounting and market return information in the CEO turnover decision and the relative sensitivity and precision of these measures. Their tests are motivated by moral hazard models with multiple signals (e.g., Holmstrom, 1979; Banker and Datar, 1989), which stress that the optimal aggregation of signals is in relation to their sensitivity to the agent's action relative to the precision with which the signal captures that action (or the signal-to-noise ratio). Engel et al. (2003) find that the weight placed on earnings in the CEO turnover decision is increasing in the timeliness of earnings, measured as the R^2 from a reverse regression of earnings on returns, and decreasing in the variance of earnings, which proxies for its noise. A key assumption underlying this analysis, however, is that the ability of earnings to explain returns is a good proxy for the sensitivity of earnings to the CEO's actions. Although in many respects this seems like a reasonable assumption, it would be useful and interesting for future research to provide empirical evidence that cross-sectional variation in the returns–earnings relation reflects cross-sectional variation in CEO actions. In summary, as Brickley (2003) notes, our knowledge of the turnover decision is still incomplete, and our understanding could undoubtedly benefit from additional theoretical and empirical work.

3.3.2. Discussion of performance measure research and suggestions for future work

Theoretical and empirical research on accounting-based performance measures has waned in recent years. In this section, we provide what we believe to be the most likely explanation for why researchers on executive compensation have gradually moved away from this area. We then offer suggestions for future research in this area.

To provide insight into the declining volume of research on accounting-based performance measures, we first note that although boards have many performance measures available to them for providing executives with incentives, empirically, stock price performance appears to account for the vast majority of monetary incentives for most senior executives. Although the typical U.S. CEO's annual pay exhibits some covariation with identifiable performance measures such as corporate earnings and stock price, the covariation of the value of their stock and option portfolio with stock price is typically much larger in magnitude. For example, Core et al. (2003b) find that most CEOs receive more than 90% (and many CEOs receive much more) of their monetary incentives from stock price performance. This figure suggests that CEOs' monetary incentives tied to stock price are much larger than their incentives from all other performance measures. (See also Hall and Liebman, 1998.)³⁰ Bushman and Smith (2001) make related points about CEO pay-for-performance being tied to stock and option portfolios, as well as the declining importance of cash pay in general and, more specifically, the declining importance of accounting-based performance measures in determining pay.

From a theoretical perspective, although a large body of research clearly articulates that stock price need not be the dominant performance measure for U.S. CEOs, this theory also does not preclude this possibility. Indeed, stock price has many desirable properties as a performance measure for CEOs. It is very highly correlated with the shareholder's objective function, is likely to be quite sensitive to a CEO's actions, and is expected to be more difficult to manipulate than many other performance measures, such as accounting earnings. Further, the relatively minor role that accounting measures play vis-à-vis stock price in providing CEOs with observable monetary incentives also suggests that boards have mechanisms available to them to alleviate concerns that forward-looking stock prices are influenced by anticipated performance and therefore do not provide adequate incentives for managers to actually deliver performance.³¹ For example, boards may use explicit vesting restrictions on equity grants, or they may informally pressure executives to hold equity after their vesting restrictions lapse, both of which are empirically descriptive (see Core et al., 2005). By requiring executives to hold equity throughout their tenure, executives have incentives to carry out the actions that investors anticipated. Regardless, the main point here is not to debate whether stock price *should* be the dominant performance measure for U.S. CEOs, but instead to discuss the future research implications of the empirical result that stock price *is* the dominant performance measure for U.S. CEOs.

To begin, consistent with observed trends in the literature and in light of the relatively minor role that accounting-based performance measures play, we question the merit of continuing to develop or test new theories predicting the relative weights on stock price and accounting performance measures in CEO compensation contracts.³² At the very least, as is now fairly widely recognized in the literature, we note that most agency-theoretic predictions on the relative use of price and non-price performance measures cannot be tested by examining annual CEO cash pay, or even annual CEO total pay, because agency theory speaks to the weights in total compensation (e.g., including cash pay, other annual pay, and changes in the

²⁸ It is important to note that in their model, the market price of a security endogenously affects its own real value through the information it provides the decision maker. In other words, price both reflects and affects the decision maker's actions.

²⁹ Note that the intuition in Bond et al. (2010) applies to any actions taken on the basis of information gleaned from price. Thus, there is an indirect role for accounting information, in addition to any direct role, in facilitating learning from price for a wide array of contracting parties when making a variety of governance decisions.

³⁰ This is not to say, of course, that executives are ambivalent about financial-accounting performance measures, such as earnings. Rather, earnings and other financial statement numbers are well known to be important components of the information set that investors use in setting stock prices.

³¹ For example, Barclay et al. (2005) argue that the forward-looking property of stock price can be detrimental for incentive purposes because it reflects the market's expectations about actions that the manager is expected to take but has not yet done so.

³² At the same time, we note that as one moves down to lower management levels in the organization, both stock price and aggregate financial statement numbers are likely to be less relevant for providing incentives. Thus, theoretical and empirical research on the relative importance of various performance measures is undoubtedly both interesting and important when considering compensation and incentives for less senior executives.

CEO's equity portfolio value), not to the weights in a portion of the CEO's compensation.³³ Because annual cash pay regressions omit the incentive weight on stock price provided by other annual pay, changes in the value of the CEO's equity portfolio, and changes in the value of the CEO's human capital, the results of such regressions, in general, cannot be interpreted as evidence of agency-theoretic predictions.³⁴ Further, [Core et al. \(2003b\)](#) explicitly show that results from testing agency predictions on annual cash pay do not necessarily hold when using total annual pay or when including incentives embedded in CEOs' stock and option portfolios. And if a prediction does not hold for total annual pay, a test of whether it holds for cash pay is uninformative, or at least it cannot be interpreted as evidence supporting the theory. A similar argument holds for annual total pay regressions, since the weight on stock price provided by the CEO's equity portfolio is omitted.

The fact that boards use stock price as the main performance measure in providing incentives for top executives does not imply that financial reporting is of minor importance in resolving agency conflicts with executives. It does, however, suggest that an important role for financial reporting in contracting with management is unlikely to be found in formal contracting arrangements, such as short-term or long-term bonus plans. Rather, the flexibility that informal contracting arrangements afford might be better suited for incorporating the types of complex information that financial reports provide. [Gillan et al. \(2009\)](#) note that although the relationship between the firm and its CEO is very complex, many public companies do not put the terms of the relationship in writing. Further, even when a formal contract is used, it typically does not contain an explicit discussion of the CEO's specific duties, the manner in which performance will be assessed over time, the level and form of future compensation, the duration of the CEO's employment, the reasons (other than cause) the CEO might be terminated, and the manner in which future contract negotiations will be carried out. Thus, it seems that informal arrangements between firms and CEOs govern much of their contracting relationship.

An informal contract represents the equilibrium behavior of a multiperiod repeated game. [Hermalin \(2001\)](#) notes that "in many situations, inducing cooperation through repeated play is cheaper than inducing it contractually" and that, in certain situations, "desirable outcomes can be supported in repeated games that cannot be supported contractually."³⁵ This situation can occur, for example, in a setting where the variables on which an ideal contract would be based are not verifiable and therefore not contractible. Alternatively, it may be that the performance measures are verifiable and contractible (e.g., a financial-accounting variable), but that the board uses these measures subjectively in assessing the executive's performance.

To expand on the possible role of accounting information in informal contracting, we refer back to the brief discussions of moral hazard and adverse selection agency conflicts. First, we note the two primary roles [Bushman and Smith \(2001\)](#) identified for accounting information in moral hazard agency conflicts: (1) creating incentives for the agent to take actions, possibly across multiple activities, and (2) filtering noise from other performance measures (e.g., stock price) to avoid imposing unnecessary risk on the agent. Second, we note the critical role that information asymmetry plays between managers and boards in adverse selection agency conflicts.

Focusing first on moral hazard conflicts, although a large body of empirical research makes it clear that accounting-based performance measures are not the most important source of executive incentives ([Hall and Liebman, 1998](#); [Core et al., 2003b](#)), accounting information can still play a role in filtering noise from stock price performance. For example, information in financial reports can potentially provide a decomposition of the performance and actions of executives that the stock price alone does not provide. Although stock price performance, and comparisons of stock price performance with competing firms, may provide boards with valuable signals of whether the CEO has done a good or bad job over a period of time, stock price alone is unlikely to provide much information about what specific actions the CEO might have taken, or not taken, to achieve this performance. Knowledge about executives' specific strengths and weaknesses can aid boards in determining the quality of the firm's top executives, whether the executives are a good fit for the organization, and what kinds of personnel changes might improve the overall executive team. Such information can also help the board identify and correct certain agency conflicts, such as perquisite consumption, poor investments, and misleading disclosures. Thus, one could view financial reports as a tool that boards use to help them interpret stock price performance.³⁶ This disaggregation role for accounting information is along the lines discussed by [Berger and Hann \(2003\)](#) discuss in the context of segment data. Those authors argue that greater disaggregation of segment information under SFAS 131 served to reveal previously "hidden" information about firms' diversification strategies and that such information resulted in improved monitoring of executives.³⁷

³³ Ideally, a researcher would also include incentive weights in the board's ongoing assessment of the quality of the CEO, as this assessment will influence turnover risk, as well as changes in the present value of the CEO's expected future stream of compensation (i.e., human capital).

³⁴ For example, [Bushman and Smith \(2001, p. 264\)](#) argue that the estimated slope coefficients in cash pay regressions do "not have the theoretical interpretations derived from the model."

³⁵ The level of commitment between the principal and agent in a multiperiod contract is related to the concept of contract renegotiation. [Hermalin and Katz \(1991\)](#) argue that renegotiation is a mechanism that allows the contracting parties to contract on otherwise unverifiable information. A frequent modeling convention is to assume that the principal and agent can credibly commit to not renegotiate their initial contract. However, in reality, the renegotiation of long-term contracts is likely to be common, especially if both parties agree to an *ex post* change in the terms of the contract. The impact of contract renegotiation on the demand for information has been studied in both the economics (e.g., [Fudenberg and Tirole, 1990](#); [Hermalin and Katz, 1991](#); [Hart and Tirole, 1988](#)) and accounting literatures (e.g., [Demski and Frimor, 1999](#); [Gigler and Hemmer, 2004](#); [Christensen et al., 2005](#)).

³⁶ [Watts and Zimmerman \(1986, p. 202\)](#) allude to this disaggregation role for accounting information by citing "disaggregation of performance" as one of three reasons firms might use accounting numbers in structuring executive compensation.

³⁷ A related set of recent studies disaggregates net income to explore whether its components better explain the observed level of compensation. [Adut et al. \(2003\)](#) and [Compriz and Muller \(2006\)](#) examine how boards weight restructuring charges and pension expense, respectively, when determining annual CEO cash compensation (i.e., salary and bonus). [Adut et al. \(2003\)](#) find that the extent to which boards shield CEOs from restructuring charges varies as a function of characteristics of the contracting environment (e.g., managerial tenure and the determination of whether restructuring charges are a repeated

Regarding the role of accounting information in agency conflicts stemming from adverse selection, we first suggest that the nature of information asymmetry between the board and its CEO is likely to change over time. At the time an outside CEO is hired, the board is likely to have better firm-specific information than the CEO. At the same time, the prospective CEO may be better informed about his or her own type or quality but may not be any better informed than the board about whether he or she will be a good “fit” at the new organization. Over time, the CEO is likely to become better informed than the board about firm-specific information, and also possibly about his or her strengths and weaknesses and overall “fit” with the organization. Because each party is likely to be concerned about its informational disadvantage at various points in time, *ex ante*, both the board and the CEO are expected to demand and value a commitment to high quality accounting information that would reduce information asymmetry and improve contracting efficiency.

Informal multiperiod contracting also introduces issues beyond those previously discussed in the context of formal multiperiod contracting. First, the role of commitment on the part of the principal and the agent takes on a somewhat different meaning in an implicit multiperiod setting. Second, the principal, agent, and other parties can learn about contract relevant information in a multiperiod setting. For example, the board, shareholders, creditors, and other contracting parties can update their beliefs about a manager's productivity, risk tolerance, or employment horizon in a multiperiod contracting setting. Although a formal multiperiod contract could incorporate provisions that are conditional on outcomes from earlier periods of the contract (Lambert, 1993; Rogerson, 1985), this is a different concept from revising beliefs over time.

We are aware of little research examining how or whether accounting information is used in informal multiperiod contracting with executives, but we believe that this direction may prove fruitful in reviving research in this area. One suggestion for future research is to explore whether financial-accounting information helps boards develop a more accurate assessment of an executive's quality. Boards can use a number of possible signals to determine executives' characteristics, including stock price performance, aggregated or disaggregated accounting measures, and a host of other objective and subjective performance signals, such as acquisitions, product development, employee development, and investor relations. Boschen et al. (2003) provide a step in this direction by examining the dynamic effects of alternative performance measures (earnings and stock returns) in CEO compensation contracts. They find that unexpectedly good accounting performance initially increases compensation in the short run but that this relationship reverses in later years, so that the total effect of unexpectedly good accounting performance has little effect on cumulative pay. Additional research along these lines would undoubtedly enhance our understanding of multiperiod executive incentive contracting.

As a final point, we raise the following question regarding accounting-based bonus plans: If stock price is now the dominant performance measure in providing U.S. senior executives with incentives, why do we observe that nearly all publicly traded U.S. corporations continue to use accounting-based bonus plans for their executives, including the CEO? As Core et al. (2003b) suggest, one explanation might be that bonus plans are actually designed to provide incentives for lower-level executives, as opposed to the CEO. Murphy (2000) documents that the median executive bonus plan includes 122 executives beyond the CEO. In many of these bonus plans, the pool of funds to be allocated for bonuses is a function of aggregate accounting performance (e.g., 3% of annual earnings can be paid to eligible executives). The actual payouts to individual executives are frequently based on a combination of both objective and subjective assessments of each executive's performance. (The CEO's payout frequently excludes the subjective component.) Consistent with this observation, Rajan and Reichelstein (2009) discuss the role of bonus pools based on financial-accounting metrics, as well as the distinction between objective and subjective performance measures in compensating executives out of this pool. Further research on the team aspect of accounting-based bonus pools might significantly advance our understanding of why such plans are observed.

Even though accounting-based bonuses may not greatly influence the CEO's monetary incentives, contracting frictions in real institutional settings may make it efficient to have the CEO's bonus plan parallel that of lower-level executives. For example, because the federal corporate income tax deduction for salaries is limited to \$1 million, firms are effectively induced to tie the majority of their CEOs' compensation to some explicit performance measure, even if such measures do not provide significant incentives. Bonus plans that are explicitly tied to a complex function of accounting-based performance measures may also serve as a signal to shareholders and other stakeholders that the board is exerting effort to both obtain information about the firm's activities and monitor executives. Research exploring these and other explanations for accounting-based bonus plans could prove interesting.

3.3.3. Equity incentives and earnings management

A large body of literature, primarily inspired by the positive accounting theory of Watts and Zimmerman (1986), entertains the possibility that both formal and informal compensation contracts provide executives with incentives to manipulate accounting numbers to their own advantage.³⁸ Beginning with Healy (1985), many studies explore the manipulation of earnings-based measures, which are commonly used as explicit performance measures in formal executive

(footnote continued)

issue with the manager). Comprix and Muller (2006) find that CEO cash compensation is more sensitive to pension income than to pension expense. Although these findings are severely limited because of their focus on cash compensation, they suggest that boards do not simply use aggregate earnings when evaluating and monitoring the performance and actions of executives, but instead consider the separate, disaggregated components of earnings.

³⁸ Examples of such actions include cutting R&D and other discretionary expenditures when nearing retirement (Dechow and Sloan, 1991), option backdating (Heron and Lie, 2007, 2009), and managing earnings (Healy, 1985; Holthausen et al., 1995; Cheng and Warfield, 2005).

compensation contracts (e.g., earnings-based bonus plans). These papers are discussed in detail in Fields et al. (2001), so we do not discuss them further here.

More recently, research has begun to examine the manipulation of earnings numbers to influence the informal structuring of executive compensation contracts. For example, Matsunaga and Park (2001) examine how boards adjust annual compensation when CEOs miss quarterly earnings benchmarks, such as consensus analyst forecasts or earnings of the same quarter of the prior year. They find that CEOs' bonuses are not reduced when they miss a benchmark once, but that bonuses are reduced when they miss the quarterly benchmark two, three, or four times during the year. These results control for a "normal" compensation penalty for poor earnings performance and so are interpreted as the incremental compensation penalty for missing an earnings benchmark. Mergenthaler et al. (2009) document that the CEO bonus results of Matsunaga and Park (2001) extend to equity-based compensation and forced turnover, as well as to CFOs. Specifically, CEOs and CFOs both receive lower equity compensation and face a greater likelihood of forced turnover after missing multiple quarterly earnings benchmarks. Thus, it appears that boards subjectively use the success or failure in hitting certain earnings benchmarks as signals about the CEO's performance.³⁹

These studies raise a number of interesting questions, such as why boards use missing multiple earnings benchmarks as a measure of performance. The authors suggest that using certain earnings benchmarks as performance measures might encourage managers to provide the market with better information so that analysts are able to more accurately forecast earnings. Therefore, missing a benchmark more than once could be a signal of the manager's disclosure efforts or of a manager's lack of adequate control of the firm's operating activities. This is similar to the argument advanced by Nagar et al. (2003) that equity-based compensation provides managers with incentives to be more forthcoming with disclosure.

These papers also raise the question about whether CEOs are rewarded for managing earnings to achieve a target. In Section 3.2.1, we discussed a number of papers that find that managers and directors face relatively severe penalties for earnings manipulation (restatements, accounting and auditing enforcement actions, etc.). The findings in Matsunaga and Park (2001) and Mergenthaler et al. (2009) suggest that boards might, in certain instances, encourage and reward earnings management. It would be useful for future research to reconcile these findings by identifying the settings in which managers are encouraged to manage earnings, or deterred from managing them. For example, if a manager meets earnings forecasts by manipulating earnings, does he or she still get rewarded? Or is it only when he or she meets analysts' forecasts by either giving better guidance or by achieving the earnings target without using manipulation? Evidence in support of the former would seem to contradict the findings presented in Section 3.2.1.⁴⁰

We move now to the large body of literature that examines whether executives' equity incentives influence earnings management. The recent focus on equity incentives stems largely from the realization that (1) most top executives' incentives are tied to stock price performance through the executives' holdings of stock and options, and (2) executives have some control over the timing of sales of these holdings. Thus, the literature has evolved from examining the largely mechanical direct effect of earnings manipulation on accounting-based bonuses to examining a more complex indirect effect of earnings management on stock price, which, in turn, can affect a manager's wealth through changes in the value of his or her stock and option holdings.

Two features that distinguish this more recent line of research from earlier accounting-based bonus studies are as follows: (1) Stock price is believed to be a more difficult performance measure to manipulate than earnings, since investors are sophisticated in their processing of information and may anticipate or adjust for many forms of earnings management, and (2) executives must not only manipulate the stock price but must somehow benefit from such manipulation by converting their equity holdings into liquid wealth, reducing their probability of turnover, raising their value in the labor market, or some other means. In the case of liquidating their equity holdings, the manager must sell stock before investors realize that earnings are not as strong as previously thought, as well as ensure that the manipulation is undetected both *ex ante*, to ensure that investors are "fooled," and *ex post*, to ensure that the manager does not bear repercussions from manipulating earnings, such as being fired or subject to a civil or criminal complaint.

Like earlier studies, most recent work in this area treats compensation contracts as exogenous and looks for a positive relationship between executives' equity incentives and earnings management (Larcker et al., 2007; Cheng and Warfield, 2005), the frequency of accounting restatements (Harris and Bromiley, 2007; Burns and Kedia, 2006; Efendi et al., 2007; Armstrong et al., 2010b), or SEC Accounting and Auditing Enforcement Releases (Erickson et al., 2006; Johnson et al., 2009). Most studies adopt a "rent extraction" perspective and interpret a positive relationship between equity incentives and accounting manipulation as a symptom of "bad" governance and misaligned managerial incentives.⁴¹ An alternative

³⁹ It may be that the earnings benchmarks examined in these studies are correlated with the board's internally budgeted performance objectives, and that the compensation penalties observed in these papers are at least partially due to failure to meet internal benchmarks as opposed to analysts' forecasts or other benchmarks. The question would still remain, however, as to why boards impose a compensation penalty for missing the benchmark that is incremental to the normal penalty for poor performance.

⁴⁰ It is important to note that in models of private information, if the three necessary conditions for the revelation principle are satisfied, then any equilibrium in which earnings management occurs is weakly dominated by an alternative equilibrium that entails truthful reporting by the agent (Dye, 1988). Thus, to support an equilibrium that includes earnings management, the researcher should consider which of the following revelation principle conditions are not met: (1) unrestricted communication between the principal and agent, (2) full commitment between the principal and agent on how the information will be used, and (3) optimal contracts.

⁴¹ For example, Cheng and Farber (2008, p. 1220) argue that accounting restatements are symptomatic of "off-equilibrium CEO incentives" and, by virtue of being largely unexpected, represent an exogenous shock to CEOs' contracting environments. Cheng and Farber document that CEOs receive less

perspective, however, is that boards anticipate both the productive and unproductive actions that a given set of incentives will induce and so expect a certain amount of accounting manipulation in equilibrium.⁴² And for any given incentive structure, the board may decide that the expected productive benefits of the chosen incentive structure outweigh the costs associated with the expected manipulation. Finally, although most studies in this area examine the incentives of CEOs and CFOs, a few studies examine the incentives of the firm's five highest paid executives, arguing that earnings management typically requires the complicity of other senior executives (e.g., Erickson et al., 2006; Johnson et al., 2009).

As Armstrong et al. (2010b) discussed and summarize in their Table 1, this literature generally finds mixed results using a variety of research designs, measures of incentives, sample periods, and proxies for earnings management. For example, Harris and Bromiley (2007) find a positive relationship between accounting restatements and the proportion of the CEO's total compensation coming from options, but no such relationship for the proportion of pay from their annual bonus. Burns and Kedia (2006) and Efendi et al. (2007) find a similar result, documenting that the sensitivity of the CEO's option portfolio to stock price is positively associated with the frequency of accounting restatements. Larcker et al. (2007) find a positive relation between the proportion of CEO annual compensation that is performance-based and the magnitude of abnormal accruals. However, neither Larcker et al. (2007) nor Baber et al. (2009) find a relation between the proportion of CEO annual pay that is performance-based and the frequency of accounting restatements.

An important measurement issue in these studies, however, is whether the proportion of CEO annual pay that is performance-based is a meaningful proxy for the CEO's incentives. First, as previously discussed, very little of the typical CEO's incentives come from performance-based annual pay, such as bonus plans. Second, grants of stock and options to a CEO should not be confused with a CEO's portfolio of equity incentives. Core and Guay (1999) predict and find that CEOs are more (less) likely to be granted new equity when they have a smaller (larger) portfolio of incentives. Further to the point, Core and Guay (2002) explicitly show that CEO equity grants are a poor proxy for CEO equity incentives. In contrast to the studies discussed in the prior paragraph, Erickson et al. (2006) measure CEO incentives using a portfolio equity incentives approach, and find no significant relation between the incidence of accounting fraud and CEO equity incentives.

Recent work by O'Connor et al. (2006) also suggests that the relationship between CEO equity incentives and earnings management may be influenced by governance structures that either exacerbate or moderate this relationship. In particular, these authors find that the positive relationship between equity incentives and earnings management is greater if (1) the CEO is also the chairman of the board and the firm's other directors do not receive options, or (2) the CEO is not the chairman and the other directors receive options. Laux and Laux (2009) also study the interrelationship between CEO equity incentives and the firm's other governance mechanisms. In particular, these authors develop a model in which boards, aware of CEOs' potentially heightened incentives for earnings management when endowed with large equity incentives, respond with increased monitoring through the audit committee. They show that because of this substitute monitoring mechanism, the amount of earnings management is not necessarily increasing in the level of CEO equity incentives.

Finally, a number of recent studies argue that the Chief Financial Officer (CFO) often has as much influence over the firm's financial reporting as the CEO, if not more (e.g., Feng et al., 2010; Jiang et al., 2009). The Sarbanes–Oxley Act of 2002 highlights the important role the CFO plays in the firm's financial reporting, in that the act requires both the CEO and CFO to personally certify the material accuracy and completeness of the firm's financial information and disclosures. In addition, as one of the more senior executives in the firm, the CFO typically receives a large fraction of compensation in the form of equity and holds substantial equity incentives.⁴³

As in the case of the CEO, however, evidence on the relation between CFO incentives and financial reporting appears to be both mixed and sensitive to research design choices. For example, Feng et al. (2010) find that CFO equity incentives, measured as equity portfolio delta, within firms targeted by the SEC with accounting and auditing enforcement actions (AAER) are not significantly different from that of either (1) other non-CEO executives within the same firm or (2) CFOs for a sample of non-AAER control firms. They do, however, find that both the equity incentives of the CEO and the ratio of the CEO's to the CFO's equity incentives are higher in their sample of AAER firms than in the control firms.⁴⁴ In contrast, Jiang et al. (2009) find

(footnote continued)

option-based compensation following an earnings restatement, relative to a matched sample of control firms, and that the lower incentives lead to lower stock return volatility and higher operating performance.

⁴² In other words, even when incentives are structured optimally, the expected amount of earnings manipulation or fraud is not zero, but is instead some positive amount that is a function of a firm's contracting environment. For example, in situations where monitoring financial reporting is more difficult or financial reporting does not capture the firm's underlying economics with a high degree of precision, the board might be forced to tolerate a higher probability of earnings manipulation. It would be useful for future research to identify factors that influence the optimal amount of earnings management.

⁴³ Two recent papers also examine the relationship between financial reporting and the incentives provided to firms' internal auditors and general counsel. Armstrong et al. (2010c) report evidence that the level of general counsel incentives that are tied to overall firm performance is a function of stakeholder monitoring demands, and that there are fewer accounting irregularities and class action lawsuits observed at firms that provide greater incentives to the general counsel. Their results are consistent with performance-based incentives aligning the incentives of internal monitors with those of the firm's stakeholders, or performance-based incentives facilitating the selection of superior internal monitors. In addition, Chen et al. (2009) report evidence of higher external audit fees at firms where the internal auditors receive compensation that is tied to firm performance. They conclude that external auditors perceive that performance-based incentives may compromise the quality of internal audit work.

⁴⁴ Feng et al. (2010) also document that the penalties CFOs face can be quite severe: In roughly 20% of 496 AAER firms from 1982 to 2005, the CFO was charged with fraud while the CEO was not. This finding is consistent with the evidence in Hennes et al. (2008), who find that CFO turnover is more frequent than CEO turnover following accounting restatement. They conclude that CFOs have weaker financial incentives to manipulate accounting reports than CEOs.

a positive relationship between the magnitude of CFO equity incentives and both absolute total and discretionary accruals and the probability of beating analyst forecasts, although the relationship with equity incentives exists only before the enactment of SOX.

A problematic feature in most of these studies, which might explain the contradictory findings, is that the compensation contracts are typically treated as exogenous. Therefore, the research designs preclude the endogenous matching of executives with compensation contracts on some attribute (e.g., the executive's risk aversion or talent) that is potentially correlated with both the choice of the contract and the executive's propensity to manipulate accounting reports. Armstrong et al. (2010b) relax the assumption of exogenous contracts and instead allow for endogenous matching of executives and contracts.

In particular, they first model the probability that a CEO will have a certain level of equity incentives and then form matched pairs of CEOs who have a similar propensity score (i.e., a similar probability of having a certain level of incentives conditional on observable attributes of their contracting environment) but dissimilar levels of equity incentives. They then compare the frequency of accounting irregularities across the matched pairs of observations and in general find that there is no significant difference across the CEOs with relatively high and low levels of equity incentives. Their findings suggest that the results in this literature are sensitive to the potential omission of relevant variables, such as the CEO's degree of risk aversion or talent that could affect both the choice of the compensation contract and the executive's willingness to manipulate earnings. Their analysis also highlights the identification issues inherent in contracting and governance research, which make it difficult to convincingly establish a causal relationship.

Although a propensity score research design is one technique to address identification difficulties posed by endogenous matching on unobservable variables, there are a number of other recent advances in the statistics and econometrics literatures that seem well suited to addressing this and other similar research questions. (See, for example, Heckman, 2000, 2001, 2008, and Imbens and Wooldridge, 2009, for excellent reviews, and Larcker and Rusticus, 2010, for a more thorough discussion of instrumental variables in the context of accounting research.) In addition, it would be useful for future research to report the sensitivity of reported results to the potential omission of relevant variables (e.g., Manski, 1995; Rosenbaum, 2002, 2004; Armstrong et al., 2010b). This approach would aid researchers in better discerning which relationships are more likely to be causal (i.e., the ones that are relatively less sensitive to omitted variables) as opposed to associations (i.e., the ones that are relatively more sensitive to omitted variables).⁴⁵

We also caution against using incomplete constructs to measure an executive's incentives to engage in earnings management. For example, a common research design examines the relationship between equity portfolio delta, or some other *ex ante* measure of an executive's incentives to increase stock price and the frequency of accounting irregularities. Although *ex ante* measures of equity incentives are readily available, they do not necessarily capture cross-sectional variation in the executive's realized benefits from managing earnings. The realized benefits from managing earnings are a function not only of the size of the executive's equity portfolio but also the extent to which managed earnings inflate the stock price, as well as the executive's ability to liquidate his or her equity portfolio before investors learn about the earnings management. Armstrong et al. (2009) make this point in the context of whether executives benefit from inflating discretionary accruals around initial public offerings. If earnings management is "a purposeful intervention in the external financial reporting process with the intent of obtaining some private gain" (Schipper, 1989), then to conclude the existence of earnings management, it is necessary for researchers to document not only statistical evidence that is consistent with earnings management (e.g., large and positive discretionary accruals) but to also demonstrate that executives did, in fact, "gain," or at least expected to gain, from manipulating earnings.

Finally, we note the development of recent theoretical work on modeling the principal's contracting problem when managers can engage in earnings management. For example, Gigler and Hemmer (2004) predict that the contracting (or stewardship) value of information should determine whether it is mandatorily or voluntarily disclosed, with more contract relevant information being subject to mandatory disclosure. This implies that managers should be afforded more discretion over the firm's financial reporting when earnings and other accounting numbers serve less of a contracting role. Their results also relate to the result that a commitment to *not* produce information can be valuable whenever contracting parties cannot commit to not renegotiate a long-term contract (e.g., Demski and Frimor, 1999; Christensen et al., 2002).⁴⁶ Similar to the benefits of a conservative accounting system identified by Christensen et al. (2002), it is the *ability* to manage earnings that generates a benefit rather than the act of managing earnings *per se*. Thus, earnings management generates strict contracting benefits even though everyone sees through it in equilibrium. A related idea is that when managers are in possession of private information, the discretion afforded by accounting rules can provide a channel through which managers can reveal this information.

Chen et al. (2007) also develop a model in which earnings are used for both stewardship and valuation purposes and show that the current owners of the firm have incentives to engage in earnings management, which, in turn, reduces the

⁴⁵ For example, Armstrong et al. (2010b) perform a sensitivity analysis of their results to "hidden bias" that could result from the omission of a relevant variable from the propensity score model. This analysis quantifies the strength of a correlated omitted variable that would be necessary to alter the statistical significance of their results.

⁴⁶ In particular, as Gigler and Hemmer (2004) note, in cases where the contracting parties cannot commit to not renegotiate a long-term contract at an interim stage, "although the use of information in the renegotiation is *ex post* efficient, it results in contracts that are *ex ante* less efficient than full commitment contracts." Accordingly, "these models generally find that information destruction, through aggregation [or] earnings management ... improves the *ex ante* efficiency of renegotiation-proof contracts."

stewardship value of earnings and leads to inferior risk-sharing. They find that conservative reporting standards dampen insiders' incentives to manage earnings, since, in their model, the current owner has an incentive to bias earnings upward, even though investors rationally anticipate earnings management and price protect against it. Additionally, the upward bias induced by earnings management reduces the informativeness of earnings for stewardship purposes, which, in turn, leads to inefficiencies in the incentive contract. [Chen et al. \(2007\)](#) show how conservative accounting can improve contracting efficiency (i.e., the stewardship value of earnings) because the resulting reduction in earnings management more than offsets the loss in value of the earnings signal. Their model predicts that conservative accounting is more likely to arise when accounting numbers play both roles and when those with control over the financial reporting process have significant equity stakes in the firm and therefore have stronger incentives to misreport.⁴⁷ Their model also predicts that the degree of earnings management is lower when accounting standards are conservative than when they are unbiased. Although their results are intriguing, they rely critically on the assumption that the current owner of the firm cannot credibly commit to not manage earnings and is therefore forced to manage earnings to fulfill potential investors' rational conjecture. This suggests that the benefit of conservative financial reporting in mitigating the incentives for earnings management are greatest when the firm is unable to credibly commit to not manage earnings.

3.4. The difficulties in identifying “good” and “bad” governance

Our discussion of corporate governance has emphasized the role of financial reporting in resolving agency problems among managers, directors, and shareholders. Underlying this discussion is the broad notion that contracting parties strive to mitigate these agency problems, but that there are contracting costs and frictions that limit the extent to which these agency problems can be resolved. The cost of transferring governance-relevant financial and non-financial information to outside directors and shareholders is one such friction that limits a firm's ability to reduce agency conflicts. Because the costs and benefits of transferring information among managers, directors, and shareholders differ across firms, industries, and countries, one expects to observe firm-specific, industry-specific, and country-specific variation in governance mechanisms, such as board structure and incentive compensation plans. Further, observed variation in governance mechanisms can allow researchers to better understand how agency conflicts, as well as the costs and benefits of different governance mechanisms, vary across economic settings.

We recognize that many studies explicitly or implicitly take a different view of cross-sectional variation in governance structures, pointing to certain governance structures (e.g., a high proportion of outside directors and strong pay-for-performance in compensation plans) as being unconditionally “good” (“strong”) or “bad” (“weak”). Based on our understanding of this literature, we conclude that “bad” (“weak”) governance is broadly intended to mean that a firm suffers from a serious agency conflict between shareholders and managers, and that some (often unarticulated) contracting cost or friction prevents the firm from implementing “good,” or at least “better,” governance mechanisms that would mitigate the agency conflict.

In light of the discussion above, an obvious first note of caution when asserting that some governance structures are “good” or “bad” is to ensure that, in fact, what is being called a “bad” structure is not instead a “good” structure for certain firms. For example, many papers identify firms with a relatively higher proportion of outside directors as having a “good” governance structure, implying that firms with the highest proportion of outside directors have the very “best” governance. (This cross-sectional variation in good/bad governance is asserted even if all or most firms in the sample have a majority of outside directors.) In many cases, this view ignores the extensive economic arguments and empirical evidence, much of which we have discussed above, as to why some firms that are labeled as having “bad” governance might, in fact, have appropriately (and endogenously) selected a board with relatively few outside directors.

We also emphasize that the mere existence of an agency conflict, or the observation of an action that might stem from an agency conflict (e.g., earnings management or even accounting fraud) should not be taken as evidence that a firm's governance deviates from shareholders' preferred governance structure. As [Jensen and Meckling \(1976\)](#) point out, no governance structure is likely to eliminate all agency conflicts. Thus, researchers should expect to observe evidence of agency conflicts in the actions executives take at even the best-governed firms.⁴⁸ [Guay \(2008\)](#) makes a related point with respect to decision-making discretion that boards provide to CEOs. In widely held corporations, it is well understood that shareholders

⁴⁷ The two conditions [Chen et al. \(2007\)](#) describe would seem to hold for family-owned firms. As we discuss in greater detail in Section 4, [Ali et al. \(2007\)](#) find that family-owned firms are more timely in reporting bad news and have higher quality earnings. Similarly, [Wang \(2006\)](#) examines firms in the S&P 500 and finds that founding family ownership is associated with higher quality earnings, as evidenced by (1) lower abnormal accruals, (2) greater earnings informativeness, and (3) lower persistence in the transitory loss components of earnings. However, [Chen et al. \(2008\)](#) report that the degree of timely loss recognition is increasing in the level of family ownership only for their subsample of firms managed by a non-family professional CEO. Otherwise, the degree of timely loss recognition is decreasing in the level of family ownership in firms managed by founder CEOs.

⁴⁸ As an example, consider that over time, firms hire and fire CEOs, with unsuccessful CEOs being removed, and successful CEOs becoming more powerful as an increasing function of their success and tenure. It is tempting to view agency conflicts related to powerful CEOs, such as perquisite consumption, empire building, and accounting distortions, as indicative of a breakdown of the governance system. However, as [Hermalin and Weisbach \(1998\)](#) note, a by-product of a successful CEO is that this individual will gain bargaining power that can be used to extract rents, such as high annual pay or large perquisites. For example, [Baker and Gompers \(2003\)](#) find evidence consistent with successful CEOs being able to bargain for less independent boards. Therefore, what might look like a agency problem stemming from suboptimal governance structure *ex post* (i.e., after the CEO has achieved a period of success) could have been optimal from an *ex ante* perspective (i.e., when the CEO was originally hired).

delegate substantial decision rights to the board of directors, in part because of the considerable information acquisition and coordination costs shareholders would have to bear to make many key decisions themselves. In turn, and for many of the same reasons, it is more efficient for the board of directors to delegate substantial decision rights to executive management, recognizing the possibility that such managers will sometimes take opportunistic actions that benefit themselves to the detriment of shareholders.

An alternative way of characterizing these points is to suggest that the notions of “good” and “bad” governance should, at a minimum, be conditional rather than unconditional concepts. That is, only after conditioning on relevant economic characteristics of the firm, its operating and information environment, and its use of complementary and substitute governance mechanisms, can one begin to make statements about whether certain governance structures are “good” or “bad.” (However, see [Brickley and Zimmerman \(this issue\)](#), for further cautionary discussion about potential problems with relying on even this type of conditional benchmarking.) We also note that after conditioning on economic characteristics, one must consider firms with “too much” or “too little” of certain structures to be “bad.” For example, firms can have too few or too many outside directors, and in both cases, this would be “bad.”

Upon identifying a group of firms with conditionally unusual governance structures, the natural question is why these firms have an unusual governance structure. A broad interpretation of the governance literature suggests at least three possibilities: (1) there exists some unknown (to the researcher) economic determinant of governance structures, or firm-specific variation in the costs and benefits of certain governance structures, that are not captured in the governance expectation model (i.e., certain variables are omitted from the model); (2) shareholders behave rationally, but economic frictions either prevent shareholders at some firms from instituting the “good” governance structure or slow down the process (recognizing that the process by which shareholders and boards learn about governance structures can also be a friction); or, (3) shareholders behave heuristically or irrationally and do not attempt to institute governance mechanisms that maximize shareholder value. The first of these possibilities is undoubtedly relevant, and we encourage researchers to continue to identify new determinants of governance structures. On this point, we simply emphasize that prior research has documented financial reporting characteristics as important determinants of governance structures and encourage researchers to ensure that their governance models incorporate these determinants. The third possibility may be relevant, but the heuristic/irrational perspective is beyond the scope of our survey.⁴⁹ The second possibility, that frictions inhibit the adoption of certain governance structures, strikes us as a fruitful area for future accounting research, and worthy of further discussion here.

If shareholders recognize that certain governance structures are better than the structures in place at the firm they own, which seems to be the case if one accepts the academic literature arguing that “good” and “bad” governance structures can be documented with relative ease, what precisely are the frictions that prevent shareholders from making adjustments, and how do these frictions vary cross-sectionally? To begin, we suggest that firm-specific evolution is likely to be important in explaining observed governance practices. Early on, most firms are closely held, with equity ownership concentrated among entrepreneurs, venture capitalists, private equity firms, or other institutional or sophisticated investors. These owners have strong incentives to structure governance optimally if they are to maximize the price at which they eventually sell the firm to outside investors. Further, at this stage of development, the selection of governance structures may be less hampered by frictions that exist in widely held firms (although there may be frictions stemming from the process by which owners learn about the merits of alternative firm-specific governance structures). Over time, however, firms change. Closely held firms become widely held, creating a variety of frictions, informational demands, and free-rider problems with respect to making adjustments to governance structures. Growing firms become mature firms. Firms that originally had difficulty conveying information related to their operating strategy and potential for creating value find that financial reporting systems and other disclosure mechanisms are better able to reduce informational asymmetries between managers and outside investors.

We encourage future research to identify and quantify the costs and frictions that prevent or impede firms from adjusting their governance structures, as well as to examine how these frictions vary cross-sectionally. Cross-sectional variation in frictions is likely to be a function of economic characteristics of firms, such as organizational structure, ownership structure, information asymmetry between managers and shareholders, and geography. As an example of the latter, [Knyazeva et al. \(2010\)](#) document that firms located near smaller pools of prospective directors have fewer independent directors and less experienced directors, and that this friction can be costly. Similarly, [John et al. \(2008\)](#) argue that the geographic distance between a firm and its investors affects the firm’s information environment which, in turn, affects the firm’s dividend policies. In addition to the frictions mentioned above, we also suggest that researchers might explore the process by which firms learn over time about the costs and benefits of various governance structures.

In addition to frictions that vary with firm characteristics, cross-sectional variation in regulatory regimes (e.g., interstate or interexchange variation in regulatory environments) might lead to testable hypotheses regarding variation in firms’ governance structures (e.g., a relatively greater or lesser ability of shareholders to select directors or vote on proposals).⁵⁰ Further, even when a group of sample firms operates within the same regulatory environment, regulations can produce

⁴⁹ For researchers who view heuristic or irrational behavior as a probable explanation for observed governance structures, research on frictions in the market for corporate control would seem a fruitful area of research. That is, if groups of irrational shareholders persist in controlling firms with suboptimal governance structures, an obvious question is: What are the frictions that prevent a well-functioning market for corporate control from acting as a correction mechanism?

⁵⁰ As an example of interstate variation in regulatory environments that gives rise to cross-sectional variation in governance structures, a number of recent studies, beginning with [Bertrand and Mullainathan \(2003\)](#), examine the effect of changes in the state business combination laws that occurred in the

variation in frictions or contracting costs across firms. In addition, one might question what frictions prevent firms from finding a non-regulatory solution to undesirable governance structures, at least over time. To date, much of the literature on the relation between governance structures and regulatory environments has been conducted at the cross-country level. Yet many of the studies on inefficient governance structures are conducted using single country samples of U.S. firms.

The firm-level evolution of governance structures also highlights interesting and important measurement issues. Because all of the firm's governance mechanisms evolve simultaneously (i.e., endogenously with respect to both the other governance mechanisms and the firm's information environment), one expects to find that certain combinations of governance mechanisms and information structures will be observed together (e.g., the proportion of outside directors and financial reporting quality). Larcker et al. (2007) and Dey (2008) are good examples of papers that attempt to identify how governance mechanisms are grouped together, with an eye toward developing an understanding of how the various dimensions of governance might be measured. These insights are likely to be helpful for future research in at least two ways. First, a better understanding of the correlations between governance mechanisms should aid researchers in developing sharper hypotheses regarding substitution effects and complementarities among these mechanisms, an issue we currently know relatively little about.

Second, better measurement of the various dimensions of governance might allow more powerful tests to identify firms where frictions are likely to prevent shareholders and directors from moving to a "better" governance structure. As evidenced by Agrawal and Knoeber (1996), Larcker et al. (2007), and Dey (2008), it is difficult to document robust relations between governance measures and outcome variables, such as firm performance and accounting quality. Larcker et al. (2007) attribute this result "to the difficulty in generating reliable and valid measures for the complex construct that is termed 'corporate governance'" (authors' emphasis). We agree with this observation, but we would modify the statement slightly to state that it appears difficult to generate reliable and valid measures of "good corporate governance." In other words, the various dimensions of the construct labeled "corporate governance" are likely to be easier to identify and measure than to determine whether a firm's position along each dimension is the best place for it to be at any given point in time. However, we also acknowledge that better measures of the various dimensions of governance would allow more refined predictions and more powerful tests regarding when shareholders and boards would be better off adjusting the firm's position along the continuum of any given governance dimension.⁵¹

4. Accounting information and ownership structure

In this section, we discuss agency conflicts between controlling shareholders (i.e., shareholders with sufficient ownership interest to influence or control company policy) and minority-interest shareholders. In firms with no controlling shareholder, or where the objective of the controlling shareholder is aligned with the objective of minority shareholders (i.e., to maximize the present value of the firm's expected future cash flows), the interesting agency conflicts are between shareholders as a group and other contracting parties, such as directors, managers, and creditors. However, when a controlling shareholder has a somewhat different objective function from minority shareholders, such as one that includes the extraction of private benefits of control, the minority shareholders become more like other suppliers of capital, such as creditors, in terms of agency conflicts and contracting issues.

Controlling shareholders are typically assumed to have fewer agency conflicts with managers and boards of directors vis-à-vis widely held firms because there is little separation between ownership and control, directors and managers can be hand-selected, and the direct monitoring of managers is more intense. As a result, the demand for high quality public disclosures and financial reporting for the purpose of monitoring management seems less important in firms with controlling shareholders than in firms with dispersed ownership that rely more heavily on outside directors to monitor management. (See LaFond and Watts, 2008, for a discussion of this point.) However, although manager-shareholder conflicts are smaller in firms with controlling shareholders, there are important agency conflicts between minority shareholders and controlling shareholders, since the latter have the ability and incentives to extract private benefits from control, such as perquisite consumption and self-serving investments (e.g., see Shleifer and Vishny, 1997).

The conflicts between controlling and minority shareholders are akin to agency problems with creditors and other outside (non-shareholder) contracting parties. At some point in the firm's evolution, controlling shareholders decide whether to raise capital from minority shareholders or creditors, or both.⁵² Analogous to creditors' expectations regarding borrowers' incentives, minority shareholders recognize the potential for agency conflicts with controlling shareholders and will pay less

(footnote continued)

mid- to late 1980s and early 1990s. These laws generally made it more difficult to acquire firms and thus are thought to have reduced the efficacy of the market for corporate control.

⁵¹ In some cases, the development of better governance measures appears to be hindered by a preoccupation with collapsing the multidimensional governance construct into a single scalar value, as evidenced by the proliferation of univariate measures such as the "G-Score" (Gompers et al., 2003). Although this exercise produces a single-dimensional variable that might be more amenable to empirical analysis, it undoubtedly discards information about how the various governance mechanisms interact. Instead, these measures implicitly assume some structure about how the various governance components interact (e.g., linearly) rather than use information about their underlying structure and interrelationships.

⁵² The opposite can also occur. That is, widely held firms can sometimes be transformed into firms with controlling shareholders when the latter acquires a sufficient number of shares from the former. In these cases, a different agency problem can arise where the remaining minority shareholders are unable to price protect their claims from the actions of controlling shareholders.

for shares when agency conflicts are greater. Controlling shareholders, for their part, can put bonding mechanisms in place *ex ante* to commit to not take advantage of minority shareholders and thus mitigate the degree of price protection. In other words, controlling shareholders are expected to internalize the costs associated with maintaining liberal private benefits of control, in much the same way that borrowers internalize the retention of operational and investment flexibility in contracting with creditors.⁵³ But since monitoring and bonding are costly, and residual agency costs are expected to persist (e.g., inefficient investment policies exist in certain states), one expects these agency conflicts to reduce firm value, again similar to the effects of residual stockholder–creditor conflicts.⁵⁴

The above discussion raises the question of whether a commitment to high quality, transparent financial reporting can lower the cost of monitoring by minority shareholders, thereby reducing concerns that controlling shareholders may extract private benefits of control. Fan and Wong (2005) explore this question by arguing that in emerging markets with weak property rights, controlling shareholders may enhance value because such owners are better able to negotiate and enforce contracts with outside parties. And, recognizing the concerns of minority shareholders, controlling shareholders in this setting have incentives to introduce monitoring and bonding mechanisms, such as a commitment to timely and credible financial reporting, to limit their ability to extract private benefits. Consistent with this hypothesis, the authors examine a broad sample of East Asian firms and find that concentrated ownership is positively related to the likelihood that a high quality (i.e., “Big 5”) auditor is selected to review and audit the financial statements.

Wang (2006) and Ali et al. (2007) make similar arguments in the context of family-owned firms (i.e., firms where a founder or his or her descendants is a large shareholder or holds a top management position). As with controlling shareholders, family-owned firms recognize the potential agency conflicts with outside/minority investors and might be expected to respond with a commitment to high quality financial reporting to mitigate such conflicts. Ali et al. (2007) find that family-owned firms are more timely in reporting bad news and have higher quality earnings, greater analyst following, and smaller bid-ask spreads. Wang (2006) finds similar results, reporting that founding family ownership is associated with lower abnormal accruals, greater earnings informativeness, and less persistence of transitory loss components in earnings.

There are also papers that make the opposite prediction, arguing that firms with controlling shareholders will obscure information to outside parties to enable greater extraction of private benefits. For example, Francis et al. (2005a) predict and find that firms with a dual-class stock structure (i.e., two classes of stock with equal cash flow rights but different voting rights) have relatively lower earnings informativeness, measured as the strength of the return–earnings correlation. In a related paper with similar predictions and findings, Fan and Wong (2002) examine a large sample of East Asian companies with substantial cross-sectional variation in ownership structure and minority rights and provide evidence that ownership control is negatively related to earnings informativeness.

DeAngelo and DeAngelo (1985), however, provide an interesting alternative explanation for a negative relation between information transparency and controlling shareholders. They suggest, but do not test, that managers of dual-class firms may be more likely to retain voting control when it is costly for them to provide external shareholders with information that allows outside investors to make decisions regarding selection of investment opportunities and/or evaluation of managerial performance. This conjecture is consistent with Jensen and Meckling’s (1995) argument that decision rights are more efficiently allocated to the party that has the best information about the decisions that need to be made. This alternative explanation also highlights the importance of establishing causality between the choice of a controlling shareholder structure and the financial reporting environment. Specifically, does the lack of transparency in the information environment drive the decision to have a controlling shareholder, or instead does the decision to retain a controlling shareholder drive the decision to produce an information environment that lacks transparency?

Further complicating the expected relation between financial reporting quality and ownership structure are economic arguments predicting that the demand for accounting information by outside contracting parties varies cross-sectionally with ownership structure. For example, Fan and Wong (2002) and Francis et al. (2005a) advance the hypothesis that because controlling shareholders can monitor management without public disclosures, there may be less governance-related demand for high quality financial reporting, thereby allowing controlling shareholders to protect proprietary information through less transparent reporting. Ajinkya et al. (2005) make a similar argument, suggesting that institutions with concentrated (blockholder) ownership have access to privately obtained information and are less likely to demand high quality, timely disclosures.

⁵³ We note that some researchers, such as Leuz et al. (2009), refer to the agency conflict between controlling shareholders and minority investors as a governance problem. However, this distinction appears to be largely semantic and depends on one’s definition of governance. Because controlling shareholders can typically control agency conflicts with directors and managers quite well, we do not view the agency conflict with minority investors as one of governance, but rather as a conflict with one of several classes of outside capital providers, and akin to agency conflicts with creditors or preferred shareholders.

⁵⁴ Note, however, that the welfare loss to the controlling shareholder stemming from agency conflicts with minority shareholders is less than the decline in firm value, because the controlling shareholder obtains private benefits that at least partially offset the lower proceeds received from minority shareholders (Jensen and Meckling, 1976; DeAngelo and DeAngelo, 1985). Further, to the extent that controlling shareholders have “paid” for their private benefits of control through a lower share price, controlling shareholders are not expected to willingly relinquish such benefits. Indeed, *ex post* actions or regulations that limit the controlling shareholders’ ability to obtain their private benefits of control would serve as a windfall gain to minority shareholders, who paid a price for their shares that reflected such benefits. This setting is again similar to contractual agreements with creditors, whereby lenders charge a higher rate when borrowers have a greater ability to make wealth transfers in future states. And *ex post* actions or regulations that prevent borrowers from making such wealth transfers would result in a windfall gain to creditors.

Ball and Shivakumar (2005, 2008) make a related point in the context of privately held firms, arguing that there is greater demand for high quality financial reporting in public firms than in private firms because the former engage in substantially more arm's-length transactions with outside contracting parties. Outside contracting parties face greater information asymmetries, which they argue can be reduced through timely financial reporting. Consistent with this hypothesis, Ball and Shivakumar (2005) find that publicly held U.K. firms have more timely loss recognition than privately held U.K. firms, and Ball and Shivakumar (2008) find similar results for U.K. private firms that undergo an initial public offering. Burgstahler et al. (2006) test similar hypotheses and draw similar inferences when documenting that public European Union firms engage in less earnings management than private firms. In contrast, Beatty et al. (2002a) find that publicly held banks engage in more earnings management than privately held banks. Similarly, Givoly et al. (2010) find that privately held firms have higher quality accruals and a lower propensity to manage earnings, a result interpreted as consistent with an "opportunistic behavior" hypothesis, where public firms have greater incentives to manage earnings to meet performance benchmarks.

There is also recent research exploring differences in the demand for financial reporting transparency among state ownership, domestic private investors, and foreign investors. Bushman et al. (2004) find that state ownership and financial transparency are negatively related, a result consistent with state-owned firms' suppressing information transparency (because of expropriation activities) or not requiring information transparency (because of direct governing of firm management). In related papers, Wang et al. (2008) and Guedhami et al. (2009) find that state-owned firms are less likely to hire a large, high quality auditor. With respect to foreign versus domestic ownership, Leuz et al. (2009) argue that information asymmetries exist between foreign and domestic investors and find that foreign investment is lower in countries where opaque earnings exacerbate information asymmetry and monitoring costs. Consistent with this result, Guedhami et al. (2009) find that foreign investors are more likely to demand a high quality (Big 4) auditor.

Overall, it remains an open question whether ownership structures with controlling shareholders use financial reporting as a commitment mechanism that restricts the controlling shareholder's ability to extract private benefits of control, or instead use financial reporting to distort the information environment to facilitate greater extraction of private benefits. There is also an open question about whether public or private equity ownership facilitates greater financial reporting transparency. The answer to this question likely rests, in part, on whether shareholder ownership structures serve to facilitate more efficient investing or operating decisions, or instead are chosen to allow managers, entrepreneurs, founding families, or other classes of investors to extract private benefits.⁵⁵ These issues are similar to research questions that arise in the context of shareholders and creditors, which we discuss in the next section. Specifically, when do shareholders use financial reporting as a commitment mechanism to mitigate agency conflicts with creditors, and when do they actively distort financial reporting in an attempt to extract greater wealth from creditors? In general, the debt literature provides support for the former as the *ex ante* role of financial reporting. It would be both interesting and surprising if the literature on ownership structure were to conclude that controlling shareholders, for example, structure financial reporting *ex ante* to exacerbate agency conflicts. In such a case, future research might explore situations in which controlling shareholders derive sufficient utility from private benefits to outweigh the combination of the price protection that minority shareholders are expected to impose on controlling shareholders, along with residual agency costs.

5. The role of financial accounting in debt contracting

In this section, we review literature on the role of accounting information in contractual relationships between debt holders and owner/managers. In the United States, debt is an important source of capital. For example, in 2006, U.S. domiciled corporations raised more than \$2.6 trillion of new external capital.⁵⁶ Of that amount, more than 95%, or about \$2.5 trillion, was some form of debt financing (i.e., bonds, syndicated debt, or other types of loans). The remaining 5% was in the form of common and preferred equity. Similar statistics hold for 2005 and 2004. In addition, for the publicly traded firms in the Compustat database from 2000 to 2008, we find that the average leverage ratio, defined as the ratio of long-term debt to total assets, is 56%. (The median is 31%).⁵⁷ While some (perhaps most) of these debt issuances are likely to be replacing existing debt, it is clear that firms access debt markets far more frequently than equity markets. Yet, most of the focus of capital-markets accounting research has historically been on equity markets.⁵⁸

Much of the debt research has developed with the agency-theoretic view of the firm that Jensen and Meckling (1976), Fama and Miller (1972), and Myers (1977) have articulated. Three central ideas emerge from this literature. First, owner/

⁵⁵ Of course, in addition to (or instead of) using financial reporting as a commitment mechanism, firms may also elect to use other corporate governance mechanisms to protect minority shareholders. For example, Reese and Weisbach (2002) suggest that firms domiciled in countries with weak protection of minority shareholders have incentives to cross-list in the United States when raising capital, since the United States has stronger shareholder rights and more regulated financial reporting, both of which have been shown to reduce cost of capital. Consistent with this idea, Lang et al. (2003) find that firms that cross-list in the United States have less earnings management, more timely loss recognition, and more conservative earnings reports than a matched sample of firms that do not have cross-listed shares. These differences are attributable to both "innate" differences in the firms and the likely perceived benefits of cross-listing. See Coffee (2002) for a more thorough discussion of the literature examining the effects of cross-listing.

⁵⁶ The data supporting these statistics comes from <http://www.federalreserve.gov/econresdata/releases/corpssecure/current.htm>.

⁵⁷ Our calculation omits firms that have a negative leverage ratio. Firms can have a negative leverage ratio if they have negative equity and other large liabilities. The omission biases these statistics toward zero.

⁵⁸ To illustrate, Kothari (2001) and Fields et al. (2001) cite approximately 700 papers related to capital markets and accounting-choice research, with fewer than 10% of these papers focusing on accounting issues related to debt markets and debt contracting.

managers have incentives, *ex post*, to engage in actions to further their own interests to the detriment of outside capital providers. Second, outside capital providers will price protect their claims in anticipation of this behavior. Third, owner/managers anticipate price protection and are willing to incur monitoring and bonding costs, *ex ante*, to restrict their ability to engage in such behavior.

Smith and Warner (1979) expand on these ideas, postulating that four categories of agency conflicts arise between debt holders and equity holders. First, there is a conflict of interest between these two stakeholders over dividends. Debt holders are concerned that equity holders could increase their dividend payments, thereby reducing the resources available to payoff debt holders' claims. Second, there is a conflict over future increases in debt levels that reduce the probability that the lender will be repaid. The third and fourth sources of conflict relate to asset substitution and underinvestment. Following a debt issuance, firms often have incentives to shift their asset mix toward riskier investments, resulting in a wealth transfer from debt holders to equity holders.⁵⁹ Alternatively, as firms approach default, they may choose to forgo positive net present value (NPV) projects because the benefits would accrue primarily to the firm's creditors rather than to its equity holders.

Smith and Warner (1979), Watts and Zimmerman (1978, 1986, 1990), and others suggest that accounting information can play an important role in reducing the agency costs that arise in the debt-contracting process. They emphasize that debt contracts typically contain covenants, often based on accounting information, that restrict dividend payments or the issuance of additional debt. Lenders prevent borrowers from shifting risk by using security agreements (or borrowing-base restrictions) to collateralize the firm's assets. Alternatively, lenders can put in place capital expenditure restrictions, asset sale restrictions, or sweeps, which require that the proceeds from asset sales be used to pay down the firm's debt. Like dividend restrictions, these provisions are often based on accounting information and will both directly and indirectly prevent asset substitution.

It is much more difficult to design a contractual mechanism based on accounting information that will force firms to commit to invest in all positive NPV projects or to maintain a given risk profile when exercising future growth options. Thus, lenders must rely on other contractual mechanisms, such as price protection through interest rates or reduction in the debt's maturity, to reduce these costs.⁶⁰

In summary, similar to the literature on minority-interest shareholders described above, several influential finance and accounting papers argue that owner/managers have incentives to expropriate wealth from bondholders. And, as with the minority-interest literature, these influential papers posit that elements of the firm's financial reporting system can play an important role in helping to minimize expected contracting costs. However, unlike the minority-interest setting, where the relationship with majority shareholders is largely informal and unwritten, debt contracts are explicit (although debt-contracting relationships also frequently have many informal components) and often include clauses and covenants that are based on outputs of the accounting system. Thus, in addition to the implicit contracting incentives discussed in the previous section, debt contracts may provide incentives that influence management's accounting choices, either in anticipation of, or following the origination of, the contract. In the following summary and synthesis of the debt-contracting literature, we focus on the importance of attributes of the accounting system at various stages in the contracting process, as well as the methods by which debt contracts provide incentives that influence the firm's accounting choices.

First, we focus on how elements of a firm's accounting system affect whether the firm is able to enter the debt market and, if so, which segment(s) of the debt market are accessible. In many ways, this research is similar to the research investigating the minority shareholder's decision to invest in a majority controlled firm. Next, we discuss how attributes of the accounting system affect the design of debt contracts, highlighting features of the debt contract affected by outputs of the accounting system. We then discuss how, conditional on obtaining debt financing, the debt contract is likely to affect outputs of the accounting system. Toward the end of this section, we provide some thoughts on how future research might focus on how attributes of the accounting system may affect the outcomes of the renegotiation process. Afterward, we discuss a relatively recent extension of agency theory to incomplete contracts, which suggests a new and important role for accounting information in the debt-contracting process. We conclude by offering more general avenues of future research.

5.1. The role of financial accounting in determining the availability and source of debt financing

When a firm accesses external capital markets, characteristics of the firm's accounting system are likely to be important. Since both debt and equity holders have limited liability, their downside risk is limited to the amount of their investment. Debt holders also have limited upside potential. In addition, unlike equity holders, who are residual claimants, debt holders have higher priority in bankruptcy and often have security requirements collateralizing the firm's assets. These differences in

⁵⁹ The risk-seeking incentives of equity holders are best illustrated by viewing the equity holders' claims as a call option on the firm's assets with an exercise price equal to the face value of the firm's debt (Merton, 1974). Option-valuation theory indicates that the value of a call option to a risk-neutral holder is strictly increasing in the volatility of the underlying asset, which, in this case, is the firm's assets. The magnitude of such risk-shifting incentives, however, is expected to be relatively small for most financially healthy firms, when the option is substantially in the money, but of greater significance for financially distressed firms, when the option is at or out of the money. See Guay (1999) and Parrino and Weisbach (1999) for empirical evidence on the magnitude of stockholder–bondholder conflicts arising from risk-shifting incentives.

⁶⁰ It is important to note that price protection and reduction in maturity can be substitutes for accounting-based covenants for the other debt-contracting problems discussed above.

payoffs, control rights, and priority in bankruptcy likely lead to differences in demands for various attributes of accounting information.

Before providing access to capital, lenders typically require firms to supply audited financial statements, so as to assess the firm's ability to repay the debt. Private lenders, such as banks, will also often demand access to proprietary information such as budgets, forecasts, and other financial data. Lenders are likely to prefer the most reliable information regarding downside risk and evaluation of the firm's collateral, as well as information that is useful in assessing the timing and riskiness of the firm's expected future cash flows from existing projects and anticipated investments. The firm's financial reporting system plays an important role in this analysis. If the firm's accounting reports provide unreliable asset values, opaque performance measures, or performance measures that make it difficult to forecast either future cash flows or their riskiness, the lender will have difficulty assessing the firm's credit quality and the firm is less likely to be able to cost effectively access the debt market.

There has been relatively little research on the role of financial reporting in determining whether a firm can obtain debt financing.⁶¹ Instead, research tends to focus on the determinants of overall capital structure, or, alternatively, which attributes of the accounting system affect the borrower's choice of debt markets. Similarly, there is a paucity of research investigating why some firms have minority shareholders while others do not. We conjecture that this lack of research is at least in part attributable to the difficulty identifying firms that would like to borrow (or obtain minority shareholders) but are unable to find a willing lender and therefore do not participate in the debt markets.

One suggestion for future research is to develop empirical models to predict the demand for debt financing as a function of various firm characteristics, and then use the predictions derived from such a model to study firms that are expected to have debt financing but do not.⁶² In particular, researchers might investigate whether opaque, untimely, or low quality financial statements prevent firms from accessing the debt markets.⁶³ We also encourage researchers to explore the more fundamental decision of how financial reporting influences the firm's decision regarding the type of financing to pursue (e.g., whether to borrow from the debt markets, issue equity, or choose some alternative source of financing). Although a detailed discussion of capital structure is beyond the scope of this review, we note that the information asymmetry between owners/managers and capital providers is an important element of many theories of capital structure (e.g., Myers and Majluf, 1984).⁶⁴

Firms that decide to access the debt markets recognize institutional differences between various suppliers of debt capital that give rise to differing demands for certain attributes of accounting information. For example, the simplest partition of the debt market is whether banks or public investors, in the form of bonds, provide the debt. Private debt holders, such as banks, typically have access to private information, while public debt holders typically do not. More specifically, both private debt holders and rating agencies are exempt from the disclosure restrictions in Regulation FD, and borrowers are thus allowed to provide these parties with access to management and to non-public information. In addition, private debt agreements often stipulate the types of public and proprietary information that must be provided to the private-debt holder, both before loan initiation and throughout the life of the loan.⁶⁵ Public debt holders lack access to proprietary information, although ratings agencies that the firm solicits (and, thus, pays for) are allowed access to non-public information. Presumably, this information is considered when the ratings agency develops its debt rating.

There are other institutional differences across these two markets. Public debt often has many holders and typically requires the approval of two-thirds of the bondholders for a renegotiation (Smith and Warner, 1979). As a result, public debt has relatively larger renegotiation costs than private debt. Additionally, public debt is often underwritten and is subject to SEC regulations and filing requirements, while private debt generally is not.⁶⁶

The differential access to private information as well as other institutional differences that exist across these two markets is likely to affect the type of information demanded at loan inception, the contractual features included in the debt agreement, and, thus, the incentives that the debt contract provides the borrower over the life of the contract. For example, Smith and Warner (1979) suggest that, *ceteris paribus*, if public debt contains covenants, they will be looser than private debt covenants because of the higher renegotiation costs. Consistent with this conjecture, Begley and Freeman (2004) provide evidence that public debt seldom has financial covenants, and they suggest that this finding likely stems from high coordination costs across public debt holders that make renegotiation very costly.

Research on the role of the accounting system in the choice to obtain public versus private debt has also focused on issues related to the costs of obtaining information and renegotiating contracts. Bharath et al. (2008) argue that banks have better

⁶¹ In our review of the accounting, finance, and economics journals over the past 20 years, we were unable to locate any papers that examine whether attributes of the firms' financial reports influence their ability to access the debt markets. There are, however, numerous papers investigating which markets they enter and the determinants of capital structure. We discuss those findings here.

⁶² A recent working paper by Christensen and Nikolaev (2010a) adopts a slightly different, and perhaps more interesting, research design, using an instrumental variables approach to investigate whether attributes of the firm's accounting system influence the firm's ability to access credit markets.

⁶³ Beatty et al. (2010) have a flavor of this analysis, providing evidence that firms with low-quality financial statements are more likely to lease rather than obtain debt financing.

⁶⁴ Liang and Zhang (2006) offer a relatively recent paper on the role of financial accounting in the decision to issue debt versus equity.

⁶⁵ Private debt holders often base their lending decisions on proprietary, non-public information, including internal financial forecasts and projections, detailed sales data (by region, store, and/or segment), aging of inventory, payables and receivables schedules, capital expenditure budgets, and a variety of other information that is unavailable to the public.

⁶⁶ Some private debt, typically syndicated debt, is traded and held by institutional investors. The primary capital providers in this market are banks. (See Wittenberg-Moerman (2008), for a discussion of the institutional features of the syndicated-debt market.)

access to private information and superior information processing abilities, and they are thus able to reduce adverse selection costs and lend to firms with lower accounting quality. Consistent with this prediction, the authors examine the choice of public debt versus private bank debt and find that firms with lower accounting quality are more likely to borrow from banks. Further, [Dhaliwal et al. \(in press\)](#) focus on the role of disclosure costs in accessing public versus private debt markets and find that when the cost of making public disclosures is high, firms are more likely to access private-debt markets in order to avoid having to make costly disclosures.

[Beatty et al. \(2008b\)](#) investigate the determinants of the decision to lease as opposed to using equity or other forms of debt financing. They find that firms with lower quality accounting are more likely to enter into leases, arguing that the legal protections afforded to lessors allow them to provide financing to firms with lower quality accounting. In particular, they suggest that a bankruptcy filing does not affect the lessor's claims to the firm's assets unless the terms of the lease are breached. If the lessee breaches the lease obligations, then the lessor can immediately repossess the lessee's property. This provision offers the lessor relatively more security, as other creditors have to go through bankruptcy proceedings to recover their assets.

To summarize, the research investigating the role of the accounting system in the firm's decision to access public debt, private debt, or leasing suggests that the institutional features of the different debt markets allows them to cater to borrowers that have accounting systems of varying quality. Borrowers with the highest accounting quality appear to be most likely to obtain financing from public debt holders. As [Bharath et al. \(2008\)](#) suggest, this result is likely to reflect public debt holders' actions to price protect themselves from borrowers with low quality accounting, while other providers of debt capital can use other lower cost contractual mechanisms to reduce the potential agency problems that arise from the information asymmetry associated with low quality accounting reports. In other words, borrowers with lower quality accounting are not precluded from borrowing, since they can still obtain financing from private-debt holders who can use private information obtained from management to perform additional due diligence, or from lessors, who also have access to private information and are afforded greater legal protection if the firm faces financial distress.

Within the private debt markets, there are also institutional differences across lenders leading to differences in the features of the debt contracts these lenders offer. For example, private debt can be supplied by insurance companies (or other institutional investors) or through banks.⁶⁷ As [El-Gazzar and Pastena \(1990, 1991\)](#) discuss, banks and insurance companies typically have different investment horizons. Bank liabilities (i.e., deposits) typically have a shorter maturity than the liabilities of insurance companies, and, accordingly, banks typically look to provide shorter-term lending to better match the duration of their assets and liabilities. Further, private bank loans typically involve multiple lenders (i.e., syndication), while insurance company loans typically have a single lender. These institutional differences lead to differences in monitoring and renegotiation costs, which, in turn, lead to differences in covenant packages and differences in the role of financial-accounting numbers.

[El-Gazzar and Pastena \(1990\)](#) find that all of the private placements (i.e., insurance funded debt) in their sample made “tailoring” adjustments to GAAP in their financial covenants, while only 21% of the bank debt contracts had similar adjustments. Further, they find that insurance companies typically impose more restrictions (covenants) than banks, but [El-Gazzar and Pastena \(1991\)](#) show that insurance company restrictions have more slack at initiation. Because tailoring of GAAP and greater restrictions require more lender monitoring, these findings are consistent with the greater monitoring and lower renegotiation costs (because of the presence of only a single lender) seen with insurance company loans. At the same time, the greater covenant slack at initiation of the longer term insurance company loans is consistent with the borrower's needs for greater flexibility to efficiently run the operations of the firm over a longer time horizon.

Both of these studies are relatively early attempts at measuring the degree to which lenders tailor GAAP and the extent to which lenders use covenant packages in debt contracts. However, both studies have relatively small samples, and the private debt included in their samples came before the dramatic growth in the syndicated loan market. That market grew at an annual rate of 27% between 1991 and 2003. It now accounts for more than \$1 trillion in new loans each year and makes up more than half of the annual issuances in U.S. equity and debt markets. (See [Wittenberg-Moerman, 2008](#).) It would be interesting to re-examine whether these predictions hold for syndicated debt, or syndicated debt that is traded, where matching asset and liability durations may be less important in the design of financial covenants, since the issuer of the debt might not hold the debt until maturity.

[Sufi \(2007\)](#) and [Ball et al. \(2008a\)](#) take advantage of the recent growth in the syndicated-debt market and examine how information asymmetry and accounting quality affect the role of lead arrangers in the loan syndicate. Specifically, they argue that when there is greater information asymmetry between syndicate lenders concerning the borrower's financial characteristics, the lead lender is induced to more actively monitor the borrower, which, in turn, induces the lead lender to hold a larger proportion of the loan and form a more concentrated syndicate. [Sufi \(2007\)](#) provides evidence consistent with these predictions. [Ball et al. \(2008a\)](#) extend the evidence in [Sufi \(2007\)](#) to examine the role of financial statements in reducing the information asymmetry among lenders. They find that when financial reports provide more informative signals about future credit quality, lead lenders are able to hold a smaller proportion of the overall syndicate and the syndicate is less concentrated.

Both papers present interesting innovations in the literature examining how lender characteristics influence the demand for accounting information at contract initiation. An avenue for future research would be to examine how the lender's

⁶⁷ Private placements are a form of debt financing, which insurance companies or other non-bank institutional investors typically provide.

attributes affect renegotiations. In particular, when firms violate covenants, there are typically changes in cash-flow rights, control rights, and information rights. Future research might consider how attributes of the lending syndicate influence the reallocation of these rights following covenant violations.

Within the syndicated loan markets, some loans are traded publically, and others are not. [Wittenberg-Moerman \(2008\)](#) exploits this institutional feature to examine the relationship between the quality of financial reporting and information asymmetry between investors in the syndicated debt market. She uses the timeliness of accounting earnings as a proxy for high quality accounting reports, and the bid-ask spread on debt securities as a measurement of information asymmetry among syndicated debt investors. She finds that timely loss recognition, but not timely gain recognition, is negatively associated with the size of bid-ask spreads. This result is consistent with the discussion in Section 3 that because managers are expected to be forthcoming with good news but reluctant to disclose bad news, a commitment to timely loss recognition improves the transparency of the information environment. This argument is even more compelling with respect to debt markets; because debt is a fixed claim on a firm's cash flows (i.e., it has a limited upside), the value of a lender's investment is more sensitive to bad news than it is to good news.

[Biddle and Hillary \(2006\)](#) use an alternative approach to provide evidence on the relationship between accounting quality and access to debt markets. They note that when investors lack adequate information about a firm's activities and performance, they may withhold capital, thereby restricting the firm's ability to invest. They also argue that high quality accounting reports can mitigate information asymmetry and reduce firms' reliance on internal capital for investment. Using both country- and firm-level tests, they find that when firms have higher quality accounting, there is less reliance on internally generated cash flow when making investments. Biddle and Hillary then hypothesize that accounting quality is more important in economies that rely on arm's-length financing through public stock markets than in economies that rely more on private creditor financing, since in the latter case creditors can obtain additional information about firms through private channels. The authors cite the United States and Japan as the settings where public stock markets and private credit financing are most important, respectively, and they find that the relationship between accounting quality and investment cash-flow sensitivity, which is a measure of the extent to which firms face financing frictions, holds in the United States but not in Japan.

A concern with this approach, however, is that the differential use of debt financing between firms domiciled in the United States and those in Japan is not clear. [Beatty et al. \(2008a\)](#) highlight this point and provide evidence that accounting quality reduces investment cash-flow sensitivity for firms that borrow from private lenders in the United States. Beatty et al. also provide evidence that certain contractual features, such as investment restrictions and lender monitoring, may substitute for accounting quality and reduce its importance in financing decisions in debt markets.

In addition to the decision on the source of financing, firms must also decide whether to enter into a relationship lending arrangement, in which they borrow from the same lender over time. There is an extensive body of theoretical finance literature on this topic.⁶⁸ Relationship lending involves both a formal debt contract and an informal contract, where the lender and borrower can build reputational capital over time. Firms that decide to pursue a relationship with a bank may benefit, since a good payment record will help to establish the firm's reputation, will reduce the need for monitoring, and will lead to improvements in future loan contract terms. (For some examples of the literature supporting this point, see [Diamond, 1991](#); [Rajan, 1992](#); [Boot and Thakor, 1994](#)). However, relationship lending does not come without a cost. Firms that enter into a relationship with a bank may suffer from a "holdup" problem, where the relationship lender uses its information advantage (relative to potential lenders) to extract rents before providing additional financing or renewing existing financing ([Rajan, 1992](#)).

[Ongena and Smith \(2001\)](#) and [Bharath et al. \(2009\)](#) suggest that a firm's accounting system plays a vital role in relationship lending. For example, [Ongena and Smith \(2001\)](#) suggest that "firms facing large information asymmetries with outside investors stand to benefit most from long-term bank relationships but are also particularly susceptible to hold-up problems and high switching costs." This argument implies that firms whose accounting systems are least effective in reducing information asymmetry may benefit the most from relationship lending but also may face the most obstacles.

[Bharath et al. \(2009\)](#) extend this argument, examining whether attributes of the firm's accounting system, or general measures of opacity, are associated with relationship lending. They find that firms with the lowest accounting quality (most opaque) derive the most benefits (lowest interest rates) from relationship lending. This result is important for contemporary research, since the firm's historical relationship with their lenders is often neglected in many research designs.

We suggest that future researchers consider other aspects of [Ongena and Smith's \(2001\)](#) arguments, and investigate whether contract renegotiation costs (in terms of waiver fees, higher interest rates, etc.) are higher when the firm has a relationship with its bank, and whether the accounting system mitigates the bank's ability to "hold-up" the borrower at renegotiation points. These tests could provide evidence that accounting information is useful in renegotiation by reducing hold-up costs.

In summary, the evidence from research examining the role of the accounting system in the choice of lenders suggests that elements of the accounting system are associated with (1) the choice of lender, (2) the lending market entered, (3) the amount of the loan held by the lead lender, and (4) the size of the bid-ask spread in the syndicated loan market. Attributes of the firm's accounting system are also important in relationship lending arrangements, where better quality accounting amplifies the benefits that arise in relationship banking.

⁶⁸ As we discuss in Section 3, the ideas of contract memory and reputation become important in repeated game settings.

Consistent with the observations in Beatty (2008), we note that it is unclear exactly which elements of the accounting system are important in these decisions, and each of the papers discussed above seems to focus on a different attribute of the accounting system in isolation. It would be useful for future research to examine the construct validity of various “accounting quality” measures in the debt markets and obtain a better understanding of why accounting quality is important. For example, Bharath et al. (2008), Ball et al. (2008a) and Sufi (2007) suggest that accounting quality is important in the choice of lending market because accounting quality makes a firm’s operations more transparent and thus facilitates better monitoring. Firms that have better accounting quality can therefore borrow in markets, or from lenders, where monitoring is weaker. However, it is not clear whether the measures of accounting quality used in these studies are consistent with more transparent operations (construct validity), or exactly how they facilitate better monitoring. Do firms that have larger accruals as a percentage of assets necessarily have more opaque operations, larger agency problems, and, thus, a greater need for monitoring? Additional theoretical and empirical evidence on the relationship between this and other measures of accounting quality and the opacity of firm operations and the extent of agency problems would help us better understand the role of accounting information in the debt-contracting process.

Perhaps a survey or experimental evidence on how banks use accounting information in lending decisions, in the selection of monitoring mechanisms, or when making decisions regarding the extent to which they should monitor would allow us to obtain a better understanding of how attributes of the accounting system affect lending decisions. For example, future researchers should devise an experiment where the proportion of income that is accruals versus cash is manipulated, and lenders are asked to make monitoring decisions. The monitoring choices lenders make would be observable, and the researcher could provide evidence on which monitoring mechanisms are put in place when a larger proportion of the firm’s income consists of accruals.

We also suggest that future research expand on the analyses in Bharath et al. (2008) and Dhaliwahi et al. (2010) by further exploring why accounting quality seems to affect the choice of which debt market the firm enters. For example, do firms with higher quality accounting, as measured in these studies, have less earnings management? Do they have more informative disclosures? Or do they reveal more proprietary information in their financial reports? At a minimum, researchers should investigate whether the accounting quality metrics commonly used in debt research (e.g., absolute value of accruals and the Dechow and Dichev (2002) measure of earnings quality) are reasonable predictors of credit quality or changes in credit quality.

Future research might also consider a more direct test of the relationship among the various measures of accounting quality and the extent to which firms have agency problems. For example, perhaps firms that have high accounting quality are more likely to have boards and other monitors that can uncover or prevent agency problems. Or perhaps instead, as we discussed in Section 3.2.8, when boards recognize that managers have substantial discretion and there is therefore a greater scope for agency conflicts, they demand that firms include debt in their capital structure as a mechanism toward providing higher quality accounting reports. Ultimately, more research on how the various measures of accounting quality employed in the empirical debt-contracting research affect agency costs, as well as the causality of this relationship, will help deepen our understanding of the role of accounting information in lending decisions.

Finally, we also suggest that researchers consider whether accounting quality allows for the design of more efficient contractual mechanisms, which reduce agency costs and, potentially, renegotiation costs. Additional empirical evidence on how accounting quality affects the choice of monitoring mechanisms lenders use and how these mechanisms influence agency costs would be useful. (As we discuss above, Bharath et al. (2008) presents one step in this direction.) For example, are firms with “better” accounting quality able to obtain debt with a longer maturity, less restrictive covenants, and lower interest rates? Which attributes of accounting quality are best suited for these three alternative choices? Does increased transparency result in longer maturity debt or looser covenants? Does increased conservatism lead to lower rates or longer maturity? Perhaps more importantly, additional theoretical insight as to why different accounting attributes might be better suited to influence different contractual mechanisms would also be helpful.

5.2. How do elements of the firm’s accounting system affect the design of the debt contract?

The literature on how attributes of the accounting system affect the design of debt contracts is both relatively new and growing. In Table 1, we provide a comprehensive list of definitions of the common features of debt contracts that may be affected by different aspects of firms’ accounting systems. In the remainder of this section, we provide a brief description of the motivation for why the accounting system might affect each element of the debt contract. We then discuss the literature supporting or rebutting these conjectures, and we conclude by offering our thoughts on additional research that would advance this area of literature.

5.2.1. Association between financial reporting and interest rates

The central premise underlying Jensen and Meckling’s (1976) framework is that creditors are expected to demand higher “nominal” returns (i.e., higher interest rates) as compensation for the agency costs associated with the manager’s incentives to engage in actions that benefit the shareholder at the creditor’s expense.⁶⁹ It has been argued (e.g. Francis et al., 2005b) that

⁶⁹ We use the phrase “nominal” returns here because a creditor’s expected return is the nominal return less the expected costs associated with anticipated agency problems (e.g., expected wealth transfers, monitoring costs, and the cost of writing covenants that the creditor bears). This cost wedge between the interest rate creditors charge and the creditor’s expected return represents an agency cost shareholders bear. As Jensen and Meckling (1976) note, the value loss to shareholders is somewhat less than the full amount of these agency costs, however, because the shareholders reap any expected wealth transfers that stem from the stockholder–bondholder agency conflicts.

Table 1

Characteristics of the debt contract that may be affected by attributes of the accounting system.

Attribute	
Interest rate	The rate the lender charges. For bank loans, this is typically stated as a spread over LIBOR, while for public debt the rate is typically fixed
Maturity	The period the loan is made available to the borrower
Security/collateral	A lien on the company's assets
Performance-pricing provision	A contracting feature that provides for changes in interest rates over the life of the debt contract based on measures of performance (typically accounting measures or debt ratings)
Performance-pricing metric	The measure that the performance-pricing provision is based on (e.g., debt/EBITDA, debt/net worth, S&P credit rating)
Concavity/convexity of pricing grid	The rate of change in the pricing metric to the rate of change in the interest rate. This ratio is not necessarily constant over the pricing grid
Number of steps in the pricing grid	A typical pricing grid can have anywhere from two to 10 pricing "levels"
Size of the loan	The amount the lender borrows
Borrowing-base restrictions	Restrictions on the amount that the firm can borrow. This is similar to a security/collateral requirement. Typically, a borrowing-base restriction limits the amount to be borrowed to a percentage of receivables or inventory
Investment restrictions	Restrictions preventing firms from making capital expenditures
Cash flow, asset sale, and debt/equity sweeps	Provisions requiring the borrower to pay down debt if cash flows (EBITDA) are greater than a pre-specified level, or if a sale exceeds a pre-specified dollar amount, or if long-term debt or equity is issued
Financial covenants	Covenants based on accounting ratios
Dividend restrictions	Covenants restricting firms' ability to pay dividends
Income escalators	Net-worth covenants where the covenant thresholds are increased by a percentage of positive net income
Fixed GAAP	Provisions included in the contract that limit the borrower's ability to make voluntary (or mandatory) accounting changes
Tailored GAAP	Modifications to GAAP included in the contract, such as eliminating goodwill or intangible assets from the calculation of covenants

elements of the firm's accounting reports can exacerbate or mitigate these agency costs and, in turn, that these elements are likely to be associated with the interest rate charged on the loan.

The early literature indirectly tested this hypothesis, where the cost of debt was measured by either interest expense or credit ratings. For example, [Ahmed et al. \(2002\)](#) investigate the association between the extent to which firms report conservatively and the credit rating the firm receives on its public debt. Ahmed et al. measure conservatism using adjusted measures of book-to-market and accruals and find that firms that report more conservatively have better credit ratings. As [Zhang \(2008\)](#) discusses, this paper is an important first step in the evolution of the research on the relationship between attributes of the accounting system and the cost of debt. She also discusses its limitations, such as the potential endogeneity between other firm characteristics, the cost of debt, and the extent to which firms provide higher quality financial reports.

[Francis et al. \(2005b\)](#) extend this line of research by examining whether various measures of accounting quality are associated with the interest expense reported on a firm's income statement. They find that the ratio of interest expense to interest bearing debt is lower for firms that have higher quality accounting. However, one potential problem with their tests is that, absent performance pricing or renegotiation, interest rates are determined at the time the contract is initiated. Correlating current accounting quality and interest rates at the time the contract is initiated assumes that either accounting quality or credit quality, or both, are relatively persistent. [Ashbaugh et al. \(2006\)](#) extend these tests using a similar measure of accounting quality but employing credit ratings as a measure of firms' cost of debt capital. More specifically, they investigate the relationship between credit ratings at the time the debt is issued and accounting quality before the issuance, and they find that of measures of both financial transparency and accounting quality are associated with firms' bond ratings, controlling for other features of firms' operating environments and corporate governance structures.

As machine readable data on actual interest spreads (over LIBOR) charged in loan contracts has become available, there have been more direct tests of the relationship between financial reporting and the cost of debt. For example, [Bharath et al. \(2008\)](#) investigate the relationship between interest spreads charged on the loan contract and measures of accounting quality before entering into the loan agreement. They divide their sample according to whether the firm has public or private debt and find that accounting quality is associated with lower interest spreads in both markets, after controlling for firm characteristics, bond characteristics, and default risk. Bharath et al. also find that accounting quality has a relatively larger effect on interest rates in public markets than in private debt markets, which they argue is consistent with either private market lenders' access to additional information beyond public reports, or their ability to more cost effectively monitor the borrower and place restrictions on the borrower's actions through covenants, which can act as substitutes for high quality accounting information.

Future researchers should consider designing a test to determine why accounting quality is more important in public debt markets than in private debt markets. There are a number of potential explanations for the difference documented in [Bharath et al. \(2008\)](#), such as differences in access to information, costs of renegotiation, length of the lending relationship, and monitoring ability. Establishing which of these factors increases the importance of accounting information will help us better understand why accounting information is important in the debt markets.

[Zhang \(2008\)](#) investigates the relationship between the extent to which firms report conservatively and the interest rate spread charged on the loan and finds that firms that report more conservatively are able to negotiate lower interest rates.

Beatty et al. (2002b) examine the relationship between interest rates and firms' flexibility to make accounting changes and finds that firms that are afforded the flexibility to make accounting changes are charged a premium in their cost of debt. These findings are consistent with lenders' requirement that firms bear the costs of agency conflicts, as well as lenders' expectations of fewer agency problems when firms commit to timely disclosure of information and when they bond themselves against making opportunistic use of the flexibility inherent in the accounting rules.

In addition to the papers that examine the direct effect of accounting quality on the cost of debt, there is also a stream of research that examines factors expected to indirectly influence, or at least be associated with, the quality of firms' financial statements and, in turn, to affect the cost of debt. For example, Pittman and Fortin (2004), and Mansi et al. (2004) provide evidence that when firms engage higher quality (larger) auditors, they have a lower cost of debt. Anderson et al. (2004) find that firms whose boards are smaller and more independent, and whose audit committees are also more independent, have a lower cost of debt. Ashbaugh et al. (2006) take a broader approach and find that numerous governance factors that are likely to affect the quality of the firm's accounting system are associated with the cost of debt.

Asquith et al. (2005) highlight that lenders must consider whether to either adjust the interest rate charged on the loan to reflect aspects of the firms' accounting system, or to include a performance-pricing provision in the contract. Performance-pricing contracts provide for a pricing grid, which maps measures of firm performance in period t to the interest rate charged on the loan during period $t + 1$. For example, a typical performance-pricing contract would have several different interest rates that would correspond to different values of the firm's debt-to-EBITDA ratio. As the ratio varies, the lender's interest rates reset according to the terms of the pricing grid. By *ex ante* committing to a repricing schedule, performance pricing may affect the cost of writing the contract, the design of the other features included in the contract (e.g., covenants and maturity), and the probability and cost of renegotiation. Thus, through the use of performance-pricing features, accounting information can have an important effect on contracting costs.

Asquith, Beatty and Weber (2006) also find that debt contracts are more likely to include performance-pricing provisions when renegotiation, adverse selection, and moral hazard costs are high. Manso et al. (2009) develop a screening model where the lender provides the option to include a performance-pricing provision in the contract, and the firm's choice to include, or not include, performance-pricing features allows the lender to sort firms by type and identify firms with more promising growth options. Ball et al. (2008a) investigate the choice of performance metrics included in performance-pricing contracts and find that performance-pricing provisions are more likely to be based on accounting information when the "debt-contracting value" of the accounting information is high.⁷⁰

Summarizing, this research finds that the quality of a firm's financial reporting is related to its cost of debt. These results highlight that accounting information is associated with contracting costs and plays an important role in determining the cost of a firm's debt capital. Similar to the discussion above, what is less clear is precisely why debt holders value "high quality" accounting information. It is unclear whether elements of the accounting system are priced because high quality accounting reduces agency costs, the costs of writing the contract, renegotiation costs, or information asymmetry. Evidence on why accounting quality is associated with interest rates would provide insight into lenders' information demands and borrowers' incentives to provide this information.

A host of other questions in this area remain unexplored. For example, since performance pricing directly links outputs of the accounting system to the cost of capital, it likely provides incentives for firms to manage earnings. The decision to include this feature in the contract is likely to depend on elements of the accounting system, such as the amount of discretion available to managers to increase earnings. Similarly, the design of the pricing grid, such as what accounting measurements are contracted on, will likely depend on the management's ability to exercise discretion over the financial reporting process. In addition, performance pricing appears to be a mechanism to make an incomplete contract more complete, reducing the costs of writing the contract. Finally, performance pricing also changes the payoff of a debt contract from fixed to variable, allowing the lender a higher return than the initial rate negotiated in the loan. Thus, in performance-pricing contracts, outputs from the accounting system change the payoff structure of the contract.

These features of performance pricing suggest that such provisions have the potential to significantly affect a firm's accounting choices. Researchers might want to develop a measure of the incentives (to increase net income) provided by performance-pricing contracts, such as how a dollar of additional income affects the cost of debt, similar to the portfolio delta measure used as a measure of equity incentives in the compensation literature. If we had such a measure, we might have a better sense of how, or whether, performance-pricing provisions affect accounting choices. Such a measure would also allow us to consider how debt contracts affect firms' investments or risk decisions.

As discussed above, Ball, et al. (2008a) examine whether performance pricing is based on an accounting metric (e.g., net worth or EBITDA) or debt ratings. There are a number of unanswered questions related to how the accounting system affects the design of the performance-pricing grid. For example, how do elements of the accounting system affect the convexity or concavity of the grid? Similarly, how does the accounting system affect whether the repricing metric is based on an income metric or a measurement of net worth? Finally, what elements of the accounting system determine the size of the spread that the grid covers? Do elements of the accounting system affect whether the starting point is the top of the grid, with interest

⁷⁰ Ball et al. (2008a) develop a new measure of accounting quality that is potentially of interest to researcher on accounting quality in debt markets by examining the ability of a firm's financial-accounting system to predict credit quality. They label this new metric the "debt-contracting value," of accounting information or DCV.

rates adjusted only downward without renegotiation; in the middle; or at the bottom of the grid, where interest rates can be increased only without renegotiation?

5.2.2. Association between financial reporting and the design of debt covenants

The financial covenants in debt contracts are designed to reduce a variety of the agency costs discussed in [Smith and Warner \(1979\)](#). Because many of these agency conflicts are the result of information asymmetry between borrowers and lenders, it is natural that elements of the firm's financial reporting system are likely to be associated with attributes of the covenants.⁷¹ At the most basic level, covenants are likely to be designed around attributes of the firm's financial reports (both current attributes and anticipated future attributes) at the time the firm enters into the contract.

[Beatty et al. \(2008c\)](#) and [Nikolaev \(2008\)](#) investigate the relationship between the extent to which firms provide conservative financial reports and attributes of the firm's financial covenants. [Beatty et al. \(2008c\)](#) examine the use of income escalators and tangible net worth covenants in debt contracts, arguing that these modifications make contract calculations more conservative. They find that firms that provide more conservative reports are more likely to have conservative modifications (e.g., income escalators) in their debt covenants. They suggest that covenant modifications are unlikely to fulfill the lender's demands for conservative financial statements. [Nikolaev \(2008\)](#) examines the relationship between conservative financial reporting and the extent of covenant use in public debt. He finds that firms that provide more conservative reports are more likely to have (and have more) covenants in their debt agreements. He also suggests that covenants and the degree of timely loss recognition act as complementary mechanisms for reducing agency costs.

[Guay \(2008\)](#) suggests that the results in [Beatty et al. \(2008c\)](#) may stem from having covenant modifications serve a different but complementary role from conservative financial reporting in resolving agency conflicts between borrowers and lenders. Specifically, whereas conservative reporting serves to commit managers to timely recognition of information about losses, covenant modifications are typically formulaic functions of reported financial numbers and therefore provide no new information to contracting parties. He argues that one role of covenants, however, may be to mitigate concerns about upward biases in reported financial numbers.

[Graham et al. \(2008\)](#) examine the effect of accounting quality on debt covenants by investigating how accounting restatements affect a firm's loan covenants. They find that firms with restated financial statements agree to additional covenants in their subsequent loans as a way to address lenders' increased concerns about information problems associated with the borrower. [Costello and Wittenberg-Moerman \(2010\)](#) extend this paper by investigating the effect of internal control weaknesses on loan covenant packages. They find that after the disclosure of an internal control weakness, banks decrease their reliance on the use of accounting-based covenants and performance-pricing metrics. [Costello and Wittenberg-Moerman](#) also find that firms that have corrected breaches in accounting quality by restating financial statements face tighter covenants, while firms that have "poor" accounting systems, as evidenced by the disclosure of a control weakness, face fewer covenant restrictions but instead encounter higher interest rates and additional security requirements. The results in these two papers highlight the tradeoffs lenders make between various monitoring mechanisms and suggest that accounting quality has a nuanced role in the way it affects the design and use of debt covenants.

[Frankel et al. \(2008\)](#) examine how firms' existing accounting methods and mandatory changes in those methods shape covenants in the context of goodwill accounting. They find that changes in the accounting rules for goodwill (i.e., SFAS 141 and 142) have led to modifications of covenants in debt contracts. More specifically, net worth covenants are more likely to exclude goodwill from covenant calculations after the promulgation of these standards. They also find that firms with goodwill on their balance sheets are less likely to have covenant modifications that exclude goodwill from covenant calculations, a finding that is consistent with creditors' recognition that intangible assets are an important source of information about the firm's financial health and its ability to pay future principal and interest on the debt.

[Beatty et al. \(2002b\)](#) examine the determinants of the decision to exclude mandatory and voluntary accounting changes from the calculation of covenant compliance. Consistent with [Jensen and Meckling \(1976\)](#), they conjecture that lenders will price protect themselves when they provide firms with discretion to make accounting changes to influence contract calculations. Their results suggest that lenders charge borrowers more (i.e., a larger spread over LIBOR) when they provide borrowers with the discretion to make voluntary accounting changes. They also find that contracts are more likely to exclude voluntary accounting changes when accounting discretion is likely to result in larger moral hazard costs, and that mandatory accounting changes are more likely to be excluded from loan agreements when the lender faces higher costs of investigating covenant violations. These results suggest that lenders understand that accounting discretion may increase contracting costs, and they consider these costs when they design (enter into) debt contracts.⁷²

There are a number of unanswered research questions regarding the role and design of financial covenants. In particular, we encourage more research on how attributes of financial reports affect features of the covenant package. For example, how

⁷¹ Although they do not directly examine the effect of attributes of the accounting system on the design of covenants, [Black et al. \(2004\)](#) investigate whether the use of covenants is associated with the extent to which regulators monitor the borrower. They find that when regulatory monitoring increases, lending agreements from banks are less likely to include covenants.

⁷² [Christensen and Nikolaev \(2010\)](#) build on this result, suggesting that the control over the effect of changes in GAAP on contract terms will depend on the dispersion of the ownership of the loan. They suggest that debt contracts are typically designed such that the rights to determine the effect of GAAP changes on contract terms are allocated so as to minimize the potential for *ex post* wealth transfers among contracting parties.

does financial reporting quality affect the tightness of covenants, or the number of financial covenants included in the contract? In addition, what factors affect the choice of financial ratios over which covenants are written?

Similarly, there is also an opportunity to investigate the financial reporting attributes that debt holders value by examining the modifications to GAAP that are made in the calculation of compliance with covenants (i.e., setting of covenant thresholds). While Beatty et al. (2008c) and Frankel et al. (2008) have taken some preliminary steps investigating why firms exclude intangible assets from net worth calculations (i.e., include goodwill in covenant calculations), there are a number of other frequent modifications that are made to covenant calculations that have not been investigated.

In addition, there is a need for additional evidence on why some covenants include goodwill in covenant calculations while others exclude it. Holthausen and Watts (2001) suggest that debt holders should exclude goodwill from covenant calculations, since goodwill is unlikely to have any value if there is a default. Yet Frankel et al. (2008) find that firms with goodwill already on their balance sheet are less likely to have it excluded from covenant calculations. Beatty et al. (2008c) fail to find a significant relationship, either positive or negative, between the exclusion of goodwill from covenant calculations and the extent to which firms report conservatively. They conjecture that the exclusion of goodwill from covenant calculations may not actually make covenant calculations more conservative.⁷³ Additional research on this topic would help to resolve some of the conflicting results in the literature.

Ultimately, we find a need for additional evidence on the types of modifications to GAAP that are made to calculate compliance with covenants. Uncovering the factors that cause contracting parties to make these modifications can help us understand the attributes of the accounting system that debt holders value.

5.2.3. Association between elements of the accounting system and other contract features

Recent studies examine the relationship between attributes of the firm's accounting system and features of debt contracts. For example, Bharath et al. (2008) investigate the relationship between accounting quality and the maturity and security requirements included in private and public debt contracts. They find that in private debt contracts, firms with higher quality accounting are able to negotiate a longer maturity and less restrictive collateral requirements.⁷⁴ They do not find similar results in public debt markets and suggest that the difference may be that in private debt markets, monitoring and renegotiation are relatively less expensive, allowing lenders to more cost effectively tailor the debt contract to the individual borrower by adjusting price and non-price terms to reflect differences in accounting quality. Firms with better accounting quality may be easier to monitor, leading to debt contracts with a longer maturity and less security. The authors conjecture, however, that because lenders in public debt markets have greater difficulty monitoring and renegotiating, poor accounting quality affects interest rates, as opposed to maturity or security. The premise that there are differences in renegotiation costs across private and public debt markets is plausible and likely affects the role of accounting information across the two markets.

It is less clear that higher renegotiation costs in public debt markets make it more efficient to adjust only interest rates and not other features of the contract. Although Bharath et al. (2008) focus on the association between security and maturity, recent papers by Chava et al. (2010) and Beatty et al. (2010) examine other contract features, such as investment and dividend payout restrictions, and the use of cross-acceleration provisions. Both papers find that the borrower's accounting quality influences the covenants included in public debt contracts. Chava et al. (2010) find dividend payout restrictions are more likely to be included in the contract when firms have low accounting quality, while Beatty et al. (2010) find that cross-acceleration provisions are more likely to be included when firms have poor accounting quality. They suggest that cross-acceleration provisions are a mechanism for public debt holders to delegate monitoring to banks, and firms with poor accounting quality are more likely to delegate monitoring to banks that have access to proprietary information and lower renegotiation costs.

Marquardt and Wiedman (2004) examine the effect of the accounting system on the decision to include the option to make debt convertible into equity (conversion feature). They find that the decision to include an equity conversion feature in a debt contract depends on the impact of the equity conversion feature on fully diluted earnings per share.

The literature has generally ignored the influence of accounting quality on other attributes of the debt contract. For example, many debt contracts contain cash-flow sweeps, where borrowers are required to pay down a portion of their debt if they realize earnings or cash flows beyond certain thresholds. We conjecture that firms may use cash-flow sweeps to resolve free cash-flow problems of the type discussed in Jensen (1986) (e.g., excessive perquisite consumption and overinvestment). More specifically, debt in general has been hypothesized to indirectly help resolve free cash-flow problems (as we discussed in Section 3.2.8), through the lender's role in monitoring management and reducing the conflicts of interest between managers and shareholders. Cash-flow sweeps might be a more "direct" mechanism to further reduce such agency problems. One could hypothesize that the decision to include a cash-flow sweep, and the measure of performance on which this contractual feature is based, are likely to depend on elements of the firm's accounting system, as well as the corporate

⁷³ If goodwill is included in covenant calculations, and the firm has goodwill on its balance sheet, then the amortization or write-off of goodwill will cause covenants to become tighter. If goodwill is excluded from covenant calculations, then the write-off of goodwill has no effect on covenant calculations. Thus, the exclusion of goodwill from covenant calculations does not unambiguously make covenants more conservative.

⁷⁴ Bharath et al. (2008) suggest that since there is no consensus on how to measure accounting quality, it is appropriate to use a factor analysis of common measures of accounting quality in order to develop a relatively comprehensive measure. The three measures they use to develop one factor are (1) a measure based on Dechow and Dichev (2002), (2) a measure based on Dechow et al. (1996), and (3) a measure based on Teoh et al. (1998).

governance system we discuss in Section 3. Similarly, the decision to use a cash-flow sweep versus financial covenants or a direct restriction on capital investments is likely to depend on elements of the firm's accounting system.

Finally, many contracts contain features such as borrowing-base restrictions, which limit the amount a firm can borrow as a function of the firm's accounts receivable and inventory balances. It is also likely that the inclusion and design of these features depend on the quality of the firm's accounting system and the accounting choices the firm has made (e.g., FIFO and LIFO).⁷⁵

5.3. The effect of debt contracts on accounting choice

The literature on how debt contracts affect accounting choices started in the late 1970s and early 1980s and has been evolving over the past 30 years. (See, for example, Deakin, 1979.) The central premise underlying this line of research is that, conditional on having debt financing, features of the firm's debt contracts influence managers' accounting choices. A relatively recent survey by Fields et al. (2001) suggests that there are two streams of research in this literature.⁷⁶

The first stream of research investigates whether managers change accounting methods to avoid covenant violations. The second stream investigates whether stock market participants' reaction to mandated accounting changes is associated with the probability of a covenant violation. Fields et al. (2001) suggest that the second stream of literature (i.e., the stock price reaction to mandated accounting changes) mostly died out in the late 1980s and early 1990s.⁷⁷

We extend Fields et al. (2001) by first focusing on recent research on one of the central premises in this literature; namely, that covenant violations are costly. We then discuss the literature suggesting that debt contracts give incentives for firms to provide conservative accounting reports. We conclude this section by focusing on the literature that examines the effect of debt contracts on other accounting choices.

5.3.1. Are covenant violations costly?

One of the central hypotheses in the literature on debt contracts and accounting choice is that managers change accounting policies to circumvent financial covenants in debt contracts. As Sweeney (1994) notes, two central assumptions underlie this argument: (1) violating the covenant and entering into technical default is costly, and (2) managers have sufficient accounting discretion to avoid violating the covenant. Regarding the first assumption, there has been substantial debate about whether technical default is costly.

Smith (1993) provides some guidelines for assessing whether covenant violations are costly. He suggests that the lender's reaction to a default fall along a continuum, from most to least costly: (1) grant a permanent waiver without renegotiation, (2) grant a temporary waiver without renegotiation, (3) offer no waiver and no renegotiation, (4) renegotiate and provide the borrower with a waiver, (5) renegotiation fails, no waiver is granted, and the firm seeks alternative financing or enters bankruptcy. There are no renegotiation costs associated with the first three categories. The fourth and fifth categories result in default costs, and they are significant, suggesting that there is a continuum of costs associated with a covenant violation.

The early research finds that, on average, violating covenants is costly. For example, Beneish and Press (1993) report that more than half of the firms in their sample that violate their covenants incur costs, and that the average cost of technical default ranges between 1.2% and 2.0% of the firm's market value of equity. Similarly, Sweeney (1994) finds that approximately two-thirds of the firms in her sample that disclosed a technical default experienced some form of default cost (e.g., increased collateral, restricted borrowing, or increases in interest rates). The other third incurred no "direct" default costs.⁷⁸

These papers relied on technical violations disclosed in the firm's financial statements to identify firms that violated covenants. One problem with this approach, however, is that firms are not required to disclose covenant violations that are cured before the financial statements are released. Thus, disclosed covenant violations are likely to be systematically different from undisclosed covenant violations and, potentially, more costly. Dichev and Skinner (2002) identify this issue and use a slightly different approach to investigate the cost of covenant violations. They use a machine readable database of financial covenants to identify covenant thresholds and then match this data to actual financial performance to identify firms with covenant violations. Dichev and Skinner find that roughly 30% of all loans have some form of covenant violation and suggest "that private lenders set debt covenants tightly and use them as 'trip wires' for borrowers, that technical violations occur relatively often, and that violations are not necessarily associated with financial distress." A potential problem with this research design is that covenant calculations are often based on "modified GAAP." These modifications are typically not included in any of the electronic databases, making it difficult to determine from the firm's financial statements when a covenant violation occurred.

⁷⁵ The effect of characteristics of the firm's accounting system on other elements of the contract, such as capital expenditure restrictions and asset sale restrictions, are less clear and have not been explored in the literature.

⁷⁶ There have been several surveys of this literature, including Lev and Ohlson (1982), Dopuch (1989), Bernard (1989), Watts and Zimmerman (1990), and Fields et al. (2001). In summarizing the previous literature, we focus on the Fields et al. (2001) discussion, because it is both the most recent literature review, and because it subsumes these prior reviews in their framework.

⁷⁷ Consistent with Fields et al. (2001), our review of the recent literature suggests that there are relatively few studies examining the association between the stock market's reaction to mandated accounting changes and proxies for tightness of debt covenants. The one exception we noted was Espahbodi et al. (2002).

⁷⁸ By direct default costs, we mean that the covenant violation did not adversely affect the terms of the contract. This does not mean that there were no reputational or other costs (e.g., an adverse stock market reaction) to the disclosure of these covenant violations.

In addition, although many contracts explicitly provide for an increase in interest rates when there is a covenant violation, technical defaults also typically give rise to indirect costs as a result of the implicit contract between the firm and the lender, and measuring these indirect costs is difficult. There is also a burgeoning body of finance literature on this topic. (See [Roberts and Sufi \(2009a\)](#), for a discussion.) For example, [Chava and Roberts \(2008\)](#) examine the effect of covenant violations on firms' investment behavior. They provide evidence that lenders' threat of accelerating debt payments affects firms' investment decisions, resulting in a net reduction in investment following the technical violation. [Nini et al. \(2009\)](#) examine changes in firms' corporate governance after covenant violations. They find that covenant violations are often followed by an increase in CEO turnover, the hiring of turnaround specialists, and a reduction in shareholder payouts. [Sufi \(2009\)](#) examines whether covenant violations affect firms' ability to access credit markets and finds that covenant violations lead to a reduction in borrowers' access to lines of credit. Similarly, [Roberts and Sufi \(2009b\)](#) find that covenant violations lead to an increase in interest rates and restrictions on the firms' ability to access credit markets.

Another recurring problem with research on whether covenant violations are costly is that firms can renegotiate contracts if they anticipate violating a covenant, and they do not have to disclose the renegotiation. Thus, the covenant violations disclosed in the financial statements are likely to be the most costly violations, as the cost of curing these violations may be so prohibitive that the firm is unable to cure them before the financial statements are released.

[Graham et al. \(2005\)](#) survey managers to ascertain the role of debt contracts in managers' accounting choices. Their survey evidence suggests that managers take actions to avoid violating debt covenants, but the extent to which debt covenants motivate managerial actions varies cross-sectionally. Compared with public firms that are financially healthy, [Graham et al.](#) find that firms that are privately held or are close to violating covenants are more likely to make accounting choices to avoid violating covenants.

Given the problems related to the lack of disclosure about firm and lender actions as the firm approaches and potentially violates a covenant, and the problems in actually measuring the threshold at which a technical violation would occur, it is unlikely that we will soon obtain a clean answer to the question of whether covenant violations are costly. Perhaps more importantly, given the variety of other contractual features that the outputs of the accounting system affect, it is not clear how important it is to have a definitive answer to this question.

If, for example, we assume that most covenant violations are not costly, does this imply that the firm lacks an incentive to make financial reporting choices to reduce the costs that arise from the firm's debt contract? If there are performance-pricing provisions, borrowing-base restrictions, security requirements, cash-flow sweeps, or other contractual features that are based on the outputs of the firm's accounting system, then the firm will have incentives to make accounting choices to reduce the contracting costs that arise from these features of the contract. Thus, even if violating financial covenants were costless, firms' debt contracts are still likely to influence managers' accounting choices. In fact, other contracting features may have an even larger impact on managers' accounting choices.

In other words, although some covenant violations are likely to be costly, the cost of violating a covenant relative to a change in interest rates in the performance-pricing grid, a reduction in the amount available to borrow, or a restriction on investment are unknown, and consequently the relative importance of these contractual features is unknown as well. Instead of focusing on the costs of covenant violations, researchers might want to consider how the accounting system jointly affects all of the attributes of the contract. That is, a loss of \$1 of income can reduce the amount of funds available to the borrower, increase the borrower's interest rate, and restrict the borrower's ability to invest. Attempting to measure these costs may be easier and more useful than trying to measure the cost of violating a covenant.

5.3.2. *The effect of debt contracts on earnings management*

Historically, researchers often used the leverage ratio as a proxy for the costs associated with violating debt covenants, and they investigated the association between this measure and firms' accounting choices. (See [Watts and Zimmerman \(1986\)](#), for a summary of the earlier papers and [Fields et al. \(2001\)](#), for a summary of the more recent papers that use this measurement.) However, [Fields et al. \(2001\)](#) criticize the use of the leverage ratio, arguing that leverage is determined endogenously, is not necessarily correlated with the tightness of covenants, and is likely to be a poor proxy for default risk. They suggest that researchers should use actual covenants to measure the probability of default, and as a result, the literature using leverage as a measure of default costs has waned. Perhaps in response to the suggestions from [Fields et al. \(2001\)](#), researchers have become more creative when examining the effects of debt contracts on accounting choices.

First, in addition to accounting choices, firms have a variety of alternative mechanisms they can use to reduce contracting costs, such as renegotiating the contract or taking real actions such as cutting R&D or dividends. The costs and benefits of these alternatives are likely to vary both cross-sectionally and intertemporally. In addition, covenants and other factors such as performance pricing, investment restrictions, and borrowing-base requirements may provide incentives for managers to make accounting choices to reduce debt-contracting costs.

For example, [Healy and Palepu \(1990\)](#) examine the accounting and the dividend payment choices of a sample of firms that approach the dividend constraints included in their debt contracts. They find that as firms approach their dividend constraints, they are more likely to cut dividends as opposed to making accounting changes to avoid covenant violations. [Daniel et al. \(2008\)](#) extend this research to look at the accounting choices of the dividend paying firms in the S&P 1500. They find that firms whose earnings are below expected dividend levels tend to manage earnings upward but that this effect exists only for firms that have debt in their capital structure. The conflicting results of these two studies highlight some of the issues that arise when studying the effects of debt contracts on accounting choices.

Healy and Palepu (1990) identify firms that are paying dividends, have debt covenants based on dividend restrictions, and are close to violating those covenants. For these firms, it appears as if cutting dividends is the least costly alternative in terms of net benefits. In the research setting examined in Daniel et al. (2008), it appears as if some feature of the debt contract provides incentives for firms to make income increasing accruals when current earnings are below historical dividend levels. However, it is unclear which contractual features provide these incentives, whether accruals management is less costly than changing accounting methods, whether accruals management provides more flexibility than changing accounting methods, and whether the costs of cutting dividends differs dramatically across these two settings.

Other papers have adopted an approach similar to Daniel et al. (2008), focusing on whether debt in the capital structure affects firms' business decisions. For example, Roychowdhury (2006) examines firms' incentives to engage in "real activities management" to meet income thresholds. He finds that firms with debt in their capital structure are more likely to engage in "real activities management" to meet thresholds than firms that have no debt. Altamuro et al. (2005) investigate the effect of having bank debt on firms' revenue recognition decisions. They find that firms with bank debt are more likely to accelerate revenue recognition than firms that have no bank debt in their capital structure.

Other papers have taken a slightly different approach, investigating the effect of specific contract features on accounting choices. For example, Beatty and Weber (2003) examine the effect of the provision that allows accounting changes to affect contract calculations on the decision to make voluntary accounting changes. They find that when accounting changes affect contract calculations (e.g. increases in income associated with the accounting change relaxes the covenant), managers are more likely to make income increasing accounting changes. Beatty and Weber (2006) examine the interaction between covenant tightness and the flexibility to include accounting changes in contract calculations on the adoption decisions associated with SFAS 142. They find that firms with both tight covenants and where accounting changes affected covenant compliance calculations were less likely to take write-offs when adopting SFAS 142.

5.3.3. The effect of debt contracts on the extent to which firms report conservatively

As discussed above, several papers suggest that the extent to which firms report conservatively affects the design of debt contracts. In particular, researchers have suggested that firms that report more conservatively are charged a lower interest rate, have conservative covenant modifications, and are more likely to have smaller bid-ask spreads in the syndicated debt markets (i.e., a lower cost of capital).

Two elements of the debt contract suggest that the results from this research are plausible. First, debt contracts have asymmetric payoffs, providing incentives for lenders to obtain more timely information about losses.⁷⁹ Second, debt contracts often prevent managers from changing accounting policies after they enter into the contract (e.g., recognizing certain types of accruals, or a switch from LIFO to FIFO).⁸⁰ If lenders value timely information about losses, and contracts can be designed to prevent managers from changing accounting methods after they enter into the contract, then it is reasonable to expect lenders to reward firms with accounting attributes that are more conducive to debt contracting with more favorable contract terms.

The literature on the effects of the debt contract on the choices firms make to report conservatively is more contentious. For example, Bushman and Piotroski (2006) find that economies with strong legal systems and a prevalence of debt financing are more likely to have timely loss recognition. Similarly, Ball et al. (2008b) establish that the extent to which an economy has asymmetrically timely earnings is positively correlated with the size of the economy's debt market. Both papers suggest the extent of debt in the firm's capital structure drives decisions to report conservatively. Zhang (2008) finds that firms that report conservatively are more likely to violate covenants after experiencing negative news.

Alternatively, Ball and Shivakumar (2005) investigate the conservatism choices of U.K. private and public firms and find that timely loss recognition is more prominent in publicly traded firms than in privately held firms. They suggest that external shareholders, as opposed to debt markets, drive conservative accounting choices. Giger et al. (2009) and Li (2009) suggest that if a firm provides conservative reports after the contract has been negotiated, there will be a suboptimal number of covenant violations, resulting in an increase in contracting costs. They suggest that the increase in contracting costs associated with "false positives" (i.e., covenant violations that are not indicative of financial distress) are greater than the benefits of more timely signals of a reduction in credit quality, and thus, from the lender's perspective, conservative reporting is suboptimal.

Reconciling these two research streams, it is ultimately an empirical issue whether covenant violations that arise from conservative accounting choices are beneficial or detrimental to debt holders. On one hand, a covenant violation that allows the lender to call the debt and preserve its principal provides the lender with a benefit that outweighs the cost of a Type I error (i.e., a "false positive"). However, if there are a sufficient number of "false positives," then it is less clear whether there is a net benefit to reporting conservatively. Future research might consider trying to measure whether the extent to which there are "false positive" covenant violations, and the costs associated with those violations, and examine whether these costs exceed the benefits of conservative reporting.

⁷⁹ While a performance-pricing contract may allow lenders to increase the interest rates they charge on the loan, usury laws will generally limit the interest that lenders can expect to earn on the loan, which will preserve the asymmetric payoff structure.

⁸⁰ If firms could change all of their accounting policies after they entered into the contract, it is not clear that accounting choices made before entering the contract would influence the design of the contract.

5.4. Theoretical advancements and incomplete contract theory

Most of our discussion of debt contracting has focused on the recent empirical advances in this literature. There have also recently been some notable theoretical advances in the literature. Since many of them have occurred in the finance and economics literature, we refer the interested reader to Roberts and Sufi (2009a) for a more thorough and complete discussion. Here we focus on the theoretical advances that we think will be particularly useful to accounting research. We begin by discussing the incomplete contracting line of research, then focus on renegotiation in “complete” contracting models, and conclude this section by discussing other theoretical advancements in the literature that may be useful to accounting researchers.

Hart (1995) and Tirole (1999) provide an introduction to a vast economics and finance literature loosely described as “incomplete contracting.” They highlight that one of the shortcomings of the standard “principal agent” view of the firm is that it ignores the costs of writing contracts. That is, when two parties negotiate a contract, it can be very costly, and often impossible, to gather the information necessary to write a complete contract that specifies all contingencies for all states of the world that may arise after the contract is written. If the costs of writing a “complete” contract are high, then the contract will include clauses or terms that allow for renegotiation in certain states. Thus, an incomplete contract will stipulate outcomes under some states of nature and provide for renegotiation under other states.⁸¹

In the traditional agency-theoretic view, accounting information is useful in the debt-contracting process because shareholders can use accounting information to commit to not expropriate wealth from debt holders. From an incomplete contracting perspective, accounting information can both reduce agency costs and the costs associated with writing a more complete contract. By linking accounting measures to renegotiations, the incomplete contracting literature may open up new avenues for future accounting research.

For example, Garleanu and Zwiebel (2009) highlight the rich set of predictions regarding how information asymmetry between entrepreneurs and lenders affects the design and renegotiation of debt contracts. The authors begin by recognizing that a lender lacks complete information about the future actions that the owner might take to expropriate wealth from the lender (i.e., lack of transparency about the types and severity of agency problems). As a result, the authors note that “it is typically not feasible to delineate contractually all future positive NPV projects *ex ante*, or for a court to *ex post* enforce such a vague contractual provision. Consequently, covenants are instead conditioned on more easily observable and verifiable accounting variables, such as financial ratios, that are likely to be imperfectly correlated with the availability of good future projects, and are then renegotiated when more information becomes available.” Thus, accounting-based covenants arise endogenously in the debt contract as a mechanism for owners to commit to restrict certain actions, and as a trigger for renegotiating the contract when new information about the firm’s investment opportunity set becomes available.

The incomplete contracting approach adopted in Garleanu and Zwiebel (2009) has the potential for new and interesting avenues of accounting research. For example, their theory predicts that the greater the information asymmetry between the owner and the lender about the form and magnitude of potential wealth transfers, the more restrictive (i.e., tighter) the covenants are expected to be. Further, they predict that such information asymmetry is increasing in the complexity and lack of transparency within the firm. These results are intuitive in that owners will grant lenders stronger decision rights, allowing for prohibitions on certain investments, when lenders are less informed about the form and magnitude of future wealth transfers. The authors also argue that covenant tightness should be positively associated with the magnitude and predictability of cash flows and cash holdings, since fungible assets enable managers to make payments for wealth transfers. Finally, they suggest that, in most cases, when financial covenants are violated, borrowers and lenders should agree to looser, rather than tighter, covenants in the future.

In addition to Garleanu and Zwiebel (2009), there have been other theoretical papers in the accounting literature that have adopted an incomplete contracting approach to model debt-contracting problems. A relatively early paper in the stream of literature by Sridhar and Magee (1996) assumes that a firm is able to generate two signals regarding future outcomes that are observable to both the debt holder and the equity holder, but the debt holder cannot contract on the second signal (i.e., it is unverifiable). Thus, from an incomplete contracting perspective, it is too costly to contract on the second signal. Given these assumptions, Sridhar and Magee develop a model that highlights attributes of the variable that will be included in the debt contract. In particular, their model suggests that, from the borrower’s perspective, uncertainty in reporting latitude for the contractible variable is not desirable. They suggest that borrowers will tailor debt agreements to reduce the discretion in the contractible performance measure, and this tailoring should result in either a lower interest rate or looser covenants because such changes facilitate more effective monitoring by debt holders. Their analysis also predicts that if the parties expect future standards to diminish (increase) the uncertainty in the firm’s reporting latitude, the debt contracts will have lower (higher) interest rates and/or looser (tighter) covenants.

Li (2009) also uses an incomplete contracting framework to investigate the role of conservative accounting choices in the debt-contracting setting. She suggests that the extent to which lenders will demand conservative financial reporting depends

⁸¹ For example, a debt contract may be written with a covenant that requires the borrower to maintain at least a certain ratio of EBITDA-to-debt. If the borrower’s level of EBITDA-to-debt exceeds this ratio, the borrower maintains control rights and pays interest according to the terms of the debt contract. If, however, the borrower’s EBITDA-to-debt falls below the threshold specified by the covenant, the contract specifies that the loan will be in technical default, and the lender has the right to demand repayment, or renegotiate the contract with the borrower. During this renegotiation process, the lender can assert more control rights.

on the expected renegotiation costs, the firm's investment opportunities, and the expected liquidation value of the firm's assets.⁸²

Within the incomplete contracting literature, there are numerous other papers that examine issues other than the design of covenants and renegotiation that are potentially interesting to accounting researchers. For example, [Diamond \(1991\)](#) investigates the decision to issue short-term debt versus long-term debt. He models the maturity decision as a function of the tradeoff between liquidity risk, which relates to the lender's unwillingness to refinance the loan when bad news arrives, and the borrower's private information regarding future credit ratings.

His model predicts that firms of both high and low quality – that is, firms with both good and bad credit ratings – borrow short-term, which is consistent with the stylized fact that higher quality borrowers tend to issue commercial paper and lower quality borrowers tend to borrow through short-term bank loans. From an accounting perspective, the disclosure of bad news to the lender is an important consideration in the debt maturity decision, as is the borrower's private information regarding the borrower's credit quality. One could envision empirical tests of whether the timeliness of bad news is associated with the maturity structure of corporate debt. Similarly, the extent to which the lender has access to information to evaluate the firm's credit quality during the life of the loan may also be related to the maturity of the debt.

There are also a number of papers that investigate the liquidation value of assets and the way in which the liquidation value of the firm's assets affects the availability of credit, the proportion of debt and equity in the firm's capital structure, and the maturity of the firm's debt (e.g., [Aghion and Bolton, 1992](#); [Shleifer and Vishny, 1992](#); [Bolton and Scharfstein, 1996](#); [Hart and Moore, 1994, 1998](#)). These papers are potentially of interest to accountants for a variety of reasons. For example, [Hart and Moore \(1994\)](#) suggest that asset specificity and durability will affect the maturity of the firm's debt. They argue that firms borrow short-term to finance working capital such as inventory and accounts receivable, and borrow long-term to finance property plant and equipment. The firm's accounting system and, more specifically, the accruals recorded by this accounting system are likely to be a central source of information regarding the firm's working capital. Extending these theoretical models to consider how the quality of information regarding accruals affects the maturity of firms' debt will help guide future empirical research on the elements of the debt contract that the accounting system is likely to affect.

Similarly, one can envision extensions of these models that lead to additional insights into the properties of accruals that creditors are likely to value, or how other elements of the accounting system beyond accruals provide important information in lending decisions. For example, a central hypothesis from this body of literature is that the liquidation value of the firm's assets is of central importance in a variety of lending decisions. This assertion suggests that lenders have demands for information regarding liquidation values, which are unlikely to equate to market values or to the fair value of a firm that is a going concern. Future theoretical and empirical accounting research should extend these models to derive insights into the properties of accounting information that are useful to lenders and/or standard setters as they determine the role of market values, fair values, and historical costs in accounting standards.⁸³

Outside of the incomplete contracting models are other theoretical models that investigate a variety of different attributes of debt, such as the tradeoff between short-term debt and long-term debt and renegotiation, both of which are of potential interest to accounting researchers. For example, the costly state verification avenue of theoretical research pioneered by [Townsend \(1979\)](#) constructs a model in which there is information asymmetry between borrowers and lenders, and the lender has a contractually agreed-upon option to incur a cost to verify some piece of information (e.g., managerial effort and asset values). He goes on to develop a model where the audit costs that the lender incurs serve to force the borrower to report truthfully.

There have been numerous extensions of this line of research over the past 30 years that accounting researchers may find useful. For example, [Gale and Hellwig \(1985\)](#) extend the ideas in [Townsend's \(1979\)](#) model to suggest that the act of observation or verification in a debt contract could be interpreted as bankruptcy. When the borrower fails to make a debt payment, the lender exercises its option to verify the firm's assets and forces the firm into bankruptcy. Once in bankruptcy, the lender is able to verify the borrower's "true" assets and receive a payment on its claim, which is generally consistent with [Townsend's \(1979\)](#) model. Future research might consider reformulating the model where the observation or verification occurs when the firm violates a financial covenant, which is triggered by the receipt of an accounting report. Here a covenant violation would lead to renegotiation, where there is a potential for random verification as the accounting report is generated from a stochastic process, and verification can leave the borrower worse off (forced to pay down the debt) or better off, and the act of renegotiating the covenant may lead to better terms. In this extension, the accounting report serves as the trigger for the costly state verification, and thus, attributes of the firm's accounting system will endogenously become important in the lending process. Such a model could lead to hypotheses regarding the type of accounting information used for debt covenants, the tightness of covenants, and the manner in which covenants are reset after a covenant violation.

In addition to the costly state verification and incomplete contracting frameworks, there have been a variety of additional theoretical advancements in the debt-contracting literature. Rather than attempt to summarize these theoretical developments, we direct interested readers to surveys by [Roberts and Sufi \(2009a\)](#), [Hart \(2001\)](#), [Allen and Winton \(1995\)](#), and [Harris and Raviv \(1991\)](#).

⁸² [Gigler et al. \(2009\)](#) reach the slightly stronger conclusion that conservatism reduces the efficiency of debt contracts. However, they do not use an incomplete contracting approach in their model, which potentially explains the difference in the results of these two studies.

⁸³ As [Roberts and Sufi \(2009\)](#) note, both [Williamson \(1988\)](#) and [Shleifer and Vishny \(1992\)](#) have extended the concept of liquidation value to encompass the idea of the redeployability of the asset and the financial condition of potential buyers.

5.5. Synthesis and directions for future research

The past decade has brought an increased interest in investigating how attributes of the accounting system affect the design of debt contracts. This change in research focus is likely attributable to the greater availability of machine readable data on contract terms and improved techniques for extracting debt-related data from SEC filings. We find this increase in research to be promising.

Researchers have established that the importance of accounting quality in the debt markets is a function of the particular debt market from which the firm has obtained its debt financing, as well as the institutional features of that market. Researchers have also established that financial reporting quality likely affects numerous features of the debt contract (e.g., interest rates, covenants, maturity, and collateral requirements). Consistent with the suggestions in Fields et al. (2001), the past decade has seen an increase in the use of *actual* covenant data and other features of debt contracts in the accounting-choice literature. Thus, rather than using indirect proxies (e.g., leverage) for debt-contracting incentives to make accounting choices, researchers now attempt to measure the actual degree of covenant tightness and other contractual features that are thought to affect accounting choices. By developing better measures of how accounting information is used in debt contracts, researchers have also been able to develop sharper and more convincing tests of how debt contracts affect accounting choices.

While we have provided numerous suggestions on how the existing lines of research in the debt-contracting area can be extended, we believe that a few potential new lines of research hold particular promise. For example, we currently know comparatively little about which attributes of the accounting system are most valuable to lenders. For example, do capital providers in the debt markets prefer transparent financial statements? Some lenders have access to private information and can require borrowers to provide additional detail, making less transparent financial reports more transparent. Thus, it is not clear how important transparency is in some of the lending markets. Future research should consider these differences, and investigate the accounting attributes that various lenders value. This research might also inform standard setters, who are often forced to consider various tradeoffs among financial statement users as they develop accounting standards. Many of these tradeoffs are based on equity holders' informational demands for valuation purposes. It would seem that if we knew more about debt holders' information demands, standard setters would be better able to incorporate their needs when drafting standards.

Second, there has been relatively little research on the role of accounting reports in the renegotiation process. When a firm initially obtains debt financing, the firm's demand for capital, its investment opportunity set, its inherent risk, and various other firm-specific factors, including attributes of the firm's accounting system, are likely to affect the design of the contract. When a firm violates its covenants or renegotiates or amends its debt contracts, changes in these factors and, more directly, the outputs of its accounting system are likely to affect the renegotiation. The firm's accounting system can be an important source of information about the firm's future credit quality and cash flows, changes in credit quality and cash flows, and past investment choices and perquisite consumption. In addition, outputs of the accounting system can serve as triggers for the renegotiation process. Yet although the accounting system likely plays a very important role in the renegotiation process, we know relatively little about its role in this process.

Finally, we believe that recent theoretical research on debt contracts has the potential to make a significant contribution to this body of literature. Jensen and Meckling (1976) provide a framework for understanding how agency costs may manifest in debt contracts. However, Jensen and Meckling (1976) describe a static one-period game. Accounting is important in the debt-contracting process because it not only affects the design of the contract at initiation but also plays a role in the allocation of decision rights and control rights throughout the life of the contract. Innovations in the incomplete contracting paradigm are potentially useful for researchers to model the debt-contracting process and the role of accounting information in this process.

6. Conclusion

In this survey, we reviewed the accounting literature on corporate governance and debt contracting, with a particular emphasis on developments over the past decade, as well as areas likely to be of future interest to accounting researchers. The paper focused on the firm as a nexus of contracts among the various factors of production and highlighted the role of the accounting system in reducing the information-related agency costs that arise among managers, directors, and equity and debt capital providers. We have deliberately adopted a rather broad view of contracting by considering not only formal (written) contracts, which have historically been the focus of a large proportion of accounting studies, but also informal contracts that govern many of the multiperiod relationships among the firm's contracting parties. Throughout this survey, we have suggested a number of directions for future research. Rather than repeat those suggestions here, we instead discuss what we believe are the main themes that emerge from this survey, as well as potential new lines of research that we believe would be useful for enhancing our understanding of the role of accounting information in corporate governance and debt contracting.

An important theme of our survey is the sometimes neglected, or implicitly assumed, role of informal contracts. Although informal contracts are not governed by formal written documents and in most cases are not subject to the same degree of legal enforcement, they represent an important mechanism for facilitating a variety of economic transactions and relationships that might otherwise be non-contractible, or contractible with lower efficiency. Understanding informal contracts, however, poses a number of challenges from both a theoretical and empirical perspective. Theoretically, informal

contracts represent the equilibrium behavior of the players in a repeated game and therefore necessarily entail a multiperiod model. This poses a number of technical challenges and also introduces additional issues that may be tangential to the question of interest. Empirically, informal contracts require time-series (or panel) data to estimate the equilibrium behavior of the contracting parties. In addition to the standard econometric concerns that are inherent in analyzing panel data, informal contracts also raise issues about the power of tests to examine rare outcomes that are infrequent in equilibrium. Demski and Sappington (1999, p. 30) make this point in the context of senior executive turnover, where they note that “key dimensions of penalty and reward structures may not be observed by the empirical researcher because these dimensions are not exercised in equilibrium.”

Another theme emerging from our survey is the interrelationship among various governance characteristics, as well as the interrelationship among various features of debt contracts. We know little about how these mechanisms interact with each other and whether these mechanisms serve as substitutes or complements. This is potentially a significant problem for accounting research, as, from a theoretical perspective, it is unclear whether the accounting system enhances existing governance mechanisms, substitutes for those mechanisms, and/or is the mechanism that managers use to disguise the extent of the firm's agency problems. Additional research on the relationships among these contracting mechanisms appears warranted.

We also have very little evidence on which governance structures are most efficient for mitigating the various types of agency problems among managers, directors, and shareholders. Studies such as Larcker et al. (2007) and Dey (2008) provide a useful first step toward informing researchers about how various governance mechanisms work together. These studies are, however, admittedly exploratory. As such, they are largely silent on the theory regarding why we might expect to observe certain governance structures together in some settings, while other structures are more effective in other settings. The governance literature would therefore greatly benefit from additional theoretical work modeling the relationship among alternative governance mechanisms, focusing on the role of the accounting system in reducing agency costs.

Our review also points out that although the accounting literature has accumulated a large body of descriptive evidence over the past decade, more research is necessary to better establish the direction of causality in the relationships among governance mechanisms, attributes of firms' accounting systems, features of firms' various contracts, and outcomes such as firm performance, risk-taking, and accounting irregularities. This is a difficult task because of the endogenous nature of the firm's economic characteristics, governance mechanisms, and accounting system, as well as other features of the firm's information environment. Indeed, the heterogeneity in observed governance structures and debt-contract features that we highlight in this survey attest to the endogenous nature of these mechanisms.

Although a detailed discussion of techniques to address endogeneity is beyond the scope of this survey, we encourage researchers to identify and make use of exogenous shocks to develop research settings that can be used to identify causality in these relationships. We also encourage researchers to consider recent advances in statistics and econometrics aimed at facilitating causal inferences (e.g., Rosenbaum, 2002; Heckman, 2000, 2001, 2008; Imbens and Wooldridge, 2009). And toward this end, we note the importance of giving careful consideration to the issue of identification when seeking to document causal relationship. Doing so, however, requires researchers to explicitly discuss the identifying assumptions in the research design rather than mechanically applying two-stage least squares and other empirical techniques. Although it is well known, it is worth repeating here that exclusion restrictions are *untestable* and should be explicitly justified on economic grounds. We urge accounting researchers to bring these and other methodological techniques into the accounting literature and to devote more effort to developing credible research designs, even if at the expense of the scope of the research question and broader generalizability.⁸⁴ Only once these techniques become more established in the empirical contracting literature will we be able to develop a cohesive, comprehensive body of causal evidence.

Finally, throughout the preceding discussion we have suggested that researchers should afford greater attention to *why* specific accounting attributes are valued in certain contracting settings. For example, a number of accounting attributes – including conservatism, earnings timeliness, and discretionary accruals, among others – appear to be important in debt-contracting settings. Yet other than for some relatively recent research on conservatism, we have very little theoretical understanding about *why* these particular accounting measurements are expected to be important, and very little empirical evidence on why lenders value these accounting attributes. Further, it would be useful to have a better understanding of how accounting properties relate to information asymmetry among contracting parties. For example, from a theoretical perspective, a greater degree of earnings timeliness is likely to reduce information asymmetries between insiders and outsiders. However, even when managers are doing their best to convey their private information, a high growth firm in an uncertain business environment may still have low earnings timeliness as a result of constraints inherent in the firm's economic environment and the accounting rules. In a firm experiencing high growth in an uncertain business setting, one might expect that other mechanisms will arise to reduce information asymmetry, and thus low earnings timeliness will not necessarily imply that a high degree of information asymmetry exists between insiders and outsiders, between controlling shareholders and minority shareholders, or between debt holders and equity holders. We believe that a better understanding

⁸⁴ Angrist and Pischke (2010) cite instrumental variables, regression discontinuity methods, and differences-in-differences-style policy analysis as “the econometric methods that feature most prominently in quasi-experimental studies.” They also note that although “these econometric methods are not new ... their use has grown and become more self-conscious and sophisticated since the 1970s. When using instrumental variables, for example, it's no longer enough to mechanically invoke a simultaneous equations framework, labeling some variables as endogenous and other exogenous, without substantially justifying the exclusion restrictions and as-good-as-randomly assigned assumptions that make instruments valid.” (p. 12).

of the value of accounting properties, interactions among governance mechanisms, and the informational demands of contracting parties will improve our understanding of the accounting system's role in reducing agency costs.

References

- Adams, R.B., Ferreira, D., 2007. A theory of friendly boards. *Journal of Finance* 62, 217–250.
- Adams, R.B., Hermalin, B.E., Weisbach, M.S., 2009. The role of boards of directors in corporate governance: a conceptual framework and survey. Working Paper.
- Adut, D., Cready, W.H., Lopez, T.J., 2003. Restructuring charges and CEO cash compensation: a reexamination. *Accounting Review* 78, 169–192.
- Aghion, P., Bolton, P., 1992. An incomplete contracts approach to financial contracting. *Review of Economic Studies* 59, 473–494.
- Agrawal, A., Chadha, S., 2005. Corporate governance and accounting scandals. *Journal of Law and Economics* 48, 371–406.
- Agrawal, A., Jaffe, J.F., Karpoff, J.M., 1999. Management turnover and governance changes following the revelation of fraud. *Journal of Law and Economics* 42, 309–342.
- Agrawal, A., Knoeber, C.R., 1996. Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis* 31, 377–397.
- Ahmed, A.S., Billings, B.K., Morton, R.M., Stanford-Harris, M., 2002. The role of accounting conservatism in mitigating bondholder–shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review* 77, 867–890.
- Ahmed, A.S., Duellman, S., 2007. Accounting conservatism and board of director characteristics: an empirical analysis. *Journal of Accounting and Economics* 43, 411–437.
- Ajinkya, B., Bhojraj, S., Sengupta, P., 2005. The association between outside directors, institutional investors, and the properties of management. *Journal of Accounting Research* 43, 343–376.
- Alchian, A., Demsetz, H., 1972. Production, information costs, and economic organization. *American Economic Review* 62, 777–795.
- Ali, A., Chen, T., Radhakrishnan, S., 2007. Corporate disclosures by family firms. *Journal of Accounting and Economics* 44, 238–286.
- Allen, F., Winton, A., 1995. Corporate finance structure, incentives, and optimal contracting. In: Jarrow, R., Maksimovic, V., Ziemba, W. (Eds.), *Finance*. North-Holland, Amsterdam, pp. 693–717.
- Altamuro, J., Beatty, A., Weber, J., 2005. The effects of accelerated revenue recognition on earnings management and earnings informativeness: evidence from SEC staff accounting bulletin No. 101. *The Accounting Review* 80, 373–401.
- Anderson, R., Mansi, S., Reeb, D., 2004. Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics* 37, 315–342.
- Angrist, J.D., Pischke, J., 2010. *Mostly harmless econometrics: an empiricists companion*. Princeton University Press.
- Armstrong, C.S., Balakrishnan, K., Cohen, D., 2010a. Corporate governance and the information environment: evidence from state antitakeover laws. Working Paper.
- Armstrong, C.S., Foster, G., Taylor, D.J., 2009. Earnings management around initial public offerings: a re-examination. Working Paper.
- Armstrong, C.S., Jagolinzer, A.D., Larcker, D.F., 2010b. Chief executive officer equity incentives and accounting irregularities. *Journal of Accounting Research* 48, 225–271.
- Armstrong, C.S., Jagolinzer, A.D., Larcker, D.F., 2010c. Performance-based incentives for internal monitors. Working Paper, Stanford University.
- Arrow, K.J., 1985. The economics of agency. In: Pratt, J.W., Zeckhauser, R.J. (Eds.), *Principals and Agents: The Structure of Business*. Harvard Business School Press, Boston.
- Ashbaugh, H., Collins, D., LaFond, R., 2006. The effects of corporate governance on firms' credit ratings. *Journal of Accounting and Economics* 42, 203–243.
- Asquith, P., Beatty, A., Weber, J., 2005. Performance pricing in debt contracts. *Journal of Accounting and Economics* 40, 101–128.
- Baber, W., Kang, S., Liang, L., Zhu, Z., 2009. Shareholder rights, corporate governance, and accounting restatement. Working Paper, Georgetown University.
- Baker, M., Gompers, P.A., 2003. The determinants of board structure at the initial public offering. *Journal of Law and Economics* 46, 569–598.
- Ball, R.T., Bushman, R.M., Vasvari, F.P., 2008a. The debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research* 46, 247–287.
- Ball, R., Robin, A., Sadka, G., 2008b. Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies* 13, 168–205.
- Ball, R., Shivakumar, L., 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics* 39, 83–128.
- Ball, R., Shivakumar, L., 2008. Earnings quality at initial public offerings. *Journal of Accounting and Economics* 45, 324–349.
- Banker, R.D., Datar, S.M., 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research* 27, 21–39.
- Banker, R.D., Huang, R., Natarajan, R., 2009. Incentive contracting and value relevance of earnings and cash flows. *Journal of Accounting Research* 47, 647–678.
- Barclay, M.J., Gode, D., Kothari, S.P., 2005. Matching delivered performance. *Journal of Contemporary Accounting and Economics* 1, 1–25.
- Barclay, M.J., Smith, C., 1995. The maturity structure of corporate debt. *Journal of Finance* 50, 609–631.
- Basu, S., 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24, 3–37.
- Beasley, M., 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review* 71, 443–465.
- Beatty, A., 2008. Discussion of the debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research* 46, 289–296.
- Beatty, A., Ke, B., Petroni, K., 2002a. Earnings management to avoid earnings declines across publicly and privately held banks. *The Accounting Review* 77, 547–570.
- Beatty, A., Liao, S., Weber, J., 2008a. Evidence on the determinants and economic consequences of delegated monitoring. Working Paper, Massachusetts Institute of Technology and Ohio State University.
- Beatty, A., Liao, S., Weber, J., 2008b. Financial reporting quality, private information, monitoring, and the lease-versus-buy decision. Working Paper, Massachusetts Institute of Technology and Ohio State University.
- Beatty, A., Liao, S., Weber, J., 2010. The effect of private information and monitoring on the role of accounting quality in investment decisions. *Contemporary Accounting Research* 27, 17–47.
- Beatty, A., Ramesh, K., Weber, J., 2002b. The importance of accounting changes in debt contracts: the cost of flexibility in covenant calculations. *Journal of Accounting and Economics* 33, 205–227.
- Beatty, A., Weber, J., 2003. The effects of debt contracting on voluntary accounting method changes. *The Accounting Review* 78, 119–142.
- Beatty, A., Weber, J., 2006. Accounting discretion in fair value estimates: an examination of SFAS 142 goodwill impairments. *Journal of Accounting Research* 44, 257–288.
- Beatty, A., Weber, J., Yu, J.J., 2008c. Conservatism and debt. *Journal of Accounting and Economics* 45, 154–174.
- Becker, C., Defond, M., Jambalvo, J., Subramanyam, K., 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15, 1–24.
- Bedard, J., Hoitash, R., Hoitash, U., 2010. Chief financial officers on their company's board of directors: an empirical examination of financial reporting quality and entrenchment. Working Paper, Bentley University.
- Begley, J., Freeman, R., 2004. The changing role of accounting numbers in public lending agreements. *Accounting Horizons* 18, 81–96.
- Beneish, M.D., 1999. Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review* 74, 425–457.
- Beneish, M.D., Press, E., 1993. Costs of technical violation of accounting-based debt covenants. *The Accounting Review* 68, 233–257.

- Berger, P.G., Hann, R., 2003. The impact of SFAS No. 131 on information and monitoring. *Journal of Accounting Research* 41, 163–223.
- Bernard, V., 1989. In: *Capital Market Research in Accounting During the 1980s: A Critical Review from the State of Accounting Research as we Enter the 1990s*. Board of Trustees of the University of Illinois, Champaign.
- Bertrand, M., Mullainathan, S., 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy* 111, 1043–1075.
- Beyer, A., Cohen, D., Lys, T., Walther, B. Corporate information environment: management reports and forecasts, analyst reports, other disclosures, and auditing. *Journal of Accounting and Economics*, this issue.
- Bharath, S.T., Dahiya, S., Saunders, A., Srinivasan, A., 2009. Lending relationships and loan contract terms. *Review of Financial Studies* (doi:10.1093/rfs/hhp064, published online October 7, 2009).
- Bharath, S.T., Sunder, J., Sunder, S., 2008. Accounting quality and debt contracting. *The Accounting Review* 83, 1–28.
- Bhraj, S., Sengupta, P., 2003. Effects of corporate governance on bond ratings and yields. *Journal of Business* 76, 455–475.
- Biddle, G., Hilary, G., 2006. Accounting quality and firm-level capital investment. *The Accounting Review* 81, 963–982.
- Black, E.L., Carnes, T.A., Moseback, M., Moyer, S.E., 2004. Regulatory monitoring as a substitute for covenants. *Journal of Accounting and Economics* 37, 367–391.
- Bolton, P., Scharfstein, D.S., 1996. Optimal debt structure and the number of creditors. *Journal of Political Economy* 104, 1–25.
- Bond, P., Goldstein, I., Prescott, E.S., 2010. Market-based corrective actions. *Review of Financial Studies* 23, 781–820.
- Boone, A., Field, L., Karpoff, J., Raheja, C., 2007. The determinants of corporate board size and independence. *Journal of Financial Economics* 85, 66–101.
- Boot, A.W.A., Thakor, A.V., 1994. Moral hazard and secured lending in an infinitely repeated credit market game. *International Economic Review* 35, 899–920.
- Boschen, J.F., Duru, A., Gordon, L.A., Smith, K.J., 2003. Accounting and stock price performance in dynamic CEO compensation arrangements. *The Accounting Review* 78, 143–168.
- Brickley, J.A., 2003. Empirical research on CEO turnover and firm-performance: a discussion. *Journal of Accounting and Economics* 36, 227–233.
- Brickley, J.A., Coles, J., Jarrell, G., 1997. Leadership structure: separating the CEO and chairman of the board. *Journal of Corporate Finance* 3, 189–220.
- Brickley, J.A., Coles, J.L., Linck, J.S., 1999. What happens to CEOs after they retire? New evidence on career concerns, horizon problems, and CEO incentives. *Journal of Financial Economics* 52, 341–377.
- Brickley, J.A., Zimmerman, J.L. Corporate governance myths: some comments on Armstrong, Guay, and Weber. *Journal of Accounting and Economics*, this issue.
- Burghstahler, D., Hail, L., Leuz, C., 2006. The importance of reporting incentives: earnings management in European private and public firms. *The Accounting Review* 81, 983–1016.
- Burns, N., Kedia, S., 2006. The impact of performance-based compensation on misreporting. *Journal of Financial Economics* 79, 35–67.
- Bushman, R., Chen, Q., Engel, E., Smith, A., 2004. Financial accounting information, organizational complexity, and corporate governance systems. *Journal of Accounting and Economics* 37, 167–201.
- Bushman, R., Engel, E., Smith, A., 2006. An analysis of the relation between the stewardship and valuation roles of earnings. *Journal of Accounting Research* 44, 53–83.
- Bushman, R., Piotroski, J.D., 2006. Financial reporting incentives for conservative accounting: the influence of legal and political institutions. *Journal of Accounting and Economics* 42, 107–148.
- Bushman, R., Piotroski, J., Smith, A., 2004. What determines corporate transparency? *Journal of Accounting Research* 42, 207–252.
- Bushman, R., Smith, A.J., 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics* 32, 237–333.
- Cai, J., Liu, Y., Qian, Y., 2009. Information asymmetry and corporate governance. Working Paper.
- Carcello, J., Neal, T., 2000. Audit committee composition and auditor reporting. *The Accounting Review* 75, 453–467.
- Carcello, J., Neal, T., 2003. Audit committee characteristics and auditor dismissals following “new” going-concern reports. *The Accounting Review* 78, 95–117.
- Chava, S., Kumar, P., Warga, A., 2010. Managerial agency and bond covenants. *Review of Financial Studies* 23, 1120–1148.
- Chava, S., Roberts, M.R., 2008. How does financing impact investment? The role of debt covenants. *Journal of Finance* 63, 2085–2121.
- Chen, H., Chung, H.H., Wynn, J.P., 2009. Does incentive-based compensation impair independence of internal auditors? Evidence from audit fees. Working Paper, Arizona State University.
- Chen, S., Chen, X., Cheng, Q., 2008. Do family firms provide more or less voluntary disclosure? *Journal of Accounting Research* 46, 499–536.
- Chen, Q., Hemmer, T., Zhang, Y., 2007. On the relation between conservatism in accounting standards and incentives for earnings management. *Journal of Accounting Research* 45, 541–565.
- Cheng, Q., Farber, D.F., 2008. Earnings restatements, changes in CEO compensation, and firm performance. *The Accounting Review* 83, 1217–1250.
- Cheng, Q., Warfield, T.D., 2005. Equity incentives and earnings management. *The Accounting Review* 80, 441–476.
- Christensen, H.B., Nikolaev, V., 2010. Contracting on mandatory changes to GAAP: new practice and its determinants. Working Paper.
- Christensen, P.O., Demski, J.S., Frimor, H., 2002. Accounting policies in agencies with moral hazard and renegotiation. *Journal of Accounting Research* 40, 1071–1090.
- Christensen, P.O., Feltham, G.A., Sabac, F., 2005. A contracting perspective on earnings quality. *Journal of Accounting and Economics* 39, 265–294.
- Coase, R., 1937. The nature of the firm. *Economica* 4, 386–405.
- Coffee, J.C., 2002. Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance. *Columbia Law Review* 102, 1757–1831.
- Coles, J., Daniel, N., Naveen, L., 2008. Boards: does one size fit all? *Journal of Financial Economics* 87, 329–356.
- Comprix, J., Muller, K.A., 2006. Asymmetric treatment of reported pension expense and income amounts in CEO cash compensation calculations. *Journal of Accounting and Economics* 42, 385–416.
- Core, J.E., Guay, W.R., 1999. The use of equity grants to manage optimal equity incentive levels. *Journal of Accounting and Economics* 28, 151–184.
- Core, J.E., Guay, W.R., 2002. Estimating the value of employee stock option portfolios and their sensitivities to price and volatility. *Journal of Accounting Research* 40, 613–630.
- Core, J.E., Guay, W.R., 2010. Is pay too high and are incentives too low? A wealth-based contracting framework. Working Paper.
- Core, J.E., Guay, W.R., Larcker, D.F., 2003a. Executive equity compensation and incentives: a survey. *Federal Reserve Economic Policy Review*, 27–50.
- Core, J.E., Guay, W.R., Thomas, R., 2005. Is CEO compensation inefficient pay without performance? *University of Michigan Law Review* 103, 1141–1185.
- Core, J.E., Guay, W.R., Verrecchia, R.E., 2003b. Price versus non-price performance measures in optimal CEO compensation contracts. *The Accounting Review* 78, 957–981.
- Core, J.E., Holthausen, R.W., Larcker, D.F., 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51, 371–406.
- Costello, A.M., Wittenberg-Moerman, R., 2010. The impact of financial reporting quality on debt contracting: evidence from internal control weakness reports. Working Paper.
- Daniel, N.D., Denis, D.J., Naveen, L., 2008. Do firms manage earnings to meet dividend thresholds? *Journal of Accounting and Economics* 45, 2–26.
- Deakin, E.B., 1979. An analysis of differences between non-major oil firms using successful efforts and full cost methods. *The Accounting Review* 54, 722–734.
- DeAngelo, H., DeAngelo, L., 1985. Managerial ownership of voting rights: a study of public corporations with dual classes of common stock. *Journal of Financial Economics* 14, 33–69.
- Dechow, P., Dichev, I., 2002. The quality of accruals and earnings. *The Accounting Review* 77, 35–59.
- Dechow, P., Sloan, R., 1991. Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting and Economics* 14, 51–89.

- Dechow, P., Sloan, R., Sweeney, A., 1996. Causes and consequences of earnings manipulation. *Contemporary Accounting Research* 13, 1–36.
- DeFond, M., Hann, R., Hu, X., 2005. Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research* 43, 153–193.
- DeFond, M., Jiambalvo, J., 1991. Incidence and circumstances of accounting errors. *The Accounting Review* 66, 643–655.
- Demski, J.S., Frimor, H., 1999. Performance measure garbling under renegotiation in multi-period agencies. *Journal of Accounting Research* 37, 187–214.
- Demski, J.S., Sappington, D.E.M., 1999. Summarization with errors: a perspective on empirical investigations of agency relationships. *Management Accounting Research* 10, 21–37.
- Demsetz, H., Lehn, K., 1985. The structure of corporate ownership. *Journal of Political Economy* 93, 1155–1177.
- Desai, H., Hogan, C.E., Wilkins, M.S., 2006. The reputational penalty for aggressive accounting: earnings restatements and management turnover. *The Accounting Review* 81, 83–112.
- Dey, A., 2008. Corporate governance and agency conflicts. *Journal of Accounting Research* 46, 1143–1181.
- Dhaliwal, D.S., Khurana, I.K., Pereira, R. Firm disclosure policy and the choice between private and public debt. *Contemporary Accounting Research*, in press, doi:10.1111/j.1911-3846.2010.01039.x.
- Diamond, D., 1991. Monitoring and reputation: the choice between bank loans and directly placed debt. *Journal of Political Economy* 99, 689–721.
- Dichev, I., Skinner, D., 2002. Large-sample evidence on the debt covenant hypothesis. *Journal of Accounting Research* 40, 1091–1123.
- Dikolli, S.S., 2001. Agent employment horizons and contracting demand for forward-looking performance measures. *Journal of Accounting Research* 39, 481–494.
- Dopuch, N., 1989. The impact of regulations on financial accounting research. *Contemporary Accounting Research* 5, 494–500.
- Drymiotis, G., 2007. The monitoring role of insiders. *Journal of Accounting and Economics* 44, 359–377.
- Duchin, R., Matsusaka, J.G., Ozbas, O., 2008. When are outside directors effective? *Journal of Financial Economics* 96, 195–214.
- Dutta, S., Reichelstein, S., 2003. Leading indicator variables, performance measurement, and long-term versus short-term contracts. *Journal of Accounting Research* 41, 837–866.
- Dutta, S., Reichelstein, S., 2005. Stock price, earnings, and book value in managerial performance measures. *The Accounting Review* 80, 1069–1100.
- Dutta, S., Zhang, X., 2002. Revenue recognition in a multiperiod agency setting. *Journal of Accounting Research* 40, 67–83.
- Dye, R.A., 1988. Earnings management in an overlapping generations model. *Journal of Accounting Research* 26, 195–235.
- Dye, R.A., 2001. An evaluation of “essays on disclosure” and the disclosure literature in accounting. *Journal of Accounting and Economics* 32, 181–235.
- Efendi, J., Srivastava, A., Swanson, E.P., 2007. Why do corporate managers misstate financial statements? The role of option compensation and other factors. *Journal of Financial Economics* 85, 667–708.
- El-Gazzar, S., Pastena, V., 1990. Negotiated accounting rules in private financial contracts. *Journal of Accounting and Economics* 12, 381–396.
- El-Gazzar, S., Pastena, V., 1991. Factors affecting the scope and initial tightness of covenant restrictions in private lending agreements. *Contemporary Accounting Research* 8, 133–151.
- Engel, E., 2005. Discussion of does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research* 43, 195–204.
- Engel, E., Hayes, R.M., Wang, X., 2003. CEO turnover and properties of accounting information. *Journal of Accounting and Economics* 36, 197–226.
- Engel, E., Hayes, R.M., Wang, X., 2010. Audit committee compensation and the demand for monitoring of the financial reporting process. *Journal of Accounting and Economics* 49, 136–154.
- Erickson, M., Hanlon, M., Maydew, E.L., 2006. Is there a link between executive equity incentives and accounting fraud? *Journal of Accounting Research* 44, 113–143.
- Espahbodi, H., Espahbodi, P., Rezaee, Z., Tehranian, H., 2002. Stock price reaction and value relevance of recognition versus disclosure: the case of stock-based compensation. *Journal of Accounting and Economics* 33, 343–373.
- Fama, E., Jensen, M., 1983. Separation of ownership and control. *Journal of Law and Economics* 26, 301–325.
- Fama, E.F., Miller, M., 1972. *The Theory of Finance*. Holt, Rinehart, and Winston, New York.
- Fan, J.P.H., Wong, T.J., 2002. Corporate ownership structure and the informativeness of accounting earnings in East Asia. *Journal of Accounting and Economics* 33, 401–425.
- Fan, J.P.H., Wong, T.J., 2005. Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of Accounting Research* 43, 35–72.
- Farber, D., 2005. Restoring trust after fraud: does corporate governance matter? *The Accounting Review* 80, 539–561.
- Feng, M., Ge, W., Luo, S., Shevlin, T.J., 2010. Why do CFOs become involved in material accounting manipulations? Working Paper.
- Ferreira, M.A., Laux, P.A., 2007. Corporate governance, idiosyncratic risk, and information flow. *Journal of Finance* 62, 951–989.
- Ferreira, D., Ferreira, M., Raposo, C. Board structure and price informativeness. *Journal of Financial Economics*, forthcoming.
- Fich, E.M., Shivdasani, A., 2007. Financial fraud, director reputation, and shareholder wealth. *Journal of Financial Economics* 86, 306–336.
- Fields, T., Lys, T., Vincent, L., 2001. Empirical research on accounting choice. *Journal of Accounting and Economics* 31, 255–307.
- Francis, J., LaFond, R., Ohlsson, P., Schipper, K., 2005a. The market pricing of accruals quality. *Journal of Accounting and Economics* 39, 295–327.
- Francis, J., Maydew, E., Sparks, H., 1999. The role of Big 6 auditors in the credible reporting of accruals. *A Journal of Practice and Theory* 18, 17–34.
- Francis, J., Schipper, K., Vincent, L., 2005b. Earnings and dividend informativeness when cash flow rights are separated from voting rights. *Journal of Accounting and Economics* 39, 329–360.
- Francis, J.R., Martin, X., 2010. Acquisition profitability and timely loss recognition. *Journal of Accounting and Economics* 49, 161–178.
- Frankel, R., Seethamraju, C., Zach, T., 2008. GAAP goodwill and debt contracting efficiency: evidence from net worth covenants. *Review of Accounting Studies* 13, 87–118.
- Fudenberg, D., Tirole, J., 1990. Moral hazard and renegotiation in agency contracts. *Econometrica* 58, 1279–1320.
- Gale, D., Hellwig, M., 1985. Incentive-compatible debt contracts: The one-period problem. *Review of Economic Studies* 52, 647–663.
- Garleanu, N., Zwiebel, J., 2009. Design and renegotiation of debt covenants. *Review of Financial Studies* 22, 749–781.
- Gerety, M., Lehn, K., 1997. The causes and consequences of accounting fraud. *Managerial and Decision Economics* 18, 587–599.
- Gibson, M.S., 2002. Is corporate governance effective in emerging markets? Working Paper, Federal Reserve Board.
- Gigler, F.B., Hemmer, T., 2004. On the value of transparency in agencies with renegotiation. *Journal of Accounting Research* 42, 871–893.
- Gigler, F., Kanodia, C., Sapra, H., Venugopalan, R., 2009. Accounting conservatism and the efficiency of debt contracts. *Journal of Accounting Research* 47, 767–797.
- Gillan, S.L., Hartzell, J.C., Parrino, R., 2009. Explicit versus implicit contracts: evidence from CEO employment agreements. *Journal of Finance* 64, 1629–1655.
- Gillan, S., Hartzell, J., Starks, L., 2006. Evidence on corporate governance. Working Paper, University of Texas at Austin.
- Givoly, D., Hayn, C., Katz, S., 2010. Does public ownership of equity improve earnings quality? *Accounting Review* 85, 195–225.
- Gjesdal, F., 1981. Accounting for stewardship. *Journal of Accounting Research* 19, 208–231.
- Gompers, P., Ishii, J., Metrick, A., 2003. Corporate governance and equity prices. *Quarterly Journal of Economics* 118, 107–155.
- Graham, J.R., Harvey, C., Rajgopal, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40, 3–73.
- Graham, J.R., Li, S., Qiu, J., 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89, 4–61.
- Guay, W.R., 1999. The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants. *Journal of Financial Economics* 53, 43–71.
- Guay, W., 2008. Conservative financial reporting, debt covenants, and the agency costs of debt. *Journal of Accounting and Economics* 45, 175–180.
- Guay, W., Verrecchia, R., 2006. Discussion of an economic framework for conservative accounting and Bushman and Piotroski (2006). *Journal of Accounting and Economics* 42, 149–165.
- Guay, W., Verrecchia, R., 2007. Conservative disclosure. Working Paper, University of Pennsylvania.

- Guedhami, O., Pittman, J.A., Saffar, W., 2009. Auditor choice in privatized firms: empirical evidence on the role of state and foreign owners. *Journal of Accounting and Economics* 48, 151–171.
- Gul, F.A., Goodwin, J., 2010. Short-term debt maturity structures, credit ratings, and the pricing of audit services. *The Accounting Review* 85, 877–909.
- Hall, B.J., Liebman, J.B., 1998. Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics* 113, 653–691.
- Hanlon, M., Heitzman, S., 2010. A review of tax research. *Journal of Accounting and Economics*, this issue.
- Harris, J., Bromiley, P., 2007. Incentives to cheat: the influence of executive compensation and firm performance on financial misrepresentation. *Organizational Science* 18, 350–367.
- Harris, M., Raviv, A., 2008. A theory of board control and size. *Review of Financial Studies* 21, 1797–1832.
- Harris, M., Raviv, A., 1991. The theory of capital structure. *Journal of Finance* 46, 297–355.
- Hart, O., 1995. In: *Firms, Contracts, and Financial Structure*. Oxford University Press.
- Hart, O., 2001. Financial contracting. *Journal of Economic Literature* 39, 1079–1100.
- Hart, O., Moore, J., 1998. Default and renegotiation: a dynamic debt model. *Quarterly Journal of Economics* 113, 1–41.
- Hart, O., Moore, J., 1994. A theory of debt based on the inalienability of human capital. *Quarterly Journal of Economics* 109, 841–879.
- Hart, O., Tirole, J., 1988. Contract renegotiation and coasian dynamics. *Review of Economic Studies* 55, 509–540.
- Healy, P.M., 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7, 85–107.
- Healy, P., Palepu, K., 1990. Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics* 31, 405–440.
- Heckman, J.J., 2000. Causal parameters and policy analysis in economics: a twentieth century retrospective. *Quarterly Journal of Economics* 115, 45–97.
- Heckman, J.J., 2001. Microdata, heterogeneity, and the evaluation of public policy: nobel lecture. *Journal of Political Economy* 109, 673–748.
- Heckman, J.J., 2008. Econometric causality. NBER Working Paper 13934.
- Hellwig, M.F., Schmidt, K.M., 2002. Discrete-time approximations of the Holmstrom–Milgrom Brownian-Motion model of intertemporal incentive provision. *Econometrica* 70, 2225–2264.
- Hemmer, T., 2004. Lessons lost in linearity: a critical assessment of the general usefulness of LEN models in compensation research. *Journal of Management Accounting Research* 16, 149–162.
- Hemmer, T., 2007. Discussion of “Limited commitment in multi-agent contracting”. *Contemporary Accounting Research* 24, 377–385.
- Hennes, K.M., Leone, A.J., Miller, B.P., 2008. The importance of distinguishing errors from irregularities in restatement research: the case of restatements and CEO/CFO turnover. *The Accounting Review* 83, 1487–1519.
- Hermalin, B., 2001. In: *Economics and Corporate Culture. The Handbook of Organizational Culture and Climate*. John Wiley and Sons, Hoboken, NJ.
- Hermalin, B.E., Katz, M.L., 1991. Moral hazard and verifiability: the effects of renegotiation in agency. *Econometrica* 59, 1735–1753.
- Hermalin, B.E., Weisbach, M.S., 1998. Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review* 88, 96–118.
- Hermalin, B., Weisbach, M., 2003. Boards of directors as an endogenously determined institution: a survey of the economic literature. *Economic Policy Review* 9, 7–26.
- Heron, R.A., Lie, E., 2009. What fraction of stock option grants to top executives have been backdated or manipulated? *Management Science* 55, 513–525.
- Heron, R.A., Lie, E., 2007. Does backdating explain the stock price pattern around executive stock option grants? *Journal of Financial Economics* 83, 271–295.
- Hoitash, U., Hoitash, R., Bedard, J., 2009a. Corporate governance and internal control over financial reporting: a comparison of regulatory regimes. *Accounting Review* 84, 839–867.
- Hoitash, U., Hoitash, R., Johnstone, K., 2009b. Internal control material weaknesses, CFO compensation, and the moderating effects of corporate governance, external monitoring, and firm risk. Working Paper, Northeastern University.
- Holderiness, C.G., 2003. A survey of blockholders and corporate control. *Federal Reserve Economic Policy Review*, 51–64.
- Holmstrom, B., 1979. Moral hazard and observability. *Bell Journal of Economics* 10, 74–91.
- Holmstrom, B., 2005. Pay without performance and the managerial power hypothesis. *Journal of Corporation Law*, 711–712.
- Holmstrom, B., Milgrom, P., 1987. Aggregation and linearity in the provision of intertemporal incentives. *Econometrica* 55, 303–328.
- Holmstrom, B., Milgrom, P., 1991. Multitask principal–agent analysis: incentive contracts, asset ownership, and job design. *Journal of Law, Economics, and Organization* 7, 524–552.
- Holthausen, R.W., Larcker, D.F., Sloan, R.G., 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics* 19, 29–74.
- Holthausen, R.W., Watts, R.L., 2001. The relevance of value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics* 31, 3–75.
- Huebner, M., McCullough, H., 2008. The fiduciary duties of directors of troubled U.S. companies: emerging clarity. *The International Comparative Legal Guide to Corporate Recovery and Insolvency*.
- Hui, K., Matsunaga, S., Morse, D., 2009. The impact of conservatism on management earnings forecasts. *Journal of Accounting and Economics* 47, 192–207.
- Imbens, G.W., Wooldridge, J.M., 2009. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47, 5–86.
- Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323–329.
- Jensen, M., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance* 48, 831–880.
- Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3, 305–360.
- Jensen, M., Meckling, W., 1990. Specific and general knowledge, and organizational structure. In: *Werin, L., Wijkander, H. (Eds.), 1992, Contract Economics*. Blackwell, Oxford, pp. 251–274.
- Jensen, M.C., Meckling, W.H., 1995. Specific and general knowledge, and organizational structure. *Journal of Applied Corporate Finance* 8, 4–18.
- Jensen, M., Ruback, R., 1983. The market for corporate control. *Journal of Financial Economics* 11, 5–50.
- Jiang, J., Petroni, K.R., Wang, I.Y., 2009. CFOs and CEOs: who has the most influence on earnings management? *Journal of Financial Economics* 96, 513–526.
- John, K., Knyazeva, A., Knyazeva, D., 2008. Do shareholders care about geography? Working Paper, New York University.
- Johnson, S.A., Ryan, H.E., Tian, Y.S., 2009. Managerial incentives and corporate fraud: the source of incentives matters. *Review of Finance* 13, 115–145.
- Karamanou, I., Vafeas, N., 2005. The association between boards, audit committees, and management earnings forecasts: an empirical analysis. *Journal of Accounting Research* 43, 453–486.
- Karpoff, J., Lee, D., Martin, G., 2008. The consequences to managers for financial misrepresentation. *Journal of Financial Economics* 88, 193–215.
- Katz, S., 2009. Earnings quality and ownership structure: the role of private equity sponsors. *Accounting Review* 84, 623–658.
- Klein, A., 2002a. Economic determinants of audit committee independence. *The Accounting Review* 77, 435–452.
- Klein, A., 2002b. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33, 375–400.
- Knyazeva, A., Knyazeva, D., Masulis, R., 2010. Local director talent and board composition. Working Paper, University of Rochester.
- Kothari, S.P., 2001. Capital markets research in accounting. *Journal of Accounting and Economics* 31, 105–231.
- Kothari, S.P., Shu, S., Wysocki, P.D. Do managers withhold bad news? *Journal of Accounting and Economics*, this issue.
- Krishnan, J., 2005. Audit committee quality and internal control: an empirical analysis. *The Accounting Review* 80, 649–675.
- Kumar, P., Sivaramakrishnan, K., 2002. Optimal incentive structures for the board of directors: a hierarchical agency framework. Working Paper, University of Houston.
- LaFond, R., Roychowdhury, S., 2008. Managerial ownership and accounting conservatism. *Journal of Accounting Research* 46, 101–135.
- LaFond, R., Watts, R., 2008. The information role of conservatism. *The Accounting Review* 83, 447–478.
- Lambert, R.A., 1993. The use of accounting and security price measures of performance in managerial compensation contracts: a discussion. *Journal of Accounting and Economics* 16, 101–123.
- Lambert, R.A., 2001. Contracting theory and accounting. *Journal of Accounting and Economics* 32, 3–87.
- Lambert, R.A. Discussion of “Implication for GAAP from an analysis of positive accounting research”. *Journal of Accounting and Economics*, this issue.

- Lang, M., Raedy, J., Yetman, M., 2003. How representative are firms that are cross-listed in the United States? An analysis of accounting quality. *Journal of Accounting Research* 41, 363–386.
- Larcker, D.F., Richardson, S.A., Tuna, I., 2007. Corporate governance, accounting outcomes, and organizational performance. *The Accounting Review* 82, 963–1008.
- Larcker, D.F., Rusticus, T.O., 2010. On the use of instrumental variables in accounting research. *Journal of Accounting and Economics* 49, 186–205.
- Laux, C., Laux, V., 2009. Board committees, CEO compensation, and earnings management. *The Accounting Review* 84, 869–891.
- Lee, C.M.C., 2001. Market efficiency and accounting research. *Journal of Accounting and Economics* 31, 233–253.
- Lehn, K., Patro, S., Zhao, M., 2008. Determinants of the size and composition of U.S. corporate boards. Working Paper, University of Pittsburgh.
- Leuz, C., Lins, K., Warnock, F., 2009. Do foreigners invest less in poorly governed firms? *Review of Financial Studies* 22, 3245–3285.
- Leuz, C., Verrecchia, R., 2000. The economic consequences of increased disclosure. *Journal of Accounting Research* 38, 91–124.
- Lev, B., Ohlson, J., 1982. Market-based empirical research in accounting. *Journal of Accounting Research* 20, 449–322.
- Li, C., Sun, L., Ettredge, M., 2010. Financial executive qualifications, financial executive turnover, and adverse SOX 404 opinions. *Journal of Accounting and Economics* 50, 93–110.
- Li, J., 2009. Accounting conservatism and debt contracts: efficient liquidation and covenant renegotiation. Working Paper, Columbia University.
- Liang, P.J., Zhang, X.J., 2006. Accounting treatment of inherent versus incentive uncertainties and the capital structure of the firm. *Journal of Accounting Research* 44, 145–176.
- Linck, J., Netter, J., Yang, T., 2008. The determinants of board structure. *Journal of Financial Economics* 87, 308–328.
- Manne, H.G., 1965. Mergers and the market for corporate control. *Journal of Political Economy* 73, 110–120.
- Mansi, S.A., Maxwell, W.F., Miller, S.P., 2004. Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research* 42, 755–793.
- Manski, C.F., 1995. In: *Identification Problems in the Social Sciences*. Harvard University Press, Cambridge, MA.
- Manso, G., Strulovici, B., Tchisti, A., 2009. Performance-sensitive debt. Working Paper, Massachusetts Institute of Technology.
- Marquardt, C., Wiedman, C., 2004. Earnings management through transaction structuring: contingent convertible debt and diluted earnings per share. *Journal of Accounting Research* 43, 205–243.
- MacKie-Mason, J.K., 1990. Do taxes affect corporate financing decisions? *Journal of Finance* 45, 1471–1493.
- Masulis, R., Wang, C., Xie, F., 2010. Globalizing the boardroom—the effects of foreign directors on corporate governance and firm performance. Working Paper, University of New South Wales.
- Martin, X., Shalev, R., 2009. Target transparency and shareholder wealth in M&A. Working Paper.
- Matsunaga, S.R., Park, C.W., 2001. The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review* 76, 313–332.
- McConnell, J.J., 2003. Outside directors. *Financial Review* 38, 25–31.
- McNichols, M.F., Stubbins, S.R., 2009. The role of target firms' accounting information in acquisitions. Working Paper.
- Mehran, H., 1995. Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics* 38, 163–184.
- Mergenthaler, R., Rajgopal, S., Srinivasan, S., 2009. CEO and CFO career penalties to missing quarterly analysts forecasts. Working Paper.
- Merton, R.C., 1974. On the pricing of corporate debt: the structure of interest rates. *Journal of Finance* 29, 449–470.
- Miller, G., 2006. The press as a watchdog for accounting fraud. *Journal of Accounting Research* 44, 1001–1033.
- Murphy, K.J., 2000. Performance standards in incentive contracts. *Journal of Accounting and Economics* 30, 245–278.
- Myers, S.C., 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5, 147–175.
- Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187–221.
- Nagar, V., Nanda, D., Wysocki, P., 2003. Discretionary disclosure and stock-based incentives. *Journal of Accounting and Economics* 34, 283–309.
- Nikolaev, V., 2008. Debt covenants and accounting conservatism. Working Paper, University of Chicago.
- Nini, G., Sufi, A., Smith, D.C., 2009. Creditor control rights, corporate governance, and firm value. Working Paper, University of Pennsylvania.
- O'Connor, J.P., Priem, R.L., Coombs, J.E., Gilley, K.M., 2006. Do CEO stock options prevent or promote fraudulent financial reporting? *Academy of Management Journal* 49, 483–500.
- Ongena, S., Smith, D.C., 2001. The duration of bank relationships. *Journal of Financial Economics* 61, 449–475.
- Palmrose, Z., 1988. An analysis of auditor litigation and audit service quality. *The Accounting Review* 63, 55–73.
- Parrino, R., Weisbach, M.S., 1999. Measuring investment distortions arising from stockholder–bondholder conflicts. *Journal of Financial Economics* 53, 3–42.
- Paul, J., 1992. On the efficiency of stock-based compensation. *Review of Financial Studies* 5, 471–502.
- Petra, S., 2007. The effects of corporate governance on the informativeness of earnings. *Economics and Governance* 8, 129–152.
- Pittman, J.A., Fortin, S., 2004. Auditor choice and the cost of debt capital for newly public firms. *Journal of Accounting and Economics* 37, 113–136.
- Raheja, C., 2005. Determinants of board size and composition: a theory of corporate boards. *Journal of Financial and Quantitative Analysis* 40, 283–306.
- Rajan, R.G., 1992. Insiders and outsiders: the choice between informed and arm's-length debt. *Journal of Finance* 47, 1367–1400.
- Rajan, R., Winton, A., 1995. Covenants and collateral as incentives to monitor. *Journal of Finance* 50, 1113–1146.
- Rajan, M.V., Reichelstein, S., 2009. Objective versus subjective indicators of managerial performance. *The Accounting Review* 84, 209–237.
- Raman, K., Shivakumar, L., Tamayo, A., 2008. Targets' earnings quality and bidders' takeover decisions. Working Paper.
- Reese, W.A., Weisbach, M.S., 2002. Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics* 66, 65–104.
- Roberts, M.R., Sufi, A., 2009a. Financial contracting: a survey of empirical research and future directions. *Annual Review of Financial Economics* 1, 207–226.
- Roberts, M.R., Sufi, A., 2009b. Control rights and capital structure: an empirical investigation. *Journal of Finance* 64, 1657–1695.
- Rogerson, W., 1985. Repeated moral hazard. *Econometrica* 53, 69–76.
- Roll, R., 1988. R^2 . *Journal of Finance* 25, 541–566.
- Rosenbaum, P.R., 2002. In: *Observational Studies*. Springer, New York.
- Rosenbaum, P.R., 2004. Design sensitivity in observational studies. *Biometrika* 91, 153–164.
- Ross, S., 1989. Information and volatility: the no-arbitrage martingale approach to timing and resolution irrelevancy. *Journal of Finance* 25, 1–17.
- Roychowdhury, S., 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42, 335–370.
- Ryan, H.E., Wiggins, R.A., 2004. Who is in whose pocket? Director compensation, board independence, and barriers to effective monitoring. *Journal of Financial Economics* 73, 497–524.
- Schipper, K., 1989. Commentary on earnings management. *Accounting Horizons* 3, 91–102.
- Shleifer, A., Vishny, R., 1997. A survey of corporate governance. *Journal of Finance* 52, 737–783.
- Shleifer, A., Vishny, R.W., 1992. Liquidation values and debt capacity: a market equilibrium approach. *Journal of Finance* 47, 1343–1366.
- Smith, C.W., 1993. A perspective on accounting-based debt violations. *The Accounting Review* 68, 289–303.
- Smith, C.W., Warner, J., 1979. On financial contracting—an analysis of bond covenants. *Journal of Financial Economics* 7, 117–161.
- Sridhar, S., Magee, R., 1996. Financial contracts, opportunism, and disclosure management. *Review of Financial Studies* 1, 225–258.
- Srinivasan, S., 2005. Consequences of financial reporting failure for outside directors: evidence from accounting restatements and audit committee members. *Journal of Accounting Research* 43, 291–334.
- Sufi, A., 2009. Bank lines of credit in corporate finance: an empirical analysis. *Review of Financial Studies* 22, 1057–1088.
- Sufi, A., 2007. Information asymmetry and financing arrangements: evidence from syndicated loans. *Journal of Finance* 62, 629–668.
- Sweeney, A., 1994. Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics* 17, 281–308.
- Teoh, S., Welch, I., Wong, T.J., 1998. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50, 63–99.

- Teoh, S., Wong, T., 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68, 346–366.
- Tirole, J., 1999. Incomplete contracts: where do we stand? *Econometrica* 67, 741–781.
- Townsend, R.M., 1979. Optimal contracts and competitive markets with costly state verification. *Journal of Economic Theory* 21, 265–293.
- Vafeas, N., 2000. Board structure and the informativeness of earnings. *Journal of Accounting and Public Policy* 19, 139–160.
- Verrecchia, R.E., 2001. Essays on disclosure. *Journal of Accounting and Economics* 32, 97–180.
- Wang, D., 2006. Founding family ownership and earnings quality. *Journal of Accounting Research* 44, 619–656.
- Wang, Q., Wong, T.J., Xia, L., 2008. State ownership, the institutional environment, and auditor choice: evidence from China. *Journal of Accounting and Economics* 46, 112–134.
- Wang, X., 2010. Increased disclosure requirements and corporate governance decisions: evidence from chief financial officers in the pre- and post-Sarbanes–Oxley periods. *Journal of Accounting Research* 48, 885–920.
- Watts, R., 2003. Conservatism in accounting, Part I: explanations and implications. *Accounting Horizons* 17, 207–221.
- Watts, R.L., Zimmerman, J.L., 1978. Towards a positive theory of the determination of accounting standards. *Accounting Review* 53, 112–134.
- Watts, R.L., Zimmerman, J.L., 1986. In: *Positive Accounting Theory*. Prentice-Hall, Englewood Cliffs, NJ.
- Watts, R.L., Zimmerman, J.L., 1990. Positive accounting theory: a ten-year perspective. *The Accounting Review* 65, 131–156.
- Weber, J., Willenborg, M., 2003. Do expert informational intermediaries add value? Evidence from auditors in microcap IPOs. *Journal of Accounting Research* 41, 681–720.
- Williamson, O.E., 1983. Organization form, residual claimants, and corporate control. *Journal of Law and Economics* 26, 351–366.
- Williamson, O.E., 1988. Corporate finance and corporate governance. *Journal of Finance* 43, 567–591.
- Wittenberg-Moerman, R., 2008. The role of information asymmetry and financial reporting quality in debt trading: evidence from the secondary loan market. *Journal of Accounting and Economics* 46, 240–260.
- Xie, B., Davidson, W., DaDalt, P.J., 2003. Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance* 9, 295–316.
- Yermack, D., 2004. Remuneration, retention, and reputation incentives for outside directors. *Journal of Finance* 59, 2281–2308.
- Zhang, J., 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics* 46, 27–54.
- Zhao, Y., Chen, K.H., 2008. Staggered boards and earnings management. *The Accounting Review* 83, 1347–1381.