

By What Criteria Do We Evaluate Accounting?
Some Thoughts

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Abstract

Accounting obviously *matters*. Substantial resources have been devoted to accounting activities for millennia, in different civilizations and in different economic systems, and continue to be devoted to them 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? A partial answer to that question is implicit or explicit in much of the modern archival accounting literature, though the question seldom is addressed in much depth in that literature. To promote some thought and discussion on this important issue, I adopt a “soft” welfare-economic framework, though scholars from other disciplines no doubt will see the world differently. In that framework, the role of accounting regimes is to increase welfare. Accounting research studies the economic logic of firm and household behavior, focusing on the integral role of an accounting regime in the economy. Consequently, major research streams in the contemporary archival literature (namely: real effects; price effects, including value relevance; and costly contracting), can be viewed in terms of what they can and cannot reveal about welfare effects. This essay provides some thoughts on the many issues that arise in implementing an economic welfare criterion.

This essay is a very personal reflection on six decades of reading and participating in the accounting literature. It is based in part on keynote addresses at the 2017 MIT Asia Conference in Accounting in Hangzhou China, at the 100th Anniversary of Accounting Conference at Temple University in 2018, at the 2018 CARE Conference, and at Aalto University, Helsinki Finland in 2019. The essay has benefited from the insightful comments of Matthias Breuer and Christian Leuz. Financial support from the University of Chicago, Booth School of Business is gratefully acknowledged.

I. 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. The question is *how*. That is the topic of this essay.

Notable evidence of accounting clearly *matter*ing over the course of history includes the following:¹

- ✓ The earliest acknowledged forms of accounting started in Ancient Egypt, where bookkeepers kept meticulous commercial and taxation records.²
- ✓ In ancient Mesopotamia, more than 7,000 years ago, accounting records of important matters such as crops, herds and transactions were maintained.³
- ✓ A reference to accounting in Chinese government administration was recorded four millennia ago.
- ✓ The ancient Greeks used independent scribes to record private transactions.⁴
- ✓ The Roman Empire kept elaborate accounting records of revenues, expenditures, assets and debts.⁵
- ✓ In India, a manuscript outlined accounting and financial practices in the third century BCE.⁶
- ✓ There are references to accounting in ancient religious texts, including the Bible , the Qur'an , and the Torah.
- ✓ The development of double-entry accounting, and its adoption by merchants in Europe during the late 13th Century, facilitated the recording of transactions in a common denominator (currency) and hence the calculation of quantities such as total assets and debts, net wealth, total revenues and expenses, and net profit or loss.⁷ Double entry bookkeeping is credited by scholars such as Sombart (1902) and Schumpeter (1952) with playing a substantial role in the development of capitalism. It underlies the logic of financial reporting to this day.
- ✓ In the modern era, accounting has its fingers spread throughout the entire economy. Indeed, accounting is the primary mechanism for measuring – and hence influencing – economic institutions and economic behavior worldwide.

¹ I am by no means an expert in accounting history, so this list undoubtedly is not a representative survey of the relevant literature. The sole purpose of the list is to establish that some form of accounting has existed in a variety of civilizations for millennia.

² These included: “tax records, agendas, grain distribution tables, accounting tables, distribution records of wages and receivables, food orders, materials, lists of various items and materials, lists of the contents of the temples, documents for the transfer and delivery of materials and yields” (Mohamed, 2019).

³ For example, Keister (1963), Schmandt-Besserat (1995), Mouck (2004), and Basu and Waymire (2006).

⁴ Provasi and Farag (2013). Stone (1969) notes that scribes commonly were slaves because – unlike free citizens – they could be tortured to verify the truthfulness of their accounts. That puts the PCAOB in a different perspective.

⁵ Oldroyd (1995).

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https://en.wikipedia.org/wiki/History_of_accounting#:~:text=By%20the%20time%20of%20the.accounts%20for%20a%20sovereign%20state, visited 29 August 2022.

⁷ An accessible summary of the history of the double entry system is at https://en.wikipedia.org/wiki/Double-entry_bookkeeping_system.

It is difficult to imagine a costly economic activity like accounting flourishing for thousands of years – and in so many civilizations – without *matter*ing.

But *how* exactly does accounting matter? How does one *evaluate* an accounting regime?

Before proceeding to address these questions, some definitions and caveats are in order. I will define accounting as the independent measurement and communication of economic outcomes. I will define an accounting regime in an all-encompassing fashion, including (but not limited to) the institutional structure for setting and enforcing accounting and auditing standards, the standards themselves, and the institutions for educating and licensing accountants. With apologies to colleagues viewing accounting through the lens of other disciplines, I will adopt a “soft” welfare-economics perspective, so the essay is devoid of any insights that could be provided by other perspectives.

Consistent with the above, I will define accounting research as investigation of the logic of economic institutions and behavior, focusing on the integral role of independent measurement and reporting. A well-known implication of the Coase (1937) theory of the firm is that economic institutions exist only in a world of positive transactions costs. Indeed, their role is to contribute to economic efficiency by minimizing these frictions. This simple proposition underlies the logic of economic institutions and behavior, including accounting institutions and behavior, and is fundamental to any analysis of research on the welfare economic role of accounting.

This essay is not a literature survey, although it refers to some relevant contributions. It will have only a little to say about governments, regulation and politics, which will be addressed in Section XIII under the heading of externalities and distributional effects. Finally, what follows are some thoughts on what turns out to be a complex issue, not answers. The intent is to provoke thought and discussion on our profession, and on how it – and attributes of it – can be evaluated.

II. Efficiency and Equity: The Ultimate Welfare-Economic Criteria

Conceptually, the task of evaluating accounting involves a *preference ordering of accounting regimes*. There is a considerable quantity of archival research that provides partial insight into that task. For example, when researchers report that frequent financial reporting induces myopic investment behavior by firms (Kraft, Vashishtha, and Venkatachalam, 2018), the implication seems to be that myopia and its effects on investment are economically inefficient and hence – other things equal, such as cost and informativeness to other parties – a low-frequency reporting regime is preferred. To take another

example, implicit behind the Lara, Osma, and Penalva (2016) evidence, that timely recognition of losses on investments is associated with increased investment efficiency, there seems to be an implicit conclusion that – other things equal – a regime with Basu (1997) timely loss recognition (conditional conservatism) is preferred. Likewise, when countries change from their individual accounting rules to International Financial Accounting Standards (IFRS), evidence that increased financial statement transparency occurs seems to imply that economic efficiency is increasing in transparency and hence – again, other things equal – the new accounting regime is preferred.

While these and many other studies individually address tiny pieces of the preference-ordering puzzle, it can be helpful to stand back and try to view the puzzle as a whole. Other things never are equal. For example, does a study reporting average effects, such as an increase in the average firm’s investment efficiency, or an average regression slope or R^2 , disguise important distributive effects across firms and households? What are the incremental costs of operating an alternative regime with seemingly superior average outcomes? Do mandates that are shown to increase transparency to investors also adversely affect firm behavior? In other words, the literature contains ample partial results, but these do not directly translate to aggregate welfare effects.

The primary welfare-economic criterion I invoke in this essay is economic efficiency. It lurks behind each of the major research streams in the contemporary archival literature: real effects; price effects, including “value relevance”; and costly contracting. Efficiency is an idealized economic state in which all resources are optimally allocated in the sense that any changes made for the benefit of one would harm another (i.e., any changes that provide non-negative outcomes to all parties have been made). Loosely stated, the role of accounting then is to increase economic efficiency.⁸ A focus on economic efficiency sidelines issues of equity among firms and households. While equity is an indisputably important criterion, I confess that I have few useful thoughts to contribute on equity, and it rarely is addressed in the archival literature.⁹ There is, however, an important emerging literature on externalities and distributional effects, which I discuss in Section IX. While that literature does not formally adopt

⁸ 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 et al. (2011), for example).

⁹ I could hide behind the Kaldor-Hicks Compensation Principle (also known as the Second Theorem of Welfare Economics) to avoid discussing equity issues and consider efficiency as a sole criterion. Applied in this context, the theorem states that if a redistribution of wealth takes place *in initial endowments* to compensate for any accounting regime choice that harms some and benefits others, then subsequently an unfettered and frictionless price mechanism allocates scarce resources efficiently. That would be logically inconsistent, because in a frictionless world there are no firms, no accounting regimes to evaluate, and no accounting research. More importantly, the idea is wildly impractical in the context of accounting regime changes.

equity as a criterion, it does provide relevant results – for example, when positive or negative externalities of individual behavior exist, or when regulatory mandates benefit some but harm others.

III. Barriers to Assessing the Contribution of Accounting

Before proceeding further, I will briefly discuss three barriers to a comprehensive assessment of the welfare-economic contribution of any accounting regime.

1. Specifying the Counterfactual

What is the base case against which the effect of an accounting regime on economic efficiency is to be assessed? Does one assess the current regime relative to one with:

- ✓ no accounting of *any* type whatsoever?
- ✓ a regime in which assets and liabilities are counted in physical terms only (number of goats, amphora of oil, etc.)?
- ✓ a monetary-based accounting regime in which assets, liabilities and net income are counted in additive monetary terms, using double-entry accounting?
- ✓ a pre-regulatory modern regime, such as the US before the advent of the SEC, or the UK before the Companies Acts addressed financial reporting?
- ✓ some previous regime, such as evaluating IFRS relative to prior national accounting standards, or evaluating the effects of FASB's first lease accounting standard (SFAS No. 13, in 1976)?

The true base case for assessing the contribution of accounting to economic efficiency is the first (absolutely no accounting at all), but it is not easy to imagine, and is impossible to research using archival data.

Accounting has its fingers throughout the economy, and its influences are myriad. Consequently, we take much for granted and view the baseline only as 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 a newly-innovated accounting standard. By setting such a limited baseline, we tend to lose sight of the magnitude of accounting's complete economic role. There is not much alternative, because the true baseline is unobservable except in experimental data.

Nevertheless, it can be helpful for educators, researchers and standard setters to contemplate – however briefly – a world with no accounting.

2. Identifying Causality When Accounting and Other Institutions Are Economic Complements

Even under the least ambitious of the above counterfactuals, there is another seemingly insurmountable barrier to assessing the contribution of accounting to economic efficiency: institutional complementarity.

Institutional complementarity has long been recognized in economic development. It is formalized by Aoki (1994, 2001), for example, the latter paper building on the demonstration by Milgrom and Roberts (1990) and Topkis (1998) of complementarity arising in a supermodular strategic game. Empirically, after categorizing the institutions in all OECD countries, Hall and Gingerich (2009) 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 Ball (2001, 2004), Leuz, Nanda, and Wysocki (2003) and Leuz (2010), among others.

When attempting to assess the contribution of accounting to economic welfare, the problem that arises is that accounting has important institutional complements, without which an accounting regime – and its effects – would not be the same. Equally, many of those institutions would not be the same without their accompanying accounting regime. Consequently, 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 (number of sheep, amphora of oil, etc.) could not emerge without the development of a number system, language, reading and writing, and even the human brain (Basu and Waymire, 2006; Dickhaut, 2009), as well as a rudimentary education function in which scribes acquire these skills. 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 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?

At the same time, the demand for keeping accounting records would have created a derived demand for the development of complementary institutional structures, including commercial language, number systems, monetary systems, reading and writing. The development of accounting regimes likely influenced the shape of other developing institutions.

So I offer the following proposition: It is logically impossible to assess the contribution to economic efficiency of accounting *per se*, simply because other institutions are economic complements and their contributions are intertwined.

A corollary of the above proposition compounds the difficulty: Just as accounting is associated with complementary institutional characteristics, *changes* in accounting are associated with *changes* in institutional characteristics. An instructive example of this complexity 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 had preceded 1993, including:

- ✓ 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.¹⁰
- ✓ Many new liquid security markets had sprung up, most notably for derivatives, providing a wider range of reliable prices.
- ✓ Electronic data services had proliferated, containing timely transactions prices and fair values for stocks, commodities, financial instruments, real estate, used plant & equipment, etc.
- ✓ 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 was viewed as theoretical and impractical by most practitioners who did know about it. That changed over time. By 1976, FASB was able to judge the discounted cash flow valuation method as being sufficiently *generally accepted* as to mandate its use in SFAS No. 13 on lease accounting.
- ✓ 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 valuations as being sufficiently generally accepted in practice to be used in valuing stock options issued to employees.

These institutional developments made pricing information more reliable, as well as quicker and cheaper to obtain and process, thereby creating 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 economic benefit associated with the introduction of fair value accounting for marketable securities does one attribute to the new accounting method *per se*? To the development of markets? Of pricing services? Of valuation theory?

¹⁰ 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.

Consistent with the general rule that regime changes are complementary, causality also runs in the other direction. Consider the many data services that now supply firms and their auditors with reliable and timely pricing information, for even the most complex securities. As argued above, the advent of their supply helped facilitate the use of fair value accounting for marketable securities. Equally, their use in financial reporting would have increased the demand for this information and presumably contributed to the development of those data services.

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”?

In this regard, I am suspicious of even “quasi-natural experiments” that attempt to identify accounting effects in archival data. It is difficult to imagine any change in any characteristic of accounting that occurs purely randomly, independent of complementary institutional changes. 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. It makes identification of the contribution of accounting to social welfare using archival data an imperfect and challenging task.

3. *Accounting Regime Costs*

From a welfare-economic (social) perspective, the optimum accounting regime is not independent of its cost. The optimal amount of resources consumed – and, consequently, the optimal quantity and quality of accounting information produced (however defined) – is bounded.

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:

- ✓ Regime-level costs of developing, promulgating and maintaining accounting and auditing standards
- ✓ Regime-level costs associated with training accountants and auditors
- ✓ Regime-level costs of developing, maintaining and operating the complex set of non-auditing mechanisms that monitor the implementation of accounting standards (company boards, audit committees, whistleblowing systems, security analysts, credit rating agencies, an independent press, short sellers)
- ✓ Regime-level costs of developing and operating an effective regulatory apparatus

- ✓ Regime-level costs of developing and operating an independent and effective judicial system in which statutory and private accounting-related litigation can occur
- ✓ Firm-level personnel, information system and overhead costs of developing and operating internal accounting and internal audit systems
- ✓ Firm-level costs of complying with external reporting rules
- ✓ Firm-level costs of complying with contractual reporting commitments (notably, debt agreements)
- ✓ 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 introduction of the new revenue recognition standard in 2014 and the new standard on accounting for leases in 2016. They document a substantial increase in postings, implying a substantial increase in the labor cost of preparing financial reports under the new regimes. Meehan and Stephenson (2020) and Barrios (2022) study changes in the supply price of accounting labor associated with the 120- and 150-hour educational requirements for entry.

From the perspective of a preference ordering of regimes these observable costs are only “the tip of the iceberg.” Despite the data limitations, it is surprising that so little research on accounting costs has been published, especially when viewed relative to the volume of research reporting benefits. A cynical view would be that accounting researchers are biased toward promoting their profession.

The U.S. Financial Accounting Standards Board (FASB) states: “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.”¹¹ Consistent with this principle, FASB has commenced reporting rudimentary cost-benefit analyses.¹² These consist only of a listing of expected costs and benefits of the standards. For example, to my knowledge no systematic survey was undertaken, along the lines of the partial analysis in the Enache et al. (2022) study but broadened to include firms, their auditors, lenders and analysts. That would have given some indication of the expected increase in labor costs due to the new lease and revenue recognition standards, despite the complexity of those standards.

¹¹ <https://www.fasb.org/Page/PageContent?PageId=/about-us/standardsettingprocess.html&isstaticpage=true&bcpath=tff>.

¹² Described in <https://www.fasb.org/Page/PageContent?PageId=/about-us/standardsettingprocess.html&isstaticpage=true&bcpath=tff>.

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. That does not imply using formal cost-benefit analyses, culminating in numerical estimates of net benefits, which Coates (2014) cautions against in the context of financial regulation. The problem that arises from an economic welfare perspective is that decision-makers might not internalize the costs of implementing their decisions. For example, it might be in the interest of the accounting profession to require overly complex accounting standards and audits, resulting in higher audit fees. While the profession would encounter some pushback from clients, in a competitive economy many costs imposed on firms ultimately are borne largely by consumers, or are dispersed through the economy due to responses such as more firms going private. 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 budgets and incentives of regulatory bodies.

Implication of these barriers

Researchers obviously cannot experimentally shut down all accounting, however briefly, so they cannot observe its contribution to economic welfare against the true counterfactual of no accounting at all. Nor can they completely parse out the effects of complimentary economic institutions: accounting and other institutions are intertwined, as are their effects. So researchers 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).

In addition, researchers do not have full knowledge of all the economic activity that affects or is affected by accounting, and can have limited data on an activity they are investigating. Consequently, archival researchers have tended to study share market measures (earnings-returns associations, announcement effects, spreads, liquidity, turnover), debt market measures (ratings, debt yields, debt covenants), management compensation attributes, supply contract features, and other partial measures.

A comprehensive assessment of the welfare-economic contribution of any accounting regime therefore is well out of reach, so researchers are left with discovering only partial insights. The three primary frameworks utilized for this purpose in the contemporary archival accounting literature are discussed in the following section.

IV. Criteria for Evaluating Accounting Information in the Contemporary Archival Literature

Three major criteria for evaluating accounting information been employed in the archival accounting literature in recent decades: real effects, value relevance and costly contracting. These criteria provide different frameworks or lenses for viewing accounting generally.

1. *Real Effects*

The notion that accounting information affects real outcomes is more than intuitively appealing: it is obvious. Why bother with financial reporting if it has no effects on what households and firms *do*?

I like to cite a loose application of the Heisenberg Uncertainty Principle, that the act of measuring affects what is measured. A fundamental example is the differential effects of cash and accrual accounting regimes on firms' incentives to invest in inventory. Cash accounting expenses all cash outlays for inventory immediately upon acquisition, regardless of whether it has been consumed or remains intact in inventory. Accrual accounting expenses only the costs of the inventory that has been used, and the cost of unused closing inventory is parked on the firm's balance sheet until sold. Accrual accounting thereby provides greater incentives to invest in inventory than cash accounting. As a result, the act of measuring and reporting closing inventory affects the amount of inventory being measured.¹³

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.

Two important dimensions that welfare economics would add to the criterion as stated above by Kanodia and Sapra (2016) are that:

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.); and
2. The optimal accounting regime moves real outcomes toward optimality, as distinct from simply affecting outcomes.¹⁴

¹³ Hines (1988) expressed a related point in “critical perspectives” terminology, noting that accounting does not simply mirror an externally given reality, but helps to construct that reality.

¹⁴ An attractive property of the Kanodia and Sapra (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.

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

- ✓ facilitates firms learning from the outcomes of their past production, investment and financing decisions
- ✓ facilitates firms learning from what did and did not generate successful outcomes in other firms
- ✓ facilitates households learning where to allocate resources
- ✓ disciplines and enhances credibility of manager disclosures of private, forward-looking information¹⁵
- ✓ facilitates formal and informal contracts (debt, management, supply, royalty, dealership, etc.) being written with payoffs or decision rights that are contingent on independently verified accounting outcomes
- ✓ 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
- ✓ incents managers to act in a fashion more aligned with the interests of owners (i.e., reduces agency costs)
- ✓ aids the development of debt, equity, supply, and other markets generally

It is apparent that accounting information has myriad effects on real outcomes. Otherwise, why would so many resources be committed to it, in some many civilizations and regimes, for so long?

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, household consumption, etc. For example, it encompasses effects on household holdings in equities, and hence in trading in equities. Accounting effects on *prices*, including effects on changes in prices, are discussed in the following subsection.

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 improving users’ decisions. The real effects criterion also overlaps what is referred to as “economic consequences,” on which there is a robust 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

¹⁵ Gigler and Hemmer (1998), Ball (2001), Ball, Jayaraman and Shivakumar (2012).

(1996), Leuz and Verrecchia (2000), Sadka (2006), Christensen, Lee and Walker (2007), and Ernstberger, Stich and Vogler (2012).¹⁶

Kanodia and Sapra (2016) make clever use of public data to investigate accounting effects on investment efficiency, risk taking and economic cyclicity. Lara, Osma, and Penalva (2016) also use publicly available data to study accounting effects on investment efficiency. Despite the obvious attraction of a framework that addresses how accounting affects economic activity, most real effects are unobservable: firms disclose mainly aggregate information, 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.”

While it is clear that accounting has substantial real effects, some of which are observable to the researcher, demonstrating their welfare effects is another matter. In the absence of fully identified production functions and investment opportunity sets, 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 accounting regime are taken into account.

2. *Price Effects and Value Relevance*

In an influential paper (3014 Google cites as of 7 September 2022), Barth, Beaver and Landsman (2001, pp.78-79) describe the much-studied value relevance criterion as follows:

“In the extant literature, an accounting amount is defined as value relevant if it has a predicted association with equity market values.”

The basic idea is that accounting variables such as earnings and book values are in some sense “good” if they are correlated with stock prices or changes in stock prices. This research stream has been so successful that it more appropriately might be described as a river.¹⁷

¹⁶ Nor is the term itself completely new. While others could have preceded, the first use of it 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 (such as changes in expected future inventory prices, or the firm moving into a new industry), and they can also *induce* real effects”

¹⁷ A search for “value relevance” on 7 September 2022 returned 51,800 Google cites. A search for “value relevance” combined with “accounting” returned 51,700 cites, 16,800 of which are post-2018.

Nevertheless, I will refer to the price effects of accounting information in a considerably wider sense. From a welfare economics viewpoint, the criterion as stated above could be adapted by stating that an optimal accounting regime accounting:

1. Affects prices, as distinct from merely being associated (i.e., correlated) with them;
2. Affects prices other than in the equity market; and
3. Moves prices toward optimality, as distinct from merely affecting them.

Under this broader interpretation of the relation between accounting information and prices, the 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 and management compensation).¹⁸

Historically, research on the relation between accounting numbers and prices overwhelmingly has addressed equity prices, under the “value relevance” standard. This reflects the substantial use of accounting information in the equity market. However, it also reflects the ready availability of equity market data. In recent years, data on debt prices, management compensation and other prices has become available, but the equity market still garners considerable attention.

Researchers can learn a lot about the economic role of financial reporting from using equity market prices and changes in 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 earnings, and concluded that accounting earnings not only are value-relevant (i.e., contain information that overlaps the information that is incorporated in market values), but also are not very timely (i.e., are mostly anticipated by investors). These are fundamental properties of accounting, measured using the natural benchmark of the equity market. Over a firm’s lifetime, accounting earnings and equity returns are identical. In the meantime, equity prices incorporate the information that has been released in accounting earnings, as well as considerable information about expected future earnings (hence the adage “prices lead earnings”). Consequently, Phil Brown and I believed we could study fundamental properties of accounting using equity returns as a benchmark. Using this benchmark was highly controversial at the time (e.g., Chambers, 1974).¹⁹ It since has become widely used and known as “value relevance”

¹⁸ Also including the terms of trade within corporations, which I prefer to call “quasi prices” (Ball, 1989) – a topic for another day.

¹⁹ Among more recent critics, Morales and Sponem (2017) assert 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.”

research. Nevertheless, as we pointed out in the last sentence of the paper, one cannot take this too far. While one can learn important properties of accounting information using the equity market as a benchmark, one cannot meaningfully order accounting regimes based merely on correlation with equity prices or price changes.

Using equity market price behavior as a proxy for welfare effects can be misleading, perhaps severely. 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 that it is not.

Because equity is the residual claimant on the firm, receiving distributions only after all other claims have been satisfied, the equity price response to accounting information generally will exceed the price responses of other factors of production. For example, 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 is expected to be atypical, and hence misleading as a guide to aggregate welfare effects via the price mechanism.

Similarly, 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 that 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 the firm, 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 sub-optimal from their perspectives. Consequently, the firm and hence its shareholders would pay a price for not incorporating the interests of others in its accounting. Thus, if a firm's financial reporting is not optimal from the viewpoint of any contracting party, that party will impose at least some of the resulting cost on the firm (lenders and suppliers will

charge higher prices to the firm; customers will only pay lower prices). This is another reason that value relevance is not a sufficient criterion for evaluating financial reporting because it is too narrow.²⁰

Further, as noted in Section III, 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 involves symmetric treatment of them. However, lenders are more interested in timely recognition (incorporation into the accounts) of losses than of gains, so the total demand for timely loss recognition, taking into account both the debt and equity markets, exceeds that for timely gain recognition. Given that it is costly for the firm to run its accounting system, the optimal accounting regime thus will tilt toward asymmetry. That is, it will exhibit at least some Basu (1997) conditional conservatism.

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. For example, a low earnings-returns r-squared could be due to excess market volatility (Shiller, 1990) rather than providing insight into accounting. Alternatively, a high earnings-returns r-squared could be due to investor “fixation” on earnings (Sloan, 1976). In general, using equity price or rate of return as the benchmark for assessing an accounting regime assumes the absence of mispricing.

In addition to all of the above, a stronger correlation/association between accounting and equity prices *is not the same as better prices*. It is trite to demonstrate this point by the following hypothetical. Instead of incurring the cost of estimating market values of all the individual assets and liabilities, why not simply mark the total book value of *equity* to market?²¹ In this hypothetical regime, the correlation

²⁰ This could explain why standard setters require timely asset impairment but either do not allow or do not require positive asset revaluation, despite their stated aversion to conservatism.

²¹ Defined as the number of outstanding shares times the closing price at balance date. If a full Balance Sheet was reported, 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, they could be recorded at current value, in which case the balancing item would reflect the fundamental proposition that for all surviving (i.e., non-liquidated) firms, the sum of the values of the individual parts is less than the value of the sum (Coase, 1937).

between book and market values would be perfect, as would be the correlation between earnings and returns. Nevertheless, accounting then would contribute absolutely nothing positive to the economy. Accounting would merely duplicate existing market prices, so it would be economically redundant. Indeed, any accounting costs would be a deadweight economic loss. This purely hypothetical case illustrates the general proposition that, when evaluating an accounting regime, higher correlation between accounting numbers and equity prices is not the same as accounting contributing more to economic welfare. The age-old distinction between correlation and causation rears its head here.

Ironically, in value relevance studies of association, but not causation, it would seem more appropriate to evaluate accounting regimes on the *inverse* of the closeness of accounting information with market prices, or changes in prices. Unless accounting is shown to affect prices, it is redundant to the extent it is correlated with – and hence duplicates – the information in prices. Thus, absent causal effects, accounting information in high R^2 regimes is more redundant (more closely duplicates the publicly-available information in equity prices) than in low R^2 regimes. Conversely, it is in the low R^2 contexts where accounting has the potential to provide the most incremental information, given asset prices. Consider the example of accounting for long term debt. If accountants and auditors can observe the market value of a firm's debt at balance date, then so too can lenders. Loans are obtained from banks and other informed lenders, and most corporate bonds are held by institutions that are required price their investments regularly, many on a daily basis.²² So, what incremental information can the balance sheet provide to these investors? One candidate would be the face value of the firm's debt (i.e., its historical cost), which is a necessary input for Black-Scholes valuation of existing debt, and for potential investors deciding whether to invest in new debt issuances. Knowing the face value of the firm's debt would seem more important as the probability of default rises and its market value declines. Thus, the incremental information contained in the face value of debt increases in its distance from its market value, contrary to value relevance association metrics.

Several research designs do provide seemingly valid evidence of whether accounting information leads to *better* prices. 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

²² Insurance companies, mutual funds, pension funds and banks owned 94 percent of US corporate bonds in 2017 (Kojien and Yogo, 2022).

because of possible complementary changes, but many of these can be carefully addressed, and the study appears to reliably document a causal improvement in traded equity prices.

An important body of research shows that earnings announcements are associated with revisions in equity prices (Beaver, 1968), the magnitude of which has increased in recent years (Ball and Shivakumar, 2008; confirmed a decade later in Beaver, McNichols and Wang, 2018). Assuming market efficiency, this implies that pre-announcement prices had not incorporated the information contained in the earnings announcements. It follows that post-announcement prices are more informed about the firm's current financial position than pre-announcement prices. If a regime did not require firms to report earnings, the information they would have conveyed to the market would have been revealed eventually through other media.²³ However, under this hypothetical, prices at any intermediate point would have been less informed than if earnings had been reported. This is why Ball and Brown (1968) emphasized earnings *timeliness*.

Causality is not perfectly established in this research. There are issues such as other information being released close in time to, or together with, earnings announcements. This problem can be minimized by studying price reactions over small "event windows" in which exogenous information events are less likely to intervene, and by controlling, albeit imperfectly, for events that are observable. 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.

Lev (1989) penned an influential commentary (with 1998 Google cites as of 21 June 2022), bemoaning the low degree of this association between firm-level earnings and returns, as measured by the univariate OLS regression R^2 , and called for research to increase it. A follow-up piece a decade later with Paul Zarowin (with 3073 cites) proposed changes to financial reporting to increase the metric. In essence, these papers equate 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 appeal and popularity, there are several limitations of using the R^2 metric for that purpose.

1. I am aware of no theory of the optimal earnings-returns R^2 . In practice, any observed association could be too low, too high, or even optimal. In the absence of a theory of the optimal degree of earnings-returns association, how do we interpret any observed level?

²³ In the limit, when a firm is liquidated, the amount of its lifetime earnings is revealed, as the difference between the sum of distributions to owners less the sum of their capital contributions.

2. As noted above, assessing the optimality of an accounting regime would need to take into consideration the cost of operating the regime. 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, like Goldilocks' porridge, "just right"?
3. Over what horizon is the R^2 to be calculated? 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 the R^2 between earnings and stock returns is 100% over the entire life of a firm. The unstated horizon problem illustrates the absence of theory to support the R^2 metric.
4. Assessing the optimality of an accounting regime would also need to take into consideration the existence of myriad competing and complementary information sources, and interactions among them. Consequently, accounting information only can be evaluated incrementally with respect to the total set of available information (Ball, 2001). For example, earnings information about one firm affects the stock prices of other firms (Foster, 1981), implying that individual firm earnings-returns R^2 s understate the relation between earnings and price changes. Similarly, independently verified accounting information can affect the reliability of non-accounting information. For example, when investors know that future earnings outcomes will be reported accurately and free of managerial manipulation, disclosure by managers of their private information will be more credible (Gigler and Hemmer, 1998; Ball, 2001; Ball, Jayaraman and Shivakumar, 2011). Examples of managers' private information include planned new products or acquisitions and their expected contributions to revenues and earnings, expected cost savings, expected merger benefits, and expected earnings. The irony then is that – other things equal – the higher the reliability of the reported earnings outcome, the more credible will be any disclosures that help investors anticipate the actual earnings outcome, and hence the lower will be the "surprise" content of earnings. This effect would make the earnings-returns R^2 at the time of earnings announcement a decreasing function of accounting quality, other things equal (Ball, 2001; Ball, Jayaraman and Shivakumar, 2011) – a further source of ambiguity in that metric.
5. A well-known reason that estimated earnings-returns R^2 s are understated in practice 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 conveyed during that window is the difference between the earnings outcome and its expectation at the

beginning of the window. That expectation is not observable and thus the information released during the window is estimated with error, thereby reducing the R^2 .

6. Value relevance estimation is even more complex to identify in a multi-firm world. The relevance of earnings-returns R^2 s, measured at the individual firm level, to diversified investors is questionable. For example, random errors in firm level earnings tend to offset each other, under the fundamental logic of diversification, so R^2 s are larger at the portfolio level. In addition, firms' earnings are informative about other firms' values, especially for firms in the same industry Foster (1981). These effects imply that association metrics measured at the individual firm level understate the value relevance of accounting information to investors, perhaps substantially. They also reflect the absence of theory to support association studies, and the R^2 metric in particular.

These limitations of accounting-market association metrics lead me to conclude that they are informative but of limited usefulness when evaluating accounting regimes from a welfare-economic perspective.

Accounting information clearly improves equity prices, so it passes the basic “value relevance” test with flying colors. Nevertheless, there are limitations in how the basic concept is measured, and the connection between the value relevance criterion and contribution to economic welfare is tenuous.

3. Costly Contracting

Accounting information satisfies the costly contracting criterion if it “facilitates transactions between capital providers and firms” (Christensen et al., 2016, p. 398). The two important dimensions that I would add to this formulation of the criterion are:

1. accounting affects many more contracts other than just those involving the capital market; and
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. 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, etc.²⁴ Firms also contract

²⁴ While regulation has tended to obscure the fact, firms do 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 (firms built this requirement into their corporate charters). It became such a generally accepted good practice that the stock exchanges made it a condition of listing. It subsequently became mandated by statute.

in product markets with final consumers, corporate and government clients, and with other firms in supply contracts, royalty contracts, dealership arrangements, etc.

I prefer to view firms as specialist contracting intermediaries, situated between owners of factors of production and consumers:²⁵ All parties contracting with a firm would incur costs if they had to exit the firm and recontract with other firms (search costs, relocation costs, becoming familiarized with a new firm, etc.). Therefore, when entering into a supply, employment, purchase, investment, or any other relationship with a firm, all parties have an interest in information about its financial health, which signals the probability of being required to incur the costs of recontracting with another firm at a later date.²⁶ Said differently, all parties contracting with the firm have an investment in contracting costs that is specific to the firm, as defined in Alchian (1984), whose value is a function of the firm's financial strength. From an economic efficiency perspective, the properties of accounting information affect all parties contracting with the firm, and the role of accounting is to reduce all manner of contracting frictions in the economy.

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 exposure to the firm's financial position and the greatest incentive to ensure it is run efficiently.²⁷ There no doubt are circumstances where that proposition does not hold, the obvious case being firm insolvency in which shareholders have incentives to gamble the firm's resources, and hence many decision rights are transferred to creditors, but as a general proposition it makes sense. What I am arguing is that all parties dealing with the firm have an investment in it: in search costs, housing location, orientation costs, investment in specific information about how it is run, etc. Consequently, all parties contracting with the firm have an interest in accounting information about the strength of its resources and profitability.

²⁵ See Ball (1989).

²⁶ Accounting information also is used by many non-contracting parties, including competitors, consultants, economists, academics, and governments.

²⁷ That is not always the case, however. When a firm is at or near financial insolvency, shareholders have perverse incentives to invest in risky projects, however unpromising they may be. (The classic metaphor is betting the firm's assets on the longest-odds horse at the racetrack). If the gamble is successful, shareholders win. If unsuccessful, shareholders lose (but would have lost anyway), and lenders bear the cost of the losing gamble. To restrict this behavior, some decision rights are transferred to lenders when insolvency threatens (e.g., under common law, statute law or covenants in private debt contracts that trigger decision rights conditional on adverse outcomes).

From a costly contracting perspective, accounting information plays several roles. An important role is reducing information asymmetry between the firm and contracting parties *ex ante*, when deciding whether to enter into an agreement and on what terms, thereby reducing moral hazard and adverse selection. For example, knowing that a potential customer is profitable and solvent can influence a supplier's decision to enter into a multi-period arrangement and the terms of the arrangement.

The fact that audited financial statements are independently verified makes financial statement information more contractible, meaning that parties to a contract can agree to terms in which future payoffs and future actions depend on *ex post* financial statement outcomes, knowing that those outcomes have not been unduly influenced by the other contracting party. This role of audited financial information has been well studied in the context of debt contracts, as surveyed by Christensen et al. (2016), and more recently in long term supply contracts (Costello, 2013).

The rich tapestry of contracting relationships involving accounting numbers that is 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 with unidimensional interpretations of the "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 applied to accounting by Watts and Zimmerman (1978). 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 for dispersed and passive shareholders, resulting in a separation of ownership and control (Berle and Means, 1968). Shareholder passivity arises because each holds an insufficient shareholding to make it worthwhile incurring the cost of monitoring and changing manager behavior. This gives managers the opportunity to act in their own interest and against the interest of shareholders, including engaging in "earnings management" (a.k.a. "cooking the books"). Independent audit (Jensen and Meckling, 1976), regulatory scrutiny and the risk of civil and criminal penalties limit this opportunism, but it is costly to detect and thus it occurs to some degree. The applicability of the agency model to the public equity market has been reduced somewhat by the advent of shareholders with a sufficiently large

holding to affect managerial behavior (Shleifer and Vishny, 1986), but it remains an attractive depiction of that setting.

However, accounting information plays a role in a wide variety of contexts in which opportunism is possible by both parties, and 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. Accounting information plays indirect and direct roles in many such relationships, because firms on both sides of these contracts have an interest in information about the strength of the other's financial position. Accounting information frequently is conveyed to contracting parties through intermediaries, for example as an input to credit ratings. Long term contracts frequently require contracting parties to directly supply accounting information, and accounting-based covenants are observed in many such contracts, (Costello, 2013). In these relationships, both parties face issues of adverse selection and moral hazard. Consequently, the asymmetric agency model, which has fitted the public equity market and public financial reporting so well, does not work as well in many contracting contexts.

V. How Are These Criteria Related to Each Other and to Economic Welfare?

Similarities. On the surface, there appears to be a clear scission between the three criteria discussed in the previous Section. However, on closer examination, it is apparent that real effects, value relevance and costly contracting are intertwined. When a real effect is the dependent variable, the criterion used by the researcher is the effect of financial reporting on a *quantity*. When equity value is the dependent variable, the criterion used is the effect of financial reporting 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, some complex. Contracts specify the *dimensionality* of prices: i.e., the mapping from states to payoffs. They do so either by explicit enumeration of payoffs in states or by insertion of completion functions

such as arbitration and auditing to determine payoffs in those states that are not enumerated (Ball, 1989). Accounting 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 financial statement information implicitly incorporates into the contract all of the rules in GAAP, as well as any revisions to GAAP that occur during the contract's life that the contract does not exclude.

An example of how the real effects, value relevance and costly contracting criteria for are intertwined is provided by management compensation. 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 regime therefore affects *prices* (such as management compensation) and *quantities* (such as managers' actions), as a function of implicit and explicit *contracting*.

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. Ready access to commercial data sources such as CRSP and Compustat can lead to overfitting. Relying on common data sources can drive researchers to investigate increasingly marginal topics, and to operate in research "silos."

Research designs that have been shown to work in one context provide a convenient and safe formula for using them in other contexts.²⁸ This is fine, and conforms to what Kuhn (1970) describes as "normal science," in which research methods become increasingly refined 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, and for research to be contained in independent "silos."

²⁸ As in "following X and Y, I do the following ..."

In sum, the real effects, price effects and costly contracting streams in accounting research share much in common. Real quantities and prices obviously are co-determined. Prices are established in contracts – some simple (e.g., spot supply contracts, public equity purchases and sales), some complex (e.g., long-term supply contracts, management agreements). I do believe that researchers would gain from giving thought to how these streams overlap.

VI. The Concept of Information in Accounting

The concept of information underlies the contribution of accounting to economic welfare. In terms of the three streams of archival literature discussed above, for accounting to affect real quantities or prices, or to be used in contracting, it must provide *information*. The question is: What type of information?

In general, it is impossible 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 distinctly different types of information: novel and timeless information. The distinction can be illustrated by the following thought experiment: An accounting student reading an introductory accounting textbook finds it full of (novel) information; an accounting professor adopting the book for class use finds nothing new in it, but adopts it because it contains considerable (timeless) information about accounting.

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, 1969; Fama, 1970; Campbell et al., 1997).

Information then is pure novelty. Yesterday's news no longer qualifies as information. This concept of information underlies the value relevance R^2 measure of the relation between earnings announcements and price revisions that occur at the time of the announcements. Using this measure to evaluate an accounting regime implies that the exclusive role of accounting is to provide novel information.

In contrast, there are many contexts in which information is used despite its lack of novelty. 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.
- ✓ Historical numbers frequently are used by managers, boards, analysts and the press to provide a basis for comparison with current-period numbers (i.e., historical numbers are informative when evaluating the current outcomes).
- ✓ Economists, researchers, consultants, historians and others use historical numbers because they find them informative.

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

VII. Normative or Positive?

Hume's guillotine, named after the C18th philosopher David Hume, asserted 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 believed has been debated ever since. I would like to offer the personal opinion that the distinction is useful to maintain (mainly because it reminds researchers making normative statements to keep in mind the positive evidence on the regime they are proposing to change), but it is overblown in the literature. Two familiar studies illustrate how the positive and normative analyses of accounting regimes overlap.

Ball and Brown (1968) is credited with bringing positive accounting research (i.e., evidence) to bear on the normative theories that were promulgated by scholars at the time. The dominant view in the accounting literature was that accounting numbers are completely meaningless because they are aggregations of heterogeneous numbers, like adding apples and oranges, and hence accounting standards and accounting practice require radical change.²⁹ We showed that earnings contain information that investors incorporate into market values, and therefore cannot be meaningless. In doing so, the study cast doubt on the radical redesign of accounting proposed by those scholars (a normative issue), because the arguments on which their proposals were founded were refuted by the data (positive evidence).³⁰ A

²⁹ The first assertion that accounting aggregates (such as earnings and book values) are meaningless of which I am aware is 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, 4). The alternative hypothesis can be stated in terms of the Ogden and Richards (1923) proposition that the meaning to users of words like "earnings" can arise in usage, not in dictionaries (or in Conceptual Frameworks).

³⁰ 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).

normative corollary of the Ball and Brown (1968) research – one that remains relevant to this day – is that placing all accounting measurement rules on a homogeneous basis, as proposed by Chambers (1966), Mattessich (1972) and Barth (2014) for example, and attempted by the Conceptual Framework, is not necessary for accounting information to have meaning and to be useful.³¹ We also showed that accounting income lags market value in incorporating information, which to my mind tells us something about its economic function. So, while our paper introduced positive empirical research to accounting, it definitely had normative implications,” bringing “is” evidence to bear on an “ought” issue.³²

Similarly, Basu (1997) reported evidence of asymmetric incorporation into accounting income (and hence into balance sheets) of information that investors view as value-relevant, known as conditional conservatism. Correlated omitted variables confound estimation of the extent of the asymmetry³³, but it is difficult to deny it exists. Further evidence comes from accounting standards themselves. While the IASB and FASB have eliminated the term “conservatism” from their vocabulary, their own standard-setting impounds conditional conservatism. Thus, IAS 36 requires impairments (i.e., downward revaluations) of long term assets to fair value, but does not symmetrically require upward revaluations. Equivalently, IAS 38 requires impairments of intangible assets, but does not require upward revaluations. Under IAS 2, inventories are reported at the lower of cost and net realizable value. There is a distinct asymmetry in these accounting standards as to how good and bad news about asset values are incorporated into earnings and balance sheets – that is, the standards impound conditional conservatism. Furthermore, as Basu (1997) observes, “anticipate no profits but anticipate all losses” has survived for at least a century.³⁴ Whether this property of accounting is viewed in the literature as good or bad depends

³¹ Perfect homogeneity of accounting methods is unobtainable. It would require firms to account entirely on a cash basis, or the existence of perfectly liquid and efficient markets for all of the firm’s 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 they are classified into three buckets. Real property generally is valued using the comparable transactions method. Plant & equipment, goodwill and other long term assets are “fair valued” using discounted cash flows methods, with discount rates estimated by a variety of methods. That does not mean that reducing heterogeneity in accounting methods cannot increase the meaningfulness or usefulness of accounting information. Is there an optimal amount of accounting method heterogeneity?

³² A (perhaps uncharitable) analogy for the prior literature that focused on accounting design *per se* (for example, arguments about the properties of historical cost versus replacement costs or realizable value) is as follows. A centralized R&D arm of the auto industry collects no information whatsoever about how the vehicles the industry produces actually are used (how frequently, with how many passengers, with how much cargo or luggage, on what terrain and in what weather, at what speeds, garaged or not, using what fuel, with what fuel economy, etc.). Nevertheless, it concludes that vehicles as currently produced are useless, and recommends a radical new design for all vehicles.

³³ Ball, Kothari and Ashok Robin (2000, §6.4), Dutta and Patatoukas (2017).

³⁴ I cannot resist drawing your attention to an article on conservatism in the very first issue of *The Accounting Review*. (Scott et al., 1926). The article contained “an obituary notice” for the passing of “the time honored inventory rule to use cost or

on whether one is a value relevance or a costly contracting person, but the positive evidence cannot be said to be normatively neutral.

VIII. Aggregate (Macro) Considerations in Evaluating Accounting Systems

There now is an enormous 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 and corporate governance? Do they affect equity and debt prices, or contractual payouts; do they affect user actions and real quantities? Are they timely, conservative, noisy, manipulated? Do they induce investor myopia? *Essentially all of this work is at the individual firm (micro) level.* Aggregate welfare seldom is investigated.

In one way this is strange, because the role of accounting in aggregate economic development has long been researched by economic and accounting historians. Three prime examples are provided by research on (i) the role of accounting in the development of ancient civilizations (notably, Mesopotamia); (ii) the emergence of modern accounting methods in the Western world around the time of the Renaissance; and (iii) the development of national accounts in the 20th Century. These three episodes provide some idea of the historically important contribution of accounting to economic development. They all are macro in nature. Indeed, some are almost universal.

Accounting in Mesopotamia. Researchers including Keister (1963), Schmandt-Besserat (1995) and Mouck (2004) have written on the effect of record-keeping (accounting) on commerce, and more generally on human cognition and writing. Basu and Waymire (2006) summarize their extensive research on Mesopotamian accounting records, from which they conjecture – and collect supporting evidence – that when systematic record-keeping emerged it supplemented human memory and engendered trust, thereby facilitating complex arm’s-length exchange. As always, individual institutional inventions are complementary, so Mesopotamian accounting presumably emerged in conjunction with complementary institutional innovations such as reading and writing, commercial language, laws, and standardized weights and measures. Nevertheless, these are macro effects of accounting developments, not micro.

market price whichever is the lower.” The rule is still alive, almost a century later. Scott’s proclamation is reminiscent of the American humorist Mark Twain who, when a newspaper mistakenly printed his obituary, famously quipped: “The reports of my death are greatly exaggerated.”

Double entry accounting. Much has been written about the importance in the Western world of the invention of “the Italian system” in the thirteenth century. It remains central to the logic of accounting to this day. Here too the accounting developments complemented other inventions that occurred around the same time, including advances in communication, banking, trade, and monetary systems. Werner Sombart (1902) argued that the emergence of capitalism and double-entry bookkeeping are interconnected and causally related. Sombart believed that the double entry system:

- ✓ Allowed the affairs of a business to be separated from those of its owners, and thus the business could be viewed in a more abstract, rational fashion by its owners and other interested parties
- ✓ Provided a rational measure of business outcomes
- ✓ Transformed physical assets into abstract monetary values, thereby allowing rational economic calculation. For example, recording business assets in monetary terms helped owners in evaluating assets with different physical attributes and that enter their preference functions differently.

Joseph Schumpeter (1950, 123) similarly argued that capitalism encourages rational decision-making, in part via systematic numerical calculation of costs and profits “of which the towering monument is double-entry accounting.”

Double-entry accounting even figures into the history of Renaissance literature and art. As part of her marvelous demonstration that Renaissance literature and art celebrated the ownership of valuable objects of trade and commerce, along with its better-known depiction of sacred themes, Jardine (1998) surveys the roles of trading, banking, credit, communication – and yes, double-entry accounting – in the creation of a new wealthy class that sponsored these artistic developments. Here too, these are macro effects of accounting developments, not micro.

Development of national accounts. In the 20th century, the development of national accounting in the United States was stimulated by the Great Depression and the advent of Keynesian macroeconomic planning, and again by World War II planning. The first formal national accounts for the United States were published as late as 1947. Importantly, they were based on commercial accounting procedures. Other countries soon followed. Quoting from Palgrave: “The idea of an accounting approach for the economy as a whole, similar to the business accounting approach, was introduced The idea of micro/macro relationships was present in much of this work.”³⁵

These three episodes provide some idea of the historical importance of accounting in aggregate economic development. It is inconceivable that a modern, complex economy could be operated without

³⁵ Vanoli (2008), p.2.

modern accounting regimes. Nevertheless, essentially all archival research on properties and effects of accounting regimes, or of changes in regimes, is at the micro (individual firm) level. Given the magnitude of macro effects, it is not surprising that an entirely micro analysis can lead to limited or even erroneous conclusions.

An example of the difference between micro and macro ways of evaluating an accounting regime is research on the effect of IFRS adoption on firms' capital costs. One frequently claimed benefit of the widespread international adoption of IFRS in 2005 was to make all firms more transparent to investors, who would perceive them to be less risky. Investors then would require a lower return from investing, thereby reducing the supply price of capital to firms (a.k.a. "cost of capital").³⁶ But this story is too simple. Widespread IFRS introduction in 2005 was a macroeconomic event that cannot be completely analyzed at the individual-firm or even individual-country level.

For example, if all firms in an industry are required to adopt IFRS, and all firms obtain the alleged benefits from higher transparency, the first effect is to reduce the industry supply price of capital. Competition among firms in the industry then can be expected to pass much of the benefit to consumers in the form of reduced product prices. From a macro perspective, the largest ultimate beneficiaries thus might be consumers, not firms or investors, suggesting that researchers might want to study product market effects.

A second and offsetting effect would arise from firms responding to the reduced supply cost of capital. IFRS adoption involved public firms in all industries in more than one hundred countries. In anticipation, they would be expected to expand investment. Even adoption occurred at different times, those short term timing differences would seem immaterial to investments in long term assets; increased investment would be expected in anticipation of adoption. The effect would be to increase the aggregate quantity of capital and – other things equal – increase its supply price.

These offsetting effects suggest that the expected net effect of IFRS adoption on capital costs might be muted, and the benefits of adoption also might be reflected in lower consumer prices and in the quantity of new investment.³⁷

³⁶ De George, Li, and Shivakumar (2016) provide one review of the IFRS literature.

³⁷ Adding to the complexity of the issue, Daske et al. (2013) find that the relation between IFRS adoption and cost of capital depends upon whether firm adopt the new standards in name only.

IX. Externalities, Distribution Effects, and Aggregate Welfare

Most of the literature surveyed above consists of partial equilibrium analysis, typically reporting average effects, such as the average relation between individual firms' accounting information and their share prices, investments, or debt contracts. 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.

One type of distributional effect arises from positive or 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 external benefits of financial reporting and disclosure, which have provided a fundamental rationale for its regulation (Benston, 1979). The early work on external benefits addressed across-firm information transfers in the equity market. Brown and Ball (1967) reported that approximately 35-40 per cent of the variation in the median firm's earnings is associated with aggregate effects and a further 10-15 percent 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 this, showing that individual firms' earnings disclosures affect the stock prices of other firms in their industries, the implication being that households (as investors in firms) and firms themselves gain external benefits from information produced by other firms.

More recent work has addressed direct external benefits to decision-making by firms rather than investors. For example, Badertscher, Shroff, and White (2013) hypothesize that a firm's investment decisions are informed by the aggregate amount of public information in its industry (its "information environment"). One proxy for this construct is the proportion of firms in the industry that are public, the rationale being that the amount of external information benefits to private firms is increasing in the number of firms publicly disclosing accounting and other information. The other proxy for the information environment is the proportion of aggregate sales in the industry made by public firms, the rationale being that larger firms publish more information and create greater external benefits. Among other things, the authors show that measures of the investment efficiency of private firms are increasing in the amount of public information in their industry. In other words, private firms benefit from information produced by public firms.

There are myriad ways in which a firms' financial reporting and disclosure could inform other firms' production, investment and financing decisions – particularly those of their competitors. These positive externalities imply a latent incentive for firms to under-produce 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 and disclosure exist also. “Crowding out” is one 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 and disclosure, the argument is that the aggregate capacity of the communication channels from firms to investors and other users is inelastic, due to factors such as limited investor attention, 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 public disclosures by other firms. This implies a latent incentive for firms to over-produce accounting information relative to the social optimum.

The potential for crowding out is increased by the tendency of firms to bunch their earnings announcements in time. For good reasons they mostly adopt common fiscal period ending dates, such as 31st December, and in consequence there are “earnings seasons” containing a flurry of announcements around the same time. Further, earnings announcements are almost 30 per cent more frequent on Wednesdays and Thursdays than on other weekdays days (Ball and Bartov, 1995). Compounding this, firms in the same industry tend to announce within days of each other.

The degree of inelasticity in the supply of information processing can be questioned. Supply elasticity normally is greater in the long run than in the short run, as institutions and individual find ways to relax constraints. For example, investment advisors can emerge to analyze accounting information on behalf

of individuals with limited time. Online services summarize financial information and make it easily accessible. Investors can invest in professionally managed portfolios, or follow passive investment strategies. Brokerages, investment banks, institutional investors and the financial press can arrange their work rosters to increase their information-processing capacity in the busy season. In the long run, one would expect institutional solutions to emerge that bound information-processing capacity constraints.

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).

Individual firms do not internalize these negative externalities, again implying a latent incentive for firms to over-produce accounting information relative to the social optimum.

Recent archival research has investigated several negative externalities from reporting mandates. Kraft, Vashishtha, and Venkatachalam (2018) and Fu et al. (2020) study effects on firm behavior when the US mandated half-yearly financial reporting, and subsequently increased the mandate to quarterly reporting. They conclude that more frequent reporting induces managerial myopia and inhibits investment and innovation. Similarly, Breuer, Leuz, and Vanhaverbeke (2021) conclude that requiring German firms to publicly disclose financial statements discouraged innovation. They identify within-industry positive externalities, but they were small and concentrated in large firms.

Duguay, Minnis, and Sutherland (2020) study negative external effects on US private companies and nonprofit organizations caused by the Sarbanes–Oxley Act of 2002, which increased the labor intensity of public company audits.³⁸ This increased the aggregate demand for auditors which, when combined with short-term inelasticity of audit labor supply, increased audit prices. The effects included a doubling of the cost of nonprofit audits and a substantial reduction in the use of audited financial statements by private firms. A longer-term effect was a restructuring of the audit market, with nonprofits rotating away from auditors with public firm clients.

While positive externalities have provided the basic rationale for State reporting and disclosure mandates, the likelihood that they create negative externalities implies regulatory caution.

In general, externalities complicate the task of evaluating a financial regime. What are they? How big are they? Are they positive or negative in aggregate? Who is affected? Does the regime under-regulate

³⁸ <https://www.foley.com/en/insights/publications/2007/10/the-high-cost-of-being-a-public-company-under-the>, retrieved 26 August 2022.

financial reporting and disclosure, or over-regulate? These are difficult questions to answer with the partial-equilibrium research designs that predominate in the traditional literature. Fortunately, some scholars are addressing them with regime-wide general-equilibrium analyses.

X. 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, even if proving exactly how, when, or how much, is next to impossible. Nevertheless, a surprising amount of the commentary on the contributions of accounting has been occupied by “the sky is falling” opinions, including the following claims (some reasonable, some alarmist):

- ✓ Lack of auditor independence, increased audit market concentration, audit firm structures, long auditor tenures and a host of other variables inhibit financial statement reliability.³⁹
- ✓ Periodic accounting scandals and associated company collapses destroy user confidence in accounting information and demonstrate the need for fundamental changes in accounting.⁴⁰
- ✓ Financial reporting is a “numbers game” played between company managers and Wall Street.⁴¹
- ✓ “Earnings management” – manipulation of financial statement numbers by managers in their own self-interest – is rampant.⁴²
- ✓ The correlation between accounting earnings and stock market returns is too low.⁴³
- ✓ In recent years, the increased importance of intellectual property in the economy, combined with inadequate accounting for intellectual property assets, has rendered financial statement information almost useless to investors.⁴⁴
- ✓ Accounting information prepared without a universal measurement system is meaningless.⁴⁵
- ✓ Accounting information only is meaningful if it has been adjusted for general price level changes.⁴⁶
- ✓ Fair value accounting contributed to the 2008 financial crisis.⁴⁷
- ✓ Investors “functionally fixate” on earnings without regard to the different valuation implications of different earnings components.⁴⁸

³⁹ Notably, United States Congress (1976), Doty (2014), Brydon (2019), and an extensive academic literature surveyed in Tepalagul and Lin (2015).

⁴⁰ For example: Chambers (1973), Nobes (2005), and Ball (2008).

⁴¹ Levitt (1989).

⁴² The literature on this topic is so extensive that a Google Scholar search on “earnings management” returned approximately 155,000 results (conducted on 30th April 2022). There have been many attempts to survey and synthesize it, including Schipper (1989), Healy and Wahlen (1999), Dechow and Skinner (2000), and Ball (2013). The literature exploded in volume after the Enron-era scandals.

⁴³ Lev (1989). See Section IV.

⁴⁴ Notably: Lev and Gu (2016).

⁴⁵ See section VI.

⁴⁶ Sweeney (1936), Gynther (1966).

⁴⁷ Allen and Carletti (2008), Plantin, Sapra and Shin (2008).

⁴⁸ For example: Hand (1990), Sloan (1996).

✓ Quarterly public financial reporting encourages investor and manager short-termism.⁴⁹

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 that I read as an undergraduate in the 1960s, and they have continued almost unabated for decades. They do not tell the whole story.

I can only speculate on why this is so. In my experience, people whose living derives from commenting authoritatively on the world — academics, politicians, journalists, columnists, "leaders" of the profession, etc. — are excessively disposed to viewing it as needing improvement.⁵⁰ Indeed, they frequently have incentives to do so.⁵¹

That is not to say that accounting does not almost continually need 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 worthy of negative commentary and improvement. But critics pointing out some inadequacy in the *status quo* — real or imagined — tend to "occupy the airtime"; the positives tend to go largely unspoken.

So, has our profession *really* continued to slip backward for a very long period, as many pundits would imply? Or are the critics paying insufficient attention to the profession's contributions, perhaps because they take them for granted, or because they are largely aware of where they lie?

XI. Conclusion

In conclusion, I do believe it is important for accounting scholars and professional bodies to at least occasionally think deeply about the conceptual underpinnings of their profession and of their teaching and research, because accounting clearly *matters*. And I hope my ramblings on the topic stimulate some thought on *how* it matters.

⁴⁹ For example: Bushee (1998), Gigler et al. (2014), Brochet et al. (2015).

⁵⁰ Hayek's (1988, p. 76) oft-quoted statement from *The Fatal Conceit* comes to mind: "The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design."

⁵¹ For example, proposed "improvements" generally create more business for the accounting profession, or are intended to enhance the status of the profession — and perhaps also of the proponents themselves.

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