

By What Criteria Do We Evaluate Accounting? Some Thoughts on Economic Welfare and the Archival Literature

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ABSTRACT

The economic role of an accounting regime is to increase welfare through its effects—in conjunction with complementary institutions—on firm and household behavior. I review three major streams of the archival literature (real effects; price effects, including value relevance; and costly contracting), in terms of what they can and cannot reveal as proxies for welfare effects. One conclusion is that the partial correlations and average effects that predominate in this literature have provided valuable insights into the role of accounting in the economy, but provide limited and misleading proxies for

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welfare effects. A major concern is that teachers, students, and researchers—indeed, regulators and standard setters—raised on this literature could lose sight of, and underestimate, the fundamental contribution of accounting to aggregate welfare.

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1. Introduction

Accounting obviously *matters*. How do we know that it matters? The answer is deceptively simple: Substantial resources have been devoted to accounting for millennia, in different civilizations and in different economic systems, and continue to be devoted to it in the modern age. Activities consuming substantial resources do not survive over very long periods and in so many places without *matter*ing. But *how* does accounting matter? *How much* does accounting contribute to aggregate welfare? How does one *evaluate* an accounting regime? These questions are the topic of this essay.

The essay begins by formalizing “mattering” in terms of contribution to aggregate welfare and then outlining important barriers to implementing this criterion in practice. It proceeds by interpreting the three principal streams of the empirical archival literature in accounting (real effects; price effects, including “value relevance”; and costly contracting) as offering different proxies for welfare effects. It briefly discusses how the proxies overlap and differ, and the roles of data and research template availabilities in choosing among them. It makes only tangential references to the analytical literature on the social value of accounting that started with Feltham [1968]. It then digresses a little to discuss how stale (i.e., not novel) accounting information adds to welfare and the blurred distinction between normative and positive. It demonstrates the folly in analyzing aggregate-level events by adopting firm-level perspectives, using the adoption of International Financial Reporting Standards (IFRS) as an example. It then describes evidence of distributive effects of accounting and regulatory mandates, as well as recent studies that quantify aggregate welfare effects directly, rather than indirectly through proxies. It finishes with a discussion of the predominantly negative press the profession receives.

A central conclusion is that the partial correlations and average effects that occupy the archival literature can provide poor, misleading, or even meaningless proxies for welfare effects. That definitely is not to say that such results are without merit: As a body they tell us a considerable amount about how the economy works and the roles accounting plays in it, so they are important in their own right. They also provide important clues about welfare effects, even though that is not their focus. Nevertheless, the link between archival literature results and welfare seldom is drawn or even drawable.

Within the profession, the literature (and, I fear, classroom texts and doctoral curricula) remains largely unaware of—and probably vastly underestimates—the contribution of accounting to aggregate welfare. In the public domain, contribution to welfare does not attract the attention accorded to negatives like auditing failures or pundits’ allegations of deficiencies in accounting rules, thereby diminishing the profession’s image. Welfare effects, in my opinion, are worthy of more attention.

What follows are some personal thoughts on what turns out to be a very complex issue. They are not answers. Others no doubt will see things differently. The intent is to provoke thought and discussion on the foundations of our profession and its contribution to aggregate economic welfare.

2. *Some Background*

The contribution of accounting to economic welfare lurks behind each of the major research streams in the contemporary archival literature: real effects, price effects (including “value relevance”), and costly contracting. When authors state or imply that it is in some sense good or bad that accounting information has the real effects, price effects, or uses in contracting that they identify in their research, they implicitly offer those effects as proxies for welfare-increasing or welfare-decreasing outcomes, even though that is not necessarily their intent. How valid are the proxies? What do they tell us about the contribution of accounting to welfare? What do they not tell us?

Whether an accounting regime or change in regime affects real outcomes, prices, or contracts is inherently important to know, but the deeper issue is whether and how welfare is affected thereby. The primary welfare-economic criterion I invoke is economic efficiency (roughly, how wealthy society is), which sidelines issues of equity among firms and households (roughly, how the wealth is shared).¹ Although equity is an indisputably important dimension of welfare, I confess I have few useful thoughts to contribute on it, and it rarely is addressed in the archival literature. There is, however, an important literature on externalities and distributional effects that have equity and welfare implications, which I discuss in section

¹ More precisely, efficiency is an idealized and purely conceptual state in which all resources are optimally allocated in the sense that any changes made for the benefit of one would have to harm another (i.e., involve equity). I could hide behind the Kaldor-Hicks Compensation Principle (also known as the Second Theorem of Welfare Economics) to avoid discussing equity. Applied in this context, the theorem states that if a redistribution of wealth takes place *in initial endowments* to compensate for any accounting regime change that harms some and benefits others, then an unfettered and frictionless price mechanism allocates scarce resources efficiently. However that would be logically inconsistent, because in a frictionless world there are no firms and no accounting regimes anyway (Coase [1937]). More importantly, the idea of precompensation for accounting effects is wildly impractical, in part because we do not fully understand those effects or their incidence.

9. Although much of that literature does not formally adopt equity as a criterion, it provides relevant results—for example, when positive or negative externalities of firms' behavior exist, or when regulatory mandates benefit some but harm others.

A well-known implication of the Coase [1937] theory of the firm is that economic institutions exist only to reduce economic frictions. If no economic resources such as search costs were consumed in making transactions (i.e., if transactions were frictionless), there would be no role for economic institutions, including accounting: Households then would transact directly among themselves. Coase reasoned that the role of firms is to contribute to economic efficiency by minimizing these frictions. This simple proposition underlies the logic of economic institutions generally, including accounting institutions. It is fundamental to any analysis of the economic role of accounting. Loosely stated, the role of accounting then can be framed as increasing economic efficiency by reducing frictions in the economy, thereby (ignoring equity issues) increasing aggregate welfare.

Two related clarifications are in order. First, economic frictions are not trifles, like the low cost of checking out at the local supermarket, or of transacting on major stock exchanges. Imagine the frictions that were overcome in getting recordkeeping from clay tablets to computers!² Second, setting aggregate welfare as a criterion for evaluating accounting does not in any way support the notion of centralized planning. Although the evolution of economic institutions is by no means guaranteed to produce the Nirvana of a completely efficient institutional structure (see the studies in Dixit, Milgrom, and Milgrom [2011], for example), the course of history reveals the emergence of institutions that reduce frictions and thereby increase welfare, without this being centrally planned (Hayek [1960, 1976, 1988]). I therefore can address the contribution of accounting to economic welfare without assuming that the accounting regime is purposefully designed with that criterion in mind.

Finally, some definitions are required. I will define accounting as the measurement of monetary transactions by economic institutions and the communication of their outcomes to inform the actions of firms and households. The effects of accounting on welfare therefore occur indirectly, by affecting the actions of firms and households. I will define an accounting regime as encompassing the entire institutional structure that affects accounting practice in public firms, private firms, not-for-profits, government entities, and other institutions. A regime change could be as simple as adopting a new standard, or as complex as the invention of double entry accounting or the widespread adoption of IFRS in 2005. I will use the terms firm and institution interchangeably and will use the generic term households (rather than people, investors, or consumers).

²This is but an extension of Adam Smith's famous example of pin manufacturing with which he opens *The Wealth of Nations*, or of Leonard E. Read's [1999] remarkable parable "I, Pencil."

Consistent with the above, I will define accounting *research* as the investigation of the economics of firm and household behavior, focusing on the integral role of accounting information. Why is it necessary to specify the qualifier “integral”? Because, as discussed more fully below, accounting institutions coevolve along with many other economic institutions: they are complements.

3. *Some Barriers*

Economic welfare is a notoriously difficult concept to pin down. I discuss five barriers to assessing the welfare-economic contribution of any accounting regime. No doubt there are others.

3.1 SPECIFYING THE COUNTERFACTUAL

What is the base case against which the welfare effect of an accounting regime is to be assessed? For example, does one assess the current regime relative to the following:

- (1) A world with no accounting of *any* type whatsoever?
- (2) An early regime in which assets and liabilities are counted in physical terms only (number of goats, amphorae of oil, etc.)?
- (3) A monetary-based accounting regime in which assets, liabilities, and net income are counted in additive monetary terms, using double-entry accounting?
- (4) A more modern preregulatory regime, such as the United States before the advent of the state regulations and the creation of the SEC in 1934, or the United Kingdom before the accounting mandates of the Joint Stock Companies Act 1844?
- (5) An alternative version of the current regime, such as when comparing fair value accounting with historical cost accounting, when evaluating IFRS relative to prior national accounting standards, or when evaluating the effects of Financial Accounting Standards Board (FASB) or IASB introducing a particular new accounting standard?

Conceptually, the true base case for assessing the contribution of accounting to aggregate welfare is the first (no accounting at all), but that is not easy to imagine and is impossible to research using archival data. We therefore adopt baselines that are a small perturbation to the existing regime, such as more or less frequent reporting, more or less use of fair value accounting, more or less globalization of standards and enforcement, or with and without an individual new accounting standard or auditing mandate. By setting limited baselines, we can lose sight of accounting’s complete economic role and of the magnitude of its contribution to

welfare.³ Consequently, it can be helpful for educators, researchers, regulators, and standard setters to contemplate—however briefly—a world with no accounting.

3.2 IDENTIFYING CAUSALITY WHEN INSTITUTIONS ARE ECONOMIC COMPLEMENTS

Under even the least ambitious of the above counterfactuals, there is another seemingly insurmountable barrier to assessing the contribution of accounting to economic welfare: institutional complementarity. Institutional complementarity has long been recognized in economic development. Analytically, it is formalized by Aoki [1994, 2001], for example, building on the demonstration by Milgrom and Roberts [1990] and Topkis [1998] of complementarity emerging in a supermodular strategic game. Empirically, institutional complementarity is demonstrated by Hall and Gingerich [2009], who categorize the institutions in all OECD countries and conclude that “there are powerful interaction effects among institutions across sub-spheres of the political economy that must be considered if the economic impact of institutional change in any one sphere is to be accurately assessed.” In the accounting literature, institutional complementarity is recognized by Ohlson and Buckman [1981], Ball [2001, 2004], Ball, Robin, and Wu [2000, 2003], Leuz, Nanda, and Wysocki [2003], Leuz [2010], and Leuz and Wysocki [2016], among others.⁴

When attempting to assess the contribution of accounting to economic welfare, a thorny problem therefore is that accounting has important institutional complements, without which an accounting regime—and its effects—would not be the same. Conversely, many of those institutions would not be the same without their accompanying accounting regime. The optimal accounting regime is not independent of the structure of other economic institutions, and the optimal structure of other economic institutions is not independent of the accounting regime.

For example, even simple regimes that merely account in physical quantities could not emerge without developments in number systems, language, reading, and writing, rudimentary education functions in which scribes acquire these skills, and –apparently—even developments in the human brain (Basu et al. [2006], Dickhaut [2009]). How much economic benefit does one then attribute to accounting per se? To the development of commercial language, number systems, reading, and writing? To take another example, the development of accounting in monetary rather than physical terms—a foundation of double entry accounting—requires the

³ This approach is discussed further in section 9.3. A baseline of no accounting could be investigated experimentally, as in Basu et al. [2006], but by necessity the simulated economy and its accounting regime must then be primitive.

⁴ Though Ohlson and Buckman [1981] assume frictionless pure exchange, without obvious implications for regime design.

development of a monetary system with a currency acceptable to all parties using monetary accounting information (for running their business, in transacting with others, for paying taxes, etc.). How much benefit is attributable to accounting or to monetary systems?

Just as accounting is associated with complementary institutional characteristics, *changes* in accounting normally are associated with complementary *changes* in other institutional characteristics. An instructive example is provided by accounting for marketable securities. In 1993, SFAS No. 115 changed the accepted accounting method from the “lower of cost or market” method of my generation, as encoded by Accounting Research Bulletin (ARB) No. 30 in 1947 and restated in the omnibus ARB No. 43 in 1953, to the current “fair value” method of “marking to market” and “marking to model.”

This change was made possible by complementary institutional changes that preceded it, including the following:

- (1) Financial markets had become better understood and respected. In the era when Fama [1965] coined the term “efficient markets,” financial asset prices were viewed with skepticism. The ensuing flood of research on seemingly rational price behavior helped to change that view.
- (2) Markets for commodities and financial instruments had become substantially more liquid, so closing prices at balance dates had become considerably more reliable estimators of realizable values.⁵
- (3) Many new liquid security markets had sprung up, most notably for derivatives, providing a wider range of reliable prices.
- (4) Electronic data services had proliferated, containing timely transactions prices and fair values for stocks, commodities, financial instruments, real estate, used plant and equipment, etc.
- (5) Valuation models had become “generally accepted.” When I was a student, the present value (discounted cash flow) model was not widely known outside of academe, and it was viewed as theoretical and impractical by practitioners who did know about it. That changed over time, in part due to education and in part to reduced costs of calculation. By 1976, FASB was able to judge the discounted cash flow valuation method as being sufficiently *generally accepted* for it to mandate its use in SFAS No. 13 on lease accounting.
- (6) The Black-Scholes model, on which many “mark to model” calculations are based, was published in 1973. It—and multiple variants—rapidly became generally accepted and used in valuation practice. Two decades later, the FASB deemed Black-Scholes

⁵ For example, the daily average number of shares traded on the NYSE in January 1950 was 1.7 million. In January 2018 it was 1,104.8 million. Source: <https://www.nyse.com/data/transactions-statistics-data-library>, visited August 7, 2018.

valuations as being sufficiently *generally accepted* in practice to be used in valuing stock options issued to employees.

These institutional developments made valuation and pricing information more widely accepted, and quicker and cheaper to obtain and process. This created the opportunity for accountants to replace more and more historical costs with “fair values” —based on recently transacted prices, quotes, and generally accepted valuation methods. How much of any welfare economic benefit associated with the introduction of fair value accounting for marketable securities does one attribute to the new accounting method *per se*? To increased market liquidity or the development of new markets? To reductions in calculation costs? To new pricing services? To advances in valuation theory?

Causality also runs in the other direction: Developments in accounting encourage developments in complementary institutional structures. Consider the many data services that now supply firms and their auditors with reliable and timely pricing information, used for fair-valuing even the most complex securities. The demand for using these data in financial reporting presumably contributed to the development of the data services. In general, accounting developments can be expected to lead to developments in complementary institutions, as well as vice versa.

If accounting and other institutions are complements, can causality ever be attributed to accounting *per se*? Are developments in accounting caused by developments in other institutional variables? Are developments in other institutional variables caused by developments in accounting? Or is the correct answer “both of the above, they are caused jointly”?

Complementarity implies that changing accounting standards alone, in the absence of changes in other institutions, is unlikely to have substantial effects. Ball, Robin, and Wu [2000] studied the adoption by Chinese firms of International Accounting Standards (the precursor to IFRS) at a time when there were no observable changes in preparer and auditor incentives. They found little change in financial reporting practice and concluded that (Abstract) “financial reporting cannot be improved simply by governments mandating accounting standards that evolved endogenously in different economies.” Ball, Robin, and Wu [2003] found a similar result in a sample of East Asian countries. Christensen et al. [2007] found relatively little effect of IFRS adoption except in countries that concurrently strengthened their complementary enforcement institutions.

Researchers seeking to identify accounting effects *per se* search for “quasi-natural experiments” so they can estimate—as closely as possible—those effects in archival data. Like all research, this is an imperfect art, so researchers adopt settings and controls that identify accounting effects as plausibly as possible. As Leuz [2022, Abstract] concludes, “studies that aim to draw causal inferences are important ... assessing the strength of the research design is important when evaluating studies.”

Attributing all real effects, price effects, or contracting effects to accounting alone is to *overestimate* the contribution of accounting to welfare; complementary institutional variables are involved also. Conversely, it is not clear that researchers studying changes in accounting should control for contemporaneous changes in other institutional variables, as commonly is done. The reason is that the controlled-for variables themselves can be affected by the accounting changes. In a sense, they are part of the treatment variable. It thus is easy to *underestimate* the contribution of accounting to welfare by ignoring its role in the coevolution of complementary economic institutions. A good working hypothesis is that everything is endogenous.

In sum, complementarity is a predictable and prevalent feature of the institutional structure of the economy, and the accounting regime is an integral part of it. This makes identification of the contribution of accounting per se to economic welfare, using archival data, imperfect and maybe impossible. The alternative might be to live with estimating the joint effects of an accounting regime and its complementary institutions—not a completely unworthy task.

3.3 DATA AVAILABILITY

Accounting information is critical to the operation of all organizations: public and private, for-profit and not-for-profit, government and non-government. The frustrating reality for the archival researcher is that very few of the effects of accounting information in these settings are observable. Consequently, archival researchers have tended to study more easily observable outcome variables for publicly listed firms, such as share market measures (earnings-returns associations, spreads, liquidity, turnover), debt market measures (ratings, debt yields, accounting-based debt covenants), firms' total investment and financing numbers, management compensation attributes, supply contract features, and other partial measures for which some theory and good data are available. There is a growing literature on private firms (e.g., Ball and Shivakumar [2005], Minnis [2011], Lisowsky and Minnis [2020], Beuselinck et al. [2023]), much of it using data from European countries, which mandate its disclosure, and a tiny literature on not-for-profits (e.g., Duguay [2022]). Despite the overwhelming number of organizations in these sectors, data availability has constrained the size of these literatures.

As discussed more fully in section 5, data limitations distort research that is informative of welfare effects toward public firms and—even then—to those of their outcomes that are easily observable from public disclosures. One effect is to severely minimize the apparent contribution of accounting to aggregate welfare.

3.4 ACCOUNTING REGIME COSTS

From a welfare-economic perspective, the optimal accounting regime is not independent of its cost. The optimal quantity of resources consumed—and, consequently, the optimal quantity and quality (however defined) of

accounting information produced—is bounded. This is an issue for which data constraints are particularly binding: We have better data on accounting benefits than on costs.

If one needs convincing that substantial resources are devoted to our profession (sadly these days it seems more accurate to call it a regulated industry than a profession), consider the complexity of the institutional framework that supports a modern accounting regime. The resources consumed include the following:

- (1) regime-level costs associated with educating and training accountants;
- (2) regime-level costs associated with educating and training auditors;
- (3) regime-level costs of developing, maintaining, and operating the complex set of nonauditing mechanisms that monitor accounting practice (company boards, audit committees, whistleblowing systems, security analysts, credit rating agencies, an independent press, short sellers);
- (4) regime-level costs of developing and operating an effective accounting regulatory apparatus;
- (5) regime-level costs of developing, promulgating, and maintaining accounting and auditing standards;
- (6) regime-level costs of developing and operating an independent and effective judicial system in which statutory and private accounting-related litigation occurs;
- (7) firm-level personnel, information system, and overhead costs of developing and operating internal accounting and internal audit systems;
- (8) firm-level costs of complying with external reporting rules;
- (9) firm-level costs of complying with contractual reporting commitments (notably, in debt agreements); and
- (10) external audit costs incurred in running independent accounting firms, as reflected in audit fees.

Most of the above costs are unobservable. Audit fees are public information in some regimes, as sometimes are the budgets of standard setters and regulators. Some costs associated with regime changes can be observed. For example, Kim, Liu, and Zheng [2012] and De George, Ferguson, and Spear [2013] report increased audit fees upon the adoption of IFRS. In a clever study, Enache et al. [2022] study job postings for accountants associated with the U.S. introduction of the new revenue recognition standard in 2014 and the new standard on leases in 2016. They document a substantial increase in postings, implying an increase in the labor cost of preparing financial reports under the new regime. Meehan and Stephenson [2020] and Barrios [2022] study changes in the supply price of accounting labor associated with the United States introducing 120-hour and 150-hour educational requirements for entry to the profession.

From the perspective of a preference ordering of regimes, the observable costs are but “the tip of the iceberg.” It is surprising that so little research on accounting costs has been published, compared with the volume of research on benefits, though that view must be tempered by recognizing data limitations.

Accounting firms, regulators, politicians, standard setters, and the courts routinely make decisions that affect the accounting regime. In doing so, one would hope they pay at least some attention to costs. For example, an alternative accounting standard that would provide users with more or more accurate information is not necessarily better from a welfare economic criterion; proprietary costs (Verrecchi, [1983]) and costs of producing, reporting, and interpreting the information are part of the equation. An issue that arises from an economic welfare perspective is that these decision makers might not internalize all the costs of implementing their decisions. For example, it might be in the interest of the accounting profession to require overly complex accounting standards that require more extensive auditing, resulting in higher audit fees. Although the profession would encounter some pushback from client firms, that would be somewhat muted because many such costs are imposed industry-wide and thus are largely passed on to consumers, or are dispersed through the economy due to responses such as more firms going private. In other words, the perspective of standard setters is not necessarily one of social optimality. One might assume that regulation solves the problem of accountants not completely internalizing the cost of regimes or regime changes, but similar observations can be made about the size of the budgets and incentives of regulatory bodies.

The U.S. FASB is aware of the issue of costs, stating: “A key principle guiding the Board’s work is to issue standards when the expected benefits of a change justify the perceived costs of that change.”⁶ Consistent with this principle, FASB has commenced reporting rudimentary cost-benefit analyses. These consist only of a listing of some expected costs and benefits of the standards. Although these lists might seem limited, that does not imply that standard setters should conduct formal cost-benefit analyses that culminate in numerical estimates of net benefits. As Coates [2014] cautions in the context of financial regulation, that would imply a degree of precision that cannot be obtained in practice. Identifying and then quantifying costs and benefits both are imperfect processes, encountering many unknowns.

The optimal cost of operating an accounting regime obviously is bounded. Despite its importance, the scarcity of archival research on costs is noticeable. Whatever its cause, and considered by itself, the literature’s focus on benefits relative to costs provides a biased impression of the welfare effects of accounting regimes and changes in regimes.

⁶ Standard-Setting Process (fasb.org) visited December 4, 2022.

3.5 CALIBRATION

Researchers frequently make arguments, in varying degrees of persuasiveness, that an effect they are reporting is economically important. Whether this is the case is not always easy to determine. In the absence of fully identified firm production functions, firm and household investment opportunity sets, and household utility functions, the researcher cannot know for sure whether a variable being studied is inherently important or trivial. Nor can the researcher know for sure whether the observed magnitude of an effect is optimal, too large, or too small. In addition, the magnitude of the reported effect is not always stressed: The crux of the evidence frequently is a test statistic. As will become clearer in the following section, calibrating the importance of a result can be difficult; assessing the importance of a result from an aggregate welfare perspective then becomes a matter of forming a reasonable judgment.

3.6 IMPLICATION OF THESE BARRIERS

Researchers obviously cannot experimentally shut down all accounting, however briefly, so they cannot observe a regime's contribution to economic welfare against the true counterfactual of no accounting at all, thereby severely under-estimating the contribution. Researchers generally are left with studying only partial effects that are associated with cross-sectional or time-series variation at the firm level, or with changes or differences in regime (such as when firms change from public to private status or vice versa, or change country of listing, or when firms or entire countries change accounting standards). Nor can they completely parse out the effects of complimentary economic institutions, and indeed they might not want to: Accounting and other institutions are intertwined, as are their effects. Many or most regime costs are unobservable, so they generally are ignored or underestimated. Data unavailability and imperfect calibration of effects create additional limitations.

It thus is not surprising that archival research provides only partial insights about welfare effects. The following section reviews the major streams in that literature.

4. *Proxies for Welfare Effects in the Contemporary Archival Literature*

Three major criteria for evaluating accounting information have been employed in the archival accounting literature in recent decades: real effects, price effects (including value relevance), and costly contracting. These criteria provide different lenses for viewing accounting generally and can be interpreted as offering different proxies for aggregate welfare effects. Although the three research streams clearly demonstrate that accounting information affects real outcomes, affects prices, and is used in contracting, from a welfare perspective the issue is whether the

information leads to *more efficient* real outcomes, prices, and contracting. That turns out to be quite a challenge.

4.1 REAL EFFECTS

The notion that accounting information affects real outcomes is more than intuitively appealing: It is obvious. Why bother with accounting if it does not affect what firms and households *do*?

I like to cite a loose application of the Heisenberg Uncertainty Principle that the act of measuring affects what is measured. A simple example of this is the effect of accrual accounting on incentives to invest in inventory. Cash accounting expenses all cash outlays for inventory immediately upon acquisition. Accrual accounting expenses only the cost of the inventory that has been used. Accrual accounting thereby provides greater incentives to invest in inventory: Purchasing inventory for future use does not penalize accruals-based earnings but does penalize cash-based performance metrics. The act of measuring and reporting closing inventory under accrual accounting therefore affects the amount of inventory being measured. Another simple example is provided by accounting for unpaid bills. Cash accounting deducts from the operating account only the costs of goods and services that have been paid for. Accrual accounting deducts from earnings the costs of goods and services consumed, including those that have not been paid for (which are recorded as Accounts Payable). Cash accounting rewards managers to stop paying their bills toward the end of their fiscal period, thereby harming the firm's credit rating and overstating its cash-based performance metrics. Accrual accounting therefore provides managers with a greater incentive to follow an optimal financing policy. These are but simple examples of the general rule that accounting measurement affects what is measured.⁷

My understanding of the term “real effects,” as it is used in this literature, is that it refers to accounting effects on *quantities*, including quantities of managerial effort, firm investment, and household consumption. Accounting effects on *prices*, including effects on changes in prices, are of course real but are not direct effects on quantities; they are discussed in the following subsection.

Kanodia and Sapra [2016, p. 624; emphasis in original] describe the real effects criterion as follows:

The *real* effects hypothesis states that the measurement and disclosure rules that govern the functioning of accounting systems—which economic transactions are measured, and which are not measured, how they are measured and aggregated, what is disclosed to capital markets and how frequently such disclosures are made—have significant effects on the *real* decisions that firms make.

⁷Hines [1988] expresses a similar point from the perspective of accounting as a social construct, noting that accounting does not simply mirror an externally given reality, but helps to construct that reality.

Two important dimensions that a welfare economics objective would add to that criterion are the following:

- (1) Accounting affects decisions of households as well as firms, both as consumers and as owners of factors of production (labor and capital invested in firms, housing, education, intellectual property, etc.).
- (2) The optimal accounting regime moves real outcomes toward optimality, as distinct from simply affecting outcomes.

Under this expanded interpretation of real effects, the objective of accounting is to engender more efficient production, investment, and consumption decisions, in both firms and households. When the real effects criterion is broadened in this fashion, it becomes clear that there are myriad ways in which reporting economic outcomes that have been accurately and independently counted could increase welfare by affecting real variables. For example,

- (1) facilitates firms learning from the outcomes of their past production, investment, and financing decisions;
- (2) facilitates firms learning what did and did not generate successful outcomes in other firms;
- (3) facilitates households learning where to allocate their resources;
- (4) disciplines and enhances credibility of manager disclosures of private, forward-looking information;
- (5) facilitates a market for professional managers, who can be compensated and incited on the basis of accounting outcomes, providing gains from specialization and more efficient separation of ownership and control;
- (6) incents managers to act in a fashion more aligned with the interests of owners (i.e., reduces agency costs); and
- (7) aids the development of debt, equity, supply, and other markets generally.

The number of potential real effects of accounting is so large that it is not surprising that there is a vast real effects literature.⁸ Recent real effects studied include the following:

- (1) Kanodia and Saprà [2016] make clever use of public data to investigate accounting effects on firm investment efficiency, risk taking, and economic cyclicalities.⁹
- (2) Lara, Osma, and Penalva [2016] also use publicly available data to study accounting effects on investment efficiency.

⁸ Leuz and Wysocki [2016] and Roychowdhury, Shroff, and Verdi [2019] provide surveys.

⁹ An attractive property of the Kanodia and Saprà [2016] approach is its linkage of capital markets with firm decision making, highlighting the artificiality of separating “managerial” and “financial” accounting (though in practice there are data and theory limitations—and some branding by scholars—that lead to compartmentalization of their research streams).

- (3) Kausar, Shroff, and White [2016] show that voluntarily obtaining a financial statement audit reduces information asymmetry between firms and the capital market. Consequently, firms obtaining audits increase their investment and their use of debt finance, and increase their operating performance.
- (4) Christensen et al. [2017] show that when the 2010 Dodd–Frank Act required U.S. mine-owning public companies to disclose their mine safety records in their financial reports, mine safety increased. Because these records previously existed in a less accessible form, this real effect likely was due to increased awareness of the issue.
- (5) Shroff [2020] shows that firms whose auditors receive a clean report under the international inspection program of the U.S. Public Company Accounting Oversight Board (PCAOB) increase capital raising and investment.
- (6) Napier and Stadler [2020] report minor real effects from the introduction of a new accounting standard (IFRS 15 *Revenue from Contracts with Customers*).

It is apparent that accounting information has myriad effects on real outcomes throughout the economy. Regretfully, most real effects are unobservable: Firms disclose mainly aggregate data, on only a small fraction of their real outcomes. Consequently, archival research on real effects is constrained by data availability. To overcome the paucity of data, Leuz and Wysocki [2016, p. 530, emphasis in original] urge “researchers to examine non-traditional disclosure and reporting settings, especially to learn about the *real effects* of disclosure mandates.”

As noted above, in the absence of fully identified production functions, investment opportunity sets, and household preferences, the researcher cannot know whether an observed real effect is economically important or trivial. Nor can the researcher know whether the magnitude of the real effect is optimal, too large, or too small—especially when costs of operating the regime are taken into account. Limited ability to calibrate real effects therefore inhibits the informativeness of this stream of research from an aggregate welfare perspective.

Despite its recent popularity in the archival literature, real effects is by no means a new concept. More than six decades ago, the decision-usefulness theory of accounting, of which the major proponent was Staubus [1961], stressed the role of financial reporting in users’ decisions, though (as was normal in those days) Staubus offered no evidence of accounting effects. The real effects criterion also overlaps “economic consequences,” on which there is a robust archival literature. The early, Rochester-based, literature is surveyed in Holthausen and Leftwich [1983]. A cross-section of subsequent research on economic consequences includes Dechow, Hutton, and Sloan

[1996], Leuz and Verrecchia [2000], Sadka [2006], Christensen, Lee, and Walker [2007], and Ernstberger, Stich, and Vogler [2012].¹⁰

In sum, real effects on firms and households lie at the foundation of accounting's contribution to welfare but identifying them and obtaining data, as well as measuring and calibrating their welfare effects, present formidable challenges.

4.2 PRICE EFFECTS AND VALUE RELEVANCE

Another way in which accounting could be expected to improve welfare is through its effect on prices. From a welfare economics viewpoint, an optimal accounting regime

- (1) affects prices, as distinct from merely being associated (i.e., correlated) with them,
- (2) affects prices in many markets, and
- (3) affects prices in ways that lead firms and households to make more informed decisions (as distinct from merely affecting prices).

Under this criterion, an objective of accounting is to engender more economically efficient ("better") prices in general, including equity market, debt market, and other factor market prices, as well as product market prices (e.g., supply prices, royalties, labor prices, and management compensation).

Historically, research on the relation between accounting variables and prices overwhelmingly has addressed equity prices. This reflects the importance of the equity market and its substantial use of accounting information. However, it also reflects the ready availability to researchers in many countries of voluminous equity market data. In recent years, data on debt prices, management compensation, and other prices have become available, but the equity market still garners considerable attention.

In discussing the welfare implications of this vast literature, it is helpful to divide it into association studies and price effect studies. The latter seek to demonstrate causation (i.e., that accounting variables affect equity prices) and the former do not (i.e., they only demonstrate correlation).

4.2.1. Association Studies. Researchers can learn a lot about the properties and the economic role of accounting from using equity market prices, and changes in equity prices, as benchmarks. I have a personal stake in this genre. In our 1968 paper, Phil Brown and I initiated the study of the association between equity prices and accounting earnings. We concluded that accounting earnings contain information that overlaps the information that

¹⁰ Nor is the term itself completely new. Although others could have preceded it, the first use of the term in the accounting literature of which I am aware is by myself (Ball [1972], p. 1; emphases in original): "changes in accounting techniques can be *responses* to real variables ... and they can also *induce* real effects ..."

is incorporated in firms' market values (in terms of subsequent terminology, they are value-relevant). More specifically, we calculated that annual earnings contain 22.6% of the information contained in returns over the same period (thereby providing the first value relevance metric). We also concluded that earnings are not as timely as we had expected because they are mostly anticipated by investors. These are fundamental properties of accounting, measured using the natural benchmark of the equity market.

The equity market provides a natural benchmark for evaluating accounting earnings. Despite being seemingly disparate variables—the one based on accounting rules and the other based on investor behavior—earnings and equity returns are structurally related.¹¹ Indeed, total earnings and total returns are identical over firms' lifetimes, the only difference being timing. Both sum to total distributions to owners minus total contributions received from owners. At the end of firms' lifetimes, there are no share prices and balance sheets affecting the variables: Cash, as they say, is king. But at any point during their lifetimes, firms' equity prices incorporate the information that has been incorporated in accounting earnings to date as well as considerable other information that will not be incorporated in earnings until later periods (hence the adage “prices lead earnings”). The accumulated timing difference typically becomes proportionately smaller as firms age, to the point where at the end of their lives it disappears completely.¹² Because of this structural relation, Phil Brown and I were able to study fundamental properties of accounting earnings, and indeed of accounting generally, by using equity returns as a benchmark. Subsequent studies using equity returns as a benchmark to learn important properties of accounting information include Dechow [1994] and Basu [1997].

Using equity prices or returns as benchmark for accounting was highly controversial at the time (e.g., Chambers [1974]; see responses in Ball and Brown [2014 and 2019]). It remains controversial in some circles.¹³ Nevertheless, it has become widely used and known as research on “value relevance,” which Barth, Beaver, and Landsman [2001, pp.78–79] describe as follows: “In the extant literature, an accounting amount is defined as value relevant if it has a predicted association with equity market values.”¹⁴ The

¹¹ Formalized by Preinrich [1938], Edwards and Bell [1961], Peasnell [1982], and Ohlson [1995].

¹² There is evidence of this in Kothari [1992], Gelb and Zarowin [2002], and Lundholm and Myers [2002].

¹³ For example, Morales and Sponem [2017], channelling Stigler [1984], opine that: “economic imperialism’ in accounting research emerged after the publication of the seminal article by Ball and Brown on ‘economic consequences’ and reflects the broader imperialism of economics research in the social sciences. Its success stems in particular from a certain mathematical rhetoric seen as a sign of scientific quality.”

¹⁴ Barth, Li, and McClure [2023] adopt a strictly empirical version of the criterion, imposing no predicted shape on the association, further weakening its economic interpretation.

value relevance research stream remains so successful that it more appropriately might be described as a river.¹⁵

However, as Phil and I pointed out in the last sentence of our 1968 paper, one cannot take this too far. Although one can learn important properties of accounting information using the equity market as a benchmark, one cannot meaningfully order accounting regimes based on correlations with equity prices or price changes. Using equity market price behavior as a proxy for welfare effects can be misleading, perhaps severely. Some of the many reasons are discussed below.

To begin with, value relevance is an excessively narrow criterion from a welfare-economic perspective. Equity claims on firms are not the only factors of production whose prices are affected by financial reporting. Other prices affected include debt, compensation, supply, product, and royalty prices. *These prices are not perfectly positively correlated with equity prices.* Consequently, a high (low) correlation between accounting numbers and one price does not imply a high (low) correlation between those accounting numbers and other prices. There is no a priori reason to believe that what is good for the equity market is good for other markets. Indeed, Gjesdal [1981] argues it is not.

For example, the equity price response to accounting information generally will exceed the price responses of other factors of production because equity is the residual claimant on the firm. Debt generally is less responsive than equity to earnings outcomes. Within debt, prices of highly rated issuances will be comparatively insensitive to earnings outcomes, but prices of lowly rated debt will behave more like equity. In general, equity price behavior in response to accounting information is expected to be atypical of other price responses.

In addition, most U.S. firms using accounting information are private, and have no traded equity prices. There is no reason to believe that what is good for public firms is good for all firms. Indeed, Ball and Shivakumar [2005] argue it is not.

Nor is value relevance a comprehensive reflection of equity holders' interests when ranking accounting regimes. It is in the interest of shareholders that their firm's accounting practices reflect the usefulness of its accounting information to other parties contracting with it, including lenders, managers, employees, suppliers, and customers. Why? Because other parties can be expected to "price protect" to some degree against an accounting regime that is suboptimal from their perspectives (e.g., Jensen and Meckling [1976]). Consequently, the firm and hence its shareholders would pay a price for not incorporating the interests of others in its accounting practices (lenders and suppliers would charge higher

¹⁵ One would imagine these issues had been settled in the debate between Barth, Beaver, and Landsman [2001] and Holthausen and Watts [2001], but testimony to their enduring popularity is that a Google Scholar search for "value relevance" combined with "accounting" on July 7, 2023, returned 60,600 cites, 15,900 of which were post-2019 (i.e., primarily 2020–22).

prices; customers would only pay lower prices). This is another reason that value relevance is not a sufficient criterion for evaluating accounting because it is too narrow.

Further, as noted in section 3.4, without taking accounting costs into consideration one cannot make statements about the optimal accounting regime, including whether the closeness of association between accounting and market variables is too low or too high. Consider the desirability, or otherwise, of Basu [1997] conditional conservatism (asymmetrically timely gain and loss recognition). Shareholders are approximately equally interested in timely information about both gains and losses, which would suggest that optimal accounting from their perspective involves symmetric treatment. However, the asymmetric payoff function for lenders implies they are more interested in timely recognition (incorporation into the accounts) of losses than of gains. The total demand for timely loss recognition, taking into account both the debt and equity markets therefore exceeds that for timely gain recognition. Given that it is not costless to account for capitalized losses (e.g., when performing discounted cash flow calculations), the optimal accounting regime will exhibit at least some conditional conservatism. The observed asymmetry is difficult to understand without taking costs into consideration.

Lev [1989] penned an influential commentary proposing the association between accounting variables and equity prices, as measured by the univariate OLS regression R^2 , as a criterion for evaluating accounting. Lev bemoaned its seemingly low level and called for research to increase it. A follow-up piece a decade later (Lev and Zarowin [1999]) proposed changes to financial reporting to increase the metric. In essence, these papers equated the size of the univariate contemporaneous correlation between a firm's earnings and its equity returns with a preference ordering of alternative accounting regimes.

Despite its inherent appeal and its popularity, there are several limitations of using the R^2 metric for that purpose, including the following.

1. I am aware of no theory of the optimal earnings-returns R^2 . Assessing the optimality of an accounting regime would need to take into consideration cost. At what cost would it be optimal to increase the value relevance R^2 ? Taking cost into account, is it too high, too low, or "just right"?
2. The optimal earnings-returns R^2 would seem to depend on firm characteristics. One way of thinking about the contemporaneous relation between earnings and returns (i.e., over the same period) is as follows. Returns are based on events that have been realized (e.g., the success of new product launches and cost control strategies, factor and product price, interest rates, exchange rates), and expectations of future events and outcomes (e.g., manager forecasts, sell-side and buy-side analyst research, macroeconomic forecasts). The role of earnings then is to parse out the component of returns that is based on verified

monetary outcomes from the component that is based on stated beliefs. This makes accounting earnings more contractible, as discussed below. It also makes the optimal earnings-returns R^2 depend upon the firm's particular component mix. For example, returns on mature firms and utilities would tend to be based more on verified monetary outcomes, whereas returns on start-ups and intellectual property-intensive firms would tend to be based more on expectations. R^2 s from cross-sectional regressions disguise this complexity.

3. Over what horizon is the R^2 to be calculated? Trade by trade? Daily? Weekly? Quarterly? Annually? Over decades? Over a typical investor's horizon? The metric is expected to increase with the horizon, to the point where, as noted above, the R^2 between earnings and stock returns is 100% over a firm's life. The unstated horizon problem illustrates the absence of theory to support this metric.
4. Using earnings announcement effects as a proxy for the optimality of an accounting regime ignores the interactions between earnings and other information. For example:
 - a. When both managers and investors know that future earnings outcomes will be independently verified and publicly reported, disclosure by managers of their private information (e.g., expected revenues or earnings from new products or acquisitions) is more credible to investors, hence more informative (Gigler and Hemmer [1998], Ball [2001], Ball, Jayaraman, and Shivakumar [2012]). Accurate accounting verification thereby allows investors to form more accurate earnings expectations, reducing the surprise content of actual earnings and hence reducing the earnings-returns R^2 at the time of announcement.
 - b. Firms' financial information is informative about other firms' values, especially those in the same industry (Foster [1981]). For this reason also, association metrics measured at the individual-firm level would seem to understate the welfare effects of accounting information.
5. Value relevance estimation is even more complex to define and estimate in a multisecurity world. For example, random accounting errors in firm-level earnings tend to offset each other, under the fundamental logic of diversification, so earnings-returns R^2 s are larger at the household's portfolio level than at the individual security level.¹⁶
6. A well-known reason that estimated earnings-returns R^2 s are understated is the existence of errors in estimating expected earnings. For example, if the event window over which equity returns are calculated is three days, an accurate measure of the earnings information

¹⁶ This point was made in Ball and Brown [1969, p. 316]. The extent to which it has been ignored in the five intervening decades is humbling. Ball and Sadka [2015] propose evaluating accounting regimes at the aggregate level.

conveyed during that window is the difference between the earnings outcome and its expectation at the beginning of the window. That expectation only is observable with error and thus the information released during the window also is estimated with error, further reducing the estimated R^2 .

Proponents of value relevance as a criterion might be surprised to learn that they are assuming market efficiency. If equities were subject to substantial mispricing, closeness of association between accounting numbers and equity market prices, or returns would not be informative of the contribution of accounting to economic welfare. The equity market then would provide a poor benchmark. For example, a low earnings-returns R^2 could be due to excess market volatility (Shiller [1990]). Alternatively, a high earnings-returns R^2 could be due to investor “fixation” on earnings that requires correction in subsequent periods (Sloan [1996]). In general, using equity price or rate of return as a benchmark for evaluating an accounting regime assumes the absence of mispricing.¹⁷

In addition, a stronger correlation/association between accounting and equity prices *is not the same as better prices* (i.e., prices that lead to welfare-increasing decisions by firms and households). It is trite to demonstrate this by the following hypothetical. Instead of incurring the cost and subjectivity of estimating fair values of individual assets and liabilities, why not simply mark book value of *equity* to market?¹⁸ The correlation between book and market values then would be perfect, as would be the correlation between earnings and returns, providing a perfect value relevance score, but earnings and book values then would contribute absolutely nothing positive to welfare. They would merely duplicate existing market prices. Indeed, any accounting costs would be a deadweight loss. This illustrates the general proposition that, when evaluating an accounting regime, higher correlation between accounting numbers and equity prices is not the same as contributing more to economic welfare.

Ironically, in value relevance studies of contemporaneous association between accounting variables and equity prices (i.e., in studies that do not address causation), accounting variables would seem to be informatively redundant to the extent they are correlated with equity market variables and hence duplicate the information in prices. Thus, absent causal effects, it

¹⁷ An alternative criterion would be the ability of earnings to predict cash flows (Ball and Nikolaev [2022]), regardless of whether expected cash flows are mispriced.

¹⁸ Defined as the number of outstanding shares times their closing price at balance date. Individual assets and liabilities could be recorded at historical cost, the balancing item then being the value added or destroyed by the firm relative to cost. Alternatively, if assets were recorded at current value, the balancing item would reflect the fundamental proposition that for all surviving (i.e., nonliquidated) firms, the value of the sum exceeds the sum of the values of its parts (Coase [1937]).

would be in the low contemporaneous R^2 regimes where accounting could possibly add the most to aggregate welfare.¹⁹

Adding to the irony, the degree of association between accounting variables and *equity* prices or returns can be a valid measure of the usefulness of those accounting variables in *debt* markets, regardless of whether causation is present. In debt contracts with payoffs or decision rights that are a function of accounting variables such as balance sheet leverage ratios or interest coverage ratios, the extent to which those accounting variables incorporate adverse information in a timely fashion (Basu [1977]) affects their usefulness in contracting. Hence, an argument can be made that the value relevance R^2 derived from equity prices is a substantially better proxy for welfare effects in the debt market (indeed, in contracting generally) than in the equity market (Ball, Robin, and Sadka [2008]).

The age-old distinction between correlation and causation rears its head here. Association studies generally regress equity prices or changes in prices (i.e., returns) on accounting variables. In doing so, they take equity pricing as given: They do not show that equity prices would be different (let alone better by any criterion) if the accounting variables were not reported, or were measured differently.²⁰ Association studies “explain” equity pricing only in the statistical sense of correlation.

4.2.2. Studies Showing Price Effects. Several research designs do provide seemingly valid evidence of causation: that is, of accounting information leading to *better* prices. For example, Daske et al. [2008] exploit the widespread change in 2005 from countries’ domestic accounting standards to IFRS. They demonstrate that measures of equity market liquidity increased around the time of the change. As the authors point out, this research context is not a pure experiment because of possible complementary institutional changes, but many of these can be carefully addressed, and the study appears to reliably document an improvement in traded equity prices around the time of IFRS adoption.

An important body of research provides evidence of accounting information leading to better prices by showing that earnings have “surprise” content. Despite the fact that they are largely anticipated, earnings announcements clearly cause revisions in equity prices. This is hinted at in the Ball and Brown [1968, p. 175] result that approximately one-eighth of the association between annual price and earnings changes occurred in the announcement month. Beaver [1968] subsequently shows clear evidence of unusual price volatility in announcement weeks. Assuming market efficiency, this implies that preannouncement prices had not incorporated the

¹⁹The role of stale (i.e., not contemporaneous) accounting information is discussed in section 6.

²⁰For example, Dietrich et al. [1997] advocate using the Ohlson [1995] model of the relation between accounting variables and equity prices when evaluating accounting regimes. But the model takes equity prices as exogenously given. Indeed, it is consistent with (and hence silent on the optimality of) any regime’s time sequence of earnings and book values.

information revealed in the announcements. It follows that postannouncement prices are more informed than preannouncement prices about the firm's current financial position and hence allow firms and households to make more informed decisions. Loosely stated, they are better prices. The information would have been revealed eventually through other media, but prices at any intermediate point before that revelation would have been less informed than if earnings had been reported.²¹ This is why Ball and Brown [1968] emphasize earnings *timeliness*.

Causality can be quite well—albeit imperfectly—established in “announcement effect” research. The potentially confounding issue is information released close in time to, or even together with, earnings announcements. Confounding information events include managers releasing forecasts of future earnings or managers discussing plans and other information during earnings conference calls. This problem can be minimized by studying price reactions over small “event windows” in which confounding information events are less likely, or by controlling for confounding events that are observable. For example, Beaver [1968] eliminates sample observations with concurrent dividends and Ball and Shivakumar [2008] control for concurrent releases of manager forecasts. All things considered, a reasonable interpretation of this literature is that earnings announcements cause prices to incorporate more information about firm value than hitherto, and hence cause “better” prices.

4.2.3. Equity Market Research and Aggregate Welfare. It is difficult to see how “value relevance” association studies could tell us much about welfare effects that arise in the equity market (ironically, they do shed some light on the utility of accounting information in contracting). In contrast, “announcement effect” studies and other causal designs demonstrate to a reasonable degree of confidence that accounting information improves equity prices. In turn, more informed equity prices seem likely to increase aggregate welfare. There are caveats, however. The magnitude of the welfare effect is impossible to gauge from the literature. Furthermore, the literature likely underestimates price effects for several reasons, including the following: It largely ignores the effects of accounting information on myriad other prices, including product prices, other factor prices, and the equity prices of other firms; it ignores the complementary effect of independently audited accounting information on the credibility of other information; it does not address the implications of households' portfolio diversification; it suffers from an errors-in-variables problem; and it ignores private

²¹ Ball and Shivakumar [2008] report that the magnitude of the Beaver [1968] earnings “announcement effect” has increased in recent decades, a result confirmed with more recent data by Beaver, McNichols, and Wang [2018]. Ball and Nikolaev [2022] report a parallel increase over time in the ability of earnings to forecast future free cash flows. The implication is that accounting earnings have increased in informativeness, which could be interpreted as welfare increasing.

companies. Nevertheless, there does seem to be a clear directional effect: Accounting information improves equity prices and thereby increases welfare.

4.3 COSTLY CONTRACTING

Accounting variables play an important economic function in a variety of implicit and explicit contractual arrangements. The literature that addresses that function is known as “costly contracting” research, reflecting the Coasian axiom that the economic role of institutions such as firms and accounting is to increase welfare by reducing contracting frictions (i.e., contracting costs).

In their survey of the costly contracting literature, Christensen et al. [2017, p. 398] define accounting information as satisfying a costly contracting criterion if it “facilitates transactions between capital providers and firms.” This criterion would seem to be necessary but not sufficient from a welfare perspective; two important dimensions I would add to that formulation are as follows:

1. Accounting affects many more contracts other than just those involving the capital market.
2. The objective is to push contracts toward optimality, not simply to facilitate them.

Under this broader interpretation of costly contracting, the objective of accounting is to engender more efficient contracting—both explicit and implicit—in factor and product markets generally.

Firms contract in factor markets with suppliers of equity and debt market capital, with suppliers of labor (including management), and with suppliers of goods, components, intellectual property, and so forth.²² Firms also contract in product markets with final consumers, corporate and government clients, and with other firms in supply contracts, royalty contracts, dealership arrangements, and so forth.

I prefer to view firms as specialist contracting intermediaries, situated between owners of factors of production and consumers (Ball [1989]). All parties contracting with a firm have made an investment in the relationship (search costs, relocation costs, becoming familiarized with how the firm operates, etc.). That investment in contracting costs is specific to the firm, as defined in Alchian [1984]: It has no value if they are required to exit the firm due, for example, to layoffs or bankruptcy. In such events, they are required to invest in search and other contracting costs once more. This principle applies to suppliers, employees, customers, lenders, and all contracting parties. Therefore, when entering into a supply, employment, purchase,

²²Regulation has tended to obscure the fact that firms contract with their shareholders. For example, Watts and Zimmerman [1986] show that firms voluntarily contracted to provide shareholders with audited financials well before regulation required it. This illustrates how focusing on mandates can obscure the underlying economic forces involved.

financing, or any other relationship with a firm, all parties have an interest in information about its financial health, which signals the probability of them being required to incur the costs of recontracting with another firm at a later date. Said differently, shareholders and lenders are not the only parties with investments in firms, and accounting information about firms' finances is potentially useful to all contracting parties.²³

Note that I am not advocating that all stakeholders should have equal *decision rights* over firm management. Alchian and Demsetz [1972] argue persuasively that ordinarily decision rights optimally reside with shareholders, who are the residual claimants to the firm's cash flows and hence are the party with the greatest incentive to ensure it is run well. There no doubt are circumstances where that proposition does not hold, the obvious case being firm insolvency, in which case, shareholders have latent incentives to gamble the firm's resources and consequently some decision rights (e.g., to borrow, pay dividends, or make investments) are taken from managers and transferred to creditors, either by contract or by law.²⁴ But in general the Alchian and Demsetz [1972] proposition makes sense. What I *am* arguing is that all parties dealing with the firm have made an investment in it and hence all parties have an interest in accounting information about the strength of its resources and profitability, even if they do not explicitly contract on the basis of that information.

Accounting information plays a role in reducing both adverse selection and moral hazard, in a variety of formal and informal contracts (debt, management, supply, royalty, dealership, etc.). One role is reducing information asymmetry between the firm and contracting parties *ex ante*, when the parties are deciding whether to enter into an agreement and on what terms. For example, knowing that a potential customer is profitable and solvent can influence a supplier's decision to enter into a multiperiod arrangement and also can influence the terms of the arrangement. The other role is facilitating contracting in which future payoffs and decision rights are agreed to be a function of *ex post* financial statement outcomes. For example, a supply contract with an important customer might require the customer to remain profitable over its duration (Costello [2013]).

These roles of accounting information have been well studied in the context of debt contracts, as surveyed by Christensen et al. [2016], in management contracts (Bushman and Smith [2001]), and more recently in long-term supply contracts (Costello [2013]). Nevertheless, one suspects that

²³ Accounting information also is used by many noncontracting parties, including competitors, consultants, economists, academics, governments, and those interested in externalities (notably, ESG issues).

²⁴ The ancient common law of fraudulent conveyance is codified in the United States under the Uniform Fraudulent Conveyance Act. In *Quadrant Structured Products Co. v. Vertin*, 2015 WL 2062115 (Del. Ch. May 4, 2015), the Delaware Court of Chancery held that creditors can sue directors for breach of fiduciary duty arising from actions taken when their firm is *balance sheet* insolvent. The Court noted that in insolvency "the creditors replace the stockholders as the equitable owners of the firm's assets."

only a minority of the agreements that utilize accounting information is observable to researchers.

Independent audit (Jensen and Meckling [1976]) of financial statements prepared by managers, certifying their compliance with “fair” accounting standards (Paton and Littleton [1940]), renders accounting information contractible to external parties. Similarly, when firms’ internal accountants perform cost or revenue allocations that affect different employees’ relative performance measures, this independent arbitration function is performed by internal audit, CFO oversight, and other centralized functions that render internal accounting information internally contractible. In general, independent verification of financial statement information adds to economic welfare by rendering the information more reliable and contractible, and hence facilitating efficient contracting. For example, despite the fact that firms’ market values contain more information than their book values, leverage restrictions in long-term debt contracts typically are based on book values. Why not simply contract on the basis of share price? Because the components of book values (net capital contributions by shareholders and retained earnings) are independently verified, whereas the additional information in market values takes the form of unrealized (and hence unverified) expectations of future outcomes. The latter are influenced by the statements of managers, such as earnings or growth forecasts, expected benefits from new products or cost-cutting strategies and presentations in conference calls, which are unverified and hence not contractible.

The rich tapestry of contracting relationships involving accounting information addressed under the costly contracting perspective casts even more doubt on the (to my mind) simplistic notion that the economic role of financial reporting lies entirely in providing new (i.e., previously unavailable) information. It also lies in contrast to the unidimensional “value relevance” criterion, with its exclusive focus on pricing in the equity market. Is the contribution of accounting to economic welfare really as narrow as that?

On a similar note, the costly contracting perspective is substantially broader than Jensen and Meckling [1976] agency theory, as first applied to accounting by Watts and Zimmerman [1986]. Agency theory addresses asymmetric contracting contexts, in which one party (the agent) acts on behalf of another (the principal), and only one party to the contract (the agent) can act opportunistically against the interests of the other. The public equity market is a natural setting to apply an asymmetric framework, where managers act on behalf of shareholders who are dispersed and rationally passive, resulting in a separation of ownership and control (Berle and Means [1932]). Shareholder passivity arises because each holds an insufficiently large shareholding to make it worthwhile incurring the cost of monitoring and changing manager behavior. This passivity provides a latent incentive for managers to act opportunistically in their own interest and against the interest of shareholders. In particular, it includes a

latent incentive for managers to engage in “earnings management” (a.k.a. “cooking the books”) to enhance their compensation, job promotion or retention prospects, or social status.

The qualifier “latent” is important in the above because, as one would expect, a variety of institutional solutions have emerged to constrain latent opportunism. These include independent audit, board monitoring, whistleblower systems, regulatory scrutiny, and the risk of civil and criminal penalties. Investors routinely rely on accounting information, and lenders and other parties routinely find it contractible, the implication being that these institutional solutions are effective in bounding (if not eliminating) the opportunism problem. A notable example is that, despite latent incentives for it to occur, “earnings management” is not as prevalent as some may believe (Ball [2013]). Nevertheless, detecting and constraining opportunism by managers is not costless, so it occurs to some degree.

The applicability of the agency model to the public equity market has been reduced somewhat by the advent of activist shareholders with sufficiently large holdings to affect managerial behavior (Shleifer and Vishny [1986]). Nevertheless, the model remains an attractive depiction of that setting—not only in proving that management opportunism is rife, but also in explaining the role and effectiveness of the various institutional solutions (including independent audit) that bound it.

It is important to note that accounting information plays a role in a wide variety of settings in which opportunism is possible by both parties, and hence where the asymmetric agency model is not applicable. Firms contract with other firms for the supply and purchase of goods, materials, components, energy, consulting services, and intellectual property, in royalty contracts, dealership arrangements, joint ventures, and a variety of other relationships. In these relationships, both parties face issues of adverse selection and moral hazard. Consequently, the asymmetric agency model, which so well explains the latent incentives of managers in public financial reporting—and the institutional solutions that constrain those incentives—does not work as well in many contracting contexts.

In sum, the costly contracting stream of literature provides important insights into the use of independently attested accounting information in reducing contracting frictions in a variety of markets, thereby expanding the gains from trade and increasing welfare.

5. *How Are the Three Literature Streams Related?*

5.1 OVERLAPS

On the surface, there appears to be a clear scission between the three criteria for evaluating an accounting regime that are discussed in the previous section: its real effects, price effects, and uses in contracting. These offer seemingly disparate proxies for welfare effects. However, on

closer examination, it is apparent that real effects, price effects, and use in costly contracting are intertwined.

When a real effect is the dependent variable, the proxy used by the researcher is the effect of accounting on a *quantity*. When equity value is the dependent variable, the proxy is the effect of accounting on a *price*. In a frictionless market economy, prices and quantities are jointly determined, and alternative accounting regimes have the same rankings under the price and quantity criteria. Frictionless economies do not exist and, if they did, there would be no firms and no accounting (Coase [1937]). Nevertheless, price and quantity effects are expected to be correlated, if not perfectly, so price and quantity effects should provide alternative insights into how accounting affects economic welfare. (Here, I am referring to prices generally, not only equity prices.)

Further, prices and quantities are established through contracts: some tacit, some explicit; some simple (e.g., spot supply contracts, public equity purchases and sales), some complex (e.g., long-term supply contracts, management agreements). Contracts specify the *dimensionality* of prices: that is, the mapping from states to payoffs. They do so either by explicit enumeration of payoffs in future states or by insertion of what I call completion functions (such as arbitration and auditing) that determine payoffs in states that arise but were not initially enumerated (Ball [1989]). Accounting therefore adds to the dimensionality of prices through contracts with payoffs that are a function of accounting numbers. As is well known, contracting on the basis of accounting information implicitly incorporates into the contract all of the rules in GAAP except those the contract excludes (Leftwich [1983]).

Earnings-based management compensation provides a nice example of how the real effects, value relevance, and costly contracting proxies for welfare effects are intertwined. The accounting regime affects the calculation of earnings and hence, in contracts that incent managers by making compensation a function of earnings, the regime affects the mapping from manager actions to payoffs. The accounting regime therefore affects *prices* (such as management compensation) and *quantities* (such as manager effort and actions), as a function of implicit and explicit *contracting*.

5.2 DIFFERENCES

So why are the three criteria represented so separately in the literature? Why do research streams seemingly operate in “silos,” with few references to other streams, even though they intersect? My hunch is that the separation in the literature is largely due to the availability of data and tractable research designs.

Data differ in availability. For example, agency theory posits a relation between management effort (a real quantity) and management compensation (a price). We have good data on management compensation but poor data on effort. Data-driven research comes with its problems. First and foremost is the well-known tendency for research to concentrate in areas with easy data access, as in the above-noted case of the equity market. In

addition, ready access by a large number of researchers to commercial data sources such as CRSP and Compustat can lead to overfitting.²⁵ In addition, relying on common data sources can drive researchers to investigate increasingly marginal topics.

Similarly, theories and research designs that have been shown to be tractable in one context can provide a convenient template for their use in other contexts.²⁶ This conforms to what Kuhn [1962] describes as “normal science,” in which research methods become increasingly refined over time and the incumbent paradigm is applied increasingly widely in search of predicted or anomalous results. However, it can add to the tendency for researchers to adopt data sources and research techniques without putting much thought into them, add to the tendency for research to be contained in independent “silos,” and raise serious doubts concerning the independence of results across studies (Heath et al. [2023]).

5.3 OVERALL

In sum, the real effects, price effects, and costly contracting streams in accounting research share much in common. Real quantities and prices obviously are codetermined. Prices are established in contracts, so the effect of accounting on prices occurs largely through its role in contracting. Where the research streams differ is in the proxies they offer for welfare effects—differences that are driven by the availability of data, theory, and tractable research templates. I do believe that researchers would gain from giving thought to how the streams they work in overlap.²⁷

6. *The Concept of Information in Accounting*

The concept of information underlies the contribution of accounting to economic welfare. For accounting to affect real quantities or prices, or to be used in contracting, it must provide households or firms with *information*. The question is: What type of information?

In general, it is not possible to separate the concept of information from an information communication system (e.g., Burgin [2010]). In other words, what constitutes information depends on the context of its use. Consistent with this rule, accounting provides at least two types of information: novel and timeless. The distinction can be illustrated by the following example. Accounting students reading an introductory accounting textbook find it full of information that is novel to them; the accounting professor

²⁵ This issue has long been recognized in the asset pricing literature. See, for example, Lo and MacKinlay [1990].

²⁶ As in “following X and Y, I do the following ...”

²⁷ A nice example of this is the joint asset price and quantity effects predicted from the widespread introduction of IFRS in 2005. The example is discussed in more detail in Section VIII.

adopting the book for class use finds little that is new in it but adopts it because it contains considerable information about accounting that is almost timeless. Focusing on novel information, as in much research on equity pricing, risks overlooking the contribution to welfare of stale accounting information.

In financial economics, information generally is viewed as a time-independent random variable, in which past values of the variable contain no additional information relative to the current value. This concept of information as novelty, when applied to Fama's [1965] seminal framing of stock price behavior as a function of information arrival, leads to viewing stock price changes (i.e., returns) as independent across time, following so-called "random walks" (Bachelier [1900], Samuelson [1965, 1973], Fama [1970], Campbell, Lo, and MacKinlay [1997]). Information then is pure novelty: Yesterday's news no longer qualifies as information. This concept of information also underlies much of the value relevance literature. Consider the relation between earnings announcements and price revisions at the time of the announcements. Using the strength of this effect to evaluate an accounting regime implies that the exclusive role of accounting is to provide *novel* information—information that had not previously been available and had not previously been incorporated in price.

In contrast, there are many contexts in which accounting information is used despite its lack of complete novelty. For example:

- (1) Stale (i.e., not novel) accounting information that has been independently audited plays an important economic role in the settlement of many contracts. For example, many contracts are settled only annually. Lenders might receive audited accounts for a December-end firm in April, review them, and decide in May whether to take any action based on those numbers, which by then are months old in a novelty sense. Boards might award bonuses to managers based on annual earnings, when meeting months after the novel information in earnings has been released.
- (2) Consider the example of accounting for firms' long-term debt. Loans are obtained from banks and from other informed lenders, and most corporate bonds are held by institutions that are well aware of their values.²⁸ Indeed, many are required to price their investments as frequently as daily. It is implausible that firms reporting their debt at year-end market values would provide novel information to these lenders, especially since audited financial statements are released more than a month after the year end. So, what *type of* incremental information could the balance sheet provide lenders? One candidate would be the total face value of the debts the firm

²⁸ Insurance companies, mutual funds, pension funds, and banks owned 94% of U.S. corporate bonds in 2017 (Kojen and Yogo [2022]).

has outstanding (i.e., historical cost). Although this is an informationally stale number, it is a necessary input for any Black-Scholes valuation of existing or potential new debt: It measures the amount of existing claims that could compete for repayment. The implication is that lenders and potential lenders could find stale historical costs more informative than novel market values. Furthermore, knowing the face value of the firm's debt (i.e., the amount of competing claims) would seem more important as the probability of default rises, and hence its market value declines. Thus, the incremental information to lenders contained in the historical cost of debt increases in its distance from its current market value, contrary to the novel-information logic of value relevance association metrics.

- (3) Historical information is used by managers, boards, analysts, the press, courts, government bodies, and others to provide a basis for comparison with current-period numbers, for measuring growth, for comparison with other firms, and for myriad other purposes. For U.S. public companies, historical accounting data are available on their websites and on the SEC's EDGAR database.²⁹ Drake, Roulstone, and Thornock [2015, 2016] show that EDGAR download activity is correlated with negative shocks to firm value and with large corporate events such as accounting restatements, earnings announcements, and acquisition announcements. Playing on the ambiguity of the term, Drake et al. [2020] investigate whether there is (novel) information in (stale) information. Hail, Muhn, and Oesch [2021] conclude that historical information attenuates information asymmetry in the context of a sudden financial event. These studies demonstrate that stale historical information is useful to investors seeking to evaluate novel current information.
- (4) Economists, researchers, consultants, historians, and others use stale historical numbers because they find them to be informative.

The above are but a few examples of contexts in which accounting supplies information that is not novel, in the sense used in financial economics, but nevertheless contributes to aggregate welfare.

7. *Normative or Positive?*

Hume's guillotine, named after the 18th century philosopher David Hume, states that one cannot logically derive normative "ought" statements from positive "is" statements. Whether the distinction between the positive and the normative is as clear cut as Hume implied has been debated ever since.

²⁹ EDGAR usage data are available in the SEC's Semi-Annual Report to Congress Regarding Public and Internal Use of Machine-Readable Data for Corporate Disclosures (June 2023), available at <https://www.sec.gov/files/2023-fdta-report.pdf>.

One wonders whether an excessively rigid distinction in the archival literature has led to a dearth of seemingly normative statements about accounting's social value.

Two familiar studies illustrate how positive and normative analyses of accounting regimes can be related. First, Ball and Brown [1968] brought the results of positive accounting research (i.e., empirical evidence) to bear on the normative theories that were promulgated by scholars at the time. A premise of those theories was that accounting numbers are meaningless aggregations of numbers because they are calculated using heterogeneous accounting methods, such as lower of cost or market for inventories and straight-line depreciation for plant and equipment. From that premise, scholars had concluded the accounting regime required radical change to one that utilizes a single universal measurement method, such as valuing all assets at their current selling prices—that is, to a regime that would for the first time make accounting numbers meaningful.³⁰ We could have challenged the premise at a theory level, based on the Ogden and Richards [1923] thesis that the meaning to users of words like “earnings” and “book value” arises largely in usage, not in dictionaries. However, we challenged the premise empirically by showing that earnings contain information that investors incorporate into market values, so they cannot be meaningless to them. In doing so, the study cast doubt on the radical redesign of accounting proposed by those scholars (a normative issue), because the premise on which their proposals were founded was refuted by the data (positive evidence).³¹ A normative corollary of the Ball and Brown [1968] research—one that remains relevant to this day—is that placing all accounting measurement methods on a homogeneous basis, as proposed by Chambers [1966], Mattessich [1972], and Barth [2014] for example, is not necessary for accounting information to have meaning and to be useful.³² We also

³⁰ The first assertion that accounting earnings are meaningless of which I am aware is by Canning [1929, p. 126]: “No propositions that assign a qualitative nature to net income can be maintained. . . . it expresses the magnitude of a difference between two summations of non-homogeneous things.” By 1968, the prevailing view in academia was that balance sheets and income statements are “of very doubtful utility” because “it is pointless to add unlike things” (Chambers [1966, p. 4]).

³¹ A brief reading of our introduction reveals that we viewed the study as bearing on normative propositions. A rare appreciation of this point is in Dopuch [1983, p. 178]: “Few people realize, however, that one of the primary motivations for that study [Ball and Brown [1968]] was to provide a rebuttal to criticisms of historical cost accounting provided by theorists such as Chambers, Canning, Paton, and others.” See also Ball and Brown [2019, p. 427].

³² Perfect homogeneity of accounting methods is unobtainable. It would require firms to account entirely on a cash basis, or the existence of perfectly liquid, frictionless and efficient markets for all assets and liabilities, in which case firms and accounting would not exist anyway (Coase [1937]). In practice, “fair values” are reported using many different methods. Marketable securities are calculated using so many methods that the methods have to be classified into three buckets. Real property generally is valued using the comparable transactions method. Plant & equipment, goodwill and other long-term assets generally are valued using discounted cash flows methods, with both future cash flows and discount rates estimated by

showed that accounting income lags market value in incorporating information, which to my mind tells us something about its economic function. So, although our paper is viewed as having introduced positive empirical research to accounting, it definitely had normative implications.

Second, Basu [1997] reported evidence that in practice there is an asymmetric incorporation into accounting income (and hence into balance sheets) of information that investors view as value relevant, a property of accounting practice known as conditional conservatism. That is, decreases in asset values are recognized in a timelier fashion than increases. The asymmetry is confirmed by the accounting standards themselves. IAS 36 requires impairments (i.e., downward revaluations) of long-term assets to fair value, but does not symmetrically require upward revaluations. IAS 38 requires impairments of intangible assets, but does not require upward revaluations. IAS 2 requires inventories to be reported at the lower of cost and net realizable value. There is a distinct asymmetry in these accounting standards as to how positive and negative changes in asset values are incorporated into earnings and balance sheets. Furthermore, as Basu [1997] observes, the adage “anticipate no profits but anticipate all losses” has survived for at least a century.³³ Whether this property of accounting is viewed in the literature as good or bad depends on whether the author is a value relevance or a costly contracting person, but the positive evidence of asymmetry in practice and accounting standards cannot be said to be normatively neutral.

The normative-positive distinction is important, but positive results can have implications for normative frameworks. In particular, the extensive archival literature provides valuable insights into the shape and magnitude of accounting’s contribution to aggregate welfare.

8. *An Aggregate Perspective When Evaluating Accounting Regimes*

As should be clear from the above, there now is an enormous, diverse, and insightful literature that evaluates aspects of accounting regimes generally, and public financial reporting in particular. Are financial reports useful to investors, lenders, suppliers, or in management compensation contracts or corporate governance? Do they affect equity or debt prices? Do they affect user actions and real quantities? Are they timely, conservative, noisy, manipulated? Do they induce investor myopia? *Essentially all this work is at the micro level.* Aggregate welfare seldom is investigated.

a variety of methods. The notion that fair value accounting involves homogeneous accounting methods is a fairy tale. Although homogeneity of accounting methods is impossible, that does not mean that reducing heterogeneity in methods cannot increase the meaningfulness or usefulness of accounting information. Is there an optimal (nonzero) amount of accounting method heterogeneity? At what cost? Is it greater or lesser than under the current regime?

³³I cannot resist drawing the attention of readers to an article on conservatism in the very first issue of *The Accounting Review* (Scott et al. [1926]). The article contains “an obituary notice” for the passing of “the time honored inventory rule to use cost or market price whichever is the lower.” Nevertheless, this asymmetric rule is still alive, almost a century later.

An illustrative example of the difference between micro and aggregate welfare perspectives is provided by the effect of the widespread international adoption of IFRS in 2005. This episode demonstrates the limitations of thinking about accounting effects at the individual-firm level rather than at the aggregate level. One frequently claimed benefit of the adoption of IFRS was to make firms more transparent to investors, who then would perceive them to be less risky. In turn, investors would require a lower return from investing, thereby reducing the supply price of capital to firms (a.k.a. “cost of capital”).³⁴ But this story is too simple. Widespread IFRS introduction in 2005 was a macroeconomic event involving firms in all industries and in more than one hundred countries. It cannot be completely analyzed at the individual-firm or even individual-country level.

If all firms in an industry were required to adopt IFRS, and if all firms obtained the alleged benefits from higher transparency, the first effect would be to reduce the *industry* supply price of capital. Competition among firms in the industry then could be expected to have passed much of the benefit on to consumers, in the form of reduced product prices. Further, if firms in all industries in almost all countries adopted IFRS, the benefits to consumers would be economy wide. Thus, from a macro perspective the largest ultimate beneficiaries of IFRS adoption might have been consumers, not firms or investors, suggesting that researchers might want to study product market effects rather than capital market effects.

A second and partially offsetting effect would arise from firms in all industries and countries expanding investment in response to the reduced supply cost of capital. Even if firms or industries or countries adopted IFRS at different times, those short-term timing differences would seem immaterial to investing in long-term assets. Consequently, increased investment would be expected from all firms and all industries in anticipation of—or around the time of—IFRS adoption. This in turn would increase the aggregate demand for capital and, other things equal (notably, households’ consumption preferences), *increase* the supply price of capital, somewhat offsetting the transparency-induced decrease.

These two effects suggest that the expected net effect of IFRS adoption on capital costs might be muted, and that the benefits of adoption might be reflected more in lower consumer prices and increased investment by firms. In this example, focusing on the capital market could lead to a substantial underestimation of aggregate welfare effects.

The qualitative evidence from the course of history reveals that accounting has important aggregate welfare effects, functioning as an important and integral contributor to the evolution of economic institutions. These effects can be hinted at but not identified by partial correlation studies, “turning one dial at a time.” Consequently, taking an aggregate welfare

³⁴De George, Li, and Shivakumar [2016] provide one review of the IFRS literature.

perspective can be fruitful, though difficult, as discussed in the following section.

9. *Externalities, Distribution Effects, and Aggregate Welfare*

9.1 EXTERNALITIES

Financial reporting has been shown to have positive and negative externalities, which are benefits obtained by, or costs imposed on, some parties as a result of the actions of others. In the accounting literature, the focus historically has been on positive externalities. The early work on external benefits addressed cross-firm information transfers in the equity market. Brown and Ball [1967] reported that approximately 35%–40% of the variation in the median firm's earnings is associated with aggregate effects and a further 10%–15% is associated with industry effects, the implication being that one firm's earnings information is informative about the earnings of others. Foster [1981] and Freeman and Tse [1992] subsequently demonstrated that individual firms' earnings disclosures do in fact affect the stock prices of other firms in their industries, confirming that investors gain external benefits from the earnings information produced by other firms. Absent agency costs, firms will endogenize the benefits of reporting to their own shareholders, but that is not the case for external benefits. Other things equal, firms therefore under-produce accounting information relative to the social optimum. This has provided a fundamental rationale for disclosure regulation (Benston [1969]).

More recent work has addressed external benefits to decision making by other firms, rather than directly to their investors. For example, Badertscher, Shroff, and White [2013] hypothesize that private firms' investment decisions are informed by the aggregate amount of publicly available information in their industry (their "information environment"). Their proxies for this construct involve the proportion of firms in an industry that are public and hence disclose publicly. Among other things, the authors show that measures of the investment efficiency of private firms are increasing in their information environment proxies. In other words, private firms obtain external benefits from information produced by public firms.

There are myriad ways in which a firms' financial reporting and disclosures could inform other firms' production, investment, and financing decisions—particularly those of their competitors. These positive externalities imply another latent incentive for firms to underproduce accounting information relative to the social optimum, because they do not internalize the benefits of their information to other firms—and to the shareholders, lenders, managers, employees, and other parties who contract with other firms.

Mechanisms to ameliorate information under-production include government fiat (such as reporting and disclosure mandates and penalties),

moral suasion, and private cooperative agreements (such as trade associations with information-sharing rules, and various subscription services that collect, aggregate, and sell industry-level information). If the external benefits exceed the costs of operating these mechanisms, the mechanisms increase aggregate welfare. Otherwise, they impose welfare losses.

Negative externalities (i.e., social costs) of financial reporting likely exist also. “Crowding out” is a prime example. The classic application of crowding is motor vehicle traffic, where externalities occur because each vehicle entering the road causes a comparatively small effect on aggregate traffic that is not internalized by its driver but which, when aggregated over all vehicles entering the road, slows the traffic substantially. Applied to financial reporting, the argument is that the aggregate capacity of the communication channels from firms to users is inelastic, due to factors such as limited attention of investors and other users, limited size of the financial press, or a limited number of security analysts (e.g., Fishman and Hagerty [1989], Hirshleifer and Teoh [2003]). Public disclosures by firms thus can create negative externalities by crowding out the disclosures of other firms. The implication here is that public firms *over*-produce information relative to the social optimum, other things equal.

The potential for crowding out is increased by earnings announcements bunching in time. Firms mostly adopt common fiscal period ending dates (such as December 31, March 31, or June 30) so there are “earnings seasons” containing a flurry of announcements around the same time. Further, earnings announcements are almost 30% more frequent on Wednesdays and Thursdays than on other weekdays days (Ball and Bartov [1995]). Compounding this again, firms in the same industry tend to announce within days of each other. These practices create the potential for “crowding out,” the result being a negative externality that firms do not endogenize.

However, the degree of inelasticity in the supply of information processing capacity can be questioned. Supply elasticity normally is greater in the long run than in the short run, as institutions and individuals find ways to relax constraints. For example, the practice of investment advisors analyzing accounting information on behalf of time-constrained individuals might emerge. Online services summarizing financial information might make it more easily accessible. Investors might invest in professionally managed portfolios or follow passive investment strategies. Brokerages, investment banks, institutional investors, and the financial press might arrange their work rosters to increase their information-processing capacity in the busy earnings season. In the long run, one would expect institutional solutions to emerge that bound information-processing capacity constraints, if not completely.

There also is a long analytical literature on public disclosure crowding out private information production (e.g., Gonedes [1980], Verrecchia [1982], Diamond [1985], Goldstein and Yang [2017]). In these models, individual firms do not internalize these negative externalities, once again implying a latent incentive for firms to overproduce accounting information

relative to the social optimum, other things equal. Here too, one wonders what institutional innovations have evolved to bound this problem.

Recent archival research has uncovered several negative externalities from reporting mandates. Kraft, Vashishtha, and Venkatachalam [2018] and Fu et al. [2020] study effects on firm behavior when the United States mandated half-yearly financial reporting, and then when it increased the mandate to quarterly. These mandates presumably made accounting information available in a timelier fashion, but the authors conclude that the increased frequency of reporting also induced managerial myopia and inhibited investment and innovation. Duguay, Minnis, and Sutherland [2020] study the Sarbanes–Oxley Act of 2002, which increased the labor intensity of public company audits. Due to short-term inelasticity of audit labor supply, this caused a doubling of the cost of nonprofit audits and a reduction in the use of audited financial statements by private firms.

Although positive externalities have provided the basic rationale for state reporting and disclosure mandates, the possibility that they also create negative externalities implies regulatory caution.

9.2 DISTRIBUTIVE EFFECTS

Much of the literature surveyed above consists of partial equilibrium analysis, typically reporting average effects, and ignoring potentially important distributional effects. Notably, when interpreting a cross-sectional regression of an outcome variable (share price, investment, management compensation, debt contract provision, etc.) on an accounting regime treatment variable (new accounting standard, change in audit rules, etc.), it is common to focus on the coefficient for the accounting treatment variable, and its statistical significance. The implicit assumption from a welfare economics perspective is that the residual unexplained variation in the outcome variable—which often is substantial—is noise (i.e., is not caused by the accounting treatment variable, and is without implications for welfare). However, it could indicate that the treatment effect varies across firms or across time, in which case the average result under-states the full welfare effects, perhaps substantially.

For example, an accounting innovation might reveal to some firms that they had been overinvesting, and to others that they had been underinvesting. The OLS coefficient might be an unbiased estimator of the mean treatment effect across firms, which might be insignificant, but from a welfare economics perspective, average effects are only part of the picture; one cannot completely ignore distributional issues across households and firms. They are, however, difficult to identify.

The importance of looking beyond average effects is nicely demonstrated by three studies demonstrating distributive effects. Zhang [2013] develops a model in which the quality of accounting information affects firm cash flow uncertainty, which in turn affects capital costs and then investment. In this model, improving accounting information leads to a welfare-increasing expansion of the real economy but it also affects capital allocation across

firms. In a large sample study of the product market effects of mandatory IFRS adoption in the EU, Downes, Flagmeier, and Godsell [2018] show that IFRS adoption led to increased concentration in industry sales: Larger firms increased their market share at the expense of smaller firms. Breuer, Leuz, and Vanhaverbeke [2021] show that requiring German firms to publicly disclose financial statements did not reduce aggregate innovation-related expenditure by innovating firms, but did reduce the number of innovating firms. The mandate imposed proprietary costs of disclosure that were decreasing in firm size, and produced external benefits that were increasing in firm size, resulting in a concentration of innovation spending among large firms. In terms of its effect on innovation, the regulation had no average effect but important distributional effects. These three studies demonstrate that average effects can be misleading proxies for welfare effects.

In general, externalities and distributional effects complicate the task of evaluating an accounting regime, or a change in regime. What are they? How big are they? Are they positive or negative in aggregate? Who is affected? Does the regime under-regulate financial reporting and disclosure, or over-regulate? These are difficult questions to answer with the partial-equilibrium research designs that predominate in the literature.

9.3 ESTIMATING AGGREGATE WELFARE EFFECTS DIRECTLY

As noted in the Introduction, activities consuming substantial resources do not survive over long periods without contributing substantially to welfare. Indeed, under some heroic assumptions (notably, perfect competition and the absence of regulation) the total costs incurred by an accounting regime are a lower bound to its welfare effect. Total regime cost is unobservable (see section 3.4), as is the extent of consumer surplus, so that line of reasoning does not move the calculation of welfare contribution beyond the qualitative assessment that it is substantial. Nor does it provide any insight into *how* accounting contributes to welfare.

Recent studies attempt to quantify welfare effects directly. Choi [2021] adapts the David, Hopenhayn, and Venkateswaran [2016] general-equilibrium model of resource allocation across firms to provide a role for accounting. Choi incorporates three sources of information about current productivity that firms use to predict future productivity and hence to make more informed decisions: cash flows, accruals-based accounting earnings, and other information. The distinction between the effects of cash flow and accrual accounting is based on the Nikolaev [2018] framework. The result is an aggregate “real effects” framework (the price of capital and the quantity of labor are exogenous, and there is no contracting in the model), in which accounting information affects firms’ decisions, improves resource allocation, and increases aggregate productivity. The model estimates that in 2012 accrual accounting (relative to a cash accounting regime) generated a 0.7% (\$118 billion) increase in aggregate output for the United States, 3.4% (\$295 billion) for China, and 2.3% (\$42 billion) for India. The effect of accruals information on aggregate output was

proportionately lower in the United States for two reasons: Firms' productivities were less uncertain, and there was more nonaccounting information available to managers. Despite these impressive numbers, the model likely underestimates the welfare contribution of accounting, for several reasons: The model uses cash flow accounting as the base case, which itself would provide welfare-increasing information to firms; it confines the role of accounting to informing firms' operating decisions; it does not address effects on prices or on contracting; and it ignores complementarity between accounting and other information. Are the dollar estimates in the same order of magnitude as the costs incurred by the countries' accounting regimes?

Terry, Whited, and Zakolyukina [2023] adopt a regulated setting in which managers have latent incentives to manipulate reported earnings to meet short term earnings targets. They can do so by accounting means (e.g., by falsifying data or by tampering with accounting estimates such as uncollectible allowances) or by making suboptimal investments in intangible assets (which, under accounting rules, are immediately expensed against earnings). These distortions are only partially observable to the researcher, so the authors impose the structure of a dynamic equilibrium model on the archival data. One conclusion from estimating the model is that manager manipulation of reported earnings in these ways decreases earnings informativeness to investors, which increases firms' capital costs. Considered by itself, that would seem to imply that earnings manipulation would reduce firm values, but the wider picture is different. In the counterfactual in which earnings manipulation by accounting means is completely eliminated by regulation, firm values decrease by an average of 5.7% because managers now resort to cutting investments in intangible assets to meet their earnings targets. Interestingly, the complete elimination of earnings manipulation by accounting means results in a tiny rise in aggregate welfare.

Alternative general equilibrium analyses undoubtedly would estimate different aggregate effects, both in character and in magnitude. In that way, they are no different from other estimation procedures, which always are dependent on explicit or implicit specification assumptions. These studies show that aggregate welfare effects of accounting can be addressed directly, and illustrate both the insights obtainable from aggregate analyses and the dependence of their results on model specification.

10. *Why Is There So Much Negative Commentary?*

I will finish with an issue that has vexed me for a long time: the amount of negativism in the literature. It is abundantly clear that accounting *matters*—that it contributes substantially to aggregate welfare. Nevertheless, a surprising amount of the commentary on accounting has been occupied by “the sky is falling” opinions, including the following claims (some reasonable, some alarmist):

- (1) Lack of auditor independence, increased audit market concentration, audit firm incentive structures, long auditor tenures, and a host of other variables inhibit financial statement reliability.³⁵
- (2) Periodic accounting scandals and associated company collapses destroy user confidence in accounting information and demonstrate the need for fundamental changes in accounting.³⁶
- (3) Financial reporting is a “numbers game” played between company managers and Wall Street.³⁷
- (4) “Earnings management”—manipulation of financial statement numbers by managers in their own self-interest—is rampant.³⁸
- (5) Quarterly public financial reporting encourages investor and manager short termism.³⁹
- (6) Managers will sacrifice substantial firm value merely to meet short-term earnings targets.⁴⁰
- (7) The correlation between accounting earnings and stock market returns is too low.⁴¹
- (8) The increased importance of intellectual property, combined with inadequate accounting for intellectual property assets, has rendered financial statements of limited use to investors.⁴²
- (9) Accounting information prepared without a universal measurement system is meaningless.⁴³
- (10) Accounting information only is meaningful if it has been adjusted for general price-level changes or firm-specific input price changes.⁴⁴
- (11) Fair value accounting contributed to the 2008 financial crisis.⁴⁵
- (12) Investors “functionally fixate” on earnings without regard to the different valuation implications of different earnings components.⁴⁶

Negative commentaries date at least as far back as Canning’s [1929] doctoral thesis at Chicago, they were central to the “Golden Age” accounting literature (Nelson [1973]) that I read as an undergraduate in the 1960s,

³⁵ Notably, United States Congress [1976], Doty [2012], Brydon [2019], and an extensive academic literature surveyed in Tepalagul and Lin [2015].

³⁶ For example: Chambers [1973], Nobes [2005], and Soll [2014].

³⁷ Levitt (1998).

³⁸ The literature on this topic is so extensive that a Google Scholar search on “earnings management” returned approximately 213,000 results (conducted on July 10, 2023). Attempts to survey and synthesize it include Schipper [1989], Healy and Wahlen [1999], Dechow and Skinner [2000], and Ball [2013]. The literature exploded in volume after the Enron Era scandals.

³⁹ For example: Bushee [1998], Gigler et al. [2014], Brochet et al. [2015].

⁴⁰ Graham, Harvey, and Rajgopal [2005].

⁴¹ Lev [1989]. See section 4 above.

⁴² Notably: Lev and Gu [2016].

⁴³ See section 6.

⁴⁴ Sweeney [1936], Gynther [1966].

⁴⁵ Allen and Carletti [2008], Plantin, Sapra, and Shin [2008].

⁴⁶ For example: Hand [1990], Sloan [1996].

they were fueled by the Enron Era scandals, and they have continued unabated for decades. They do not tell the whole story.

Despite the long list of alleged negatives, accounting information continues to be used extensively throughout the economy. It is used voluntarily by managers, boards, professional investors, investing households, analysts, regulators, the press, and the general public. It is used in valuing firms, in trading, in evaluating and compensating managers, by competitors in learning from the financial outcomes of other firms, and in myriad other uses. Accounting information continues to be used extensively in debt, compensation, supply, and other contracting. It is used by economists, historians, and accounting researchers. Can it be as bad as the critics allege? Myriad users “vote with their feet,” so by inference the positives surely outweigh the negatives by a substantial margin.

That definitely is not to say that accounting information is without limitations. The profession needs to learn from past mistakes, such as the accounting scandals early this century. Further, the profession continually needs to adapt to political and economic change: The world always shifts in a fashion that makes at least some dimension of the prevailing regime in need of improvement, such as the proliferation of long-term noncancellable leases in the 1960s and 1970s that led to FASB issuing SFAS13. But critics pointing out some inadequacy in the status quo—real or imagined—tend to “occupy the airtime”; the positives largely go unspoken.

I can only speculate on why negativism is so prevalent. There presumably are other reasons, but in my experience people whose living derives from commenting authoritatively on the world—academics, politicians, journalists, columnists, authors of populist books, “leaders” of the profession, etc.—are excessively disposed to viewing it as needing improvement in ways that they propose. Indeed, they frequently have incentives to do so. Hayek’s [1988, p. 76] oft-quoted statement from *The Fatal Conceit* comes to mind: “The curious task of economics is to demonstrate to [people] how little they really know about what they imagine they can design.”

So, has our profession *really* continued to slip backward, as many pundits would imply? Or are the critics paying insufficient attention to the profession’s contributions to aggregate welfare, perhaps because they take them for granted, or because (despite the voluminous archival literature) they are largely unaware of the magnitude of its contributions, and where they lie?

11. Concluding Remarks

In conclusion, I do believe it is important for accounting scholars, teachers, and professional bodies to at least occasionally step back from their daily activities and think deeply about the conceptual underpinnings, and fundamental contribution to aggregate welfare, of their profession—and about the underpinnings of their practice, teaching, or research—because

accounting clearly *matters*. And I hope my rambblings on the topic stimulate some thought on *how* and *how much* it matters.

REFERENCES

- ALCHIAN, A. A. "Specificity, Specialization, and Coalitions." *Journal of Institutional and Theoretical Economics* 140 (1984): 34–49.
- ALCHIAN, A. A., and H. DEMSETZ. "Production, Information Costs, and Economic Organization." *The American economic review* 62 (1972): 777–95.
- ALLEN, F., and E. CARLETTI. "Mark-to-Market Accounting and Liquidity Pricing." *Journal of Accounting and Economics* 45 (2008): 358–78.
- AOKI, M. "The Contingent Governance of Teams: Analysis of Institutional Complementarity." *International Economic Review* 35 (1994): 657–66.
- AOKI, M. *Toward a Comparative Institutional Analysis*. Cambridge, MA: MIT Press, 2001.
- BACHELIER, L. "Théorie de la spéculation," *Annales Scientifiques de l'École Normale Supérieure* 3 (1900): 21–86.
- BADERTSCHER, B.; N. SHROFF; and H. D. WHITE. "Externalities of Public Firm Presence: Evidence from Private Firms' Investment Decisions." *Journal of Financial Economics* 109 (2013): 682–706.
- BALL, R. "Changes in Accounting Techniques and Stock Prices" *Journal of Accounting Research* 10 (Supplement) (1972): 1–38.
- BALL, R. "The Firm as a Specialist Contracting Intermediary: Application to Accounting and Auditing." Unpublished manuscript, University of Rochester (1989).
- BALL, R. "Infrastructure Requirements for an Economically Efficient System of Public Financial Reporting and Disclosure." *Brookings-Wharton Papers on Financial Services* (2001): 127–69.
- BALL, R. "Daimler-Benz AG: Evolution of Corporate Governance from a Code-Law 'Stakeholder' Toward a Common-Law 'Shareholder Value' System," in *The Economics and Politics of Accounting: International Perspectives on Trends, Policy, and Practice*, edited by A. Hopwood, C. Leuz, and D. Pfaff. Oxford: Oxford University Press, (2004): 103–43.
- BALL, R. "Accounting Informs Investors and Earnings Management Is Rife: Two Questionable Beliefs." *Accounting Horizons* 27 (2013): 847–53.
- BALL, R., and E. BARTOV. "The Earnings Event-Time Seasonal and the Calendar-Time Seasonal in Stock Returns: Naive Use of Earnings Information or Announcement Timing Effect?" *Journal of Accounting, Auditing & Finance* 10 (1995): 677–98.
- BALL, R., and P. BROWN. "An Empirical Evaluation of Accounting Income Numbers." *Journal of Accounting Research* 6 (1968): 159–78.
- BALL, R., and P. BROWN. "Portfolio Theory and Accounting." *Journal of Accounting Research* 7 (1969): 300–323.
- BALL, R., and P. BROWN. "Ball and Brown (1968): A Retrospective." *The Accounting Review* 89 (2014): 1–26.
- BALL, R., and P. BROWN. "Ball and Brown (1968) After 50 Years." *Pacific-Basin Finance Journal* 53 (2019): 410–31.
- BALL, R.; S. JAYARAMAN; and L. SHIVAKUMAR. "Audited Financial Reporting and Voluntary Disclosure as Complements: A Test of the Confirmation Hypothesis." *Journal of Accounting and Economics* 53 (2012): 136–66.
- BALL, R. and V. V. NIKOLAEV. "On Earnings and Cash Flows as Predictors of Future Cash Flows." *Journal of Accounting and Economics* 73 (2022): 101430.
- BALL, R.; A. ROBIN; and G. SADKA. "Is Financial Reporting Shaped by Equity Markets or by Debt Markets? An International Study of Timeliness and Conservatism." *Review of Accounting Studies* 13 (2008): 168–205.
- BALL, R.; A. ROBIN; and J. S. WU. "Accounting Standards, the Institutional Environment and Issuer Incentives: Effect on Timely Loss Recognition in China." *Asia-Pacific Journal of Accounting & Economics* 7 (2000): 71–96.
- BALL, R.; A. ROBIN; and J. S. WU. "Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries." *Journal of Accounting and Economics* 36 (2003): 235–70.

- BALL, R., and G. SADKA. "Aggregate Earnings and Why They Matter." *Journal of Accounting Literature* 34 (2015): 39–57.
- BALL, R., and L. SHIVAKUMAR. "How Much New Information Is There in Earnings?" *Journal of Accounting Research* 46 (2008): 975–1016.
- BALL, R., and L. SHIVAKUMAR. "Earnings Quality in U.K. Private Firms." *Journal of Accounting and Economics* 39 (2005): 83–128.
- BARRIOS, J. M. "Occupational Licensing and Accountant Quality: Evidence from the 150-Hour Rule." *Journal of Accounting Research* 60 (2022): 3–43.
- BARTH, M. E. "Measurement in Financial Reporting: The Need for concepts." *Accounting Horizons* 28 (2014): 331–52.
- BARTH, M. E.; W. H. BEAVER; and W. R. LANDSMAN; "The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting: Another View." *Journal of Accounting and Economics* 31 (2001): 77–104.
- BARTH, M. E.; K. LI; and C. G. McCLURE. "Evolution in Value Relevance of Accounting Information." *The Accounting Review* 98 (2023): 1–28.
- BASU, S. "The Conservatism Principle and the Asymmetric Timeliness of Earnings." *Journal of Accounting and Economics* 24 (1997): 3–37.
- BASU, S.; J. DICKHAUT; G. HECHT; I. TAFKOV; K. TOWRY; and G. WAYMIRE. "Recordkeeping and Exchange: Experimental Evidence." Working paper, Emory University and University of Minnesota, 2006.
- BEAVER, W. H. "The Information Content of Annual Earnings Announcements." *Journal of Accounting Research* 6 (Supplement), (1968): 67–92.
- BEAVER, W. H.; M. F. McNICHOLS; and Z. Z. WANG. "The Information Content of Earnings Announcements: New Insights from Intertemporal and Cross-Sectional Behavior." *Review of Accounting Studies* 23 (2018): 95–135.
- BENSTON, G. J. "The Value of the SEC's Accounting Disclosure Requirements." *The Accounting Review* 44 (1969): 515–32.
- BERLE, A. A., and G. C. MEANS. *The Modern Corporation and Private Property*. New York: Commerce Clearing House, 1932.
- BEUSELINCK, C.; F. ELFFERS; J. GASSEN; and J. PIERK. "Private Firm Accounting: The European Reporting Environment, Data and Research Perspectives." *Accounting and Business Research* 53 (2023): 38–82.
- BREUER, M.; C. LEUZ; and S. VANHAVERBEKE. "Reporting Regulation and Corporate Innovation." CFS Working Paper Series No. 675, Goethe University, 2021.
- BROCHET, F.; M. LOUMIOTI; and G. SERAFEIM. "Speaking of the Short-Term: Disclosure Horizon and Managerial Myopia." *Review of Accounting Studies* 20 (2015): 1122–63.
- BROWN, P., and R. BALL. "Some Preliminary Findings on the Association Between the Earnings of a Firm, Its Industry, and the Economy." *Journal of Accounting Research* 5 (Supplement) (1967): 5577.
- BRYDON, S. D. *Assess, Assure and Inform: Improving Audit Quality and Effectiveness. Report of the Independent Review into the Quality and Effectiveness of Audit*. London: Her Majesty's Stationery Office, 2019. Available at: www.gov.uk.
- BURGIN, M. *Theory of Information: Fundamentality, Diversity and Unification* (Vol. 1). Singapore: World Scientific, 2010.
- BUSHEE, B. J. "The Influence of Institutional Investors on Myopic R&D Investment Behavior." *Accounting Review* 73 (1998): 305–33.
- BUSHMAN, R. M., and A. J. SMITH. "Financial Accounting Information and Corporate Governance." *Journal of Accounting and Economics* 32 (2001): 237–333.
- CAMPBELL, J.; A. LO; and C. MACKINLAY. *The Econometrics of Financial Markets*. Princeton, NJ: Princeton University Press, 1997.
- CANNING, J. B. *The Economics of Accountancy*. New York: The Ronald Press Co., 1929.
- CHAMBERS, R. J. *Accounting, Evaluation and Economic Behavior*. New Jersey: Prentice-Hall, 1966.
- CHAMBERS, R. J. *Securities and Obscurities: A Case for Reform of the Law of Company Accounts*. Sydney: Gower Press, 1973.
- CHAMBERS, R. J. "Stock Market Prices and Accounting Research." *Abacus* 10 (1974): 39–54.

- CHRISTENSEN, H. B.; E. LEE; and M. WALKER. "Cross-Sectional Variation in the Economic Consequences of International Accounting Harmonization: The Case of Mandatory IFRS Adoption in the UK." *The International Journal of Accounting* 42 (2007): 341–79.
- CHRISTENSEN, H. B.; E. FLOYD; L. Y. LIU; and M. MAFFETT. "The Real Effects of Mandated Information on Social Responsibility in Financial Reports: Evidence from Mine-Safety Records." *Journal of Accounting and Economics* 64 (2017): 284–304.
- CHOI, J. H. "Accrual Accounting and Resource Allocation: A General Equilibrium Analysis." *Journal of Accounting Research* 59 (2021): 1179–219.
- COASE, R. "The Nature of the Firm." *Economica* 4 (1937): 386–405.
- COATES IV, J. C. "Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications." *Yale Law Journal* 124 (2014): 882–1011.
- COSTELLO, A. M. "Mitigating Incentive Conflicts in Inter-Firm Relationships: Evidence from Long-Term Supply Contracts." *Journal of Accounting and Economics* 56 (2013): 19–39.
- DASKE, H.; L. HAIL; C. LEUZ; and R. VERDI. "Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences." *Journal of Accounting Research* 46 (2008): 1085–142.
- DASKE, H.; L. HAIL; C. LEUZ; and R. VERDI. "Adopting a Label: Heterogeneity in the Economic Consequences Around IAS/IFRS Adoptions." *Journal of Accounting Research* 51 (2013): 495–547.
- DAVID, J. M.; H. A. HOPENHAYN; and V. VENKATESWARAN. "Information, Misallocation, and Aggregate Productivity." *The Quarterly Journal of Economics* 131 (2016): 943–1005.
- DECHOW, P. "Accounting Earnings and Cash Flows as Measures of Firm Performance: The Role of Accounting Accruals." *Journal of Accounting & Economics* 18 (1994): 3–42.
- DECHOW, P. M.; A. P. HUTTON; and R. G. SLOAN. "Economic Consequences of Accounting for Stock-Based Compensation." *Journal of Accounting Research* 34 (1996): 1–20.
- DECHOW, P. M., and D. SKINNER. "Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators." *Accounting Horizons* 14 (2000): 235–50.
- DE GEORGE, E. T.; C. B. FERGUSON; and N. A. SPEAR. "How Much Does IFRS Cost? IFRS Adoption and Audit Fees." *The Accounting Review* 88 (2013): 429–62.
- DE GEORGE, E. T.; X. LI; and L. SHIVAKUMAR. "A Review of the IFRS Adoption Literature." *Review of Accounting Studies* 21 (2016): 898–1004.
- DIETRICH, R.; R. FREEMAN; T. HARRIS; K. PALEPU; D. LARCKER; S. PENMAN; and K. SCHIPPER. *Evaluating Financial Reporting Standards*. New York: Coopers & Lybrand Academic Advisory Committee, 1997.
- DOWNES, J. F.; V. FLAGMEIER; and D. GODSELL. "Product Market Effects of IFRS Adoption." *Journal of Accounting and Public Policy* 37 (2018): 376–401.
- DIAMOND, D. W. "Optimal Release of Information by Firms." *The Journal of Finance* 40 (1985): 1071–94.
- DICKHAUT, J. "The Brain as the Original Accounting Institution." *The Accounting Review* 84 (2009): 1703–12.
- DIXIT, A. K.; E. M. M. MILGROM; and P. R. MILGROM. "Dynamics of Social, Political, and Economic Institutions." *Proceedings of the National Academy of Sciences* 108 (Supplement 4) (2011): 21283–84.
- DOPUCH, N. "The Impact of Technology on Accounting Research—Past, Present, and Future," in *Technological Change: Its Impact on Accounting. 1982 Proceedings of the Arthur Young Professors' Roundtable*, edited by Summers, E. L. Reston, VA: The Council of Arthur Young Professors, (1983): 175–99.
- DOTY, J. R. (Chairman, Public Company Accounting Oversight Board). "Testimony Before U.S. House Committee on Financial Services, March 28, 2012." 2012. <https://financialservices.house.gov/uploadedfiles/hhrg-112-ba-wstate-jdoty-20120328.pdf>
- DRAKE, M. S.; D. T. ROULSTONE; and J. R. THORNOCK. "The Usefulness of Historical Accounting Reports." *Journal of Accounting and Economics* 61 (2016): 448–64.
- DRAKE, M. S.; D. T. ROULSTONE; and J. R. THORNOCK. "The Determinants and Consequences of Information Acquisition via EDGAR." *Contemporary Accounting Research* 32 (2015): 1128–61.

- DRAKE, M. S.; B. A. JOHNSON; D. T. ROULSTONE; and J. R. THORNOCK. "Is There Information Content in Information acquisition?" *The Accounting Review* 95 (2020): 113–39.
- DUGUAY, R., "The Economic Consequences of Financial Audit Regulation in the Charitable Sector." *Journal of Accounting Research* 60 (2022): 1463–98.
- DUGUAY, R.; M. MINNIS; and A. SUTHERLAND. "Regulatory Spillovers in Common Audit Markets." *Management Science* 66 (2020): 3389–411.
- EDWARDS, E., and P. BELL. *The Theory and Measurement of Business Income*. Berkely, CA: University of California Press, 1961.
- ENACHE, L.; Z. HUANG; R. MOLDOVAN; and A. SRIVASTAVA. "Labor Costs of Implementing New Accounting Standards." 2022. Available at <https://ssrn.com/abstract=4110558>.
- ERNSTBERGER, J.; M. STICH; and O. VOGLER. "Economic Consequences of Accounting Enforcement Reforms: The Case of Germany." *European Accounting Review* 21 (2012): 217–51.
- FAMA, E. F. "The Behavior of Stock-Market Prices." *Journal of Business* 38 (1965): 34–105.
- FAMA, E. F. "Efficient Capital Markets: A Review of Theory and Empirical Work." *The Journal of Finance* 25 (1970): 383–417.
- FELTHAM, G. A. "The Value of Information." *The Accounting Review* 43 (1968): 684–96.
- FISHMAN, M. J., and K. M. HAGERTY. "Disclosure Decisions by Firms and the Competition for Price Efficiency." *The Journal of Finance* 44 (1989): 633–46.
- FOSTER, G. "Intra-Industry Information Transfers Associated with Earnings Releases." *Journal of Accounting and Economics* 3 (1981): 201–32.
- FREEMAN, R. and S. TSE. "An Earnings Prediction Approach to Examining Intercompany Information Transfers." *Journal of Accounting and Economics* 15 (1992): 509–23.
- FU, R.; A. KRAFT; X. TIAN; H. ZHANG; and L. ZUO. "Financial Reporting Frequency and Corporate Innovation." *The Journal of Law and Economics* 63 (2020): 501–30.
- GELB, D. S., and P. ZAROWIN. "Corporate Disclosure Policy and the Informativeness of Stock Prices." *Review of Accounting Studies* 7 (2002): 33–52.
- GIGLER, F., and T. HEMMER. "On the Frequency, Quality, and Informational Role of Mandatory Financial Reports." *Journal of Accounting Research* 36 (Suppl.) (1998): 117–47.
- GIGLER, F.; C. KANODIA; H. SAPRA; and R. VENUGOPALAN. "How Frequent Financial Reporting Can Cause Managerial Short-Termism: An Analysis of the Costs and Benefits of Increasing Reporting Frequency." *Journal of Accounting Research* 52 (2014): 357–837.
- GJESDAL, F. "Accounting for Stewardship." *Journal of Accounting Research* 11 (1981): 208–31.
- GOLDSTEIN, I., and L. YANG. "Information Disclosure in Financial Markets." *Annual Review of Financial Economics* 9 (2017): 101–25.
- GONEDES, N. J. "Public Disclosure Rules, Private Information-Production Decisions, and Capital Market equilibrium." *Journal of Accounting Research* 18 (1980): 441–75.
- GRAHAM, J. R.; C. R. HARVEY; and S. RAJGOPAL. "The Economic Implications of Corporate Financial Reporting." *Journal of Accounting and Economics* 40 (2005): 3–73.
- GYNTHNER, R. S. *Accounting for Price-Level Changes—Theory and Procedures*. Oxford: Pergamon Press, 1966.
- HAIL, L.; M. MUHN; and D. OESCH. "Do Risk Disclosures Matter When It Counts? Evidence from the Swiss Franc Shock." *Journal of Accounting Research* 59 (2021): 283–330.
- HALL, P. A., and D. W. GINGERICH. "Varieties of Capitalism and Institutional Complementarities in the Political Economy: An Empirical Analysis." *British Journal of Political Science* 39 (2009): 449–82.
- HAND, J. R. "A Test of the Extended Functional Fixation Hypothesis." *Accounting Review* 65 (1990): 740–63.
- HAYEK, F. A. *The Constitution of Liberty*. Chicago: University of Chicago Press, 1960.
- HAYEK, F. A. *The Road to Serfdom*. New York: Routledge, 1976.
- HAYEK, F. A. *The Fatal Conceit*. Chicago: University of Chicago Press, 1988.
- HEALY, P. M., and J. M. WAHLEN. "A Review of the Earnings Management Literature and Its Implications for Standard Setting." *Accounting Horizons* 13 (1999): 365–83.
- HEATH, D.; M. C. RINGGENBERG; M. SAMADI; and I. M. WERNER. "Reusing Natural Experiments." *The Journal of Finance* 78 (2023): 2329–64.

- HINES, R. D. "Financial Accounting: In Communicating Reality, We Construct Reality." *Accounting, Organizations and Society* 13 (1988): 251–61.
- HIRSHLEIFER, D., and S. H. TEOH. "Limited Attention, Information Disclosure, and Financial Reporting." *Journal of Accounting and Economics* 36 (2003): 337–86.
- HOLTHAUSEN, R. W., and R. W. LEFTWICH. "The Economic Consequences of Accounting Choice: Implications of Costly Contracting and Monitoring." *Journal of Accounting and Economics* 5 (1983): 77–117.
- HOLTHAUSEN, R. W., and R. L. WATTS. "The Relevance of the Value-Relevance Literature for Financial Accounting Standard Setting." *Journal of Accounting and Economics* 31 (2001): 3–75.
- JENSEN, M., and W. MECKLING. "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure." *Journal of Financial Economics* 3 (1976): 305–60.
- KANODIA, C., and H. SAPRA. "A Real Effects Perspective to Accounting Measurement and Disclosure." *Journal of Accounting Research* 54 (2016): 623–76.
- KAUSAR, A.; N. SHROFF; and H. WHITE. "Real Effects of the Audit Choice." *Journal of Accounting and Economics* 62 (2016): 157–81.
- KIM, J. B.; X. LIU; and L. ZHENG. "The Impact of Mandatory IFRS Adoption on Audit Fees: Theory and Evidence." *The Accounting Review* 87 (2012): 2061–94.
- KOTHARI, S. P. "Price-Earnings Regressions in the Presence of Prices Leading Earnings: Earnings Level Versus Change Specifications and Alternative Deflators." *Journal of Accounting and Economics* 15 (1992): 173–202.
- KOJEN, R. S., and M. YOGO. "Understanding the Ownership Structure of Corporate Bonds." No. w29679, National Bureau of Economic Research, 2022.
- KRAFT, A. G.; R. VASHISHTHA; and M. VENKATACHALAM. "Frequent Financial Reporting and Managerial Myopia." *The Accounting Review* 93 (2018): 249–75.
- KUHN, T. S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1962.
- LARA, J. M. G.; B. G. OSMA; and F. PENALVA. "Accounting Conservatism and Firm Investment Efficiency." *Journal of Accounting and Economics* 61 (2016): 221–38.
- LEFTWICH, R. "Accounting Information in Private Markets: Evidence from Private Lending Agreements." *Accounting Review* 58 (1983): 23–42.
- LEUZ, C. "Different Approaches to Corporate Reporting Regulation: How Jurisdictions Differ and Why." *Accounting and Business Research* 40 (2010): 229–56.
- LEUZ, C. "Towards a Design-Based Approach to Accounting Research." *Journal of Accounting and Economics* 74 (2022): 101550.
- LEUZ, C.; D. NANDA; and P. D. WYSOCKI. "Earnings Management and Investor Protection: An International Comparison." *Journal of Financial Economics* 69 (2003): 505–27.
- LEUZ, C., and R. E. VERRECCHIA. "The Economic Consequences of Increased Disclosure." *Journal of Accounting Research* 38 (Supplement) (2000): 91–124.
- LEUZ, C., and P. D. WYSOCKI. "The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research." *Journal of Accounting Research* 54 (2016): 525–622.
- LEV, B. "On the Usefulness of Earnings and Earnings Research: Lessons and Directions from Two Decades of Empirical Research." *Journal of Accounting Research* 27 (Supplement) (1989): 153–92.
- LEV, B., and F. GU. *The End of Accounting and the Path Forward for Investors and Managers*. Hoboken, NJ: John Wiley & Sons, 2016.
- LEV, B., and P. ZAROWIN. "The Boundaries of Financial Reporting and How to Extend Them." *Journal of Accounting Research* 37 (1999): 353–85.
- LEVITT, A. "The Numbers Game. Speech by the SEC Chairman at NYU Center for Law and Business, September 28, 1998." 1998. Available at <https://www.sec.gov/news/speech/speecharchive/1998/spch220.txt>.
- LISOWSKY, P., and M. MINNIS. "The Silent Majority: Private US Firms and Financial Reporting Choices." *Journal of Accounting Research* 58 (2020): 547–88.
- LO, A. W., and A. C. MACKINLAY. "Data-Snooping Biases in Tests of Financial Asset Pricing Models." *The Review of Financial Studies* 3 (1990): 431–67.

- LUNDHOLM, R., and L. A. MYERS. "Bringing the Future Forward: The Effect of Disclosure on the Returns-Earnings Relation." *Journal of Accounting Research* 40 (2002): 809–39.
- MATTESSICH, R. "Methodological Preconditions and Problems of a General Theory of Accounting." *The Accounting Review* 47 (1972): 469–87.
- MEEHAN, B., and E. F. STEPHENSON. "Reducing a Barrier to Entry: The 120/150 CPA Licensing Rule." *Journal of Labor Research* 41 (2020): 382–402.
- MILGROM, P. and J. ROBERTS. "Rationality, Learning and Equilibrium in Games with Strategic Complementarities." *Econometrica: Journal of the Econometric Society* 58 (1990): 1255–77.
- MINNIS, M. "The Value of Financial Statement Verification in Debt Financing: Evidence from Private Firms." *Journal of Accounting Research* 49: (2011): 457–506.
- MORALES, J., and S. SPONEM. "You Too Can Have a Critical Perspective! 25 Years of Critical Perspectives on Accounting." *Critical Perspectives on Accounting* 43 (2017): 149–66.
- NAPIER, C. J., and C. STADLER. "The Real Effects of a New Accounting Standard: The Case of IFRS 15 Revenue from Contracts with Customers." *Accounting and Business Research* 50 (2020): 474–503.
- NELSON, C. L. "A Priori Research in Accounting," in *Accounting Research 1960–1970: A Critical Evaluation*, edited by N. Dopuch, L. Revsine. Urbana, IL: Center for International Education and Research in Accounting, University of Illinois, (1973): 3–19.
- NIKOLAEV, V. V. "Identifying Accounting Quality." Chicago Booth Research Paper No. 14-28, 2018.
- NOBES, C. W. "Rules-Based Standards and the Lack of Principles in Accounting." *Accounting Horizons* 19 (2005): 25–34.
- OGDEN, C. K., and I. A. RICHARDS. *The Meaning of Meaning: A Study of the Influence of Language and Thought and of the Science of Symbolism*. Oxford, England: Harcourt Brace, 1923.
- OHLSON, J. A. "Earnings, Book Values, and Dividends in Equity Valuation." *Contemporary Accounting Research* 11 (1995): 661–87.
- OHLSON, J. A., and A. G. BUCKMAN. "Toward a Theory of Financial Accounting: Welfare and Public Information." *Journal of Accounting Research* 19 (1981): 399–433.
- PATON, W. A., and A. C. LITTLETON. *An Introduction to Corporate Accounting Standards, Monograph No. 3*. Chicago IL: American Accounting Association, 1940.
- PEASNELL, K. V. "Some Formal Connections Between Economic Values and Yields and Accounting Numbers." *Journal of Business Finance and Accounting* 9 (Autumn), (1982): 361–81.
- PLANTIN, G.; H. SAPRA; and H. S. SHIN. "Marking-to-Market: Panacea or Pandora's Box?" *Journal of Accounting Research* 46 (2008): 435–60.
- PREINRICH, S. "Annual Survey of Economic Theory: The Theory of Depreciation." *Econometrica* 6 (January) (1938): 219–31.
- READ, L. E. *I, Pencil: My Family Tree as Told to Leonard E. Read*. (Revised edn.) Irvington-on-Hudson, NY: The Foundation for Economic Education, Inc., 1999. Available at https://www.econlib.org/library/Essays/rdPncl.html?chapter_num=2#book-reader.
- ROYCHOWDHURY, S.; N. SHROFF; and R. S. VERDI. "The Effects of Financial Reporting and Disclosure on Corporate Investment: A Review." *Journal of Accounting and Economics* 68 (2019): 101246.
- SADKA, G. "The Economic Consequences of Accounting Fraud in Product Markets: Theory and a Case from the US Telecommunications Industry (WorldCom)." *American Law and Economics Review* 8 (2006): 439–75.
- SAMUELSON, P. A. "Proof that Properly Anticipated Prices Fluctuate Randomly." *Industrial Management Review* 6 (1965): 41–49.
- SAMUELSON, P. A. "Proof that Properly Discounted Present Values of Assets Vibrate Randomly." *The Bell Journal of Economics and Management Science* 4 (1973): 369–74.
- SCHIPPER, K. "Commentary on Earnings Management." *Accounting Horizons* 3 (1989): 91–102.
- SCOTT, D. R.; J. H. JACKSON; E. J. FILBEY; J. J. REIGHARD; C. F. RITTENHOUSE; and W. A. PATON. "Conservatism in Inventory Valuations." *Accounting Review* 1 (1926): 18–30.
- SHILLER, R. J. "Market Volatility and Investor Behavior." *The American Economic Review* 80 (1990): 58–62.

- SHLEIFER, A. and R. W. VISHNY. "Large Shareholders and Corporate Control." *Journal of Political Economy* 94 (1986): 461–88.
- SHROFF, N. "Real Effects of PCAOB International Inspections." *The Accounting Review* 95 (2020): 399–433.
- SLOAN, R. G. "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows About Future Earnings?" *Accounting Review* 71 (1996): 289–315.
- SOLL, J. "The Reckoning: Financial Accountability and the Rise and Fall of Nations." New York: Basic Books, 2014.
- STAUBUS, G. J. *A Theory of Accounting to Investors*. Berkeley, CA: University of California Press, 1961.
- STIGLER, G. J. "Economics: The Imperial Science?" *The Scandinavian Journal of Economics* 86 (1984): 301–13.
- SWEENEY, H. *Stabilized Accounting*. New York: Harper and Brothers, 1936.
- TEPALAGUL, N., and L. LIN. "Auditor Independence and Audit Quality: A Literature Review." *Journal of Accounting, Auditing & Finance* 30 (2015): 101–21.
- TERRY, S. J.; T. M. WHITED; and A. A. ZAKOLYUKINA. "Information Versus Investment." *The Review of Financial Studies* 36 (2023): 1148–91.
- TOPKIS, D. M. *Supermodularity and Complementarity*. Princeton, NJ: Princeton University Press, 1998.
- UNITED STATES CONGRESS. *Senate Committee on Government Operations. Subcommittee on Reports, Accounting, and Management: The Accounting Establishment: A Staff Study*. ("Metcalf Report"). Washington, DC: U.S. Govt. Printing Office, 1976.
- VERRECCHIA, R. E., "The Use of Mathematical Models in Financial Accounting." *Journal of Accounting Research* 20 (1982): 1–42.
- VERRECCHIA, R. E. "Discretionary Disclosure." *Journal of Accounting and Economics* 5 (1983): 179–94.
- WATTS, R. L., and J. L. ZIMMERMAN. *Positive Accounting Theory*. Englewood Cliffs, NJ: Prentice Hall, 1986.
- ZHANG, G. "Accounting Standards, Cost of Capital, Resource Allocation, and Welfare in a Large Economy." *The Accounting Review* 88 (2013): 1459–88.