



## Discussion of “Earnings Management and the Revelation Principle”

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Arya, Glover, and Sunder (AGS) contribute to the earnings management literature along two dimensions. First, they classify existing explanations for earnings manipulation, based on the assumption of the revelation principle that is violated. Second, they introduce a model where allowing a manager to manipulate earnings serves as a commitment device. They show that both the owners and the manager can benefit from earnings management (a Pareto improvement). My discussion first deals with the general phenomenon of earnings management and then with the specifics of the AGS model.

The stated goal of financial reporting is to provide information for decision making purposes. Decision makers are not a homogeneous group, and in particular, include both insiders and outsiders, who may have different informational needs (see Beaver, 1998). An accounting system cannot disclose all possible relevant information. Financial statements can contain only an aggregated summary of the large number of transactions that have actually occurred during the period. As a result, preparers must make discretionary choices, deciding what kind of information is important or useful. Many users of accounting information treat reported earnings as either a “sufficient statistic” for a firm’s performance or, at least, as relevant information for decision making. However, using one summary item, like earnings, from the entire information system introduces a measurement problem; what constitutes a “correct” earnings report? In other words, one would like to identify a metric for earnings measurement that would be most relevant for decision makers. Heterogeneous users and aggregated information make such a task impossible. Even in a simple world where there are no conflicts of interests, reported earnings cannot coincide with any specific user’s needs for any given decision.

In addition to the measurement problems discussed above, one should consider reporting biases. In any real economic setting there exist conflicts of interests, either within the firm or somewhere else in the market. For example, any publicly available information could be used by those whose interests conflict with the interests of the disclosing firm, such as competitors or regulators. As a result, a firm might use its accounting reporting system strategically to influence users’ information sets.

Given the possibility of reporting biases, interpretation of financial reporting becomes more complicated. That is, even if there were an unambiguous superior method for earnings measurement (or for any other accounting variable), financial reports might not contain the earnings’ realized value, because the provider prefers to disclose something else. This is where the notion of earnings management is introduced. Earnings management is a process

of manipulating the time (or other) profile of earnings, while not changing the reported earnings over the long run. Hence, in a given report, we may observe what maximizes the provider's own utility and not what the users would like to know, or anticipate, based on accounting regulations.

Earnings management cases could be classified using a two-by-two matrix. The first dimension distinguishes between incidence of accounting earnings management and economic earnings management. The second dimension classifies earnings management cases based on the existence of an explicit contract between the sender and the receiver. Obviously, these are only polar cases: most real life scenarios are somewhere between the extremes.

There are two methods that could be used for earnings management. First, one could use the flexibility allowed in generally accepted accounting principles (GAAP) to change reported earnings—without changing the underlying (past) cash flows. This is called accounting earnings management. Second, a manager may change operating decisions, such as delivery schedule or maintenance, in order to manage the underlying cash flows, that will later on result in different income reports. This kind of management is usually referred to as economic earnings management.<sup>1</sup> There is no argument that there are real economic costs associated with economic earnings management. Many would claim accounting earnings management is also costly (see Fudenberg and Tirole, 1995). The AGS paper deals with accounting earnings management. A given manager changes only the reporting regime, but not his operating decisions. Note that while there is no direct effect of earnings management on (past) cash flows, there exists an indirect effect on current and future cash flows. This includes compensation that is based on accounting reports as well as the contract termination decision, where cash flows that are associated with a new manager are different from the anticipated cash flows, if the incumbent manager remains with the firm. It would be easy to incorporate real economic earnings management into the AGS setting if, for example, the manager's action space were continuous. Regardless of the manipulation's classification, the distinction between accounting and economic earnings management does not play any significant role in the AGS paper.

The more relevant dimension for the AGS paper is the second dimension, which deals with the existence of a contract between the information sender and its receiver. The two polar cases here are no explicit contract and full contract. On the one hand there is the no contract scenario. This happens, for example, when a firm reports to a market that includes potential investors. Since there is no contract between the firm and such users, they have to rely on accounting standards, and cannot explicitly request a specific form of information, or contractually impose a reward system on the firm. Rational users would try to "reverse" any given report and infer the information that underlined the provided disclosure. An example for such earning management was introduced by Truman and Titman (1988) who analyze income smoothing. Note that almost any signalling paper could be considered as an example here. Most of the documented empirical evidence on earnings management is related to the no contract case, where users try to figure out the motives of firms when reporting to the market when there are no contractual relations with the firm (or when the contract does not relate to the report).<sup>2</sup> Other papers in the current issue of *The Review of Accounting Studies* deal with financial reporting to the market, where the firm uses the

flexibility of GAAP, and manages its accruals. Fields, Rangan, and Thiagarajan (1998) add another dimension and compare different kinds of reports, where the ability to manipulate differs across reports.

On the other hand, consider the case where the receiver of an earnings report has a contract with its sender. Usually we model such a scenario using the principal-agent framework. If the information structure involves hidden information, such that the agent's information is superior to that of the principal, there is room for a report, which we may label as an earnings report. Since the agent's information is private, he may benefit from earnings management, possibly at the expense of the principal. The AGS paper falls under the explicit contract category. The owner offers the manager an employment contract, and only the agent observes the realization of first period earnings.

An insightful result in the mechanism design literature is the revelation principle, due to Myerson (1979). The revelation principle simply states that under certain conditions any equilibrium outcome of any mechanism could be replicated by a truth telling equilibrium in another mechanism. In other words, for payoff-calculations we can confine attention to truth-telling mechanisms. Obviously, forcing someone to tell the truth could be very costly, and as Melumad and Reichelstein (1987) showed, so costly that the principal could find it desirable to give up on the agent's private information and act based on her own priors.

The Arya, Glover, and Sunder paper is motivated along the following lines: The revelation principle is troubling for the earnings management story, because if in equilibrium one always tells the truth, there is no earnings management by definition.<sup>3</sup> However, they add, the revelation principle requires that certain conditions should hold. If the contracting space is restricted, such that some of the revelation principle's conditions are not met, we may observe earnings management.

My main concern is related to this motivation. One has to be very careful when using the revelation principle. The revelation principle states that we may have the same *payoffs* in a truth-telling equilibrium, but it does not predict the equilibrium behavior of the players. So, we may empirically observe a non-truth telling game, even when the assumptions of the revelation principle are not violated.<sup>4</sup> This may happen, for example, when the revelation mechanism is so complex that "real world" contracting parties do not want to use it. Currently, certain branches of the literature emphasize simple, and not necessarily optimal, contracts. See, for instance, the work of Demski and Dye (1997), or Baldenius (1998).

Violating the conditions stipulated in the revelation principle and restricting the contract space represents a hybrid between the full contract and the no contract cases. While the principal offers the agent an explicit contract, this contract is constrained and may not include some crucial elements. As a result, certain aspects of the principal-agent relationship are not included in the contract. In the first part of their paper, AGS contribute to the literature by summarizing the necessary conditions for the revelation principle to hold, and categorizing a variety of extant explanations of earnings management, based on the assumptions of the revelation principle the explanation violates. They conclude that no one violation is the "real" one; and possibly in many cases more than one assumption is violated.

In the second half of the paper, AGS develop their own model, building on the fact that violations of the revelation principle assumptions may lead to a non-truthful reporting, or

to earnings management. (Recall my earlier comment that this is not a necessary condition for any observed manipulation.) An important question is whether earnings management is harmful. Many tend to view the ability to manipulate earnings as a drawback, and as a welfare reducing activity that should be eliminated. What the second part of the paper shows is that, under certain circumstances, this is not true. In particular, one can observe a Pareto improvement when there exists a possibility (that is actually utilized) for earnings management. The main (and only) formal result of the paper is that for some set of parameters, the owner strictly prefers managed earnings to unmanaged earnings.

The insight here is that pre-action information could be welfare reducing, if the user cannot precommit to the way the information is used (and hence there is a violation of one of the revelation principle's conditions). A similar insight was used by Christensen (1982) to show that providing an agent with pre-action information may reduce the principal's ability to control him. What is different here, is that the principal realizes that having more information reduces her ability to control herself—if the principal has the information she might fire the agent—because this is ex-post optimal. However, since the agent knows he may be fired too often, the entire compensation scheme has to be changed. As a result, the overall payoffs to the principal are reduced. Since the principal lacks the ability to precommit, she prefers ignorance (i.e., not to have the information at all). Giving the agent the ability to manage the earnings is a *costly* way for the principal to precommit to a given action or to a no action strategy.

Allowing the agent to manage the earnings report, which in the AGS model is equivalent to a case where the agent keeps his information private, is not the only way the principal could make sure the manager's contract is not terminated. The principal could add to the contract a reward paid to the agent if he is fired (e.g., severance payments) that will make the firing so expensive that the principal is better off retaining the agent under all circumstances. AGS acknowledge this limitation, but do not provide any strong argument why their earnings management explanation is more compelling or more descriptive (even at the anecdotal evidence level) than this, or any other, alternative. Also, in AGS's setting, the reported earnings are used by the principal only for the retention decision and the model does not allow for any trade-off between informative and uninformative systems. If earnings were relevant for other decisions, the suggested commitment device might be an expensive substitute to alternative mechanisms.

Below, I provide additional comments on modelling choices made by the authors and their potential impact on the results. Obviously, it is much easier to suggest than to model an extension. My first comment relates to the model's generality and the validity of its assumptions. The entire paper is written for a specific and constrained example. While it is always true that generalization of the results and relaxation of restrictive assumptions is desirable, it should be noted that AGS's findings are that it could be that the principal is better off with managed earnings, but it is not always the case; hence, generalization of the model cannot, by definition, generate any other result. At most, one would be able to derive necessary and/or sufficient conditions for Pareto improvement.

A limitation of the model is that it has only two possible outcomes, so under the earnings management case, the principal receives no information at the end of the first period. AGS's explanation for earnings management is based on a job-security argument. The

manager manipulates his first period report because truthful reporting of a low realization yields contract termination, which is costly to the manager. If the job-security argument is the reason for earnings management, and if the possible outcome space is expanded, we would anticipate that the manager overreports low outcomes and accurately reports higher outcomes (where his job is not in jeopardy). Establishing such a result would strengthen the authors' argument and validate the earnings management interpretation. Under the current setting, if aggregated information arrives at the end of the second period, with no report at the end of the first period, there is no change in the results. The principal actually derives her benefits from receiving delayed aggregated information, and not from earnings management.

Another assumption that should be revisited is the observability of  $X_1 + X_2$  at the end of the second period. The fact that the sum of the earnings over the life span of the firm is always observed is a tautology, but assuming that at any given point in time prior to liquidation the principal may perfectly observe total earnings is a strong assumption (Fudenberg and Tirole (1995) use an identical assumption). AGS's justification is that reversals often occur well before the end of the firm's life (e.g., the choice of a depreciation method can shift earnings only over the asset's life). However, using a going concern argument one should consider that new assets are purchased and that at any time prior to liquidation the manager can manipulate the financial report. A more reasonable approach is to assume that the difference between total accumulated reported earnings and total accumulated actual earnings is bounded (e.g., the maximum accumulated level of manipulation is no more than  $X_H - X_L$ ). Such an assumption can also have interesting implications on the contract offered to a new manager, because he will face some uncertainty regarding the actual financial position of the firm.

Similar to most principal-agent models, AGS provide only a partial equilibrium analysis. However, unlike other models, they use the outside market of management services as more than a benchmark. They explicitly consider interactions between the firm and that market. In particular, they use replacement managers and assume a personal loss of  $2K$  and  $K$  for a manager who is fired after the first or the second period, respectively. Where are all other managers that are not currently employed by the firm? What is the source of the loss? The story is not sufficiently "tight." Note that the constraint of non-negative payments, when coupled with the personal loss,  $K$ , makes contract termination too desirable and a very strong punishment tool.

The paper does not include a first-best analysis. Hence, one cannot compare the reported results with a case where there is no information asymmetry. When will the owner replace a manager under a first-best scenario? Do we observe too many or too few replacements? Finally, it would be nice to formally demonstrate the impact of the assumption that when a new manager is hired, his productivity might be different from that of the current manager, despite the fact that all managers are ex-ante identical.

My comments should not overshadow my positive impression of the paper. AGS address an important issue, earnings management, and enhance our understanding of the motives for earnings manipulation. I hope additional research on this issue will follow.

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## Notes

1. Kirschenheiter (1998) contrasts these methods.
2. Healy (1985) represents an exception. He considers firms where bonus schemes are tied in a contract to accounting performance, and documents earnings manipulation by managers who want to influence their bonus.
3. This argument is due to Dye (1988).
4. Or a truthful report when the revelation principle does not hold. Violations of the revelation principle's assumptions are neither sufficient nor necessary for non-truthful reporting.

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