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Yuji Ijiri's Fairness Question in Accounting: A Deontological Game Theoretic Approach

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Abstract: We revisit the question initially raised by Yuji Ijiri about the notion of fairness in accounting. We argue that the fairness question was important then and remains relevant today. First we situate Ijiri's question in relevant debates in the history of accounting thoughts and in contemporary debates. Then we develop a framework of fair flow of information for accounting practices. To do so, we draw upon deontological ethical theory and the generalization principle, in particular. We invite a counter-example from the game-theoretic phenomenon of signal jamming to challenge the generalization principle. By addressing the challenge, we further clarify the appropriate uses of the generalization principle.

Keywords: Yuji Ijiri; fairness; game theory; signal jamming; ethics

JEL Classification: A13; M4; B1

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“The notion of fairness is one of the most essential concepts in the accounting profession. The question is ‘What is the ultimate basis by which the accountant can judge what is fair?’”

Yuji Ijiri, “The accountant: Destined to be Free”
a speech at Graduate School of Industrial Administration
Carnegie-Mellon University
given on September 18, 1975b.

At the forefront of Yuji Ijiri’s (1975a) accounting theory lies the concept of accountability, serving as a cornerstone in the understanding and application of its principles. In his accountant-accountee-accountant triangle framework, Ijiri (1983) posited that “[a]ccountability is what distinguishes accounting from other information systems” (32).¹ He further specified “the objective of [an] accounting system” as “to provide a fair system of information flow between the accountant and the accountee,” concluding, “[f]airness is, therefore, the fundamental goal that the accounting system strives to achieve” (80). This underscores the notion that for Ijiri, the essence of accountability, which sets apart from general information sciences, can be defined as follows:

- Accountability = the accountant’s obligation to ensure a fair system of information flow between the accountant and the accountee.

But then, what does it mean to assure a fair system of information flow? In 1983, Ijiri raised the same question:

“They [accountants] cannot hide behind the fairness under the generally accepted accounting principles or the so-called GAAP-fairness, as evidenced by the famous (or infamous, depending upon how you view it) *Continental Vending Machine Company* case.² They must directly deal with fairness *per se*. An impossible task? Perhaps, although some guidelines on fairness can be developed, [...] In any event, the task of providing information useful for economic decisions is not easy, but it is child’s play compared to the agony of finding a thin line of fairness between the conflicting interests of the two parties” (Ijiri 1983, 81).

Is creating a reasonably accurate framework for fair accounting an unattainable goal? Ijiri posed this difficult question. However, his own stance appeared not to be entirely pessimistic. Since the 1970s, researchers in accounting, particularly in

¹ Accordingly, he believed, accounting should not be defined through a “decision-based framework,” the objective function of which is “to provide information useful for economic decisions,” and in which “[i]t does not matter what the information is about” and “[s]ubjective information is welcome as long as it is useful to the decision maker” (Ijiri 1983, 75). See also Glover (2018).

² Continental loaned \$3,500,00 to the Valley Commercial Corporation, which was unable to repay Continental. Auditors were aware of the facts but did not mention them, because, according to a standard interpretation at that time, Continental’s book technically complied with GAAP at that moment.

the U.S., have conveniently, if not intentionally, ignored the importance of Ijiri's question (Ravenscroft and Williams 2009), despite early calls by Scott (1941) for including fairness as a basic accounting principle and by Arthur Andersen Chairman Leonard Spacek (1958) for an accounting court.³ Since the emergence and subsequent dominance of the positive theory of accounting research, the primary role of accounting theory has been reduced to "provide explanations and predictions for accounting practices" (Watts and Zimmerman 1990, 148); the so-called normative accounting research has declined sharply. However, in our view, conclusions from such strictly empirical studies, though crucial for social scientific purposes, shed little light on the normative contours of accountability or a "fair system of information flow," which lets accounting be accounting in the sense of Ijiri.

We attempt an answer to Ijiri's question. In the first half (Sections 1 and 2), we further explicate Ijiri's question and situate it in relevant debates in the history of accounting thoughts and in a contemporary debate concerning the sufficiency of GAAP-fairness (DeFond and Zhang 2014; DeFond, Lennox, and Zhang 2018; Palmrose and Kinney 2018) and an affiliated discussion about "the decline of substance over form" (Fischer 2023; Fischer, Ellman, and Schochet 2021; Williams 2023). In the second half (Sections 3 and 4), we develop a framework of fair flow of information for accounting practices. To do so, we draw upon deontological ethical theory, a paradigm non-consequentialist theory, and the generalization principle, in particular. To clearly represent the generalization principle, we use quantified modal logic, a standard formal logic in ethical theory. Then, we invite a counter-example from the game-theoretic phenomenon of signal jamming, a robust economic equilibrium widely used in many theoretic analyses of accounting manipulation practices, to challenge the generalization principle. By addressing the challenge, we further clarify the appropriate uses of the generalization principle.

Within our analytic ethics framework, the key operational question on accounting fairness arises:

Is it fair to misstate financial statements when such misstatements are widely and rationally expected by the users of financial statements?

Using the analytic tools, we offer an analysis of under what circumstances the manipulative behavior described in the signal-jamming equilibrium can or cannot

³ See Scott (1941) who calls for a "principle of fairness. Its character as a supplement to the principle of justice is obvious" (343). See Spacek's famous *Accounting Review* article titled "The Need for an Accounting Court (1958)," based on his speech at the 1957 annual meeting of the American Accounting Association. He championed the cause for fairness through his other speeches, in a two-volume collection of Spacek (1969). See Friedland (2004) and Kleinman et al. (2016) for a renewed interest from current practice.

pass the generalization test (i.e., be ethically generalized in a fair manner), and how it can help in analyzing fair judgments in the accounting or auditing context. We stress upfront that our primary goal is to develop a normative ethical analysis as applied to accounting's fairness concept. Our use of the signal-jamming model from information economics is meant to clarify the role of ethics analysis in accounting, not to replace normative analysis of accounting fairness with an economic analysis. That is, we use the deontological analysis to assign ethical judgment on accounting behavior, not to use economics to analyze the ethical dimension of the accounting choices.⁴ Finally, we discuss implications of the developed framework for research and practice.

We are not the first to concern fairness in accounting. In his 1987 paper titled "The legitimate concern with fairness", Williams (1987) agrees with Ijiri's position on fairness as an important accounting concept and emphasizes its meaning in terms of awareness and impartiality (171). Bayou, Reinstein, and Williams (2011) expand this link to ethics, stating that "[A]ccounting's centrality to mediate relationships between institutions and institutions, and individuals and institutions, makes ethics central to accounting," before offering a coherent perspective on the relation of truth and ethics in accounting based on the contemporary work by American philosopher John McCumber (2005). Our paper does not evaluate the decision usefulness as an accounting concept (the focus of Williams (1987)), nor tackle the question of truth (the focus of Bayou, Reinstein, and Williams (2011)), but instead offers a normative framework for analyzing fairness as a necessary, but not sufficient, condition for making ethical judgments in accounting practice. Sunder (2005) and Sunder (2010) emphasize the role of social norms in accounting and argued for "True and Fair as the Moral Compass of Financial Reporting." Like these writings on moral philosophy on accounting including specifically on fairness such as Harris (1987), we emphasize the inadequacy of interpreting "fair" accounting as simple adherence to accounting standards, but we differ by deploying analytic ethics and game-theory in our analysis as opposed to intuition- or judgment-based morality. Our interdisciplinary approach also complements Gangolly and Hussein (1996)'s critical analysis of positivism in accounting thought inhibiting fairness discussion from a legal or jurisprudence perspective. Finally, our work here joins Catanach and Rhoades-Catanach (2010),

⁴ As such, our analysis is distinct from other accounting analysis built on signal-jamming (such as Fischer and Verrecchia 2000; Guttman, Kadan, and Kandel 2006; Stocken and Verrecchia 2004), with which the primary analytical purpose is to explain observable disclosure behavior from a positive standpoint. Similarly, our analysis is also distinct from other economic analysis of the notion of social preference such as those in Bolton and Ockenfels (2000) and Charness and Rabin (2002), in which the goal is to provide an analytical foundation for apparent preference for equity or reciprocity revealed in human behavior observed in controlled laboratory experiments, within the economics decision making paradigm.

Fleischman, Valentine, and Finn (2010), Mintz (2010), Stuebs (2010), and Williams (2010), among others, and the works by ethics scholars (e.g., Duska and Duska 2018) in accounting in bringing this urgent and critical issue to the attention of contemporary researchers.

1 Background: The “Comma Crisis” and Ijiri’s Constitutionalism

Accounting historian Stephen A. Zeff (2007) uses the term “comma crisis” to describe the history of the audit practice. The crisis is about whether to keep a comma between “Present fairly” and “in conformity with G.A.A.P.” (Zeff 2007) in the auditor’s report. In 1934, the American Institute of Accountants (AIA)’s special committee for the modern form of the auditor’s report first used the expression “fairly present, in accordance with accepted principles of accounting.” The committee meant that auditors should offer, if necessary, separate opinions on “fairly present” and “in accordance with G.A.A.P.” Since then, the comma has appeared, disappeared, and reappeared in various reports. In most cases, there was no clear awareness about the importance of keeping or removing it. However, whether to keep the comma or not is a substantive choice. To remove the comma signifies that “Present fairly” is equivalent to “in conformity with G.A.A.P.” Its practical implication is that auditors must offer only one opinion and that opinion must be limited to whether financial statements are in technical accordance with officially documented, generally accepted accounting practices. Those who defend the equivalence assert that fair accounting is nothing but a set of conventionally accepted rules. Let us call this idea accounting conventionalism. Conventionalists would urge that they have solved Ijiri’s question by redirecting it to conventions.

In contrast, to keep a comma means that “Present fairly” may be sometimes, but not always, distinctive from “in conformity with G.A.A.P.” The non-equivalence entails that auditors can and should, if necessary, offer separate opinions. Those who take this view would defend the idea that extant rules or even existing laws are incomplete, so there must be, additionally, meta-standards or *constitutional principles*. Let us call this position accounting constitutionalism. In fact, debates on these principles existed prior to the comma crisis among scholars, such as Robert Anthony, Ray Chambers, Yuji Ijiri, and AC Littleton, of the so-called *a priori* accounting research, a dominant research paradigm before the currently dominant

positive research program ushered in during the 1960s.⁵ We are aware of the so-called “principle-based” versus “rule-based” debate and the debate about “substance” over “form” (Fischer 2023; Fischer, Ellman, and Schochet 2021; Williams 2023), which we will discuss in the next section. Here, our idea of conventionalism versus constitutionalism overlaps the distinction but is separate. In the existing debate, rules typically refer to technically and clearly codified/written statements, whereas principles do not. In the debate, principles often refer to accountants’ subjective judgments or moral intuitions. In this paper, we want to show that fundamental principles of fairness in accounting can be codified in an objective manner using symbolic logic and game theory. We, hence, submit that relying upon individual accountants’ subjective judgments rather than objectively defined principles is at best incomplete, at worst dangerous, and not a satisfactory answer to Ijiri’s question.

By placing fairness at the core of accounting theory and with ambition to define accounting fairness, Ijiri was an accounting constitutionalist. He had reasons for his stance, which we endorse. First, Ijiri knew that it was possible to certify misleading or legally fraudulent financial statements even as they technically complied with GAAP. Among others, Ijiri cited the case of *United States v. Simon* (1969).⁶ Carl Simon was a senior partner of Lybrand, Ross Bros. & Montgomery. Simon and two other auditors reviewed the Continental Vending Machine Corporation’s financial statements. Continental loaned \$3,500,000 to the Valley Commercial Corporation, which was unable to repay Continental. Auditors were aware of the facts but did not mention them, because, according to a standard interpretation at that time, Continental’s book technically complied with GAAP at that moment. However, as a result, investors

⁵ Before the rise of information content perspective in accounting academic research, the goals of the *a priori* research is to derive measurement bases (e.g., historical cost basis or current cost basis) from some self-evident postulates (e.g., entity, continuity, control, quantification, monetary unit, and periodicity). The approach is labeled as “*a priori*”, to be distinguished with the eventual but opposing approach labeled as “positive”. The debates within the measurement approach are about which the nature of the alternative postulates systems, which have been presented by scholars such as Paton and Littleton (1940), Littleton (1953), Moonitz (1961), Chambers (1966), Ijiri (1967), Mock (1976), and Mattessich (1977), among others, and by statements of purpose proposed by the FASB and other institutions and think tanks. Among many memorable debates are two heated debates: one pitting Raymond Chambers against AC Littleton and Robert Anthony while another pitting Chambers against Yuji Ijiri. The core issue in the first debate centers on accounting theory construction based on stylized economic theory or on real-world accounting practice over hundreds of years. The core issue in the second debate centers desirability of historical cost principle against that of current cost principle as valuation basis for asset valuation.

⁶ *United States V. Simon*, 425 F.2d 796 (2d Cir. 1969), the Supreme Court denied certiorari in this case, indicating that there had been sufficient evidence produced at the trial to warrant submission to the jury.

(e.g., stockholders and debtholders) who relied on the auditors' certification were significantly misled about the financial status of the companies. *United States v. Simon* is not the only abnormality. Several other cases show the insufficiency of GAAP (e.g., Enron, see DeFond, Lennox, and Zhang 2018).⁷

Cases like *U.S. v. Simon* are structurally parallel to "hard cases" in law (Dworkin 1978). In hard cases lawyers must ask whether it is fair to rely on only the black letter of the law, even if the conduct they are evaluating technically complies with existing statutes and/or precedents. Among numerous cases, a textbook example is the case of *Riggs v. Palmer* (1889), in which a grandson murdered his grandfather to come into inheritance.⁸ Likewise, the fact that GAAP is widely accepted does not preclude that it is incomplete.

Second, the earlier quote also shows that Ijiri understands – correctly, in our view – that although the conception of fairness is an unquestionable axiom of accounting, it does not mean that developing a workable framework is straightforward or that auditors can always have a complete and clear understanding of it. For the sake of argument, suppose that there are competing conceptions of accounting fairness, and we do not yet know which one is the most compelling. Still, accounting, axiomatically, depends upon some conception of fairness, although one could question a particular conception, despite the recent prominence of the use of the term fair value in accounting.⁹

7 While Enron exploited a number of GAAP provisions, it also engaged in outright manipulation in violation of GAAP requirements. For the sake of simplicity, when we mention Enron, we focus on the GAAP compliant cases.

8 In that case, a grandson murdered his grandfather so he would inherit the wealth promised in the grandfather's will, which named the grandson as an heir. No statute or case law at that time indicated that those who took advantage of their own crime were liable to forfeit inherited wealth. Technically, then, on one hand, the grandson needed to be criminally punished for the murder; on the other hand, the will had to be validly executed. So, the court wrote, "It is quite true that statutes regulating the making, proof and effect of wills, and the devolution of property, if literally construed, and if their force and effect can in no way and under no circumstances be controlled or modified, give this property to this murderer" (from Dworkin 1978, 23). However, the court also noted that "... all laws as well as all contracts may be controlled in their operation and effect by general, fundamental maxims of the common law. No one shall be permitted ... to take advantage of his own wrong ..." (ibid.). The fundamental maxim or principle, "No one shall be permitted to take advantage of one's own wrong" was not any part of the black letter of statutes/precedents; thus, the murderer tried to take advantage of legal loopholes. But he failed, because the court recognized that the relevant rules were *incomplete*, so it needed to use the maxims of the laws. Existing statutes and cases are generally accepted legal rules/practices, but they are incomplete.

9 The rise of a conceptual framework built around decision-usefulness in policy area introduces new concepts such as relevance, reliability, representational faithfulness to accounting policy debates. At the same time, earlier concepts were de-emphasized such as conservatism or discarded such as fairness. In this light, it is somewhat unfortunate or ironic that a central idea of the current

2 Ijiri's Question Matters Today

Critics might argue that while Ijiri's question was relevant when the modern founders of the accounting field debated goals of accounting research and practice, such as the Trueblood committee's project on objectives of financial reporting (see articles from the 1972 special volume of *Journal of Accounting Research*), it is no longer timely. Critics might also think that we would do better flush away fairness in accounting altogether and instead solely pursue economic objectives without any pseudo-philosophical or value-laden baggage. But ignoring Ijiri's question is itself a value-laden choice that defends conventionalism and is thus self-contradictory.

The debates between conventionalism and constitutionalism still exist in contemporary accounting research, and without answering Ijiri's question, positively or negatively, the research debates cannot make progress.¹⁰ In 2014, the *Journal of Accounting and Economics* published.

DeFond and Zhang's (2014) paper about auditing research, which make two claims, one empirical, the other normative. The empirical is that most studies in auditing research view auditing as "a binary process, with the auditor's role reduced to the simple detection and reporting of 'black and white' GAAP violations" (ibid., 280). The normative assertion is that the dominant view that reduces audit quality to mere compliance with GAAP is inappropriate. Instead, Defond and Zhang propose what they call "higher audit quality," defined as "greater assurance that the financial statements faithfully reflect the firm's underlying economics, conditioned on its financial reporting system and innate characteristics" (ibid., 281). In our view, their criticisms on the existing GAAP-oriented audit quality well illustrate the contemporary relevance of the accounting conventionalism-constitutionalism

accounting public policy has become the fair value notion, the reincarnation of the current cost idea in the 1960's debate (as fair value is operationally defined as the exit value of resources accrued to the reporting entity). The formal, extensive discussions about fair value do not concern the fundamental meaning of what makes a valuation measure fair, other than a reference to a so-called "orderly market" in which transaction price can be used as representing the ideal fair value (exit value) measure. Fairness as used in these formal discussions contains no distinguishing ethical or legal foundations. In fact, it is arguable that the term "fair" has been hijacked as a rhetorical tool to gain acceptance. As Sunder (2008) pointed out "[a]ffixing a new, loaded label to a well-researched and well-discussed method of valuation may amount to playing the old game of policy rhetoric: using clever labels to put the opponents of your proposal on the defensive before the debate even starts. Who would want to defend the use of unfair values in accounting?" (112).

¹⁰ See also Devine (2004) who noted that "a profession must establish the legitimacy of its own ethical system along with sufficient authority to command conformance ... that the chief functions of ethical codes are indirectly related to the need to fill in the areas not covered by legal and other authoritative pronouncements" (1).

debate and highlight the necessity for the accounting profession to confront the fundamental fairness question raised by Ijiri.

But we find problems in Defond and Zhang (2014), which use three rationales:

- Rationale 1. Authority of major auditing standards: in the major professional accounting standards, auditors' responsibilities extend beyond the simple detection of GAAP breaches.
- Rationale 2. Authority of the law: "US Supreme Court ... holds auditors legally liable for misleading financial statements even when those statements are in strict compliance with GAAP" (ibid., 281).
- Rationale 3. Intuitive absurdity of counterexamples: for example, it is absurd to say that financial statements from Continental and Enron should not be questioned because they did not violate GAAP.

Firstly, advocating for major auditing standards beyond the scope of GAAP may not be particularly compelling for a couple of reasons. While Defond and Zhang stand by their interpretation, it remains a subject of debate. In a 2018 study, Palmrose and Kinney, Jr. reviewed the standards of major accounting and audit bodies like the Securities and Exchange Commission (SEC), Financial Accounting Standards Board (FASB), and Public Company Accounting Oversight Board (PCAOB). They determined that, according to their analysis, the "U.S. standards, regulations, and practices do not extend the auditor's role to assure a firm's financial reporting quality beyond adherence to GAAP" (ibid., 14). They add, "Our results suggest that DZ (Defond and Zhang 2014) expresses a personal view of a hypothetical and normative definition of audit quality that is not supported by existing U.S. authoritative guidance" (14). Defond and Zhang, along with another author, Lennox, in 2018, countered Palmrose and Kinney's analysis by challenging their interpretations of key regulations and standards. Fischer, Ellman, and Schochet, in 2021, also critiqued Palmrose and Kinney's understanding of FASB standards. They highlighted that the removal of the "substance over form" principle was not due to its lack of importance, but rather because it was seen as redundant with the concept of faithful representation. Here, "form" refers to mere compliance with GAAP, while "substance over form" pertains to the accountants' duty and authority to expose financially dubious statements. Fischer and colleagues argue that reinstating the term "substance over form" in FASB standards is necessary to eliminate any ambiguity about its correct interpretation (Table 1).

Our focus is not to determine which interpretations are correct, as the debate over interpretations alone does not fully address Ijiri's question. Depending on existing standards falls into a partly conventionalist approach. A key reason for adhering to these standards is that they represent contracts or promises agreed upon by all participating parties through democratic or other legitimate means of

Table 1: Summary of the contemporary debates about rules versus principles and “Form” with respect to Yuju Ijiri’s view.

	DeFond, Lennox, and Zhang 2018; DeFond and Zhang 2014;	Palmrose and Kinney Jr (2018)	Ijiri based on our interpretation	Fischer, Ellman, and Schochet (2021)	Williams (2023)
Rules vs. Principles (attitude toward the GAAP-oriented audit)	Advocate for principles alongside GAAP rules.	GAAP rules are adequate on their own, eliminating the need for additional principles.	Advocate for principles alongside GAAP rules.	Advocate for principles alongside GAAP rules.	The separation between principles and rules should be disregarded.
Authority of major auditing standards and court decisions	Is fundamental; argue that the existing standards and decisions support their view.	Is fundamental; argue that the existing standards and decisions support their view.	Is important but limited. Relying solely on the existing standards and laws is conventionalist. Argues for a constitutional approach.	Is fundamental; argue that the existing standards and decisions are consistent with DeFond et al. and inconsistent with Palmrose & Kenney.	Accounting standards (i.e., the rules) do not disclose economic substance but rather define them. Forms determine substance.
Reliability of individual auditors’ moral judgment	Yes: individual auditors’ judgments are reliable.	No: individual auditors’ judgments are not reliable.	No: individual auditors’ judgments are not reliable. But an objective codification of principles can be made.	Yes: Individual auditors’ judgments are reliable.	No, unreliable. The issue cannot be resolved by individuals alone; a substantial institutional reform is required.
“Substance over form” debate in Convivum	Would support substance over form.	Would not support.	Would support substance over form.	Support substance over form.	The distinction is not as clear as people think.

representation. However, contracts or promises do not always provide sufficient moral or legal justification. For instance, two mafia members can voluntarily agree on promises or contracts that are profoundly unethical or illegal on behalf of their respective groups. Therefore, a more fundamental moral basis is required.

Concerning the second justification related to court rulings, it is generally the case that laws take precedence over professional standards. However, legal rulings and statutes can also be incomplete. This raises the question of whether audit standards and practices should always be subordinate to laws, or if there are instances where existing audit standards, practices, or ethical analyses should contribute to shaping the laws. Many ethical scandals in auditing do not necessarily involve a direct breach of existing laws but rather highlight the inadequacy of those laws. While laws should typically hold superior authority over accounting standards in most situations, uncritically accepting the infallibility of laws falls into the same error that conventionalists commit in regards to GAAP.

Finally, the third rationale hinges on the perceived absurdity of counterexamples like Continental Vending and Enron, which appeal to the professional judgment or moral intuition of auditors. While we understand and empathize with Defond et al.'s perspective on the absurdity of these examples, it is important to recognize that judgment is more of an assertion than an argument in itself. Moral intuition or judgment, though a vital component of ethical reasoning, does not constitute a justified argument on its own. These moral intuitions or judgments are often not as consistent as assumed, being prone to influence by morally irrelevant situational factors (Alexander in 2012). In this context, we concur with Palmrose and Kinney (2018) in their concern over Defond's focus on the role of individual auditors' subjective judgment. Williams (2023) also expresses concern that the private and profit-driven nature of audit firms can inherently skew auditors' professional judgment. Therefore, unless significant institutional reforms are undertaken, reliance on auditors' judgment alone is not a viable solution.

Before moving on to the next section, let us clarify that the audit-scope policy-level debate above, although related to our central question on identifiability, is not directly relevant to it. Our goal is primarily of moral epistemology, not of particular audit public policy. We discuss how to identify whether certifying a questionable financial statement is ethically fair or not. This question is conceptually distinct from another important policy question, whether auditors should make a separate report if the statement is ethically questionable. It is another question whether auditors should be allowed to independently report when they find ethically questionable statements.¹¹ There can be various ways to deal with GAAP-compliant but ethically

¹¹ It is yet another research matter how to train auditors to properly use the deontological framework. Ethical theory is not simple, as moral truth is not simple. As it takes years of training for a lay

questionable statements. The policy-level question, nonetheless, assumes that there are ways to identify whether GAAP-compliant statements are ethically questionable. Our paper contributes to answering that presumptive question. The debates above all assume that using GAAP is objective whereas using ethical conceptions is not. We want to refute the assumption.

We also emphasize that our paper is primarily about non-subjective ethical assessment as applied to auditing, one may wish to derive natural conclusion or implications. One such implication can be about the current corporate-pay-auditing model (vs. a civil service model) and another one is about making accounting profession closer to the legal profession. Indeed, one can develop implications from Ijiri's accountant ability framework focusing on the triangle of accountant-accountee-accountant.

3 A Deontological Approach to Fairness

Ijiri's question can be answered in a reasonably precise fashion within the tradition of deontological ethics (Donagan 1977; Korsgaard 1996). Deontology is a non-consequentialist ethical theory, according to which the moral status of an act is determined regardless of its outcome. Most relevant to the question of fairness in accounting is the generalization/universalization test (O'Neill 2014; for a critical discussion of various forms of the test, see Parfit 2011, Part III). We note upfront that passing the test is only one necessary condition for ethical conduct, which should be also regulated by other considerations such as respect for autonomy and welfare, among others. This means that our discussion here is focused on fairness, but fair accounting is not necessarily good enough to be fully ethical accounting.

3.1 Action Plans and Rationality

Deontological ethics, at least in the Kantian tradition, begins with the idea that unethical behavior is unethical because it is irrational in a certain sense; specifically, the rationale for the behavior is incoherent, because it contains a logical inconsistency (Kant 1785; O'Neill 2014). The deontological conception of rationality is hence more comprehensive than the self-interested rationality. As we show below, a

person to be certified as a professional auditor, it takes years of training for a person to be able of understanding and using ethical theory properly. Another path is to alter how auditing of corporate is done such as change the current auditor pay system. See Kleinman et al. 2016. Automating the process to use the moral framework is another. See Hooker and Kim (2018).

behavior is unethical because the underlying logic of it is logically incoherent, in deontology, regardless of its outcome.

An action can be conceived as having an “if-then” form: if certain conditions are satisfied, then perform a certain action. The conditions set out the rationale or set of reasons for the action. A conditional policy of this sort can be called an *action plan*. The agent must regard the reasons that comprise the antecedent (if-part) to be jointly sufficient to justify taking the action in the consequent (then-part). The rationale must be coherent, since otherwise it cannot justify anything.

Suppose for example that I decide to lie. Perhaps it is simply convenient to deceive others on the present occasion, in which case my action plan is, “If it is convenient to deceive others, then lie.” My reason for lying, in the relevant sense, is not a psychological cause or motivation, but a state of affairs that I take as *justifying* the lie.

We will express action plans using the notation $C \Rightarrow A$, where C is a condition and A an action. The symbol $\Rightarrow$ is not a logical entailment but indicates that the agent takes the conditions in the antecedent as justifying the action. For purposes of testing for generalizability, they are assumed to be the most general conditions that the agent regards as justifying the action; that is, they are seen as individually necessary and jointly sufficient reasons for performing the action.

Using action plans, we can revisit the case of Continental Vending Machine. Suppose that I am the auditor/accountant. My client, Continental, asks me to do something that is in accordance with GAAP. But that seems questionable (for instance, certifying financial statements even when the company has lent money to a company that is not able to repay). Continental is a significant client for my employer, and satisfying the client brings me financial gains, so I am eager to comply. I also don't think doing so will cause any problems for me, because the reporting conforms with GAAP.

My action plan above is a conditional proposition statement:

$$C_1 \wedge C_2 \Rightarrow A_1$$

where the antecedents C_1 , C_2 and consequent A_1 stand for:

C_1 = “I want to satisfy my employer and promote my interests (e.g., not to be fired)”

C_2 = “I can satisfy my employer and promote my interests by overstating the financial health¹² of the client company, and this will not be a big problem for me, because the reporting confirms with GAAP.”

A_1 = “I will certify the questionable statements.”

¹² To use the term “overstate” implies one knows what the true value is. The existence of the true financial health notion of a corporation is subject of considerable debate in the history of accounting thoughts, and is beyond the scope of this paper. Ijiri's own view on this was reflected in his notion of

The symbol $\wedge$ means “and,” and the symbol $\Rightarrow$ indicates that the agent takes the two conditions C_1, C_2 to be jointly sufficient and individually necessary reasons to perform the action A_1 .

3.2 Universality of Reason

The next premise needed to draw the generalization test is “the universality of reason”: rationality does not depend on who one is, only on one’s reasons. Thus, if an agent takes a set of reasons as justifying an action, then to be consistent, the agent must take these reasons as justifying the same action for any agent to whom the reasons apply.¹³ The agent must therefore be rational in believing that his/her reasons are consistent with the assumption that all agents to whom the reasons apply take the same action.

Suppose I decide to deceive others by lying to them, merely for reasons of convenience. Then logical consistency requires me to view convenience as sufficient reason for anyone to deceive by lying. Yet suppose I cannot rationally assume that others would *believe* my lies (and therefore be deceived by them) if everyone were to lie whenever it is convenient to do so. Then I must regard my action plan as self-defeating, and I therefore have no coherent rationale for it. Note that lying for convenience does not fail the generalization test because people in fact lie whenever convenient; it fails because I cannot rationally believe that my reason for lying would apply if everyone *were* to lie whenever convenient. This is the gist of deontological ethical reasoning.

3.3 Generalization

This leads to the generalization/universalization principle, perhaps most relevantly expressed as follows:

“I must be rational in believing that the reasons for my action are consistent with the assumption that everyone with the same reasons takes the same action. An action plan that satisfies this principle is *generalizable*” (Hooker and Kim 2018).

information hardness and his advocacy for historical cost and realization principle (We thank a referee for raising this point to us). We focus on individual behavior from an ethical standpoint.

¹³ Consistency is a minimal condition of rationality not just in ethics, but also in game theory (Binmore 2020).

Note that the principle does not imply that any action is generalizable when it is already prevalent. An action satisfies generalizability only when the *reasons* for the action are consistent with its performance by others who have the same reasons, and even then only when this performance is assumed to be *universal*, not just prevalent. Also, because the test is counterfactual, an action may be generalizable even if *no one* is performing it; the relevant question is what would happen if everyone *were* to perform it. Finally, as noted earlier, even a generalizable action may be unethical for other reasons.

Now we can return to the case of Continental – a practice that we suppose is enacted by agent a and represented by the action plan $C_1(a) \wedge C_2(a) \Rightarrow A_1(a)$. One reason for the action is $C_2(a)$: agent a can promote his self-interest (e.g., to make more money). Now, due to universality of reason, we replace a with x . Rationality constrains agent a to believe that if every auditor adopted this action plan, reason C_2 would no longer apply to anyone, and so would not apply to agent a in particular, because overstatements would no longer have credibility. Thus, if every auditor in a relevantly similar context followed the same practice, agent a 's justification for engaging in the practice would no longer exist. This means that the agent cannot consistently take reasons C_1 and C_2 as justifying the action for any agent to whom the reasons apply. This logical inconsistency means the action plan is ungeneralizable.

We can write this more formally by borrowing the modal operator $\Diamond S$ to signify that an agent can rationally believe proposition S . We also adopt the predicate $P(S)$ to mean that it is possible for proposition S to be true. The action plan $C_1(a) \wedge C_2(a) \Rightarrow A_1(a)$ is generalizable only if a can rationally believe that the following are jointly possible: reasons C_1 and C_2 apply to a , agent a carries out the questionable audit practice A_1 , and every auditor adopts the action plan. Logical notation can be used to state this generalizability condition more precisely:

$$\Diamond P(C_1(a) \wedge C_2(a) \wedge A_1(a) \wedge \forall x (C_1(x) \wedge C_2(x) \Rightarrow A_1(x)))$$

Because a cannot rationally assent to the joint possibility, the action plan is ungeneralizable.

To state the generalization principle for an arbitrary action plan, let $\zeta(a)$ be a conjunction of conditions that agent a regards as individually necessary and jointly sufficient for a to carry out action $A(a)$. Then action plan $\zeta(a) \Rightarrow A(a)$ is generalizable if and only if.

$$\Diamond P(\zeta(a) \wedge A(a) \wedge \forall x (\zeta(x) \Rightarrow A(x)))$$

4 Signal Jamming and Fair Accounting

When applying the generalization principle to our discussion of fairness in our specific accounting context, we encounter modern game theory. Specifically, a modern game-theoretic economic model of signal-jamming illustrates and situates the generalization principle within the applied accounting framework very well. We agree with Lucas (1959), who said, “The theory of Games is never likely to provide a calculus of Morals; but it may well provide models on which to sharpen our logical teeth and develop our moral sense.” So, we now move on to a game theoretic reformulation of the generalization test. In short, the signal-jamming model shows that even though an individual economic choice, which may be intuitively judged as an ethically questionable behavior, is not effective in a market with rational expectations, all individuals in the economy still choose to take on the questionable choice in equilibrium, thus making the behavior generalizable. In this section, we connect the game theory of signal jamming to ethical generalizability.¹⁴

The basic economic intuition of signal-jamming is based on the rational expectation idea underlying a market equilibrium where the response from the market (such as prices or other payoffs) fully reflects the individual incentives to engage in questionable behavior. For example, the stock market would discount a firm’s claim of high performance in pricing its stock due to obvious incentive to inflate the claim. The surprise result is that, under rational expectation, it is still rational for the individual firm to engage in such questionable behavior (such as inflating performance). Later in this section, we sketch an economic model of such behavior in the context of familiar ethics settings (such as resume-padding). See the Appendix for a full treatment (including a proof) of the economic model.

¹⁴ While we are not the first to connect game theory to ethics, our deontological approach contrasts with the existing approaches, which are utilitarianism in disguise. Our approach is non-consequentialist. In particular, the proposed generalization test is not a consequentialist test, which is the essence of the remarks by Binmore (2015) who does not accept or in our view at least have difficulties understanding the generalization principle. A consequentialist version of the generalization test, which has been suggested as a solution to the paradox of Prisoners’ dilemma or public goods game (see Cunningham 1967), would request one to ask whether the outcome would be overall good or bad if everybody performed the same act. A deontological generalization test is fundamentally different. It asks whether the outcome, good or bad, would be still logically consistent with your own action plan even if everybody who had relevantly similar reasons performed the same act. It is about you, not others. The connection between deontological ethics and a game theory perspective has been under-explored, probably in part because the self-interest-based notion of rationality dominates in the game theory literature, which perfectly explains the frequent uses of game theory in moral egoism (e.g., David Gauthier).

Using the language in the specific accounting setting, the basic thought experiment is that if every auditor certified questionable financial statements, investors would accordingly discredit the certificate to the extent that auditors mislead investors. Thus, investors would not be affected by auditors' deception. Furthermore, in that situation, an auditor who does not perform the questionable practice will put her client, a corporation, into a disadvantaged position. Accordingly, the only "generalizable action plan" is that every auditor adopt the questionable practice. Here, again, adopting the questionable practice seems to pass the generalization test not because doing so enhances one's self-interest but because its underlying logical structure is coherent (i.e., there is no inconsistency between an individual's adoption and universal adoption of the action plan).

This thought experiment of course assumes that investors would accordingly discredit deceptive auditors. One might say that the assumption is too strong. Indeed the investors in Continental Vending Machine, for instance, were misled, meaning that it is uncertain whether the specific model outcome of fully anticipated bias prevails in the real market. Generally, it is unclear whether all investors are reasonably expected to be aware of specific detailed opportunities and constraints which allows the biases to be introduced into the report.¹⁵ In the next sections, we will discuss various possible scenarios.

While the idea underlying the signal jamming model is intuitive and compelling, the economic analysis of signal jamming has a different purpose than ethical analysis: it predicts or explains the practice, whereas ethics judges the practice. Yet, an economic analysis can be useful by helping to identify types of jamming that can be ethically defended. Below, we first adapt a familiar setting of resume-padding into its equivalent signal-jamming form. Then we use the model to offer an analysis of how the manipulation behavior described in the signal-jamming equilibrium can or cannot be generalized and how it can help in analyzing the ethical judgments.

4.1 Ethics of Exaggeration

Exaggeration is an old issue in ethics, often discussed in the context of advertising speech. Claiming to sell "The World's Best Pizza," for example, is ethically permissible to the extent that customers know it is hyperbole. The ethical test is in part whether an advertising claim actually deceives anyone, where deception is

¹⁵ In the original signal-jamming model, the true state of nature (x) is not directly observed by the outsider. However, given the signal sender's incentive and cost of lying are known perfectly, the outsider infers the true state of nature (x) perfectly from an untruthful report. So even though the sender of the report has lied but the receiver is not deceived. When the perfect knowledge is not assumed, deceptions will take place at least sometimes.

understood as causing someone to believe something one knows is false. Deception merely for financial gain is normally unethical because it is not generalizable. If deception for this purpose were universally practiced, no one would be deceived, and the (attempted) deception would not serve its purpose. The reasons for action would be self-defeating.

Although the pizza ad is usually nondeceptive and ethically permissible, other cases are less clear. To get some perspective, let's take the example of resume padding. The usual defense for resume padding is that everybody does it; therefore, employers expect it and are not deceived. In fact, a failure to pad the resume could be deceptive, because it could lead employers to believe mistakenly that the applicant is less qualified than the resume states.

This doesn't show that *any kind of padding* is permissible, because one of the purposes of writing a padded resume is to communicate something about the applicant to the employer. If people wrote anything they pleased on their resume, the resume would be just a fantasy piece and would communicate nothing (other than the applicant's writing skills). So, to evaluate padding ethically, one must state a *specific padding policy* and check if it is generalizable. But this is not what people do. They only claim that "some padding" is OK and trade on this ambiguity.

This is where economic analysis comes in. Its connection with ethical analysis is this: equilibrium in economics is something like generalization in ethics. If a certain degree or type of signal jamming occurs in an equilibrium solution, then it is generalized in this solution. So, if the rationale for this degree of jamming (i.e., *this specific policy*) is consistent with what happens in equilibrium, the jamming is arguably generalizable.

4.2 Economic Model

The job applicant wishes to maximize his/her utility, a problem we may formulate as maximizing.

$$\theta E(x|y) + (1 - \theta)E(x) - C(b)$$

where b is the amount of padding, x is the true value of the applicant to an employer, and y is the value stated on the resume. $E(x|y)$ is what the employer expects from the employee, given the value y stated on the resume.¹⁶ We might interpret $E(x)$ as what

¹⁶ The assumption underlying this objective function is that the employee will be paid by the employer's expectation of his true value (labeled as x) to the firm/employer. In a labor market setting, this implies that the employee is paid by his worth to the firm/employer. This assumption implies x is well-defined at the individual level and implicitly ignores complications from the potential synergy

the employer expects based on other sources, such as recommendation letters, interviews, etc. The multiplier θ is an estimate of how much the employer's overall assessment depends on the resume, where $0 \leq \theta \leq 1$. $C(b)$ is the expected cost to the employee of an amount b of padding, perhaps due to misfit with the job or loss of credibility.

The crucial step is to suppose that in equilibrium, employers know that a certain amount $\hat{b}$ of padding occurs. This means that.

$$E(y) = y - \hat{b}$$

The optimal degree b of padding can now be found by maximizing the expression.

$$\theta(E(x) + b - \hat{b}) + (1 - \theta)E(x) - C(b)$$

Since $\hat{b}$ is a constant, the standard stationarity condition for optimality is met when the optimal value b^* of b satisfies

$$C'(b^*) = \theta$$

where C' is the derivative of C with respect to b . Thus, the applicant is incentivized to pad the resume until the marginal cost of padding is θ ; that is, until adding one unit of value by padding is offset by a cost of θ . If the employer relies solely on the resume, then $\theta = 1$, and the applicant adds padding until a point of vanishing returns; that is, until the value of any additional padding incurs an equal expected cost. Typically, $C'(b) > 0$ when $b > 0$, which means that padding exists in equilibrium. Finally, since employers presumably know how much padding occurs in equilibrium, $b^* = \hat{b}$. However, the extent of padding by employees sometimes remains unclear. Therefore, we will proceed to the next session to explore various scenarios.

4.3 Ethical Assessment

The mere fact that resume padding occurs in equilibrium does not show it is generalizable or fair. The generalization test asks whether a generalized policy is consistent with the *rationale* for the policy. We must therefore check whether the rationale for a padding amount of b^* is consistent with the equilibrium solution in which $b = b^*$. We carry out this check in three types of situations.

value from having multiple employees who are jointly worth more than the sum of their individual value.

- *Situation 1.* Resume padding is not common practice. In such an environment, the reasons for padding are something like (a) people don't generally pad resumes and (b) I can get ahead of other equally qualified people by padding my resume. The reasons (a) and (b) are inconsistent with an equilibrium in which people pad by an amount b^* . If everybody padded, the agent would not get ahead of others. Padding by b^* is therefore ungeneralizable (so, unfair), even though it occurs in equilibrium.
- *Situation 2.* Padding by amount b^* is common practice. Padding by b^* is generalizable in this environment if the reasons for doing so are (c) people typically pad their resumes by at least b^* and (d) I can get fair treatment only if I pad my resume by b^* . In the equilibrium solution, people always pad their resumes by b^* , and presumably people can get fair treatment only if they follow this policy. Thus, the fact that the padding level in equilibrium is b^* shows that padding by b^* for reasons (c) and (d) is generalizable (that is, fair). However, if someone wants to pad a resume by more than b^* for reasons (c) and (d), the equilibrium solution does not show that this is generalizable (or fair). So, we learn something from the equilibrium solution.
- *Situation 3.* In this more realistic situation, we know only that people often pad their resumes to some degree. Suppose someone wants to pad by amount b^* because (e) people often pad their resumes to some degree, and (f) I can get fair treatment only if I pad my resume by amount b^* . Reasons (e) and (f) do not provide a coherent rationale for the action, not due to lack of generalizability, but simply because they do not justify the provide a reason for the action in question. Reasons don't have to be good or convincing reasons, but they have to be reasons. Suppose I am asked why I am padding my resume by a particular amount b^* . If I say, "because I can get fair treatment when others are padding their resume to some extent," I have not answered the question. I have not explained why I chose this particular amount, and therefore have not provided a reason (good or bad) for doing so. A rationale that does provide a reason for a given action is not a rationale for that action, much less a coherent one.

A similar analysis applies to accounting statements. We can ask whether a policy of overstating financial health by a certain amount, in ways that are consistent with GAAP, is generalizable. When certifying a questionable financial statement, there can be three different kinds of situations, corresponding to the three resume padding situations, as follows:

- *Situation 1'.* Auditors do not generally overstate financial health. If the reasons for overstating are (a') auditors do not generally overstate financial health, and (b') a certain auditor can get ahead of other auditors by overstating, then overstating under this rationale is not generalizable.

- *Situation 2'*. Auditors generally overstate financial health by b^* . Suppose the reasons for overstating by b^* are (c') auditors generally overstate financial health by at least b^* in GAAP-compliant ways, and (d') a certain auditor can obtain fair treatment only if she overstates financial health by b^* in GAAP-compliant ways. This type of overstating is generalizable, but it is often unclear whether one can establish that (c') is true.
- *Situation 3'*. Auditors generally overstate financial health to some degree. Here the rationale for overstating might be (e') auditors generally overstate financial health to some degree, and (f') a certain auditor can get fair treatment only if she overstates by b^* . This is not a coherent rationale for overstating by b^* and therefore does not justify doing so.

4.4 A Combinatorial Model

We have seen that overstating financial health by an equilibrium amount b^* is generalizable only under specific conditions that are unlikely to obtain. However, it may be easier to find a generalizable signal-jamming policy if financial health is overstated in *certain ways* rather than by a *certain amount*. This requires a more sophisticated economic model that introduces combinatorial optimization.

We again explore the idea in the context of resume padding. Suppose a padding policy calls for using certain kinds of padding, rather than a certain amount of padding – such as marginally overstating one's managerial responsibilities at past jobs, or making statements that are plausible but that employers cannot check. For example, I might marginally overstate my responsibilities in past jobs because others are doing it, and I can get fair treatment only if I do it. This *may* be generalizable.

An economic analysis can perhaps help identify the *kinds* of resume padding that might occur in equilibrium and therefore could be generalizable. To do this, we replace the amount b of padding with a bundle B of padding types, $B \equiv \{b_1, b_2, b_3, \dots\}$. Now $E(x|B)$ is the employer's assessment of the applicant given that the padding types in B are used in the resume, and $C(B)$ is the expected cost to the applicant. The applicant's optimization problem is to maximize.

$$\theta(E[x|y(B)]) + (1 - \theta)Ex - C(B)$$

Now we must say

$$E[x|y(B)] = y - L(\hat{B})$$

where $\hat{B}$ is the set of padding practices that employers expect and $L(\hat{B})$ is how much

they discount the worth of the applicant due to these practices. The optimization problem becomes one of maximizing

$$\theta(E[x] + L(B) - L(\hat{B})) + (1 - \theta)E(x) - C(B)$$

This is a combinatorial problem in which B ranges over possible sets of padding types. If B^* is the optimal solution, then we might conjecture that employers know what applicants are doing in equilibrium, so that $\hat{B} = B^*$. If applicants are, in fact, using the padding techniques in B^* , then the rationale for doing so (to obtain fair treatment) could be generalizable.

We again consider the three scenarios outlined earlier in an auditing context. The first scenario is the same as before.

- *Situation 1''*. Auditors do not generally overstate financial health. If the reasons for overstating are (a'') auditors do not generally overstate financial health, and (b'') a certain auditor can get ahead of other auditors by overstating, then overstating under this rationale is not generalizable.
- *Situation 2''*. Auditors generally overstate financial health in GAAP-compliant ways belong to a certain collection B^* . Suppose the reasons for overstating are (c'') auditors generally overstate financial health in at least the GAAP-compliant ways belonging to a certain collection B^* , and (d'') a given auditor can obtain similar treatment only if she overstates financial health in the GAAP-compliant ways belong to B^* . This type of overstating is generalizable, if condition (c'') could be satisfied in practice because it is *widely known* which kinds of overstatement are generally used.
- *Situation 3''*. Auditors generally overstate financial health in one way or another. The reason for overstating might be (e'') auditors generally overstate financial health in one way or another, and (f'') a certain auditor can get fair treatment only by overstating in the GAAP-compliant ways belonging to collection B^* . This is not a coherent rationale for overstating in these particular ways and therefore does not justify doing so.

Thus, if signal jamming has reached an equilibrium in which certain *types* of GAAP-compliant overstating is used, and it is generally known that these types of overstating are used in the equilibrium, then an auditor may be ethical – under the definition provided above – in overstating financial health *in these particular ways*. This is still a big “if” that is perhaps not often satisfied. Economic analysis may therefore fail to justify overly optimistic reporting practices that are used in practice, even when they are GAAP-compliant.

5 Discussion and Conclusions

Let us return to the current debate between DZ & DLZ and PK. DZ and DLZ's contention was that in cases like U.S. vs. *Simon* and Enron, financial statements were GAAP-compliant but it is absurd to say that they were cases of fair accounting. PK's response was that making a statement beyond the scope of GAAP leads auditors to use personal and subjective judgment and it is safer for auditors to strictly follow the existing written rules of GAAP. Above, we construed that, by judgment, DZ and DLZ meant more than subjective intuition and could be turned into objective criteria. To show this, we have attempted to develop a logical and objective rule of accounting fairness. We have shown that it is possible to develop a non-subjective *rule* of fair accounting beyond GAAP. Now using this principled framework, we can explain and defend, under the rule, why the financial statements of Enron or Continental Vending were not fairly represented. Those were cases of situation 1''', or at best situation 3''', where certifying questionable financial statements or overstating financial health are not fair, so unethical. Specifically, under situation 1'', in which auditors generally do not overstate (i.e., ignoring the related-party transaction in the US vs Simon case or special-purposes entities in the Enron case), our frame shows what the auditors did in either case is not generalizable, thus unethical. Under situation 3'' in which auditors generally overstate in some ways, the specific overstating ways in either case was still not generalizable and thus unethical. Using the framework and tools developed here, we are now able to rationally explain and defend DZ and DLZ's judgment.

We believe that now more than ever the accounting community, including educators, practitioners, and policy makers, shall confront the ethical dimensions of accounting work. In other words, we must answer Professor Ijiri's question. In this paper, we demonstrate that modern tools such as analytic ethics and game theory are compatible with addressing these issues and, in the process, offer new perspectives in the fairness debate.

Appendix: The Economic Equilibrium of Signal Jamming

In this appendix, we sketch a simple economic model of "signal-jamming" to link the economic equilibrium behavior to the moral standards of generalization.

Our economic model is a variant of the original model of Stein (1989) Holmström (1999). We briefly sketch the economic model here. Suppose the choice before an accountant (or auditor) is to agree with (or to certify) a client's report that contains

a bias. To be concrete, we represent this choice-by-choice variable $b \in R$ where the report is represented by outcome variable $y = x + b$ where $x \sim N(x_0, \sigma_x^2)$ is interpreted as the real economic outcome. In this context, a choice of $b = 0$ represents a “truthful” report with respect to x , while any non-zero bias $b \neq 0$ represents a report not truthful. Suppose the accountant/auditor works for a client whose preference is to increase the market’s perception of variable x based on the report y in addition to the true economic outcome x . Assume that the accountant/auditor chooses the bias b on behalf of the client, the economic choice becomes choosing a b to maximize a weighted average of the perceived and actual economic outcome minus the cost of the bias, or,

$$\theta E[E^M[x|y]] + (1 - \theta)E[x] - C(b)$$

where θ is relative weight placed on the market expectation, $E^M[x|y]$ denotes the market’s expectation of x given realized y (different from client’s expectation $E[.]$), and $C(b)$ denotes the expected economic loss to the clients due biased report (such as litigation and rearranging economic activities to support or justify the biased report). Relating to the action plan given earlier, the economic model so far represents the choice problem: C_1 is captured by the auditor sharing the employer’s preference and C_2 is captured by the maximization problem. That is, as long as the solution the maximization problem above, denoted b^* , is chosen by the accountant/auditor (i.e., $A_1 = \{b = b^*\}$), the economic model is consistent with $\{C_1 \wedge C_2 \Rightarrow A_1\}$

Now we lay out the economic consequence of this economic choice in a market equilibrium where such a choice is anticipated by the market participants. Following the rational expectation invoked in modern game-theoretic economic models, we endow the market full economic rationality by imposing the following two conditions. First, $E^M[x|y]$ is based on a market’s conjecture of the reporting choice of the client: $E^M[x|y] = E^M[x|y = x + \hat{b}]$ and second, the conjecture is correct in equilibrium, that is $\hat{b} = b^*$. Assuming $C(b) = \frac{kb^2}{2}$, the only rational choice in equilibrium is.

$$\hat{b} = b^* = \frac{\theta}{k}$$

The ratio expression captures the tradeoff auditors face succinctly. The ratio’s numerator θ represents the magnitude of the marginal benefit of the auditor agreeing to a more biased report (y). All else equal, the higher the θ , the more bias the auditor would tolerate. The ratio’s denominator k represents the magnitude of the marginal cost of the auditor agreeing to a more biased report (y). All else equal, the higher the k , the less bias the auditor would agree to certify. In practice, the magnitude of and k would change across economic environments such as different industries and over time. For example, for firms at times when market perception its

value really matters (a high θ) such as when an IPO or seasoned offering is pending, the model predicts that auditors may be pressured to certify more bias all else equal. Conversely, for firms at times when external governance forces are tightened (a higher k) such as more regulatory oversight, the model predicts that auditors may be less willing to certify high level of bias. Overall, this expression describe the manager/auditor's desire to change market's perception fully knowing that the market is fully rational including having already anticipate such bias in the report (y) it receives.

The surprise result is that the equilibrium choice is $b \neq 0$ even if it is completely expected and ineffective. Here is a quick proof sketch. First, let's solve the $E^M[x|y]$ part of the objective function. Since this is the market's expectation, not the auditor's expectation, the market is required to make a conjecture about what it thinks the bias auditor will choose. Denote this conjecture as a $\hat{b}$. Under this conjecture $E^M[x|y] = y - \hat{b}$. That is, the market would simply take the report y and subtract b from it as the best-response. Now the auditor knows this best-response by the market and substitutes this expression into the manager's objective function, we have $\theta E\{y - \hat{b}\} + (1 - \theta)E\{x\} - C(b)$. From the manager's standpoint, bias b is a choice variable, not a conjecture, so the objective function becomes $E\{x + b - \hat{b}\} + (1 - \theta)E\{x\} - C(b)$, yielding a solution of $b^* = \frac{\theta}{k}$. To complete the proof, since the game structure and all parameters are common knowledge, the market's rational equilibrium conjecture, $\hat{b}$, should also be $\frac{\theta}{k}$; thus, $\hat{b} = b^* = \frac{\theta}{k}$. The key to this surprising equilibrium is that in the maximization problem, the market conjecture is taken as a given (i.e., not affected by the actual bias choice). To see this more clearly, we can put the true conjecture back into the optimization problem: $\max_b \theta E\left[E^M\left[x|y, \hat{b} = \frac{\theta}{k}\right]\right] + (1 - \theta)E\{x\} - C(b) = \theta\left(b - \frac{\theta}{k}\right) + E\{x\} - C(b)$, yielding the same solution. To gain intuition yet another way, suppose the market believes the report is "honest": $\hat{b} = 0$, it follows that it is not economically rational for the client/accountant/auditor to choose $b^* = 0$, because it does not maximize the objective $\theta E^M[x|y, \hat{b} = 0] + (1 - \theta)E\{x\} - C(b) = \theta b + E\{x\} - C(b)$.

Generally, it is unclear whether all investors are reasonably expected to be aware of specific detailed opportunities and constraints that allow the biases to be introduced into the report. A slight modification of the economic model of reporting bias is illustrative here: suppose the bias the client/accountant introduces contains some noise: $b^* = \hat{b} = \pi + \tilde{e}_b$ where π is a known constant and $\tilde{e}_b$ is a mean-zero random variable known to client/accountant but unobservable to the outsider market participants. In this case, each client/accountant would bias the report by b^* , but since the market participants observe only the total report $y = x + \pi + \tilde{e}_b$ and

are thus able to infer the expected bias, π , not the true bias, $(\pi + \tilde{\epsilon}_b)$.¹⁷ In this more general case, the behavior of adding bias into the accounting report is undone by the market participants only to the extent of the expected bias,¹⁸ not fully as in the original model.

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¹⁷ The equilibrium outcome of can be rationally sustained by the following modification of the original model. Suppose the cost of bias is changed to $C(b) = \frac{k(b - \epsilon_b)^2}{2}$ where $\epsilon_b \sim N(0, \sigma_b^2)$. Thus, there is randomness in the cost of bias, and the client/accounting observes the cost parameter before choosing the bias b . Then, it can be shown that the equilibrium bias and confirmed conjecture become: $b^* = \hat{b} = \frac{\theta \sigma_x^2}{k(\sigma_x^2 + \sigma_b^2)} + \epsilon_b$ $b^* = bx^2kx^2 + b^2 + b$ see Dye and Sridhar (2004) for details.

¹⁸ Equal to $\frac{\theta \sigma_x^2}{k(\sigma_x^2 + \sigma_b^2)}$.

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