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TRANSPARENCY, FINANCIAL ACCOUNTING INFORMATION, AND CORPORATE GOVERNANCE

1. INTRODUCTION

Vibrant public securities markets rely on complex systems of supporting institutions that promote the governance of publicly traded companies. Corporate governance structures serve: 1) to ensure that minority shareholders receive reliable information about the value of firms and that a company's managers and large shareholders do not cheat them out of the value of their investments, and 2) to motivate managers to maximize firm value instead of pursuing personal objectives.¹ Institutions promoting the governance of firms include reputational intermediaries such as investment banks and audit firms, securities laws and regulators such as the Securities and Exchange Commission (SEC) in the United States, and disclosure regimes that produce credible firm-specific information about publicly traded firms. In this paper, we discuss economics-based research focused primarily on the governance role of publicly reported financial accounting information.

Financial accounting information is the product of corporate accounting and external reporting systems that measure and routinely disclose audited, quantitative data concerning the financial position and performance of publicly held firms. Audited balance sheets, income statements, and cash-flow statements, along with supporting disclosures, form the foundation of the firm-specific information set available to investors and regulators. Developing and maintaining a

sophisticated financial disclosure regime is not cheap. Countries with highly developed securities markets devote substantial resources to producing and regulating the use of extensive accounting and disclosure rules that publicly traded firms must follow. Resources expended are not only financial, but also include opportunity costs associated with deployment of highly educated human capital, including accountants, lawyers, academicians, and politicians.

In the United States, the SEC, under the oversight of the U.S. Congress, is responsible for maintaining and regulating the required accounting and disclosure rules that firms must follow. These rules are produced both by the SEC itself and through SEC oversight of private standards-setting bodies such as the Financial Accounting Standards Board and the Emerging Issues Task Force, which in turn solicit input from business leaders, academic researchers, and regulators around the world. In addition to the accounting standards-setting investments undertaken by many individual countries and securities exchanges, there is currently a major, well-funded effort in progress, under the auspices of the International Accounting Standards Board (IASB), to produce a single set of accounting standards that will ultimately be acceptable to all countries as the basis for cross-border financing transactions.²

The premise behind governance research in accounting is that a significant portion of the return on investment in accounting regimes derives from enhanced governance of firms, which in turn facilitates the operation of securities

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markets and the efficient flow of scarce human and financial capital to promising investment opportunities. Designing a system that provides governance value involves difficult trade-offs between the reliability and relevance of reported accounting information. While the judgments and expectations of firms' managers are an inextricable part of any serious financial reporting model, the governance value of financial accounting information derives in large part from an emphasis on the reporting of objective, verifiable outcomes of firms. An emphasis on verifiable outcomes produces a rich set of variables that can support a wide range of enforceable contractual arrangements and that form a basis for outsiders to monitor and discipline the actions and statements of insiders.³

A fundamental objective of governance research in accounting is to investigate the properties of accounting systems and the surrounding institutional environment important to the effective governance of firms. Bushman and Smith (2001) provide an extensive survey and discussion of governance research in accounting and provide ideas for future research. In this paper, we synthesize major research findings in the accounting governance literature and extend Bushman and Smith to consider corporate transparency more generally, which includes financial accounting information as one element of a complex information infrastructure.

We begin our discussion of governance research in Section 2 with a framework for understanding the operation of accounting information in an economy. This framework isolates three channels through which financial accounting information can affect the investments, productivity, and value-added of firms. These channels involve the use of financial accounting information: 1) to identify promising investment opportunities, 2) to discipline managers to direct resources toward projects identified as good and away from projects that primarily benefit managers rather than owners of capital, and to prevent stealing, and 3) to reduce information asymmetries among investors. An important avenue for future research is the development of research designs to isolate the impact of accounting information through the individual channels and facilitate direct examination of the differential properties of the accounting system and institutional infrastructure important for each channel.

In Section 3, we discuss the direct use of financial accounting information in specific corporate governance mechanisms. The largest body of governance research in accounting examines the use of financial accounting information in the incentive contracts of top executives of publicly traded firms in the United States. This emphasis derives from the ready availability of top executive compensation data in the United States as a result of existing disclosure requirements, and from the success of contracting

theory in supplying testable predictions of relations between performance measures and optimal compensation contracts. Researchers also have examined the role of accounting information in the operation of other governance mechanisms. Examples include takeovers, proxy contests, board of director composition, shareholder litigation, and debt contracts, among others. We distill major research findings and suggest ideas for future research.

In Section 4, we discuss a developing literature using cross-country research designs to examine links between financial sector development and economic outcomes. Within-country research holds most institutional features of a country fixed, precluding investigation of interactions across institutions. By exploiting cross-country differences in political structures, legal regimes, property rights protections, investors' rights, regulatory frameworks, and other institutional characteristics, researchers can empirically explore connections between institutional configurations, including disclosure regimes, and economic outcomes. At the heart of theories connecting a well-developed financial sector with enhanced resource allocation and growth is the role of the financial sector in reducing information costs and transaction costs.⁴ Despite the central role of information costs in these theories, until recently little attention has been given by empirical researchers to the role of the information environment per se in explaining cross-country differences in economic growth and efficiency. Preliminary results from this emerging literature provide encouraging new evidence of a positive relation between the quality of financial accounting information and economic performance. This evidence suggests that future research into the governance role of financial accounting information has the potential to detect first-order economic effects.

Finally, in Section 5, we present a conceptual framework for characterizing and measuring corporate transparency at the country level introduced in Bushman, Piotroski, and Smith (2001), hereafter BPS. Corporate transparency is defined as the widespread availability of relevant, reliable information about the periodic performance, financial position, investment opportunities, governance, value, and risk of publicly traded firms. BPS develop a measurement scheme for corporate transparency that is more comprehensive than the index of domestic corporate disclosure intensity used in prior cross-country studies. Corporate transparency measures fall into three categories: 1) measures of the quality of corporate reporting, including the intensity, measurement principles, timeliness, and credibility (that is, audit quality) of disclosures by firms listed domestically, 2) measures of the intensity of private information acquisition, including analyst following, and the prevalence of pooled investment schemes and of insider trading activities, and 3) measures of the quality of

information dissemination, including the penetration and private versus state ownership of the media. We describe the BPS framework to stimulate further thought on the measurement of corporate transparency and to illustrate promising directions for future research into the economic effects of corporate transparency, and into the economics of information more generally.

2. CHANNELS THROUGH WHICH FINANCIAL ACCOUNTING INFORMATION AFFECTS ECONOMIC PERFORMANCE

A corporation can be viewed as a nexus of contracts designed to minimize contracting costs (Coase 1937). Parties contracting with the firm desire information both about the firm’s ability to satisfy the terms of contracts and the firm’s ultimate compliance with its contractual obligations. Financial accounting information supplies a key quantitative representation of individual corporations that supports a wide range of contractual relationships. Financial accounting information also enhances the information environment more generally by disciplining the unaudited disclosures of managers and supplying input into the information processing activities of outsiders.⁵ The quality of financial disclosure can impact firms’ cash flows directly, in addition to influencing the cost of capital at which the cash flows are discounted. We posit three channels through which financial accounting information improves economic performance, as illustrated in the exhibit.⁶

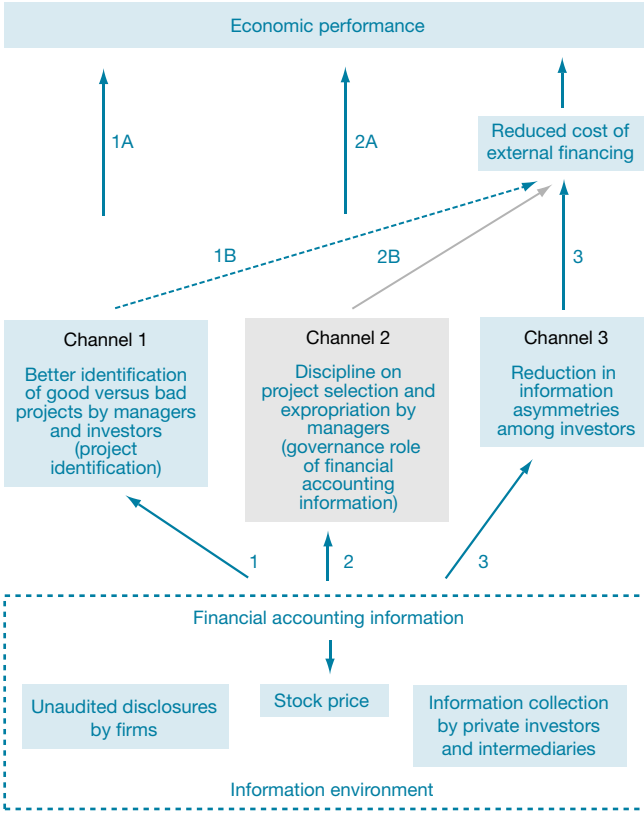
First, financial accounting information of firms and their competitors aid managers and investors in identifying and evaluating investment opportunities. An absence of reliable and accessible information in an economy impedes the flow of human and financial capital toward sectors that are expected to have high returns and away from sectors with poor prospects. Even without agency conflicts between managers and investors, quality financial accounting data enhances efficiency by enabling managers and investors to identify value creation opportunities with less error. This leads directly to more accurate allocation of capital to highest valued uses, as indicated by arrow 1A in the exhibit. Lower estimation risk can also reduce the cost of capital, further contributing to economic performance, as indicated by arrow 1B.⁷

Financial accounting systems clearly supply direct information about investment opportunities. For example, managers or potential entrants can identify promising new investment opportunities, acquisition candidates, or strategic innovations on the basis of the profit margins reported by

other firms. Financial accounting systems also support the informational role played by stock price. As argued by Black (2000) and Ball (2001), a strong financial accounting regime focused on credibility and accountability is a prerequisite to the very existence of vibrant securities markets. Efficient stock markets in which stock prices reflect all public information and aggregate the private information of individual investors presumably communicate that aggregate information to managers and current and potential investors. Recent papers by Dow and Gorton (1997) and Dye and Sridhar (2001) explicitly model a strategy-directing role for stock prices. In these models, stock price impounds private, decision-relevant information not already known by managers, managers’ investment decisions respond to this new information in price, and the market correctly anticipates managers’ decision strategies in setting price.

The second channel through which we expect financial accounting information to enhance economic performance is its governance role. The identification of investment

Three Channels through Which Financial Accounting Information Affects Economic Performance



opportunities is necessary, but not sufficient to ensure efficient allocation of resources. Given information asymmetry and potentially self-interested behavior by managers, agency theories argue that pressures from external investors, as well as formal contracting arrangements, are needed to encourage managers to pursue value-maximizing investment policies (for example, Jensen [1986]). Objective, verifiable accounting information facilitates shareholder monitoring and the effective exercise of shareholder rights under existing securities laws; enables directors to enhance shareholder value by advising, ratifying, and policing managerial decisions and activities; and supplies a rich array of contractible variables for determining the financial rewards from incentive plans designed to align executives' and investors' financial interests. Ball (2001) argues that timely incorporation of economic losses in the published financial statements (that is, conservatism) increases the effectiveness of corporate governance, compensation systems, and debt agreements in motivating and monitoring managers. He argues that it decreases the ex-ante likelihood that managers will undertake negative net present value (NPV) projects but pass on their earnings consequences to a subsequent generation, and it increases the incentive of the current generation of managers to incur the personal cost of abandoning investments and strategies that have ex-post negative NPVs.

The governance role of financial accounting information contributes directly to economic performance by disciplining efficient management of assets in place (for example, timely abandonment of losing projects), better project selection, and reduced expropriation of investors' wealth by the managers (exhibit, arrow 2A). We also allow for the possibility that financial accounting information lowers the risk premium demanded by investors to compensate for the risk of loss from expropriation by opportunistic managers (arrow 2B). However, we caution that the impact of improved governance on the rate of return required by investors is subtle. Lombardo and Pagano (2000) argue that the effect of improved governance on the required stock return on equity depends on the nature of the improvement. For instance, improved governance can manifest in a reduction of the private benefits that managers can extract from the company or in a reduction of the legal and auditing costs that shareholders must bear to prevent managerial opportunism. These two changes can have opposite effects on the observed equilibrium stock returns, and the size of these effects depends on the degree of international segmentation of equity markets.

The third channel through which we expect financial accounting information to enhance economic performance is by reducing adverse selection and liquidity risk (arrow 3). As documented in Amihud and Mendelson (2000), the liquidity of a company's securities impacts the firm's cost of capital.

A major component of liquidity is adverse selection costs, which are reflected in the bid-ask spread and market impact costs. Firms' precommitment to the timely disclosure of high-quality financial accounting information reduces investors' risk of loss from trading with more informed investors, thereby attracting more funds into the capital markets, lowering investors' liquidity risk (see Diamond and Verrecchia [1991], Botosan [2000], Brennan and Tamarowski [2000], and Leuz and Verrecchia [2000]). Capital markets with low liquidity risk for individual investors can facilitate high-return, long-term (illiquid) corporate investments, including long-term investments in high-return technologies, without requiring individual investors to commit their resources over the long term (Levine 1997).⁹ Hence, well-developed, liquid capital markets are expected to enhance economic growth by facilitating corporate investments that are high-risk, high-return, long-term, and more likely to lead to technological innovations, and high-quality financial accounting regimes provide important support for this capital market function.

In summary, we expect financial accounting information to enhance economic performance through at least three channels, one of which represents the governance role of financial accounting information. The impact of a country's information infrastructure on the efficient allocation of capital is an important topic for future research.

3. DIRECT USE OF ACCOUNTING INFORMATION IN SPECIFIC GOVERNANCE MECHANISMS

The roots of corporate governance research can be traced back to at least Berle and Means (1932), who argued that effective control over publicly traded corporations was not being exercised by the legal owners of equity, the shareholders, but by hired, professional managers. Given widespread existence of firms characterized by this separation of control over capital from ownership of capital, corporate governance research generally focuses on understanding mechanisms designed to mitigate agency problems and support this form of economic organization. There are of course a number of pure market forces that discipline managers to act in the interests of firms' owners. These include product market competition (Alchian 1950; Stigler 1958), the market for corporate control (Manne 1965), and labor market pressure (Fama 1980). However, despite the existence of these powerful disciplining forces, there evidently remains residual demand for governance mechanisms tailored to the specific circumstances of individual firms. This demand is documented by a large body of research

examining boards of directors, compensation contracts, concentrated ownership structures, debt contracts, and securities law in disciplining managers to act in the interests of capital suppliers (see Shleifer and Vishny [1997] for an insightful review of this literature).

Governance research in accounting exploits the role of accounting information as a source of credible information variables that support the existence of enforceable contracts, such as compensation contracts with payoffs to managers contingent on realized measures of performance, the monitoring of managers by boards of directors and outside investors and regulators, and the exercise of investor rights granted by existing securities laws. The remainder of Section 3 is organized as follows. Section 3.1 discusses evidence documenting widespread use of financial accounting measures in determining bonus payouts and dismissal probabilities for top executives, and in supporting the allocation of control rights and cash-flow rights in financing contracts between venture capitalists (VCs) and entrepreneurs. Section 3.2 describes recent trends in the compensation contracts of top U.S. executives, including shifts in the relative importance of accounting numbers for determining compensation payouts, and discusses potential implications. Section 3.3 reviews research examining how characteristics of accounting information systems interact with the firms' observed choices of governance configurations. Finally, Section 3.4 discusses evidence concerning the use of financial accounting information in corporate control mechanisms other than compensation contracts.

3.1 Prevalence of Financial Accounting Numbers in Top Executive Incentive Contracts

The extensive use of accounting numbers in top executive compensation plans at publicly traded firms in the United States is well documented. Murphy (1999) reports data from a survey conducted by Towers Perrin in 1996-97. Murphy reports that 161 of the 177 sample firms explicitly use at least one measure of accounting profits in their annual bonus plans. Of the sixty-eight companies in the survey that use a single performance measure in their annual bonus plan, sixty-five use a measure of accounting profits. Ittner, Larcker, and Rajan (1997) collect data on actual performance measures used in the annual bonus plans of 317 U.S. firms for the 1993-94 time period. Ittner et al. document that 312 of the 317 firms report use of at least one financial measure in their annual plans. Earnings per share, net income, and operating income are the most common financial measures. They also report that the

mean percentage of annual bonus determined by financial performance measures is 86.6 percent across the whole sample, and 62.9 percent for the 114 firms that put nonzero weight on nonfinancial measures. Wallace (1997) and Hogan and Lewis (1999) together document adoption of residual income-based incentive plans (for example, EVA) by about sixty publicly traded companies. Numerous studies have also documented that both the earnings and shareholder wealth variables load positively and significantly in regressions of cash compensation on both performance measures (for example, Lambert and Larcker [1987], Jensen and Murphy [1990], and Sloan [1993]; Bushman and Smith [2001] thoroughly review this evidence).

Poor earnings performance is also documented to increase the probability of executive turnover. Studies finding an inverse relation between accounting performance and CEO turnover include Weisbach (1988), Murphy and Zimmerman (1993), Lehn and Makhija (1997), and DeFond and Park (1999), while Blackwell, Brickley, and Weisbach (1994) document a similar relation for subsidiary bank managers within multibank holding companies.⁹ Weisbach (1988) and Murphy and Zimmerman (1993) include both accounting and stock price performance in the estimation of turnover probability. Weisbach finds that accounting performance appears to be more important than stock price performance in explaining turnover, while Murphy and Zimmerman find a significant inverse relation between both performance measures and turnover.

This phenomenon has also been found to hold outside of the United States. Kaplan (1994a, b) finds that turnover probabilities for both Japanese and German executives are significantly related to earnings and stock price performance. Estimates of turnover probability in both countries indicate that stock returns and negative earnings are significant determinants of turnover.¹⁰ Regressions using changes in cash compensation of Japanese executives document a significant impact for pretax earnings and negative earnings, but not for stock returns and sales growth. Kaplan (1994a) compares results for Japanese executives with U.S. CEOs and finds turnover probabilities for Japanese executives more sensitive to negative earnings. This relative difference is suggestive of a significant monitoring role for a Japanese firm's main banks when a firm produces insufficient funds to service loans. Kaplan documents that firms are more likely to receive new directors associated with financial institutions following negative earnings and poor stock price performance.

Finally, Kaplan and Stromberg (2000) document an important disciplining role for accounting information in private equity transactions. They examine actual financing contracts between venture capitalists and entrepreneurs. They document that VC financings allow VCs to separately allocate cash-flow rights, voting rights, board rights, and other control

rights. The allocation of cash-flow rights and control rights is frequently contingent on verifiable, observable financial and nonfinancial performance measures. The financial measures appear to comprise standard measures from the financial accounting system, including earnings before interest and taxes, operating profits, net worth, and revenues. Control rights are allocated such that if the company performs poorly, the VCs take full control, while entrepreneurs obtain control as performance improves. They argue that this is supportive of theories that predict shifts of control to investors in bad outcome states, such as Aghion and Bolton (1992) and Dewatripont and Tirole (1994).

3.2 Trends in the Use of Accounting Numbers for Contracting with Managers

While the evidence documents significant use of accounting numbers in determining cash compensation, both the determinants of cash compensation and the importance of cash compensation in the overall incentive package exhibit significant time trends. Bushman, Engel, Milliron, and Smith (1998) document that over the 1971-95 period, firms have substituted away from accounting earnings toward other information in determining top executives' cash compensation.

It has also been documented that the contribution of cash compensation to the overall intensity of top executive incentives has diminished in recent years. Recent studies construct explicit measures of the sensitivity of the value of stock and option portfolios to changes in shareholder wealth (Murphy 1999; Hall and Liebman 1998). These studies show that the overall sensitivity of compensation to shareholder wealth creation (or destruction) is dominated by changes in the value of stock and stock option holdings, and that this domination increases in recent years. For example, Murphy (1999) estimates that for CEOs of mining and manufacturing firms in the S&P 500, the median percentage of total pay-performance sensitivity related to stock and stock options increases from 83 percent (45 percent options and 38 percent stock) of total sensitivity in 1992 to 95 percent (64 percent options and 31 percent stock) in 1996. In addition, Core, Guay, and Verrecchia (2000) decompose the variance of changes in CEOs' firm-specific wealth into stock-price-based and nonprice-based components. They find that stock returns are the dominant determinant of wealth changes, documenting that for 65 percent of the CEOs in their sample, the variation in wealth changes explained by stock returns is at least ten times greater than the component not explained by stock returns.

Why is the market share of accounting measures shrinking, and can cross-sectional differences in the extent of shrinkage be explained? Has the information content of accounting information itself deteriorated, or should we look to more fundamental changes in the economic environment? For example, Milliron (2000) documents a significant shift over the past twenty years in board characteristics measuring director accountability, independence, and effectiveness consistent with a general increase in directors' incentive alignment with shareholders' interests. A number of environmental changes are candidates for explaining the observed evolution in contract design and boards.

For example, the emergence of institutional investor and other stakeholder activist groups in the 1980s created pressure on firms to choose board structures designed to facilitate more active monitoring and evaluation of managers' performance. In addition, new regulations were instituted by the Securities and Exchange Commission and the Internal Revenue Service in the early 1990s to require that executive pay be disclosed in significantly more detail and be approved by a compensation committee composed entirely of independent directors. The nature of the firm itself may have changed. Recent research notes that conglomerates have broken up and their units spun off as stand-alone companies, that vertically integrated manufacturers have relinquished direct control of their suppliers and moved toward looser forms of collaboration, and that specialized human capital has become more important and also more mobile (for example, Zingales [2000] and Rajan and Zingales [2000]).

In closing this section, we note that caution should be used in concluding from this recent shift away from explicit accounting-based incentive plans toward equity-based plans that accounting information has become less important for the governance of firms. There are a number of issues to consider in this regard. First, as discussed in our introduction and by a number of other scholars (for example, Ball [2001] and Black [2000]), the existence of a strong financial accounting regime is likely a precondition for the existence of a vibrant stock market and in its absence the notions of equity-based pay and diffuse ownership of firms become moot.

Second, while executive wealth clearly has become more highly dependent on stock price, managerial behavior is impacted by executives' and boards' understanding of how their decisions impact stock price. Under efficient markets theory, stock price is a sufficient statistic for all available information in the economy with respect to firm value, which implies that stock price is a good mechanism for guiding investors' resource allocation decisions, as they only need to look at price to get the market's informed assessment of value. But is stock price also a sufficient statistic for operating

decisions and performance assessments within firms? That is, can managers and boards rely on stock price as their sole information source? We observe analysts pouring over the details of financial statements, such as margin analyses, expense ratios, and geographic and product line segment data. In addition, market participants expend real resources privately collecting and trading on detailed firm-specific information that is ultimately aggregated in price. Given that market participants whose trading decisions drive stock price formation are heavily influenced by detailed accounting and other performance data, why should we believe that managers and boards ignore the details and are guided solely by stock price?

Lastly, stock price possesses other potential limitations as a measure of current managerial performance. In particular, the fact that stock price is forward-looking can limit its usefulness because it anticipates possible future actions. For example, when a firm is in trouble, its current stock price may reflect the market's expectation that the current CEO will soon be replaced, thus limiting its usefulness in assessing the current CEO's performance. This may lead to reliance on accounting measures, as documented in the literature on CEO dismissal probabilities discussed in Section 3.1 (see also the discussion in Section 3.4 on the role of accounting information in proxy contests).

3.3 Properties of Accounting and Choice of Governance Configurations

In this section, we discuss research investigating relations between properties of financial accounting information and governance mechanism configurations. The premise behind this research is that when current accounting numbers do a relatively poor job of capturing information relevant to governance, firms substitute toward alternative, more costly governance mechanisms to compensate for inadequacies in financial accounting information. This research is based on the premise that financial accounting systems represent a primary source of effective, low-cost governance information. The research discussed next uses various proxies to capture the governance relevance of accounting numbers. Developing more refined measures of information quality is an important goal for future research.

Consider first the portfolio of performance measures chosen by firms to determine payouts from CEOs' annual bonus plans. Bushman, Indjejikian, and Smith (1996) study the use of "individual performance evaluation" in determining annual CEO bonuses. They use managerial compensation data

from Hewitt Associates' annual compensation surveys of large U.S. companies. This data set provides the percentage of a CEO's annual bonus determined by individual performance evaluation (IPE). IPE is generally a conglomeration of performance measures including subjective evaluations of individual performance. For firms with significant growth opportunities, expansive investment opportunity sets, and long-term investment strategies, it is conjectured that current earnings will poorly reflect future period consequences of current managerial actions, and thus exhibit low sensitivity relative to important dimensions of managerial activities. This should lead firms to substitute toward alternative performance measures, including IPE. Bushman et al. (1996) proxy for the investment opportunity set with market-to-book ratios, and the length of product development and product life cycles. They find that IPE is positively and significantly related to both measures of investment opportunities, implying a substitution away from accounting information.

Ittner, Larcker, and Rajan (1997) follow a similar research strategy focused on the use of nonfinancial performance measures. Using a combination of proprietary survey and proxy statement data, they estimate the extent to which CEO bonus plans depend on nonfinancial performance measures. The mean weight on nonfinancial measures across all firms in their sample is 13.4 percent, and 37.1 percent for all firms with a nonzero weight on nonfinancial measures. They construct a measure of investment opportunities using multiple indicators, including research and development (R&D) expenditures, market-to-book ratio, and number of new product and service introductions. They find that the use of nonfinancial performance measures increases with their measure of investment opportunities.

Substitution away from publicly reported accounting data likely leads to the use of performance measures in contracts that are not directly observable by the market. Hayes and Schaeffer (2000) extend Bushman et al. (1996) and Ittner et al. (1997) by investigating the relation between executive compensation and future firm performance. If firms optimally use unobservable measures of performance that are correlated with future observable measures of performance, then variation in current compensation that is not explained by variation in current observable performance measures should predict future variation in observable performance measures. Further, compensation should be more positively associated with future earnings when observable measures of performance are noisier and, hence, less useful for contracting. They test these assertions using panel data on CEO cash compensation from *Forbes*, and show that current compensation is related to future return-on-equity after controlling for current and lagged performance measures and

analyst consensus forecasts of future accounting performance, and that current compensation is more positively related to future performance when the variances of the firm's market and accounting returns are higher. They detect no time trend in the relation between current compensation and future performance. This stability is noteworthy given the significant increases in the use of option grants documented by Hall and Liebman (1998) and Murphy (1999). Boards of directors apparently have not delegated the complete determination of CEO rewards to the market, and still fine-tune rewards using private information.

Bushman, Chen, Engel, and Smith (2000) extend this research to consider a larger range of governance mechanisms. The governance mechanisms considered include board composition, stockholdings of inside and outside directors, ownership concentration, and the structure of executive compensation. They conjecture that to the extent that current earnings fail to incorporate current value-relevant information, the accounting numbers are less effective in the governance setting. The authors develop several proxies to measure earnings "timeliness" based on traditional and reverse regressions of stock prices and changes in earnings. Consistent with the hypothesis that limits to the information provided by financial accounting measures are associated with a greater demand for firm-specific information from inside directors and high-quality outside directors (Fama and Jensen 1983), Bushman et al. find that the proportion of inside directors and the proportion of "highly reputable" outside directors are negatively related to the timeliness of earnings, after controlling for R&D, capital intensity, and firm growth opportunities. They also find a negative relation between the timeliness of earnings and the stockholdings of inside and outside directors, the extent of ownership concentration, the proportion of incentive plans granted to the top five executives that are long-term plans, and the proportion that are equity-based.

Finally, La Porta, Lopez-De-Silanes, Shleifer, and Vishny (1998) argue that protection of investors from opportunistic managerial behavior is a fundamental determinant of investors' willingness to finance firms, of the resulting cost of firms' external capital, and of the concentration of stock ownership. They develop an extensive database of the laws concerning the rights of investors and the enforcement of these laws for forty-nine countries, from Africa, Asia, Australia, Europe, North America, and South America. Interestingly, one of the regimes that they suggest affects enforcement of investors' rights is the country's financial accounting regime. They measure quality of the accounting regime with an index developed for each country by the Center for International Financial Analysis and Research (CIFAR). The CIFAR index

represents the average number of ninety items included in the annual reports of a sample of domestic companies. They document that the concentration of stock ownership in a country is significantly negatively related to both the CIFAR index and an index of how powerfully the legal system "favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process" (1995, p. 1127), after controlling for the colonial origin of the legal system and other factors. These results are consistent with their prediction that in countries where the accounting and legal systems provide relatively poor investor protection from managerial opportunism, there is a substitution toward costly monitoring by "large" shareholders.

3.4 Financial Accounting Information and Additional Corporate Control Mechanisms

In this section, we expand our discussion of the role of financial accounting information in the operation of specific governance mechanisms. An important example in this respect is DeAngelo's (1988) study of the role of accounting information in proxy fights. She documents a heightened importance of accounting information during proxy fights by providing evidence of the prominent use of accounting numbers. She presents evidence that dissident stockholders typically cite poor earnings performance as evidence of incumbent managers' inefficiency (and rarely cite stock price performance), and that incumbent managers use their accounting discretion to portray a more favorable impression of their performance to voting shareholders. DeAngelo suggests that accounting information may better reflect incumbent managerial performance during proxy fights because stock price anticipates potential benefits from removing underperforming incumbent managers.¹¹

It is also important to recognize that the governance of firms is exercised through a portfolio of governance mechanisms, and so it is important to understand potential interactions between mechanisms. Consider product market competition and the use of accounting information in governance. Aggarwal and Samwick (1999) argue that in more competitive industries (higher product substitutability), wage contracts are designed to incorporate strategic considerations and create incentives for less aggressive price competition. DeFond and Park (1999) and Parrino (1997), examining CEO turnover probabilities, posit that in more competitive industries, peer group comparisons are more readily available, creating opportunities for more precise performance comparisons.

Jagannathan and Srinivasan (1999) examine whether product market competition, as measured by whether a firm is a generalist (likely to have more comparable firms) or a specialist (few peers), reduces agency costs in the form of free cash-flow problems. If increased competition reduces agency costs and creates more peer comparison opportunities (including the supply of potential replacement executives), how is the design of incentive contracts impacted? Competition can impact the relative value of own-firm and peer-group accounting information as a function of competitiveness. It is also possible that the extent of competition influences the costs to disclosing proprietary information, impacting the amount of private information and the relative governance value of public performance measures.

Bertrand and Mullainathan (1998) illustrate the potential power of designs that consider interactions across governance mechanisms. They examine the impact on executive compensation of changes in states' anti-takeover legislation. Adoption of anti-takeover legislation presumably reduces pressure on top managers. They attempt to distinguish between optimal contracting and skimming theories in explaining observed contracting arrangements. Do shareholders, observing weakening of one disciplining mechanism, respond by strengthening another, say, pay-for-performance? Or do CEOs facing reduced threat of hostile takeover exploit this reduced pressure to skim more resources by increasing their mean pay? They find that pay-for-performance sensitivities (especially for accounting measures of performance) and mean levels of CEO pay increase after adoption of anti-takeover legislation. They further separate their sample into two groups based on whether the firm has a large shareholder (5 percent blockholder) present or not. They find that firms with a large shareholder increased pay-for-performance, while firms without a large shareholder increased mean pay. They also empirically examine the responsiveness of pay to luck, using three measures of luck. First, they perform a case study of oil-extracting firms where large movements in oil prices tend to affect firm performance on a regular basis. Second, they use changes in industry-specific exchange rates for firms in the traded goods sector. Third, they use year-to-year differences in mean industry performance to proxy for the overall economic fortunes of a sector. For all three measures, they find that CEO pay responds to luck. However, similar to the takeover results, they find that the presence of a large shareholder reduces the amount of pay for luck. These results raise important questions about the optimality of observed governance configurations in the United States.

Finally, complex interactions can exist between incentive contracts written on objective performance measures and features of organizational design such as promotion ladders,

allocation of decision rights, task allocation, divisional interdependencies, and subjective performance evaluation. Lambert, Larcker, and Weigelt (1993) present evidence that observed business unit managers' compensation across the hierarchy exhibits patterns consistent with both agency theory and tournament theory. Baker, Gibbs, and Holmstrom (1994a, b) and Gibbs (1995) analyze twenty years of personnel data from a single firm and illustrate the complex relations that can exist among the hierarchy, performance evaluation, promotion policies, wage policies, and incentive compensation. Baker, Gibbons, and Murphy (1994) theoretically isolate economic tradeoffs between objective and subjective performance evaluation in the design of optimal contracting arrangements. Ichniowski, Shaw, and Prennushi (1997), using data on thirty-six steel mills, find that mills that adopt bundles of complementary practices (for example, incentive compensation, teamwork, skills training, and communications) are more productive than firms that either do not adopt these practices or that adopt practices individually rather than together.

4. EFFECTS OF FINANCIAL ACCOUNTING INFORMATION ON ECONOMIC PERFORMANCE

A growing body of evidence indicates that the development of a country's financial sector facilitates its growth (for example, King and Levine [1993], Jayaratne and Strahan [1996], Levine [1997], Demirguc-Kunt and Maksimovic [1998], and Rajan and Zingales [1998]). Levine (1997) presents a framework whereby a well-developed financial sector facilitates the allocation of resources by serving five functions: to mobilize savings, facilitate risk management, identify investment opportunities, monitor and discipline managers, and facilitate the exchange of goods and services. At the heart of these theories is the role of the financial sector in reducing information costs and transaction costs in an economy. In spite of the central role of information in these theories, until recently little attention has been given by empirical researchers to the information environment per se in explaining cross-country differences in economic growth and efficiency.

In this section, we discuss research that explicitly examines the role of a country's corporate disclosure regime in the efficient allocation of capital. Preliminary results from this literature provide encouraging evidence of a positive relation between the quality of a country's corporate disclosure regime and economic performance. Cross-country analyses are one

promising way to assess the effects of corporate disclosure on economic performance for several reasons. First, there are considerable, quantifiable cross-country differences in corporate disclosure regimes.¹² Second, there are dramatic cross-country differences in economic efficiency. Rajan and Zingales (2001), Modigliani and Perotti (2000), and Acemoglu, Johnson, and Robinson (2000) argue that inefficient institutions can be sustained in a given country due to political agendas other than efficiency. Hence, the possibility of observing grossly inefficient financial accounting and other regimes in the cross-country sample is not ruled out. In contrast, within the United States, where market forces and explicit and implicit compensation contracts powerfully discipline managers, inefficiencies are more difficult to isolate in the data.

However, there are also limitations to this approach. The explanatory variables in these studies are highly correlated and measured with error, impeding interpretation of results. This is a significant issue for interpreting results on the basis of the CIFAR index (described above), which is commonly used to measure the “quality” of accounting information within a country. The CIFAR index is highly correlated with numerous other country characteristics. Furthermore, given the crudeness of the CIFAR index, the quality of countries’ financial accounting regimes is probably measured with considerable error. A second limitation is that causal inferences are problematic. It is plausible that both measures of financial development, such as the CIFAR index, and measures of economic performance are caused by the same omitted factors. It is also plausible that economic performance stimulates development of extensive financial disclosure systems. These limitations of cross-country designs are well recognized in the economics literature. Levine and Zervos (1993) conclude that these studies can be “very useful” as long as empirical regularities are interpreted as “suggestive” of the hypothesized relations. Lack of cross-country relations can at a minimum cast doubt on hypothesized relations.

Rajan and Zingales (1998) argue that if financial institutions help firms overcome moral hazard and adverse selection problems, thus reducing the cost of raising money from outsiders, financial development should disproportionately help firms more dependent on external finance for their growth. They measure an industry’s demand for external finance from data on U.S. firms. If capital markets in the United States are relatively frictionless, this allows them to identify an industry’s technological demand for external financing. Assuming that this demand carries over to other countries, they test whether industries that are more dependent on external financing grow relatively faster in countries that are more financially developed. Using the CIFAR index as a

measure of financial development, Rajan and Zingales document a significant positive coefficient on the interaction between industry-level demand for external financing and the country-level CIFAR index. This result supports the prediction that the growth is disproportionately higher in industries with a strong exogenous demand for external financing in countries with high-quality corporate disclosure regimes, after controlling for fixed industry and country effects. They also find that growth in the number of new enterprises is disproportionately high in industries with a high demand for external financing in countries with a large CIFAR index.

Using a similar design, Carlin and Mayer (2000) find that the growth in industry GDP and the growth in R&D spending as a share of value-added are disproportionately higher in industries with a high demand for external equity financing in countries with a large CIFAR index. Together, the results of Rajan and Zingales, and Carlin and Mayer are consistent with high-quality disclosure regimes promoting growth and firm entry by lowering the cost of external financing. However, as illustrated in the exhibit, corporate disclosure can also impact economic performance directly through the project identification and governance channels. For example, future research can focus on the governance channel by developing proxies for the relative magnitude of inherent agency costs from shareholder-manager conflicts for each industry, regardless of where the industry is located. Measures of economic performance for each industry within each country can be regressed against the interaction of the inherent agency costs for the industry and the quality of the corporate disclosure regime in the country.

Love (2000) examines the hypothesis that financial development affects growth by decreasing information and contracting related imperfections in the capital markets, thus reducing the wedge between the cost of external and internal finance at the firm level. Estimating a structural model of investment using firm-level data from forty countries, the paper finds that financial development decreases the sensitivity of investment to the availability of internal funds, which is equivalent to a decrease in financing constraints and improvement in capital allocation. Love’s main indicator of financial development is an index combining measures of stock market development with measures of financial intermediary development. Although the paper’s main result is that this indicator of financial development is negatively related to the estimated measure of capital market imperfection, it is interesting to note that the CIFAR index loads negatively over and above the main financial development indicator, while separate measures of the efficiency of the legal system, corruption, and risk of expropriation do not.

Wurgler (2000) examines the extent to which capital in each country is allocated to value-creating opportunities and withdrawn from value-destroying ones. Wurgler estimates the elasticity of gross investment to value-added as a measure of the efficiency of resource allocation in each country from equation 1:

$$(1) \quad \ln I_{jkt} / I_{jkt-1} = \alpha_k + \eta_k \ln V_{jkt} / V_{jkt-1} + \varepsilon_{jkt},$$

where I_{jkt} is gross fixed capital formation in industry j , country k , year t , V_{jkt} is value-added in industry j , country k , year t . Wurgler interprets the elasticity for each country k , η_k , as a measure of the extent to which country k reduces investment in declining industries and increases investment in growing industries. He documents a significant positive relation between value-added elasticities and financial development as measured by the ratio of the stock market capitalization to GDP and the ratio of credit outstanding to GDP. He also finds a positive relation between value-added elasticities and an index of investor rights from La Porta et al. (1998), and a significant negative relation between elasticities and the fraction of an economy's output due to state-owned enterprises. Most interesting for our purposes, however, is that he documents a significant relation between elasticities and a measure proxying for the amount of firm-specific information impounded in stock prices in a given economy, supporting the hypothesis that more informed stock prices provide better direction for managers' investment decisions.¹³ We are not aware of any direct evidence concerning the relation between the quality of financial accounting regimes and the sensitivity of corporate investments to value-added. This is an interesting issue for future research.

We note two final studies that have exploited the CIFAR index. First, Levine, Loayza, and Beck (2000) examine whether cross-country differences in legal and accounting systems explain differences in the level of financial intermediary development. They find that cross-country differences in legal and accounting systems (measured using the CIFAR index) help account for differences in financial development. These findings suggest that legal and accounting reforms that strengthen creditor rights, contract enforcement, and accounting practices can boost financial development and accelerate economic growth. Second, Lombardo and Pagano (2000) document that total stock market returns are correlated with overall measures of the quality of institutions, such as judicial efficiency and rule of law, controlling for risk. They also examine whether differences in accounting standards are a key explanatory variable of the international variation in initial public offering (IPO) underpricing. The presence of IPO

underpricing is generally viewed as the product of informational asymmetries between generality of investors and the "smart money" in the market for new issues. Shares initially quote at a discount to compensate uninformed investors for their expected losses to the better-informed ones. This informational asymmetry and the resulting IPO discount are likely to be greater where accounting practices are lax and opaque. Consistent with the prediction of the theory, they document a negative correlation between IPO underpricing and the CIFAR index.

We end this section by noting that there is also an emerging literature in accounting that examines the relation between properties of a country's financial reporting regime and its institutional architecture (see Ball [2001] for a synthesis of this literature). Ball, Kothari, and Robin (2000) and Ball and Robin (1999) document significant differences in the extent to which accounting income incorporates economic gains and losses in code-law versus common-law countries. They find that common-law accounting income is more likely than code-law income to incorporate economic losses in a timely fashion. They argue that considerable managerial discretion over reported income, and a near absence of stockholder and lender litigation costs to managers and auditors alike in code-law countries, reduces their incentives to confront economic losses and to recognize them in the financial statements.¹⁴ Guenther and Young (2000) investigate how cross-country differences in legal systems, bank versus market orientation, and legal protection for external shareholders affect the relation between financial accounting earnings and real economic value-relevant events that underlie those earnings. They find that the association between aggregate return on assets and growth in GDP is high in the United Kingdom and the United States (common law, extensive use of markets, and high protection of minority shareholder rights) and low in France and Germany (code law, extensive use of banks, and low protection of minority shareholder rights). Lastly, Ali and Hwang (2000), using financial accounting data from manufacturing firms in sixteen countries for 1986-95, demonstrate that the value relevance of financial reports is lower in countries where the financial systems are bank-oriented rather than market-oriented, where private sector bodies are not involved in the standards-setting process, where accounting practices follow the Continental model as opposed to the British-American model, where tax rules have a greater influence on financial accounting measurements, and where spending on auditing services is relatively low.

5. FUTURE RESEARCH: CORPORATE TRANSPARENCY

The studies reviewed in Section 4 provide exciting new evidence that cross-country differences in corporate disclosure intensity, as measured by the CIFAR index, are associated with differences in economic growth, efficient allocation of investment, sensitivity of investment to internal cash flow, development of financial intermediaries, IPO underpricing, and concentration of stock ownership.

A natural next step is the development of a more comprehensive framework for conceptualizing and measuring the key aspects of the domestic information environment. A fundamental feature of the information environment is corporate transparency, defined as the widespread availability of relevant, reliable information about the periodic performance, financial position, investment opportunities, governance, value, and risk of publicly traded firms (Bushman, Piotroski, and Smith 2001). As a measure of corporate transparency, the CIFAR index used in prior studies has at least three major shortcomings. First, it captures only one dimension of the quality of corporate reporting-disclosure intensity. Second, the CIFAR index does not capture cross-country differences in the extent, speed, or accuracy with which information reported by firms is disseminated throughout the economy. Third, the CIFAR index does not incorporate cross-country differences in private information acquisition and communication activities.¹⁵

BPS develop a framework for conceptualizing and measuring corporate transparency at the country level. In their framework, corporate transparency has three main elements: 1) corporate reporting (voluntary and mandatory), 2) information dissemination via the media and Internet channels, and 3) private information acquisition and communication by financial analysts, institutional investors, and corporate insiders. We describe the framework here to stimulate further thought on the measurement of corporate transparency and of domestic information environments more generally. We also use their framework to illustrate some directions for future research into the economics of information.

The first element in the BPS framework is the quality of corporate reporting. They consider not only corporate disclosure intensity as measured by the CIFAR index, but also the prevalence of specific types of accounting and governance disclosures, the timeliness of disclosures, and the credibility of disclosures as measured by the share of Big-6 accounting firms in total value audited. All measures of corporate reporting used in BPS are collected from Center for International Financial Analysis and Research (1995), and appear in the table.

Variables Used to Measure Corporate Transparency and Data Sources^a

Corporate reporting^b

- Financial accounting disclosures
 - Long-term investments: Research and development, capital expenditures
 - Segment disclosures: Product segments, geographic segments
 - Subsidiary disclosures
 - Footnote disclosures
- Governance disclosures
 - Identity of major shareholders
 - Range of shareholdings
 - Identity of managers
 - Identity of board members and affiliations
 - Remuneration of officers and directors
 - Shares owned by directors and employees
- Timeliness of disclosures
 - Frequency of reporting
 - Number of specific accounting items disclosed in interim reports
 - Consolidation in interim reporting
 - Reporting of subsequent events
- Accounting policies
 - Consolidation of subsidiaries
 - Use of general reserves
- Credibility of disclosures
 - Share of Big-6 accounting firms in total value audited
- Other
 - Financial statements available in English
 - Degree of disclosure of important accounting policies

Information dissemination

- Penetration of media^c
 - Number of newspapers per 1,000 people
 - Number of televisions per 1,000 people
- Media ownership^d
 - Percentage state-owned newspapers of top five daily newspapers in 1999
 - Market share of state-owned newspapers of aggregate market share of top five daily newspapers in 1999

Private information acquisition and communication

- Direct reporting of detailed private information
 - Number of analysts following firms^e
- Indirect communication of aggregate value-relevant information via trades
 - Prevalence of institutional investors^f
 - Total assets of pooled investment schemes to GDP
 - Insider trading laws and enforcement^g

^aSource: Bushman, Piotroski, and Smith (2001).

^bSource: Center for International Financial Analysis and Research (1995).

^cSource: World Development Indicators (2000).

^dSource: Djankov, McLiesh, Nenova, and Shleifer (2001).

^eSource: Chang, Khanna, and Palepu (2000).

^fSource: Beck, Demirguc-Kunt, and Levine (1999).

^gSource: Bhattacharya and Daouk (2001).

The second element is private information acquisition and communication by financial analysts, institutional investors, and corporate insiders. BPS measure private information acquisition of financial analysts by the average number of financial analysts following large companies, as reported in Chang, Khanna, and Palepu (2000). They measure private information acquisition by institutional investors by the assets of pooled investment schemes relative to GDP. Finally, they measure insider trading by the degree of enforcement of restrictions on insider trading, as reported in Bhattacharya and Daouk (2001).

The third element in the BPS framework is the quality of information dissemination throughout the economy. They consider two aspects of the information dissemination infrastructure in a given economy that are expected to affect the speed, accuracy, and reach of the dissemination of information reported by firms. The first aspect is the penetration of media, as measured by the number of newspapers and televisions per capita obtained from World Development Indicators (2000). The second aspect is the prevalence of state versus private ownership of newspapers, as reported in Djankov, McLiesh, Nenova, and Shleifer (2001).¹⁶

This extended representation of corporate transparency allows a variety of research questions to be addressed. We discuss three sets of questions for future research: 1) the relation among measures of the quality of corporate reporting, information dissemination, and private information acquisition and communication in an economy; 2) the economic consequences of the quality of corporate reporting, information dissemination, and private information acquisition, including interactions among these three elements of corporate transparency and interactions with legal and other domestic institutions; and 3) political, economic, or other reasons for cross-country or intertemporal differences in corporate transparency.

The relation among measures of the quality of corporate reporting, information dissemination, and private information acquisition and communication. An intriguing direction for future research is the relation of measures within and across the three elements of corporate transparency: the quality of corporate reporting, information dissemination, and private information acquisition and communication. For example, is higher quality corporate reporting associated with higher quality channels for dissemination of the information reported by firms? Do lax restrictions on insider trading encourage or stifle corporate reporting? Is higher audit rigor associated with greater disclosure intensity? Do lax restrictions on insider trading suppress private information acquisition and communication by financial analysts or institutional investors?

We are aware of no existing empirical research into the relation of measures within and across the three elements of corporate transparency. A theory literature in accounting is replete with examples of public and private information being either substitutes or complements. Verrecchia (1982) models increased public disclosure as crowding out private information, while Indjejikian (1991) models public disclosure as driving increased levels of private information (see also Antle, Demski, and Ryan [2000] for further discussion of this literature). This is ultimately an empirical issue. The recent emergence of databases that capture substantial cross-country variation in the elements of corporate transparency creates potential for important new insights into the relation between components of corporate transparency.

Economic consequences of the quality of corporate reporting, information dissemination, and private information acquisition and communication. A second interesting direction for future research is the economic consequences of the quality of corporate reporting, information dissemination, and private information acquisition and communication. A variety of economic effects are of interest, such as the cost of debt and equity capital, the stability of the financial sector, the size of the capital markets, the liquidity, informational efficiency, and functional efficiency of the stock market,¹⁷ the intensity of investments in high-risk technologies, the growth in the number of firms, the speed and intensity with which financial and human capital are invested in value-creating opportunities and withdrawn from value-destroying ones, and GDP growth.¹⁸

In the investigation of the economic effects of corporate reporting, future research can go beyond disclosure intensity to consider the economic effects of specific types of accounting or governance disclosures, as well as the timeliness, measurement, credibility, or language of corporate disclosures. Research can also consider whether these dimensions of the quality of corporate reporting have complementary economic effects, such as complementarities between disclosure intensity on the one hand, and timeliness, credibility, or measurement of disclosures on the other hand.

In the investigation of the economic effects of information dissemination, future research can explore the effects of the per-capita penetration of the media, the state versus private ownership of the media, and interactions between the penetration and ownership of the media. We also think it is interesting to explore whether corporate reporting and information dissemination have complementary economic effects, whereby the economic effects of quality corporate reporting are enhanced by a quality information dissemination infrastructure, and vice versa.

In the investigation of the economic effects of private information acquisition and dissemination, future research can consider the independent effects of the private information activities of financial analysts, institutional investors, and corporate insiders. We also think there are potentially interesting interactions to explore between private information acquisition on the one hand, and corporate reporting and information dissemination on the other hand. For example, evidence in Bhattacharya and Daouk (2001) suggests that relatively weak enforcement of restrictions on insider trading is associated with a relatively high cost of equity capital. Is this effect mitigated by high-quality corporate reporting and information dissemination, as expected if high-quality corporate reporting and information dissemination reduce information asymmetries between corporate insiders and other investors?

Although the suggestions above concern the interactions among the components of corporate transparency, we also think it is promising to consider potential interactions between measures of corporate transparency and other domestic institutions. For example, since LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997), researchers have documented a variety of economic effects of the domestic legal regime, such as laws protecting investors' rights and enforcement of laws. A recent example of studies in this vein is Lombardo (2000), who documents evidence that the cost of equity capital is negatively associated with the enforceability of contracts and the impartiality and observance of the law, while it is positively associated with corruption and risk of expropriation.

Another natural direction for future research is to understand *how*—that is, through which specific channels—corporate transparency achieves its first-order economic effects. For example, to what extent do high-quality corporate reporting and information dissemination lead to better corporate governance, producing gains through the governance channel depicted in the exhibit? Bushman and Smith (2001) discuss empirical designs that can be used to isolate the economic effects of financial accounting information operating through the governance channel. Similar designs can be used to isolate the economic effects of additional elements of corporate transparency through the governance channel.

Political, economic, or other reasons for cross-country and intertemporal differences in corporate transparency. The research proposed above is motivated at a fundamental level by an interest in the question of what combination or combinations of domestic institutions are most conducive to economic growth and efficiency. We think that the more comprehensive

measurement of corporate transparency illustrated by the BPS framework will generate new insights into how and why the availability of relevant, reliable information about firms from a variety of sources affects economies, and how these economic effects vary with other factors.

We think that another important direction for future research is to explore why elements of corporate transparency vary across countries and over time. We expect that evidence concerning the efficiency effects of corporate transparency and how they vary with the financial architecture, industrial development, corporate governance structures, globalization, or other factors will guide the development of hypotheses concerning intercountry and intertemporal differences in the demand for corporate transparency. We also think that recent theories predicting the political conditions under which financial development will be suppressed to promote agendas other than economic efficiency and new databases measuring these political forces will provide valuable input into this line of inquiry.¹⁹

Of particular interest is the role of regulation in promoting corporate transparency. Although there has been much debate on disclosure regulation, there is no universal agreement on what disclosure regulation should be or whether regulation is even necessary, thus leaving many open questions. A large literature on corporate governance assumes that financial market regulation is unnecessary. This conclusion relies on the idea that sophisticated parties can write enforceable contracts tied to their specific circumstances and that entrepreneurs have adequate incentives to minimize agency costs through bonding, commitment to audited disclosure, and other limits on discretion.²⁰ Implied in this position is the existence of effective judicial enforcement of complex contractual arrangements and an absence of externalities.

However, advocates of market regulation point to a variety of potential failures, such as the ability of insiders to expropriate both potential and existing investors through misrepresentation or asset diversion, or a lack of incentives by courts to enforce laws and contracts effectively. Some scholars argue for the enforcement of securities laws by regulators as opposed to judges. For example, Glaeser, Johnson, and Shleifer (2000) argue that regulators may be required to provide adequate resources and high-powered incentives for optimal enforcement of laws, and support this argument by comparing the regulation of securities markets (including disclosure requirements) through corporate and securities laws in Poland and the Czech Republic. Romano (2001) argues for the introduction of regulatory competition in which firms choose the regulatory regime to which they will be subject from available jurisdictions around the world. Admati and Pfleiderer (2000) develop a model that demonstrates that even in the

presence of externalities to public disclosure (disclosure by one firm provides information about other firms), mandatory disclosure requirements often are unable to achieve welfare-maximizing outcomes.

A variety of interesting empirical issues emerge concerning the effects of accounting and disclosure regulation. For example, to what extent does governmental adoption of superior accounting *rules* actually lead to superior corporate accounting *practices*, and what other institutional factors must be present for such an effect?²¹ To what extent do disclosure requirements lead to higher quality voluntary disclosures, as discussed in Ball (2001)?

The BPS measurement scheme is of limited use for empirical investigations into the regulation of corporate reporting because it reflects corporate reporting practices resulting from both voluntary and mandatory reporting behavior. Hence, an important step for future research is to develop a multinational database of domestic corporate reporting regulatory environments to facilitate future research into the causes and effects of accounting and disclosure rules and regulations.

Other aspects of the information environment. Our focus above, corporate transparency, is but one aspect of the domestic information environment. Although we believe that corporate transparency is a fundamental feature of the information environment in an economy, we think that it is useful to extend the research proposed above to consider other types of transparency. Vishwanath and Kaufmann (1999) describe a more comprehensive framework for transparency that includes transparency in both the public and private sectors.²² We think that such research has much potential for contributing to a more complete understanding of the economics of information.

6. SUMMARY

In this paper, we discuss economics-based research focused primarily on the governance role of financial accounting information and propose future research ideas. We present a framework that isolates three channels through which financial accounting information can affect the investments, productivity, and value-added of firms. The first channel involves the use of financial accounting information by managers and investors in identifying promising investment opportunities. The second channel is the use of financial accounting information in corporate control mechanisms that discipline managers to direct resources toward projects identified as good and away from projects identified as bad. The third channel is the use of financial accounting information to reduce information asymmetries among investors.

We discuss economics-based research on the use of accounting information in particular governance mechanisms. Topics include the prevalence of financial accounting numbers in managerial contracts, trends in the use of accounting numbers for contracting with managers, properties of accounting and choice of governance configurations, and financial accounting information and additional corporate control mechanisms. We then discuss cross-country research that investigates the effects of financial accounting information on economic performance and present a conceptual framework for characterizing and measuring corporate transparency at the country level, including many ideas for future research.

ENDNOTES

1. See Black (2000) for a useful discussion of this thesis.
2. For more information, see the IASB web site: <<http://www.iasc.org.uk>>.
3. See Ball (2001) for an in-depth discussion of the connection between the emphasis in accounting standards on the verifiability of financial statement data and the credibility of managers' disclosures to the market.
4. See Levine (1997) for a review of theories linking financial development and economic growth of an economy.
5. For example, Chang et al. (2000) document that cross-country differences in analyst following are positively correlated with the quality of financial accounting regimes.
6. While we focus on beneficial effects, theory identifies potential adverse consequences of public information. For example, the early release of public information can destroy risk-sharing opportunities (Hirshleifer 1971; Marshall 1974); signaling of private information can result in overinvestment or other misallocations of capital (Spence 1973); more frequent reporting of information can increase moral hazard costs by increasing the scope of strategic behavior available to managers (Holmstrom and Milgrom 1987; Abreu et al. 1991; Gigler and Hemmer 1998); information release can complicate contract renegotiation and impose agency costs if parties cannot commit not to renegotiate contracts (Laffont and Tirole 1990; Demski and Frimor 1999); public release of proprietary information can distort investment behavior (Darrrough 1993).
7. See Barry and Brown (1985) and Merton (1987) for analysis of the impact of estimation risk and incomplete information, respectively, on the cost of capital.
8. In contrast, Shleifer and Vishny (1986) and Bhidé (1993) argue that liquid stock markets and diffuse ownership structures can reduce shareholders' incentives to monitor the managers, and thus impede economic efficiency. Levine and Zervos (1998) proxy for liquidity of a country's stock market as the value of stock trading relative to the size of the market (turnover) and the value of trading relative to the size of the economy. Using a cross-country design, they find both measures to be positively and significantly related to rates of economic growth, capital accumulation, and productivity growth.
9. In contrast, Barro and Barro (1990) do not find a relation between accounting-based measures and turnover for a sample of large bank CEOs, but do find an inverse relation between stock price performance and turnover. A number of papers also examine the relation between the probability of executive turnover and stock price performance. These include Coughlin and Schmidt (1985), Warner et al. (1988), and Gibbons and Murphy (1990). See Murphy (1999) for an extensive discussion of this literature along with additional empirical analysis.
10. See also Kang and Shivdisani (1995) for evidence that top executive turnover in Japan is related to accounting performance.
11. Other examples of research on specific governance mechanisms include boards of directors (Dechow, Sloan, and Sweeney 1996; Beasley 1996), audit committee characteristics (Klein 2000a, b), shareholder litigation (Kellogg 1984; Francis, Philbrick, and Schipper 1994; Skinner 1994), debt contracts (Smith and Warner 1979; Leftwich 1981; Press and Weintrop 1990; Sweeney 1994), and the audit function (Feltham, Hughes, and Simunic 1991).
12. Regime shifts within a country or region of the world (for example, privatization), however, also may provide rich opportunities for examining the effects of financial accounting information and economic growth and efficiency.
13. The proxy is the fraction of stocks in a country whose prices move in the same direction in a given week, as reported in Morck et al. (2000). Following Morck et al., stock market synchronicity is interpreted as a low amount of firm-specific information impounded in stock prices in a given country. Wurgler (2000) represents one of the few "direct" tests (of which we are aware) of whether the informational efficiency of the stock market enhances the efficiency with which corporate resources are directed toward value-creating opportunities. We return to this issue in Section 5. Also see Durnev et al. (2000).
14. See La Porta, Lopez-De-Silanes, Shleifer, and Vishny (1998) for evidence on differences in investor legal protections between code-law and common-law countries.
15. We use the term "private information acquisition" to mean both the superior processing of publicly reported information and the collection of private information through discussions with managers, customers, suppliers, and others.
16. Djankov, McLiesh, Nenova, and Shleifer (2001) document a variety of social, political, and economic effects of cross-country differences in the prevalence of state versus private media ownership.

ENDNOTES (CONTINUED)

17. The informational efficiency of the stock market concerns the speed and accuracy with which information is reflected in stock prices. Tobin (1982) defines the functional efficiency of the stock market as the extent to which the stock market directs resources to their highest valued uses.

18. Bushman and Smith (2001) discuss a variety of cross-country empirical designs based on the recent economics and finance literatures that they suggest can be used to explore the economic effects of financial accounting information. The same designs can be used to explore the economic effects of corporate reporting, of which financial accounting information is a key ingredient, as well as the economic effects of information dissemination and private information acquisition and communication.

19. For example, Rajan and Zingales (2001) develop and test the theory that incumbent firms apply political pressure to suppress financial development to reduce domestic competition, and this tendency varies the openness of the domestic economy to foreign competition. Vishwanath and Kaufmann (1999) discuss how

transparency in the private sector may be impeded by a lack of transparency in the public sector. Beck, Clarke, Groff, Keefer, and Walsh (1999) discuss how research into the political determinants of economic development has been stifled by the lack of detailed, objective data on the political and institutional features of countries, and introduce a large database to facilitate such research.

20. See, for example, Stigler (1964), Jensen and Meckling (1976), Easterbrook and Fischel (1991), and Coffee (1999). Watts and Zimmerman (1986) discuss specifically the literature on regulation of disclosure.

21. See Ball (2001) for a discussion of a variety of infrastructure requirements for quality financial reporting.

22. The Opacity Index, developed by PriceWaterhouse-Coopers, represents a recent attempt to measure transparency broadly, incorporating transparency in both the public and private sectors of each economy.

REFERENCES

- Abreu, D., P. Milgrom, and D. Pearce. 1991. "Information and Timing in Repeated Partnerships." *ECONOMETRICA* 59, no. 6: 1713-33.
- Acemoglu, D., S. Johnson, and J. Robinson. 2000. "The Colonial Origins of Comparative Development: An Empirical Investigation." NBER Working Paper no. 7771.
- Admati, A., and P. Pfleiderer. 2000. "Forcing Firms to Talk: Financial Disclosure Regulation and Externalities." *REVIEW OF FINANCIAL STUDIES* 13, no. 3: 479-519.
- Aggarwal, R., and A. Samwick. 1999. "Executive Compensation, Strategic Competition, and Relative Performance Evaluation: Theory and Evidence." *JOURNAL OF FINANCE* 54, no. 6: 1999-2043.
- Aghion, P., and P. Bolton. 1992. "An Incomplete Contracts Approach to Financial Contracting." *REVIEW OF ECONOMIC STUDIES* 59: 473-94.
- Alchian, A. 1950. "Uncertainty, Evolution, and Economic Theory." *JOURNAL OF POLITICAL ECONOMY* 58: 211-21.
- Ali, A., and L. Hwang. 2000. "Country-Specific Factors Related to Financial Reporting and the Value Relevance of Accounting Data." *JOURNAL OF ACCOUNTING RESEARCH* 38, no. 1: 1-21.
- Amihud, Y., and H. Mendelson. 2000. "The Liquidity Route to a Lower Cost of Capital." *JOURNAL OF APPLIED CORPORATE FINANCE* 12, no. 4: 8-25.
- Antle, R., J. Demski, and S. Ryan. 2000. "Multiple Sources of Information, Valuation, and Accounting Earnings." *JOURNAL OF ACCOUNTING, AUDITING, AND FINANCE*: 675-98.
- Baker, G., R. Gibbons, and K. J. Murphy. 1994. "Subjective Performance Measures in Optimal Incentive Contracts." *QUARTERLY JOURNAL OF ECONOMICS* 109, no. 4: 1125-56.
- Baker, G., M. Gibbs, and B. Holmstrom. 1994a. "The Wage Policy of a Firm." *QUARTERLY JOURNAL OF ECONOMICS* 109, no. 4: 921-55.
- . 1994b. "The Internal Economics of the Firm: Evidence from Personnel Data." *QUARTERLY JOURNAL OF ECONOMICS* 109, no. 4: 881-920.
- Ball, R. 2001. "Infrastructure Requirements for an Economically Efficient System of Public Financial Reporting and Disclosure." *BROOKINGS-WHARTON PAPERS ON FINANCIAL SERVICES*: 127-69.
- Ball, R., S. P. Kothari, and A. Robin. 2000. "The Effect of International Institutional Factors on Properties of Accounting Earnings." *JOURNAL OF ACCOUNTING AND ECONOMICS* 29, no. 1: 1-51.
- Ball, R., and A. Robin. 1999. "Time-Series Properties of Accounting Earnings: International Evidence." Unpublished paper, University of Rochester and Rochester Institute of Technology.
- Barro, J., and R. Barro. 1990. "Pay, Performance, and Turnover of Bank CEOs." *JOURNAL OF LABOR ECONOMICS* 8, no. 4: 448-81.
- Barry, C., and S. J. Brown. 1985. "Differential Information and Security Market Equilibrium." *JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS* 20, no. 4: 407-22.
- Beasley, M. 1996. "An Empirical Analysis of the Relation between Board of Director Composition and Financial Statement Fraud." *ACCOUNTING REVIEW* 71, no. 4: 443-66.
- Beck, T., G. Clarke, A. Groff, P. Keefer, and P. Walsh. 1999. "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions." Unpublished paper, World Bank.
- Beck, T., A. Demirguc-Kunt, and R. Levine. 1999. "A New Database on Financial Development and Structure." Unpublished paper, World Bank.
- Berle, A., and G. Means. 1932. *THE MODERN CORPORATION AND PRIVATE PROPERTY*. New York: MacMillan.
- Bertrand, M., and S. Mullainathan. 1998. "Executive Compensation and Incentives: The Impact of Takeover Legislation." NBER Working Paper no. 6830.
- Bhattacharya, U., and H. Daouk. 2001. "The World Price of Insider Trading." *JOURNAL OF FINANCE* 57, no. 1: 57-108.
- Bhide, A. 1993. "The Hidden Cost of Stock Market Liquidity." *JOURNAL OF FINANCIAL ECONOMICS* 34, no. 1: 31-51.
- Black, B. 2000. "The Core Institutions that Support Strong Securities Markets." *BUSINESS LAWYER* 55: 1565-1607.

REFERENCES (CONTINUED)

- Blackwell, D., J. Brickley, and M. Weisbach.* 1994. "Accounting Information and Internal Performance Evaluation: Evidence from Texas Banks." *JOURNAL OF ACCOUNTING AND ECONOMICS* 17: 331-58.
- Botosan, C.* 2000. "Evidence that Greater Disclosure Lowers the Cost of Equity Capital." *JOURNAL OF APPLIED CORPORATE FINANCE* 12, no. 4: 60-9.
- Brennan, M., and C. Tamarowski.* 2000. "Investor Relations, Liquidity and Stock Prices." *JOURNAL OF APPLIED CORPORATE FINANCE* 12, no. 4: 26-37.
- Bushman, R., Q. Chen, E. Engel, and A. Smith.* 2000. "The Sensitivity of Corporate Governance Systems to the Timeliness of Accounting Earnings." Unpublished paper, University of Chicago.
- Bushman, R., E. Engel, J. Milliron, and A. Smith.* 1998. "An Empirical Investigation of Trends in the Absolute and Relative Use of Earnings in Determining Cash Compensation of CEOs." Unpublished paper, University of Chicago.
- Bushman, R., R. Indjejikian, and A. Smith.* 1996. "CEO Compensation: The Role of Individual Performance Evaluation." *JOURNAL OF ACCOUNTING AND ECONOMICS* 21: 161-93.
- Bushman, R., J. Piotroski, and A. Smith.* 2001. "What Determines Corporate Transparency?" Unpublished paper, University of Chicago.
- Bushman, R., and A. Smith.* 2001. "Financial Accounting Information and Corporate Governance." *JOURNAL OF ACCOUNTING AND ECONOMICS* 32, no. 1-3: 237-333.
- Carlin, W., and C. Mayer.* 2000. "Finance, Investment and Growth." Unpublished paper, University College London and University of Oxford Said Business School.
- Center for International Financial Analysis and Research.* 1995. *INTERNATIONAL ACCOUNTING AND AUDITING TRENDS*. 4th ed.
- Chang, J., T. Khanna, and K. Palepu.* 2000. "Analyst Activity around the World." Unpublished paper, Harvard Business School.
- Coase, R.* 1937. "The Nature of the Firm." *ECONOMICA* 4, no. 386: 357-76.
- Coffee, J.* 1999. "Privatization and Corporate Governance: The Lessons from Securities Market Failure." Unpublished paper, Columbia University Law School.
- Core, J., W. Guay, and R. Verrecchia.* 2000. "Are Performance Measures Other Than Price Important to CEO Incentives?" Unpublished paper, University of Pennsylvania Wharton School.
- Coughlin, A., and R. Schmidt.* 1985. "Executive Compensation, Management Turnover, and Firm Performance: An Empirical Investigation." *JOURNAL OF ACCOUNTING AND ECONOMICS* 7, no. 1-3: 43-66.
- Darrough, M.* 1993. "Disclosure Policy and Competition: Cournot vs. Bertrand." *ACCOUNTING REVIEW* 68, no. 3: 534-61.
- DeAngelo, L.* 1988. "Managerial Competition, Information Costs, and Corporate Governance: The Use of Accounting Performance Measures in Proxy Contests." *JOURNAL OF ACCOUNTING AND ECONOMICS* 10, no. 1: 3-36.
- Dechow, P., R. Sloan, and A. Sweeney.* 1996. "Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC." *CONTEMPORARY ACCOUNTING RESEARCH* 13, no. 1: 1-36.
- DeFond, M., and C. Park.* 1999. "The Effect of Competition on CEO Turnover." *JOURNAL OF ACCOUNTING AND ECONOMICS* 27: 35-56.
- Demirguc-Kunt, A., and V. Maksimovic.* 1998. "Law, Finance, and Firm Growth." *JOURNAL OF FINANCE* 53: 2107-37.
- Demski, J., and H. Frimor.* 1999. "Performance Measure Garbling under Renegotiation in Multi-Period Agencies." *JOURNAL OF ACCOUNTING RESEARCH* 37 (supplement): 187-214.
- Dewatripont, M., and J. Tirole.* 1994. "A Theory of Debt and Equity, Diversity of Securities and Manager-Shareholder Congruence." *QUARTERLY JOURNAL OF ECONOMICS* 109: 1027-54.
- Diamond, D., and R. Verrecchia.* 1991. "Disclosure, Liquidity, and the Cost of Capital." *JOURNAL OF FINANCE* 46: 1325-59.
- Djankov, S., R. La Porta, F. Lopez-De-Silanes, and A. Shleifer.* 2000. "The Regulation of Entry." Unpublished paper, Harvard University.

REFERENCES (CONTINUED)

- Djankov, S., C. McLiesh, T. Nenova, and A. Shleifer. 2001. "Who Owns the Media." Harvard Institute of Economic Research Discussion Paper no. 1919.
- Dow, J., and G. Gorton. 1997. "Stock Market Efficiency and Economic Efficiency: Is There a Connection?" *JOURNAL OF FINANCE* 52: 1087-1129.
- Durnev, A., R. Morck, and B. Yeung. 2000. "Does Firm-Specific Information in Stock Prices Guide Capital Allocation?" NBER Working paper no. 8993.
- Durnev, A., R. Morck, B. Yeung, and P. Zarowin. 2001. "Does Greater Firm-Specific Return Variation Mean More or Less Informed Stock Pricing?" Unpublished paper, May.
- Dye, R., and S. Sridhar. 2001. "Strategy-Directing Disclosures." Unpublished paper, Northwestern University.
- Easterbrook, F., and D. Fischel. 1991. *THE ECONOMIC STRUCTURE OF CORPORATE LAW*. Cambridge: Harvard University Press.
- Fama, E. 1980. "Agency Problems and the Theory of the Firm." *JOURNAL OF POLITICAL ECONOMY* 88: 288-307.
- Fama, E., and M. Jensen. 1983. "Separation of Ownership and Control." *JOURNAL OF LAW AND ECONOMICS* 26: 301-25.
- Feltham, G., J. Hughes, and D. Simunic. 1991. "Empirical Assessment of the Impact of Auditor Quality on the Valuation of New Issues." *JOURNAL OF ACCOUNTING AND ECONOMICS* 14, no. 4: 375-99.
- Francis, J., D. Philbrick, and K. Schipper. 1994. "Shareholder Litigation and Corporate Disclosure." *JOURNAL OF ACCOUNTING RESEARCH* 32, no. 2: 137-64.
- Gibbons, R., and K. J. Murphy. 1990. "Relative Performance Evaluation for Chief Executive Officers." *INDUSTRIAL AND LABOR RELATIONS REVIEW* 43, no. 3: 30-51.
- Gibbs, M. 1995. "Incentive Compensation in a Corporate Hierarchy." *JOURNAL OF ACCOUNTING AND ECONOMICS* 19: 247-77.
- Gigler, F., and T. Hemmer. 1998. "On the Frequency, Quality, and Informational Role of Mandatory Financial Reports." *JOURNAL OF ACCOUNTING RESEARCH* 36 (supplement): 117-47.
- Glaeser, E., S. Johnson, and A. Shleifer. 2001. "Coase versus the Coasians." *QUARTERLY JOURNAL OF ECONOMICS* 116, no. 3: 853-99.
- Guenther, D., and D. Young. 2000. "The Association between Financial Accounting Measures and Real Economic Activity: A Multi-national Study." *JOURNAL OF ACCOUNTING AND ECONOMICS* 29: 53-72.
- Hall, B., and J. Liebman. 1998. "Are CEOs Really Paid Like Bureaucrats?" *QUARTERLY JOURNAL OF ECONOMICS* 103: 653-91.
- Harris, M., and A. Raviv. 1979. "Optimal Incentive Contracts with Imperfect Information." *JOURNAL OF ECONOMIC THEORY* 20: 231-59.
- Hayes, R., and S. Schaefer. 2000. "Implicit Contracts and the Explanatory Power of Top-Executive Compensation for Future Performance." *RAND JOURNAL OF ECONOMICS* 31, no. 2: 273-93.
- Hirshleifer, J. 1971. "The Private and Social Value of Information and the Reward to Inventive Activity." *AMERICAN ECONOMIC REVIEW* 61, no. 4: 561-74.
- Hogan, C., and C. Lewis. 1999. "The Long-Run Performance of Firms Adopting Compensation Plans Based on Economic Profits." Unpublished paper, Vanderbilt University Owen Graduate School of Management.
- Holmstrom, B., and P. Milgrom. 1987. "Aggregation and Linearity in the Provision of Intertemporal Incentives." *ECONOMETRICA* 55, no. 2 (March): 303-28.
- Hubbard, R., and D. Palia. 1995. "Executive Pay and Performance: Evidence from the U.S. Banking Industry." *JOURNAL OF FINANCIAL ECONOMICS* 39, no. 1: 105-30.
- Ichniowski, C., K. Shaw, and G. Prennushi. 1997. "The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines." *AMERICAN ECONOMIC REVIEW* 87, no. 3: 291-313.
- Indjejikian, R. 1991. "The Impact of Costly Information Interpretation on Firm Disclosure Decisions." *JOURNAL OF ACCOUNTING RESEARCH* 29, no. 2: 277-301.

REFERENCES (CONTINUED)

- Ittner, C., D. Larcker, and M. Rajan.* 1997. "The Choice of Performance Measures in Annual Bonus Contracts." *ACCOUNTING REVIEW* 72, no. 2: 231-55.
- Jagannathan, R., and S. Srinivasan.* 1999. "Does Product Market Competition Reduce Agency Costs?" *NORTH AMERICAN JOURNAL OF ECONOMICS AND FINANCE* 10: 387-99.
- Jayarathne, J., and P. E. Strahan.* 1996. "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation." *QUARTERLY JOURNAL OF ECONOMICS* 111: 639-71.
- Jensen, M.* 1986. "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers." *AMERICAN ECONOMIC REVIEW* 76: 323-9.
- Jensen, M., and W. Meckling.* 1976. "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure." *JOURNAL OF FINANCIAL ECONOMICS* 3, no. 4 (October): 305-60.
- Jensen, M., and K. Murphy.* 1990. "Performance Pay and Top-Management Incentives." *JOURNAL OF POLITICAL ECONOMY* 98: 225-64.
- Kang, J., and A. Shivdasani.* 1995. "Firm Performance, Corporate Governance, and Top-Executive Turnover in Japan." *JOURNAL OF FINANCIAL ECONOMICS* 38, no. 1: 29-58.
- Kaplan, S.* 1994a. "Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States." *JOURNAL OF POLITICAL ECONOMY* 102-3: 510-46.
- . 1994b. "Top Executives, Turnover, and Firm Performance in Germany." *JOURNAL OF LAW, ECONOMICS AND ORGANIZATION* 10, no. 1: 142-59.
- Kaplan, S., and P. Stromberg.* 2000. "Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts." Unpublished paper, University of Chicago.
- Kellogg, R.* 1984. "Accounting Activities, Security Prices, and Class Action Lawsuits." *JOURNAL OF ACCOUNTING AND ECONOMICS* 6: 185-204.
- King, R., and R. Levine.* 1993. "Finance and Growth: Schumpeter Might Be Right." *QUARTERLY JOURNAL OF ECONOMICS* 108, no. 3: 681-737.
- Klein, A.* 2000a. "Economic Determinants behind Audit Committee Independence." Unpublished paper, New York University.
- . 2000b. "Audit Committee, Board of Director Characteristics and Earnings Management." Unpublished paper, New York University.
- Laffont, J. J., and J. Tirole.* 1990. "Adverse Selection and Renegotiation in Procurement." *REVIEW OF ECONOMIC STUDIES* 57, no. 4: 597-625.
- Lambert, R., and D. Larcker.* 1987. "An Analysis of the Use of Accounting and Market Measures of Performance in Executive Compensation Contracts." *JOURNAL OF ACCOUNTING RESEARCH* 25 (supplement): 95-125.
- Lambert, R., D. Larcker, and K. Weigelt.* 1993. "The Structure of Organizational Incentives." *ADMINISTRATIVE SCIENCE QUARTERLY*, September: 438-61.
- La Porta, R., F. Lopez-De-Silanes, and A. Shleifer.* 1999. "Corporate Ownership around the World." *JOURNAL OF FINANCE* 54, no. 2: 471-517.
- La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. Vishny.* 1997. "Legal Determinants of External Capital." *JOURNAL OF FINANCE* 52, no. 3: 1131-50.
- . 1998. "Law and Finance." *JOURNAL OF POLITICAL ECONOMY* 106: 1113-55.
- . 1999. "Investor Protection and Corporate Valuation." Unpublished paper, Harvard University.
- . 2000. "Agency Problems and Dividend Policies around the World." *JOURNAL OF FINANCE* 55, no. 1: 1-33.
- Leftwich, R.* 1981. "Evidence of the Impact of Mandatory Changes in Accounting Principles on Corporate Loan Agreements." *JOURNAL OF ACCOUNTING AND ECONOMICS* 3, no. 1: 3-36.
- Lehn, K., and A. Makhija.* 1997. "EVA, Accounting Profits, and CEO Turnover: An Empirical Examination 1985-1994." *JOURNAL OF APPLIED CORPORATE FINANCE* 10, no. 2: 90-7.
- Leuz, C., and R. Verrecchia.* 2000. "The Economic Consequences of Increased Disclosure." *JOURNAL OF ACCOUNTING RESEARCH* 38 (supplement): 91-124.

REFERENCES (CONTINUED)

- Levine, R.* 1997. "Financial Development and Economic Growth: Views and Agenda." *JOURNAL OF ECONOMIC LITERATURE* 35, no. 2: 688-726.
- Levine, R., N. Loayza, and T. Beck.* 2000. "Financial Intermediation and Growth: Causality and Causes." *JOURNAL OF MONETARY ECONOMICS* 46: 31-77.
- Levine, R., and D. Renelt.* 1992. "A Sensitivity Analysis of Cross-Country Growth Regressions." *AMERICAN ECONOMIC REVIEW* 82, no. 4: 942-63.
- Levine, R., and S. Zervos.* 1993. "What We Have Learned about Policy and Growth from Cross-Country Regressions?" *AMERICAN ECONOMIC REVIEW* 83, no. 2: 426-43.
- . 1998. "Stock Markets, Banks, and Economic Growth." *AMERICAN ECONOMIC REVIEW* 88: 537-58.
- Lombardo, D.* 2000. "Is There a Cost to Poor Institutions?" Unpublished paper, Stanford University.
- Lombardo, D., and M. Pagano.* 2000. "Legal Determinants of the Return on Equity." Università di Salerno CSEF Working Paper no. 24 and CEPR Discussion Paper no. 2276.
- Love, Inessa.* 2000. "Financial Development and Financing Constraints: International Evidence from a Structural Investment Model." Unpublished paper, Columbia University.
- Manne, H.* 1965. "Mergers and the Market for Corporate Control." *JOURNAL OF POLITICAL ECONOMY* 73, no. 2: 110-20.
- Marshall, J.* 1974. "Private Incentives and Public Information." *AMERICAN ECONOMIC REVIEW* 64, no. 3: 373-90.
- Merton, R.* 1987. "A Simple Model of Capital Market Equilibrium with Incomplete Information." *JOURNAL OF FINANCE* 42, no. 3: 483-510.
- Milliron, J.* 2000. "Board of Director Incentive Alignment and the Design of Executive Compensation Contracts." Unpublished paper, University of Chicago Graduate School of Business.
- Modigliani, F., and E. Perotti.* 2000. "Security versus Bank Finance: The Importance of Proper Enforcement of Legal Rules." Unpublished paper, Massachusetts Institute of Technology Sloan School of Management.
- Morck, R., B. Yeung, and W. Yu.* 2000. "The Information Content of Stock Markets: Why Do Emerging Markets Have Synchronous Stock Price Movements?" *JOURNAL OF FINANCIAL ECONOMICS* 59: 215-60.
- Murphy, K. J.* 1999. "Executive Compensation." In Orley Ashenfelter and David Card, eds., *HANDBOOK OF LABOR ECONOMICS*, Vol. 3. Amsterdam: North-Holland.
- Murphy, K. J., and J. Zimmerman.* 1993. "Financial Performance Surrounding CEO Turnover." *JOURNAL OF ACCOUNTING AND ECONOMICS* 16: 273-315.
- Parrino, R.* 1997. "CEO Turnover and Outside Succession: A Cross-Sectional Analysis." *JOURNAL OF FINANCIAL ECONOMICS* 46, no. 2: 165-97.
- Press, G., and J. Weintrop.* 1990. "Accounting-Based Constraints in Public and Private Debt Arrangements: Their Association with Leverage and Impact on Accounting Choice." *JOURNAL OF ACCOUNTING AND ECONOMICS* 12, no. 1-3: 65-95.
- Rajan, R., and L. Zingales.* 1998. "Financial Dependence and Growth." *AMERICAN ECONOMIC REVIEW* 88, no. 3: 559-86.
- . 2000. "The Governance of the New Enterprise." In X. Vives, ed., *CORPORATE GOVERNANCE: THEORETICAL AND EMPIRICAL PERSPECTIVES*. Cambridge: Cambridge University Press.
- . 2001. "The Great Reversals: The Politics of Financial Development in the 20th Century." Unpublished paper, University of Chicago.
- Romano, Roberta.* 2001. "The Need for Competition in International Securities Regulation." Yale ICF Working Paper no. 00-49, June 30.
- Shleifer, A., and R. Vishny.* 1986. "Large Shareholders and Corporate Control." *JOURNAL OF POLITICAL ECONOMY* 94, no. 3: 461-88.
- . 1997. "A Survey of Corporate Governance." *JOURNAL OF FINANCE* 52, no. 2: 737-84.
- Skinner, D.* 1994. "Why Firms Voluntarily Disclose Bad News." *JOURNAL OF ACCOUNTING RESEARCH* 32: 38-60.
- Sloan, R.* 1993. "Accounting Earnings and Top-Executive Compensation." *JOURNAL OF ACCOUNTING AND ECONOMICS* 16: 55-100.

REFERENCES (CONTINUED)

- Smith, C., and J. Warner.* 1979. "On Financial Contracting: An Analysis of Bond Covenants." *JOURNAL OF FINANCIAL ECONOMICS* 7, no. 2: 117-61.
- Smith, C., and R. Watts.* 1992. "The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies." *JOURNAL OF FINANCIAL ECONOMICS* 32: 263-92.
- Spence, M.* 1973. "Job Market Signaling." *QUARTERLY JOURNAL OF ECONOMICS* 87: 255-74.
- Stigler, G.* 1958. "The Economies of Scale." *JOURNAL OF LAW AND ECONOMICS* 1: 54-71.
- . 1964. "Public Regulation of the Securities Market." *JOURNAL OF BUSINESS* 37: 117-42.
- Sweeney, A.* 1994. "Debt-Covenant Violations and Managers' Accounting Responses." *JOURNAL OF ACCOUNTING AND ECONOMICS* 17, no. 3: 281-308.
- Tobin, J.* 1982. "On the Efficiency of the Financial System." *LLOYDS BANK REVIEW*, July.
- Verrecchia, R.* 1982. "The Use of Mathematical Models in Financial Accounting." *JOURNAL OF ACCOUNTING RESEARCH*, supplement.
- Vishwanath, T., and D. Kaufmann.* 1999. "Towards Transparency in Finance and Governance." World Bank.
- Wallace, J.* 1997. "Adopting Residual Income-Based Compensation Plans: Do You Get What You Pay For?" *JOURNAL OF ACCOUNTING AND ECONOMICS* 24: 275-300.
- Warner, J., R. Watts, and K. Wruck.* 1988. "Stock Prices and Top-Management Changes." *JOURNAL OF FINANCIAL ECONOMICS* 20: 461-92.
- Watts, R., and J. Zimmerman.* 1986. *POSITIVE ACCOUNTING THEORY*. Englewood Cliffs, N.J.: Prentice-Hall.
- Weisbach, M.* 1988. "Outside Directors and CEO Turnover." *JOURNAL OF FINANCIAL ECONOMICS* 20: 431-60.
- World Development Indicators.* 2000. Washington, D.C.: World Bank.
- Wurgler, J.* 2000. "Financial Markets and the Allocation of Capital." *JOURNAL OF FINANCIAL ECONOMICS* 58, no. 1-2 (October-November): 187-214.
- Zingales, L.* 2000. "In Search of New Foundations." *JOURNAL OF FINANCE* 55: 1623-53.

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