Earnings Management with the help of historical cost accounting: Not for managers but for investors

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Abstract

An accounting earnings figure under clean surplus is a change-of-value proxy under current value accounting as generally expected, but is transformed into a level-of-value proxy under historical cost accounting. The apparent informativeness of the accounting earnings figure on the stock price is not just a self-fulfilling prophecy but also a logical conclusion brought about by a much maligned principle of accounting.

However, it is not the end of the story. A particular accounting structure, i.e., historical cost accounting, catalyzes the process of self-fulfillment by inducing managers to manage the earnings figure to convey more value relevant information to investors under the Law of Conservation of Income.

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1. Introduction

Earnings management has been a hot topic in accounting research for years. The basic premise of the research is that managers seek personal gains by smoothing or manipulating earnings figures to the disadvantage of misled investors.

However, as Sunder (1997, p. 78) summarizes, "evidence in favor of the income-smoothing hypothesis is weak and inconsistent." In spite of thorough scrutiny by able researchers, we do not have conclusive evidence yet. It poses a natural question: can we reach any persuasive conclusion on this topic? First of all, can we detect it with publicly available data even if managers actually manipulate earnings? Again Sunder (1997, p. 78) points out, "if managers leave obvious tracks of their income management activity in publicly available data, their contract would be modified to discourage them from doing so. It is not surprising that they cover their tracks reasonably well." If we assume the rationality of investors in the sense that managers cannot systematically fool investors, earnings management should be endogenous as Demski (1996) and Arya et al. (1998) claim. My analysis indeed belongs to this "endogenous" camp, though, unlike them, I do not use the principal agent framework.

In addition, though real income management such as timing capital spending and maintenance expenditure must be substantial, most of the literature concentrates on accounting earnings management such as discretionary accruals. This strategy is understandable because it is not feasible to estimate normal real income, i.e., income without real discretion, unless we are managers ourselves. But a lost key is not necessarily found under the lamppost.

I shall first pose some questions about the premises of the current research and offer a different perspective. I claim historical cost accounting and the random walk nature of accounting earnings are intertwined with earnings management. As usual, an accounting structure shapes the behavior of economic agents. Conclusions of the analysis follow.

2. Is the real income management minor?

Schipper (1989, p. 92) claims the inclusion of real earnings management is a "minor" extension. However, it is not unreasonable to argue the opposite, that is, the amount affected by real earnings management is quantitatively substantial and conceptually significant.

First, in a modern manufacturing firm, a substantial part of its expenditures is fixed in the short-run. Therefore, managers have a great deal of discretion in choosing the timing of capital spending, and thus manage their earnings. The timing of discretionary expenses such as R & D, advertising and maintenance can be shifted a year or two without any substantial effects on the

long-run performance of the firm.

Second, unlike accounting earnings management, real income management is beyond the control of accounting standard setters and external auditors. Even if we succeed in implementing and enforcing rigid standards which make accounting earnings management impossible, a firm can use real, instead of accounting, decisions to manage earnings. Plugging the "loophole" of earnings management may be impossible unless the control of the firm's expenditure itself is taken out of the hands of its managers. This "road to serfdom" is hardly a desirable policy alternative.

Consequently, real income management is likely to be more important than accounting one in actual practices because managers have a great deal of discretion in real income management due to the lack of constraint imposed by external auditors.[1] Indeed, one of the important functions of budgetary control is supposed to be the adjustment of expenditures and other activities to ever changing environments in order to meet the "target" earnings. As is shown in Figure 1, managers have two types of means in managing earnings that in turn have two types of influence on results. In brief, I want to emphasize the importance of Cell 4 as well as Cell 3 in Figure 1 in the research of earnings management.

3. Is the self-serving manipulation a matter of fact?

The inherent difficulty of estimating unobservable "true" earnings notwithstanding, the premise that managers manipulate earnings for their self-serving purpose is not so self-evident. Why would investors enter into contracts in which they are systematically ripped off by managers? It is very difficult to accept such an argument that investors are fooled all the time. Above all, investors can substantially influence the welfare of managers in an indirect but definitive way, i.e., not buying shares in the first place and selling any shares they hold.

Though being often treated as a 10 billion-dollar worth Robinson Crusoe in the literature, a typical CEO is only one of the players in the game called a firm, and plays it not as a dictator but as a corporate bureaucrat.[2] The objectives of individual employees are naturally quite different from those of their CEOs. The latter cannot arbitrarily direct their subordinates to do their bidding, especially if they seek to advance their personal interests at the expense of other core employees. Surveillance of CEOs by junior colleagues must be more pronounced if the welfare of junior colleagues is closely tied to the future of the firm. Indeed, labor market is internalized[3] and promotion is a kind of tournament in large U.S. as well as Japanese firms.[4] Most U.S. CEOs are core employees of the firm, having served the firm for 20 years or more (Vancil 1987, Cosh and

[1] Dechow and Sloan (1991, p. 78) also point out this aspect though Murphy and Zimmerman (1993) challenge the robustness of their empirical evidence.
[2] Even in *Business Week*, which often depicts corporate leaders as superhuman heroes or villains, Byrne (1987, p. 33) claims that "Today's CEO rarely runs everything. An imperial facade may hide surprisingly little authority[.]"
[3] Within the boundary of one specific corporate group, but not necessarily one legal entity.
[4] See Rosenbaum (1979) for the Unites States and Hanada (1993) for Japan.

Hughes 1987 and Kato and Rockel 1992).[5] IBM's Louis Gerstner is a conspicuous exception, not a norm; routine advancements within the firm do not make news headlines.

Also, accounting standards are constructed outside the control of corporate managers on the basis of user-primacy, and evidence on capture of standard setting by managers is hardly persuasive.[6] Financial statements are also audited by independent auditors who have different objectives from managers'. Even if motivation for manipulation of earnings for self-serving purposes exists, its magnitude, at least that of accounting earnings management, is constrained by these governance structures.

Instead, we have some plausible counter-arguments against the assumption that managers single-handedly pursue their personal pecuniary gains with seemingly unbounded rationality. First of all, a successful liar needs a perfect memory. Also, in order to manipulate earnings for their personal benefit, CEOs would need to persuade their junior colleagues not to follow their own personal goals in often not so friendly environments. Considering the limited human information processing abilities and discretionary powers, honesty pays in the long run, as Benjamin Franklin pointed out long ago.[7]

Yes, in the long run, we are all dead. But, the modern public corporation is a going concern. There are many devices to mitigate opportunistic behavior. For example, Vancil (1987) shows that most large U.S. firms adopt relay process, that is, the joint management with the next CEO-candidate for an extended period to mitigate the short-sighted management before the incumbent CEO turnover. In the sample of 56 R & D intensive firms, Dechow and Sloan (1991) find more than 80%[8] of them adopted the relay process. In addition, 50 out of 56 retiring CEOs remained in the firm after their retirement. In macroeconomics, models based on infinitely living (representative) agents are very popular, and implications based on those models are often not far from the reality. For example, the dynasty assumption is crucial for the validity of the famous Ricardian equivalence theorem,[9] which captures the real economy fairly well. I believe a large public corporation as an economic decision entity is the closest analog to the infinitely living representative agent in the real economy.

Moreover, though CEOs are routinely assumed not to care about personal reputation after they retire, their marginal utility of being respected as an elderly statesman may well exceed the utility of a few extra millions in their saving account.[10] I suggest not that CEOs are altruists but

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[5] The CEO market does not seem to be a contestable market (Baumol et al. 1988) because it needs low entry barrier with small, if any, sunk cost which does not hold in the CEO market.

[6] The universal application of rational choice theory is self-defeating. Its logical consequence is that we should not take what researchers at business schools assert at face value because they are surely captured by their "clients," Corporate America. Though there may be a grain of truth in this reasoning, researchers as well as managers seem to have other motivations than material well-being.

[7] See also Akerlof (1983).

[8] Even though they adopt a relatively narrow definition of relay process.

[9] See Barro (1974).

[10] "The outstanding discovery of recent historical and anthropological research is that man's economy, as a rule, is submerged in his social relationships. He does not act so as to safeguard his individual interest in

rather that monetary rewards are not the only arguments in their utility function.[11] Purely self-interested people can enhance their utility by doing the "right" thing. As Hume (1978, p. 415) points out, "Reason is, and ought only to be the slave of the passion, and can never pretend to any other office than to serve and obey them." Rationality as understood in economic analysis is instrumental and silent on substance. It is not unreasonable to conjecture that already well-to-do CEOs care a great deal about reputation of a rather abstract kind. Many of them enter public service where they earn a mere fraction of their private sector earnings.[12]

Time consistency argument raises another question about the validity of self-serving manipulation argument. Real world contracts are not complete, having much room for discretion. Therefore correspondence between reported earnings and compensation may not be well-defined ex post, even if it seems ex ante. For example, Dechow et al. (1994) argue that compensation committees adjust earnings-based incentive compensation ex post, though evidence is inconclusive.[13] Jensen and Murphy (1990) also point out the insensitivity of compensation to performance.[14] Moreover, the most (and only[15]) robust empirical regularity established so far is the high correlation between compensation and firm size, which supports the assertion of Simon (1957) that hierarchical structure, not performance, determines the salaries of managers.[16]

The case of Robert Allen of AT&T implies another serious doubt on the validity of performance-related pay in general. In spite of the disastrous performance of the company in the recent years, he is reported to have received a huge bonus.[17] Of course, Allen could give us many pieces of evidence on how vital his efforts are to save the company from a more serious financial trouble that might have happened without his leadership.[18] Taking also into account the fact that most board members of a particular company are executives of other companies, we cannot expect a

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the possession of material goods; he acts so as to safeguard his social standing, his social claims, his social assets. He values material goods only in so far as they serve this end." (Polanyi 1945, p. 53, quoted in Hargreaves Heap and Varoufakis 1995, p. 161).

[11] This argument is more akin to Becker (1976) than to Polanyi (1945), though.

[12] Even President Clinton's annual salary is only two hundred thousand dollars; even some university professors earn more.

[13] They claim that the compensation is shielded from the negative effect of restructuring charge at a statistically significant level. But the estimated increase of the compensation through the committees is about 50,000 dollars or six percent of the annual cash compensation, which is substantial for a lowly doctoral student but seems too low to affect the decision of Fortune 500 CEOs on whether restructuring on which their positions themselves are surely at stake be implemented. As Goldberger (1991) and McCloskey (1985, 1996) rightly point out, statistical significance is not the same as economic significance. Its abuse in the literature is pervasive and many researchers equate statistical significance with economic one without careful examination. See Black (1982) and Leamer (1983) for more comprehensive criticism on econometric practices in general.

[14] But, their much-publicized finding seems to be an order-of-magnitude underestimate. See Cyert et at. (1997).

[15] Some may count the fact that the older CEOs become, the more the resignation is likely as another robust regularity.

[16] As Simon points out in his Nobel lecture (1979, p. 497), the neo-classical explanation of Lucas (1978) needs many ad hoc auxiliary assumptions as complex as what is to be explained.

[17] Allen does not seem to be an exception.

[18] This story is suggested by Shyam Sunder.

high-powered compensation scheme sensitive to minor earnings changes, even though formally disclosed formulas seem to be so.[19]

Actually, the causality of seemingly related performance pay may be in the opposite direction: after the amount of compensation is determined exogenously, the "formula" is set up to lead to that amount. This is said to be a common practice in feasibility studies in which assumptions are "adjusted" until the desired results are obtained. Furthermore, many (most?) social scientific studies, of course including this piece, may have precisely this nature.

In summary, managers are expected to have a fairly strong incentive to behave in accordance with investors' interests. At least the premise that managers manipulate reported income substantially for *their* self-serving purposes should not be taken as a fact to be explained. Anyway, no conclusive evidence has ever been offered. Besides, I want to emphasize that I am a methodological individualist and my framework is in line with this stance. A firm is a bundle of activities and the interest of participants must be maximally coordinated if participants are assumed not to be fooled systematically.[20] On the other hand, most researchers in the literature seem to discard methodological individualism by equating the firm with the CEO. Also, I want to emphasize the role of monitoring by other managers, which seems to be underestimated, rather than the CEO's reputation, which has a danger of explaining everything.

However, I do not claim managers keep themselves from managing earnings. I rather want to investigate another possibility: managers manage earnings for their self-interest defined broadly, not narrowly, and by acting for the benefit of investors, they manage to achieve their own personal goals in the long-run.

Before discussing earnings management of a different kind, I want to clarify the oft-neglected and tricky relation among the value, stock price and accounting number in the next section.

4. Is value beneath the surface or just out there?

The value relevance[21] of accounting numbers including earnings figures is no less debated topic than earnings management in empirical accounting research. However, despite the use of advanced statistical techniques, researchers often fail to specify what the value means. Black (1993,

[19] As for compensation with stock options, the more serious mystery to be resolved is why stock options themselves are used instead of just linking compensation to stock prices, which could enhance the value of the firm because expensed compensation is tax deductible for the firm in the United States. Tax consideration for managers, usually asserted, is *not* sufficient to justify the practice (Stiglitz 1994, pp. 76-77).

[20] I do not consider an inefficient equilibrium brought about by informational cascades discussed in Chapter 4, because investors can exit easily and anonymously from the scene just by selling shares.

[21] Though I only consider the relevance for the level of stock price, the earnings figure is expected to have the information content for the level *and* change of stock price because some investors surely try to extract information on the change of value from the earnings figure. I am indebted to Shyam Sunder for the clarification of the point. See also Zhang (1998) for an argument from an Ohlsonian point of view.

p. 2) address the issue with his usual clarity:

> I think of "value" and "price" as distinct. Every firm and every security has a value, even though we may have only imprecise estimates of it. Only a security that trades has a price, and its price may differ from its value (though investors who think they see this difference are often wrong).

Among accountants, the Ohlson camp is equally explicit saying "'the market' was wrong" (Bernard 1995, p. 735).[22]

According to these researchers, the value is related to the stock price and accounting number as in Figure 2. In their framework, the accounting number and stock price are competing for predicting the value that is unobservable. Because they assume the value is a kind of substance beneath the surface different from a superficial market price, I call this approach the substance theory of value. Actually most researchers seem to adopt this approach and to try to capture the value relevance of the accounting number which is *not* captured by the market price, though they are not so explicit as Black (1993) and Bernard (1995).

However, there is sleight of hand in their approach: they *assume* the market price gravitate toward the fundamental value in the long run, though the former deviates from the latter in the short run. Without this hidden assumption, the correlation between the stock price and accounting number, which is all what they can and do find, does not tell anything about the unobservable value. Moreover, if the market price deviates from the fundamental value for a long time, as they seem to assume, the fundamental value cannot be well defined. If the market price is "wrong," the investment decision is "wrong." Then, the consumption decision is "wrong," which leads to the "wrong" demand for and supply of goods. Then, we cannot know the fundamental value, which is based on the economy being at equilibrium. Since Walras introduced *auctioneer* in his general equilibrium model, no one has ever given us any satisfactory out-of-equilibrium model.[23] If transaction is implemented off equilibrium, the fundamental value cannot be calculated.

In any case, this substance theory of value is not new at all, though Bernard (1995, p.734) believes it to be. Rather, this is an old refrain from classical economists including Adam Smith and Karl Marx, who distinguished the market price from the natural price, but was allegedly buried by neo-classical subjectivism in the late nineteenth century. What we see is what we value: the market price is the value. Figure 3 describes this approach.

I call this approach the relation (market) theory of value because the value is the market relation. The relative price decided by the supply and demand is the value. The value of a security is

[22] In their case, the book value is *the* accounting number.
[23] The disequilibrium analysis initiated by Robert Clower and others in the 1960s seems to have get aborted before reaching any consensus among economists.

nothing but its posted market price as the value of a government liability called twenty-dollar bill is twenty-dollar as posted. In this approach, if we find the correlation between the stock price/value and accounting number, we can claim the accounting number has value relevance. I suspect many practitioners are engaged in this kind of analysis.[24] But this astrology-like[25] approach does not seem to be interesting enough to sustain our intellectual curiosity.

Actually, we have a more sophisticated relation approach that synthesizes the subjective element of the relation theory and the objective element of the substance theory as described in Figure 4. I call this approach the equilibrium relation theory of value because the market price coincides with the fundamental value at equilibrium.[26] If we want to maintain the fundamental value framework, this approach is the only logical option. Continual equilibrium is not a choice but an imposition. Therefore, it is more precise to claim the fundamental value is adjusted to coincide with the market value. Isn't it a tautology? Yes, any research program must start from some tautological premises as the conservation of energy is *imposed* on physical theories.

Also, "objective" used here must be understood as inter-subjective. At equilibrium, each subjective belief is completely aligned and consequently become objective. This metamorphosis from subjective into objective is an example which shows that inherently subjective social reality becomes objective in human society (Searle 1995, pp. 7-9).

Although I myself have chosen the equilibrium relation theory of value as my starting point, the following analysis is applicable to those who do not agree with my position.

5. What does the accounting earnings figure stand for?

In the United States and other developed economies, market participants decompose the stock price into the earnings and the price-earnings ratio ($P \equiv E \cdot PER$), though this formula is not an equation but identity like the famous monetary identity, $MV \equiv PY$. However, as V (velocity) in the monetary identity, the price-earnings ratio is thought to be relatively stable. With this (refutable) assumption, the formula becomes equation.[27] If the PER is stable, the earnings figure becomes a summary figure for the value of the firm. Considering limited human computational abilities, using a summary figure is a reasonable strategy for financial decision. Moreover, it is preferable from managers' point of view "because they can inform investors and creditors without informing competitors. Many firms feel they already give too much information to competitors in their financial statements." (Black 1993, p. 3) Here, we can see the subtle interaction between what kind of information be revealed and how managers and investors behave in response to it.

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[24] Ou and Penman (1989) seem to pursue this line of analysis.

[25] Because I am not a demarcationist, being astrology-like should not be taken as derogatory or unscientific, whatever it means. Many studies on cancer are also astrology-like in the sense that what they find is only statistical correlation between cancer and something else.

[26] Because the stock does not have a terminal value, we need the transversality condition.

[27] Of course, no one claims the relation is exact. What is debated is how close the relation is, though the judgment on closeness is inherently subjective.

Black (1993, p. 10) actually compared the variation in relation to price with the following four summary numbers: option-adjusted primary earnings before extraordinary items (OEBE), earnings before extraordinary items, interest, taxes, and depreciation and amortization (EBITD), option-adjusted free cash flow (OFCF), and option-adjusted book value of equity (OBE). To measure variation, he ranks the ratios and divide the first quartile point by the third. The results are striking: for every year between 1980 and 1991, OEBE, an earnings figure, outperforms the three rivals and OBE, a book value based number, is the worst.[28] Black (1993, p. 11) also estimates the timeliness of these four number and again OEBE outperforms the others in every lag up to 10 years.

I say "striking" because the earnings figure is in general based on historical cost and criticized as lacking relevance for decision making. Another indirect evidence for the informativeness of conventional accounting earnings is an apparent and puzzling lack of informativeness of current value based earnings: "The major findings are simple and dramatic: (1) Once historical cost earnings are known, the [FASB] Statement 33 earnings variables provide no additional explanatory power with respect to differences across firms in yearly stock price changes. (2) Even after any one of the Statement 33 earnings variables is known, knowledge of historical cost earnings still provides additional explanatory power. In this sense, historical cost earnings strictly dominate the Statement 33 earnings variables." (Beaver and Landsman 1983, p. 10, quoted in Mattessich 1995, p. 123)[29]

If summary figures were not sufficiently informative, managers would be required to disclose more information, which may be Pareto-inferior to both investors and managers. Decision usefulness is an important objective of accounting information, though it is not necessarily *the* objective. From this point of view, the existence of some summary accounting figures that closely track the economic income is desirable. In particular, if we have a proxy for the permanent income, which investors want to know most, it could enhance the efficiency of the market greatly. Among some candidates, the market has singled out the earnings figure, and empirical evidence suggests that it does a good job. Therefore, it is hardly surprising that the correlation between the stock price and the earnings figure is more stable than other plausible candidates such as cash flow and book value figures.

However, if we equate the value with the stock price, isn't the accounting number irrelevant and redundant for the valuation of the stock because we know the value by definition? I believe it is not necessarily so. First, "the accounting numbers are finding their way into the market as the firm is preparing its accounting statements. The accounting process itself is informing the

[28] Reported figures are OEBE (2.0), EBITD (2.8), OFCF (3.8), and OBE (4.7).

[29] Mattessich seems to conclude practitioners lack expertise to use new information, which implies the severely limited rationality of practitioners (p. 98). However, if historical cost earnings are already constructed taking account of price changes, it is no wonder that historical earnings are more informative than current value based ones. From a somewhat different angle, Lim and Sunder (1991) show that historical cost accounting may provide the closest approximation of the current economic value of the firm under the existence of measurement errors.

market... If the firm doesn't do its accounting homework, its stock price will be noisier." (Black 1993, p. 2) What we need is account*ing* rather than account information. Second, redundancy is a necessary part of the real world. The minimally efficient system is extremely vulnerable to a small shock. Without certain redundancy, we cannot communicate with each other if some noise occurs. Crossword puzzles would be unsolvable without redundancy in languages. Any engineering system is full of back-up components that are designed to be redundant. We should be more appreciative of the value of redundancy.

From managers' point of view, it is not a good strategy to confuse investors with noisy information, and the earnings figure with substantial transitory components is not very informative even if computational abilities are unlimited. As for human beings, attention is a scarce factor. Simon (1996, p. 144) argues information systems should protect users "from irrelevant distractions of their attention" and a "design representation suitable to a world in which the scarce factor is information may be exactly the wrong one for a world in which the scarce factor is attention." The change of the earnings figure draws the attention of investors. If that change is transitory, that scarce resource of investors, i.e., attention, is wasted, which requires compensation as a higher return than in the case in which managers offer a more informative figure. Therefore, if managers have any means to "sanitize" the earnings figure, they have an incentive to smooth out transitory components of the earnings figure.

However, why have investors chosen the earnings figure as a (the) proxy for the value of the firm? It seems peculiar because the earnings figure is regarded as a proxy not for the value of the firm but for the *change* of the value of the firm, though accrual and other smoothing procedures make the earnings figure have the level nature.[30] Of course, we can argue that it is an example of self-fulfilling prophecy. The earnings figure is not constructed as such. Rather it becomes a value proxy because participants in the game believe it is and behave accordingly. Again, we have to keep in mind that measurement itself affects the behavior of the game participants in general. Though conveying what is happening as a mirror does is implicitly assumed to be ideal in the literature, "The meaning and significance of *representational faithfulness* are doubtful in view of a reflexive relationship between accounting and its environment." (Sunder 1997, p. 79)[31]

Black (1993, p. 9) claims "in the end, we choose accounting rules that cause earnings to be closely related to value. Intentionally or not, consciously or not, we put more value-relevant information in the earnings figure than in any of its obvious alternatives." Yes, the earnings figure is *both* intentionally and unintentionally constructed as a value proxy. There are not just a self-fulfilling

[30] These practices make the current earnings figure becomes a certain combination of the value and the change of the value. Easton and Harris (1991) give some empirical support on this point.

[31] Social constructs such as value are not out there. That is, the accounting number is at least partly constitutive of the corporate value. This interdependence between "realities" and observations/measurements has been a central topic in contemporary post-positivist philosophy. Searle (1995) is a good introduction. See Ijiri et al. (1966) and Mattessich (1995) for related arguments from accountants.

aspect but also an inherent nature, both of which are discussed in the following two sections. First, I will show why the earnings figure has a value proxy nature under historical cost accounting.

6. Historical cost accounting and value proxy nature of accounting earnings

In this section, I want to show how historical cost accounting makes the accounting earnings figure a value proxy perhaps unintentionally. In order to understand this feature more fully, I examine the nature of earnings under current value accounting as well. In the following analysis, these two approaches are called historical cost and current value approaches respectively. In the historical cost approach, managers do not include either unrealized gain or loss in earnings or assets.[32] Therefore, only the change of the realized income is reflected on the balance sheet through clean surplus. On the other hand, in the current value approach, managers always adjust the balance sheet to the current value through clean surplus.

In order to give a structure to the model, I need several basic assumptions. Above all, as a basic accounting rule, clean surplus is always maintained. As a first-order approximation to the empirical evidence, the (discrete) time series of the corporate value (net assets) is assumed to follow a (geometric) random walk with a fixed drift. In addition, the random component, ε, is realized at the beginning of period t. Therefore,

$$x_{t+1} = x'_t(1 + r + \varepsilon_{t+1}).$$

The time frame is described in Figure 5.

Also I assume the change in net assets will be materialized as an invariant perpetuity from then on. That is, if the assets increase (decrease) by d at time t, the gain (loss) of $r \cdot d$ is perpetually realized from time t on. So as not to make the analysis unduly complicated, measurement error is abstracted away. If measurement error is unbiased, the results below can be considered the unbiased estimates of ideal results without error.

Notations and definitions used in the analysis are summarized as follows:

x_t:	Net assets at current value at the end of period t before dividends
x'_t:	Net assets at current value at the end of period t after dividends
z_t:	Net assets without unrealized gain at the end of period t before dividends
z'_t:	Net assets without unrealized gain at the end of period t after dividends
Δx_t:	Net increase of assets in period t
y_t:	Realized income in period t
r:	Constant capital cost
ε_t:	Shock with zero mean and finite variance

[32] Conservatism is not considered in my analysis.

δ:	Constant dividends payout ratio[33]
θ:	Constant retention ratio (= 1 - δ)

Then, I claim the following propositions under these assumptions.

Proposition 1:	*The accounting earnings figure approximately follows a white noise process under current value accounting.*
Proposition 2:	*The accounting earnings figure contains a permanent shock component, and approximately follows a random walk with a drift if the dividends payout ratio is close to unity under historical cost accounting.*

- Proposition 1: Current value approach

First, I consider the current value approach. This approach is easier to deal with because current value accounting tries to track the economic value in the balance sheet. Therefore, the book value is the same as the economic value:

$$x_{t+1} = x'_t(1 + r + \varepsilon_{t+1}).$$

Therefore, the net income is:

$$\Delta x_{t+1} = x_{t+1} - x'_t = x'_t(r + \varepsilon_{t+1}) = rx'_t(1 + \frac{\varepsilon_{t+1}}{r}).$$

We can proceed in the same fashion:

$$x'_{t+1} = x_{t+1} - d_{t+1} = x'_t(1 + r + \varepsilon_{t+1}) - \delta x'_t(r + \varepsilon_{t+1}) = x'_t[1 + \theta(r + \varepsilon_{t+1})].$$

Then, because (cross) products of r and ε are "small,"

$$\begin{aligned}\Delta x_{t+2} &= x_{t+2} - x'_{t+1} = x'_{t+1}(r + \varepsilon_{t+2}) \\ &= x'_t[1 + \theta(r + \varepsilon_{t+1})](r + \varepsilon_{t+2}) \\ &= x'_t[r + \varepsilon_{t+2} + \theta(r^2 + r\varepsilon_{t+2} + r\varepsilon_{t+1} + \varepsilon_{t+1}\varepsilon_{t+2})] \\ &\approx x'_t(r + \varepsilon_{t+2}).\end{aligned}$$

We can proceed in the same way. Thus the first difference approximately follows a white noise process unless an extreme value of ε is realized:

$$\Delta x_{t+i} \approx x'_t(r + \varepsilon_{t+i}).$$

In a nutshell, the accounting earnings figure behaves as the first difference of the value that

[33] In both approaches, dividend is based on the period income of the firm. This assumption reflects the alleged information conveying role of dividends.

follows a random walk process, i.e., a white noise, under current value accounting as expected.

- Proposition 2: Historical cost approach

Next, I consider the historical cost approach in which only realized gain and loss are recognized in the income statement and consequently the balance sheet with the clean surplus rule. Assume $x'_t = z'_t$. Therefore, periodical income is:

$$y_{t+1} = rx'_t(1+\varepsilon_{t+1}).$$

Then, book values before and after dividend are respectively:

$$z_{t+1} = x'_t + rx'_t(1+\varepsilon_{t+1}) = x'_t(1+r+r\varepsilon_{t+1}).$$
$$z'_{t+1} = z_{t+1} - d_{t+1} = x'_t(1+r+r\varepsilon_{t+1}) - \delta r x'_t(1+\varepsilon_{t+1}) = x'_t[1+\theta(r+r\varepsilon_{t+1})]$$
$$\approx x'_t(1+\theta r).$$

We can proceed in the same way:

$$y_{t+2} = rx'_t\varepsilon_{t+1} + rx'_{t+1}(1+\varepsilon_{t+2}) = rx'_t\varepsilon_{t+1} + rx'_t[1+\theta(r+\varepsilon_{t+1})](1+\varepsilon_{t+2})$$
$$\approx rx'_t[1+(1+\theta)\varepsilon_{t+1} + \varepsilon_{t+2} + \theta r].$$

$$z_{t+2} = x'_t[1+\theta(r+r\varepsilon_{t+1})] + y_{t+2}$$
$$\approx x'_t[(1+\theta r + r\{1+(1+\theta)\varepsilon_{t+1} + \varepsilon_{t+2} + \theta r\}]$$
$$\approx x'_t(1+r+\theta r).$$

$$z'_{t+2} = x'_t[1+\theta(r+\varepsilon_{t+1}r) + \theta y_{t+2}$$
$$\approx x'_t[(1+\theta r + \theta r\{1+(1+\theta)\varepsilon_{t+1} + \varepsilon_{t+2} + \theta r)]$$
$$\approx x'_t(1+2\theta r).$$

$$y_{t+3} = rx'_t\varepsilon_{t+1} + rx'_{t+1}\varepsilon_{t+2} + rx'_{t+2}(1+\varepsilon_{t+3})$$
$$= rx'_t\varepsilon_{t+1} + rx'_t[1+\theta(r+\varepsilon_{t+1})]\varepsilon_{t+2} + rx'_t[1+\theta(r+\varepsilon_{t+1})][1+\theta(r+\varepsilon_{t+2})](1+\varepsilon_{t+3})$$
$$\approx rx'_t[1+(1+\theta)\varepsilon_{t+1} + (1+\theta)\varepsilon_{t+2} + \varepsilon_{t+3} + 2\theta r].$$

Thus, the reported earnings figure follow:

$$\Delta y_{t+i} = y_{t+i} - y_{t-i-1} \approx x'_t(\theta r + \theta\varepsilon_{t+i-1} + \varepsilon_{t+i}).$$

In brief, the time series of the accounting earnings figure contains a permanent shock component and approximately follows a random walk with a drift if the payout ratio is close to unity.

Despite continual theoretical and practical attack from various directions, accounting practices are still under the relatively tight straitjacket of historical cost. We are told figures under historical cost are not useful for decision making. However, as Black (1993) and others show, the accounting earnings figure is a surprisingly good proxy for the value of the firm. Perhaps, it is not surprising at all. Simply, historical cost makes the accounting earnings figure a value level proxy with its “rigid” structure. Advocates for historical cost often assert “Yes, it is true historical cost data

lack decision usefulness, but historical cost accounting is more appropriate for the stewardship role of accounting than current value accounting." After all, they may not need to be so apologetic to defend their principle.

Although the assumption that the firm value follows a random walk process is reasonable and empirically confirmed at least as a first approximation, there is some evidence supporting the mean reversion in the long run, that is, the process having a long memory, but not unit root.[34] In that case, the rate of return under the historical cost approach converges to that under the current value approach in the long-run. Under the mean reversion property, historical cost accounting can be considered a kind of asymptotic current value accounting. I suspect Ohlson (1995) captures this aspect in his model with the assumption of no-unit root in abnormal return, which is the most controversial part in his model.

7. Earnings management of a different kind

In the previous section, I have shown the earnings figure under historical cost accounting follows a random walk process by construction. However, the assumption that either positive or negative income is realized in perpetuity if assets increase or decrease is fairly restrictive, though the giant portfolio nature of a large public corporation and the pervasive use of accruals tend to make a periodical flow of income relatively stable.

According to Kang et al. (1995), the random walk (permanent) component of the earnings figure accounts for three fourths of the total variability. Ali and Zarowin (1992) report a figure of the same magnitude using a different method.[35] The magnitude reported is not very different from that of the permanent component of the entire economy.[36] Though historical cost accounting and clean surplus implicitly make the reported earnings figure more permanent than usually thought, the size of three fourths seems too large. It suggests that some earnings management in my sense exists, that is, managers try to make the earnings figure more informative than otherwise for investors.

Before going into a detailed analysis, I want to stress the point that any sustainable earnings management should satisfy the *Law of Conservation of Income* (Sunder 1997, p. 67).[37] It

[34] See Black (1990) for a unifying explanation of mean reversion and consumption smoothing.
[35] 0.85 is a reported figure based on their method.
[36] McCallum (1993, p. 26) claims that "a measure such as 0.6, which attributes a substantial share of GNP variability to a stationary [permanent] component, is just as plausible." Although this is based on quarterly data, Rose (1986) shows the puzzling invariance of the stochastic process of annual and quarterly GDP data.
[37] However, we should keep in mind the possibility that managers have some slack and use it for real income management. Of course, the *Law of Conservation of Income* does not apply to this kind of income management using real variables. This amount cannot be substantial in competitive industries, but may be large in monopolies such as utilities, or defense contractors. In order to eliminate or at least reduce this slack, countless theoretical papers have been written on the incentive compatible mechanisms and numerous practices such as price cap regulation have been introduced all over the world. But it is difficult to assess the success of these because we do not know the potential efficient outcome, which is by

means any increase or decrease should be reversed in the long-run, though this feature is often forgotten in the literature.

Therefore, the big bath hypothesis advocated by Healy (1985) and others is the other side of the coin of earnings management (Sunder 1997, p. 78). However, the big bath hypothesis is vague about how big is big and implicitly assumes investors are fooled to believe the more favorable consecutive earnings figures with one big bath is superior to the less favorable series without big bath though the sum is the same. Should they be so, we could not take pity on "primitive" people whose counting system consists of one, two, three and many. On the other hand, I explicitly assume both managers and investors are rational and the rationality of both sides is part of common knowledge.

In this regard, Demski (1996) and Arya et al. (1998) are close to my analysis. In the model of Demski (1996), the ability to smooth earnings is positively related to the quality of managers, and consequently "the ability to smooth is good news." (p. 21) In the model of Arya et al. (1998), earnings management is used as a substitute for commitment technologies which are assumed to be unavailable. Arya et al. (1998) not just offer an endogenous argument for earnings management but also classify various stories of earnings management with the revelation principle; to be more precise, they implement a taxonomy based on which assumption is lacking, either limited commitment, communication or contract, in each story. However, what the revelation principle claims is not that a mechanism that induces truth-telling is *the* only Pareto-optimal one but that no other mechanism is Pareto-*superior*. Therefore, the existence of earnings management does not necessarily mean the violation of any assumption of the revelation principle. Also, because the revelation principle presupposes asymmetric information (otherwise the solution would be trivial), any impediment to the revelation principle can be interpreted as limited commitment. Rather, whether the revelation principle is applicable or not,[38] the crucial point shared by both Arya et al. (1998) and Demski (1996) is that if we assume individual rationality and the common knowledge of it, all earnings management must be endogenous, that is, investors knowingly let managers manage earnings. Therefore, the endogenous/non-endogenous dichotomy is the key criterion to classify the earnings management literature including Demski (1996), Arya et al. (1998) and my analysis into the endogenous camp.

Then, keeping in mind the conservation law, I try to show another way to think about (intentional) earnings management in addition to the built-in value-proxy nature of historical cost accounting discussed in the previous section. I claim the following proposition.

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definition unobservable, though it may be another example of the "Nirvana" approach (Demsetz 1989, p. 3).

[38] Of course, if we take account of limited information processing abilities, some mechanisms that induce non-truth-telling may outperform a truth-telling one.

Proposition 3: *Reporting the permanent part of underlying economic income as an accounting earnings figure is sustainable if managers can distinguish the shift in permanent income from temporary components.*

I assume the simplest possible structure, in order to make the argument clear, though this specification is not essential.[39] What is important is that only the permanent part can be reported and the temporary part spread out over a period of time.

Let the income generating structure have two parts:

$a_t = b_t + u_t$ $\quad u_t \sim i.i.d.\ (0, \sigma_u^2)$

$b_t = b_{t-1} + v_t$ $\quad v_t \sim i.i.d.\ (0, \sigma_v^2)$.

a_t: unmanaged income $\quad b_t$: permanent income.

u_t and v_t are i.i.d. random variables and orthogonal each other.

The first difference of the unmanaged series is:

$$\Delta a_t = a_t - a_{t-1} = b_t + u_t - (b_{t-1} + u_{t-1}) = v_t + u_t - u_{t-1}.$$

Then, any stationary q-correlated series is to be represented as an MA process[40] and the specification here is equivalent to the IMA (1,1) process:

$\Delta a_t = \xi_t - \theta \cdot \xi_{t-1}$ $\quad \xi_t \sim N(0, \sigma_\xi^2)$.

$$\frac{\theta}{1+\theta^2} = \frac{\sigma_u^2}{2\sigma_u^2 + \sigma_v^2} \text{ and } \theta \cdot \sigma_\xi^2 = \sigma_u^2.$$

Therefore,

$$\sigma_u^2 \cdot \theta^2 - (2\sigma_u^2 + \sigma_v^2) \cdot \theta + \sigma_u^2 = 0$$

$$\theta = \frac{2\sigma_u^2 + \sigma_v^2 - \sqrt{\sigma_v^4 + 4\sigma_u^2 \cdot \sigma_v^2}}{2\sigma_u^2} \quad (\because \theta \le 1).$$

Now let see what happens if managers want to report the permanent part only whatever the motivation is. Earnings management begins at time 1.

[39] For example, we can add a stochastic trend and/or seasonal factors without changing the general implication. The latter may be useful for empirical studies because we can use quarterly figures that quadruple the number of data.

[40] See Brockwell and Davis (1991, pp. 89-91).

Unmanaged income	Permanent income	Unrecognized temporary income to be reported later
$a_1 = b_1 + u_1$	$b_1 = b_0 + v_1$	u_1
.	.	.
$a_t = b_t + u_t$	$b_t = b_{t-1} + v_t$	u_t
$a_{t+1} = b_{t+1} + u_{t+1}$	$b_{t+1} = b_t + v_{t+1}$	u_{t+1}.

If the temporary income part is reported in equal parts in the next *n* years in order to satisfy the conservation law, the reported earnings figure, c_t, should be as follows:

$$c_{t-1} = b_{t-1} + \frac{1}{n}\sum_{k=1}^{n} u_{t-k}$$

$$c_t = b_t + \frac{1}{n}\sum_{k=1}^{n} u_{t-k+1}$$

$$\Delta c_t = c_t - c_{t-1} = b_t - b_{t-1} + \frac{u_t - u_{t-n}}{n} = v_t + \frac{u_t - u_{t-n}}{n}.$$

If n becomes large, $(u_t - u_{t-n})/n$ approaches asymptotically zero. Therefore,

$$\Delta c_t = c_t - c_{t-1} \approx b_t - b_{t-1} = v_t.$$

It implies the reported earnings tend toward random walk as period of smoothing is increased. Even if managers do not have perfect knowledge about the income generating process, they surely know more than the outsiders do. What I claim here is not that they actually try to report permanent income but that they can do reasonably well if they want to do.[41] If managers manage the earnings figures, i.e., try to give the information of permanent income, the time series of the reported earnings figures approaches a random walk process, despite the underlying process of the unmanaged earnings has a substantial transitory component. Actually, managers have an incentive to report permanent income because, as mentioned before, noisy information reduces the welfare of managers as well as that of investors.

What investors want to know most is the permanent income as mentioned above. From investors' points of view, the permanent income is a random variable to be estimated, though I assume managers know the exact amount in order to make the argument simple. Investors have to estimate the permanent income with the information given by managers, that is, the current and past reported income figures.[42] As shown below, the problem of investors turns out to be a typical Kalman recursion.[43] Here I claim another proposition.

[41] On the other hand, the random walk part cannot be smoothed even if managers want to do.
[42] Other information can be included but the conclusion is not affected.
[43] The following argument is indebted to Sargent (1987, ch. 10), Brockwell and Davis (1991, ch. 12) and Brockwell and Davis (1996, ch. 8).

Proposition 4: *Managers can make the time series of earnings the most imformative to investors when minimizing the variance of the transitory component in earnings.*

I assume managers can report what they want under the constraint of the conservation law, that is, $\Sigma w_t = \Sigma u_t$. I use c'_t for the reported income chosen by managers. As a first approximation, let w_t be an i.i.d. random variable with zero mean and orthogonal to v_t to be estimated by investors.

$$c'_t = b_t + w_t \qquad w_t \sim \text{i.i.d.}(0,\sigma_w^2)$$
$$b_t = b_{t-1} + v_t \qquad v_t \sim \text{i.i.d.}(0,\sigma_v^2).$$

Also define the one-step predictor and the estimation error variance respectively as:

$$\hat{b}_t = P_{t-1}(b_t)$$
$$\Omega_t = E[(b_t - \hat{b}_t)\cdot(b_t - \hat{b}_t)].$$

First we construct a linear projection.

$$\begin{aligned} P_t(b_{t+1}) &= P_{t-1}(b_{t+1}) + P_t[b_{t+1} - P_{t-1}(b_{t+1}) \mid c'_t - P_{t-1}(c'_t)] \\ &= \hat{b}_t + P_t[b_t + v_{t+1} - \hat{b}_t \mid b_t + w_t - \hat{b}_t] \\ &= \hat{b}_t + \frac{\Omega_t}{\Omega_t + \sigma_w^2}\cdot(b_t + w_t - \hat{b}_t) = \hat{b}_t + \frac{\Omega_t}{\Omega_t + \sigma_w^2}\cdot(c'_t - \hat{b}_t). \end{aligned}$$

Then,

$$b_{t+1} - \hat{b}_{t+1} = b_t + v_{t+1} - \hat{b}_t - \frac{\Omega_t}{\Omega_t + \sigma_w^2}\cdot(b_t + w_t - \hat{b}_t) = \frac{\sigma_w^2\cdot(b_t - \hat{b}_t)}{\Omega_t + \sigma_w^2} + v_{t+1} - \frac{\Omega_t \cdot w_t}{\Omega_t + \sigma_w^2}$$

$$\Omega_{t+1} = \left(\frac{\sigma_w^2}{\Omega_t + \sigma_w^2}\right)^2\cdot\Omega_t + \sigma_v^2 + \left(\frac{\Omega_t}{\Omega_t + \sigma_w^2}\right)^2\cdot\sigma_w^2 = \frac{\sigma_w^2\cdot\Omega_t}{\Omega_t + \sigma_w^2} + \sigma_v^2 = \Omega_t + \sigma_v^2 - \frac{\Omega_t^2}{\Omega_t + \sigma_w^2}.$$

A steady-state solution of Ω to which a maximum likelihood estimator converges is:

$$\Omega = \Omega + \sigma_v^2 - \frac{\Omega^2}{\Omega + \sigma_w^2}$$
$$\sigma_v^2 = \frac{\Omega^2}{\Omega + \sigma_w^2}$$
$$\Omega^2 - \sigma_v^2\cdot\Omega - \sigma_v^2\cdot\sigma_w^2 = 0$$
$$\Omega = \frac{\sigma_v^2 + \sqrt{\sigma_v^4 + 4\sigma_v^2\cdot\sigma_w^2}}{2}. \quad (\because \Omega \geq 0)$$

As easily seen, the smaller σ_w^2 is, the smaller Ω is. That is, Ω is globally minimized if $\sigma_w^2 = 0$.

Managers can convey high quality information to investors by filtering out transitory components.

Because we assume the rationality of investors and managers and the common knowledge of rationality, managers cannot systematically fool investors. However, managers can influence the estimate of the variance of earnings, which directly enhances or reduces the welfare of investors if investors care about the volatility of investment.[44] Because all of the assumptions necessary for the CAPM and other valuation models are not satisfied in the real world, I believe it is reasonable to assume that investors appreciate the reduction of firm-specific risk as well.[45] Also, I do not claim investors actually calculate in the precise fashion described here. Rather, I want to capture what is likely to go on among sophisticated professionals in the financial markets with a simple model.

As an aside, let's see the relation between the reported income and the magnitude of the transitory component. Under the IMA (1, 1) specification, $\Delta c'_t = \xi'_t - \theta \cdot \xi'_{t-1}$. Then, the relation between θ and Ω is:

$$\theta = \frac{2\sigma_w^2 + \sigma_v^2 - \sqrt{\sigma_v^4 + 4\sigma_w^2 \cdot \sigma_v^2}}{2\sigma_w^2}$$

$$= \frac{1}{\sigma_w^2} \cdot \frac{2\sigma_w^2 + 2\sigma_v^2 - (\sigma_v^2 + \sqrt{\sigma_v^4 + 4\sigma_w^2 \cdot \sigma_v^2})}{2} = \frac{1}{\sigma_w^2} \cdot \left(\sigma_w^2 + \frac{\Omega^2}{\Omega + \sigma_w^2} - \Omega \right)$$

$$= \frac{1}{\sigma_w^2} \cdot \left(\frac{\sigma_w^2 \Omega + \sigma_w^4 + \Omega^2 - \Omega^2 - \sigma_w^2 \Omega}{\Omega + \sigma_w^2} - \right) = \frac{\sigma_w^2}{\Omega + \sigma_w^2} \cdot$$

Therefore, θ is positively related to σ_w^2 and becomes zero if $\sigma_w^2 = 0$. It is not surprising because $\sigma_w^2 = 0$ implies there is only the permanent component in reported earnings.

So far, we have assumed that investors have costless and unlimited computational abilities. If we consider the limitation of these abilities, managers also have to take into account the fact that noisy information is more costly for investors to analyze and false alarm by the change of reported income due to transitory components leads to the waste of investors' precious time, which should reinforce managers' incentives to convey useful (less noisy) information.

In the signal extraction setup as stated above, there is no conflict of interest between managers and investors. Also, what I want to stress is that cheap talk is irrelevant in this signal extraction problem. Whatever managers tell, investors can judge the quality of information with past public reports[46] and reward managers accordingly. Moreover, because investors can judge the quality of information which is likely to be correlated to the quality of managers in the sense that only able managers distinguish the permanent part from the transitory one, with publicly available

[44] If investors were assumed to have a well-defined distribution function on the variance, managers' reporting strategies would be nested in the rational expectations framework, i.e., managers' behavior could not be arbitrary. Therefore, what I assume here is just the first-degree of rational expectations, not higher-degree ones.

[45] Though market/firm-specific dichotomy is conceptually different from permanent/transitory dichotomy, transitory components are likely to be firm-specific.

[46] Investors can estimate parameters with the past observations using the maximum likelihood method.

data, my framework can be regarded as a variation of the endogenous smoothing of Demski (1996). However, if managers have other incentives not to report the permanent income, there may be some trade-off.

It is true that no single explanation can claim to be *the* definite one as Arya et al. (1998) point out, but my explanation is consistent with another feature of accounting earnings, i.e., a large random walk component.[47] On the other hand, the usual self-serving story is not consistent with the random walk nature of accounting earnings. Furthermore, the inconclusive evidence for the existence of earnings management in the self-serving story itself is consistent with my story: if managers successfully convey valuable information, there should not be any predictable behavior of earnings time series. Indeed, the time series of accounting earnings has a very large random walk component.

8. Conclusion

The accounting earnings figure seems to work as the best proxy for the value of the firm, though it is not expected to be so. To be more specific, its clean-surplus nature is usually thought to imply that the earnings figure should be a proxy for the *change* of the value. However, the historical cost principle still retained in accounting practices makes the accounting earnings figure a value proxy. Moreover, this value proxy nature is completely in accordance with the expectations of investors as well as historical cost accounting. Indeed, the magnitude of the permanent component in reported earnings suggests something more than historical cost is under way. Actual time series data are consistent with the claim that managers successfully accommodate investors' expectations under severe constraints imposed by the current accounting standards. "Apparently, their [managers'] incentives to make value-maximizing decisions and to report results accurately outweigh their incentives to distort the numbers." (Black 1993, p. 10) Managers manage earnings not because they seek short-term self-serving gains at the expense of investors as conventional wisdom tells us, but because managers want to serve investors more fully motivated by enlightened long-term self-interest.[48] Here, we can see the interdependence of accounting and reality: historical cost accounting determines what should be made a focus of attention for both managers and investors to attain higher economic efficiency. Under this interdependence, unmanaged income itself may not be well-defined.

Although my story is consistent with empirical evidence revealed so far, mine is not *the*

[47] Kang et al. (1995) report the positive correlation between the permanent component and the firm size, and attribute this feature to market power. I interpret differently: the bigger the firm is, the more discretion it has and make earnings more informative.

[48] Because of the finite lives of managers, we cannot mitigate opportunism completely though various devices exist and are implemented reasonably well. However, if the society has successfully established the norm to do the "right" things which contradict the usually assumed individual "rationality", the society as a whole can benefit and even those who do the "right" things are rewarded. See Akerlof (1983), Buchanan(1994) and Frank (1988).

explanation for earnings management. What I have shown is just a tip of the huge iceberg called earnings management. What kind of research can we conduct? Because we can neither know nor estimate unmanaged earnings with precision, devising direct empirical tests seems not just futile but also impossible.[49] However, the following two approaches may be promising.

First, international comparison may be a fruitful approach.[50] Because pressure and penalty on accounting earnings management are slight, if any, in countries such as Japan, Germany and Switzerland, we expect the reported earnings figures of companies in those countries to have a more random walk component than U.S. counterpart; managers in those countries can report permanent earnings figures more liberally than those in the United States. However, one caveat exists: because "trust in numbers" (Porter 1994, 1995) is not so strong in those countries as in the United States, people there may not rely so heavily on "objective" signals such as earnings figures to convey information to related parties as in the United States. Therefore, even if the accounting standards are less stringent, the informativeness of accounting figures may not be pursued because of smaller demand. A ceteris paribus condition is unlikely to hold so as to implement a definite international comparison.

Second, the use of experimental settings seems promising. In laboratory experiments, we know the unmanaged income by definition. This aspect is a definitive advantage. However, a caveat is that the objectives of hypothetical managers are too well-defined and likely to be biased toward pursuing narrow self-interest implicitly induced in experiments. Also, intra-firm interactions, with other executives in particular, which would restrict CEOs' opportunistic behavior, are usually abstracted away though not necessarily so. If we can include those aspects in experiments, the results could be very informative but the experimental design might become intractable.

Finally, I consider some policy implications. If we need an accounting proxy for the value of the firm, a net momentum figure in triple-entry bookkeeping (Ijiri 1989) seems more appropriate than the conceptually muddled earnings figure. Black's (1993, p. 15) suggestion for continuous accounting also points this direction. Why don't we use a (stock) figure at a point rather than a (flow) figure during a period as a value proxy particularly under the age of current value accounting? As Jan Tinbergen pointed out, *n* policy objectives need *n* policy instruments. As discussed endlessly in the accounting profession, accounting has two distinct objectives, decision-usefulness and stewardship. If we have two objectives in accounting, we apparently need two accounting systems. The argument of Johnson and Kaplan (1987) can be interpreted in the same vein: we need a separate decision-useful managerial accounting system different from one for reporting use under the spectacular decline of information processing cost. However, if the premise that practitioners are as smart as professors is reasonable (I think it is), there must be some reasons why practitioners prefer just one system for multiple purposes. My tentative conjecture is that we have to think more about

[49] Arya et al. (1998) seem to be as skeptical as I am about empirical testing.
[50] This idea is suggested by Yuji Ijiri.

restrictions on human information processing abilities and uncertainty in the real world.[51] Above all, historical cost accounting may have already accomplished the task of decision usefulness better than some of us may have realized.

[51] See Simon (1996, pp. 143-144) for a general argument, and Sunder (1997, pp. 87-88) for an argument in an accounting-specific context.

Figure 1: Means/Results Matrix

		Means: Nominal	Means: Real
Results	Nominal	1	2
	Real	3	4

Figure 2: Substance Theory of Value

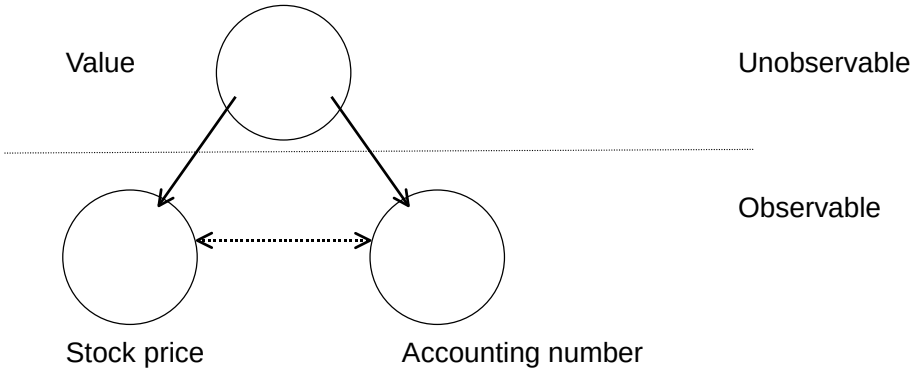


Figure 3: Relation (Market) Theory of Value

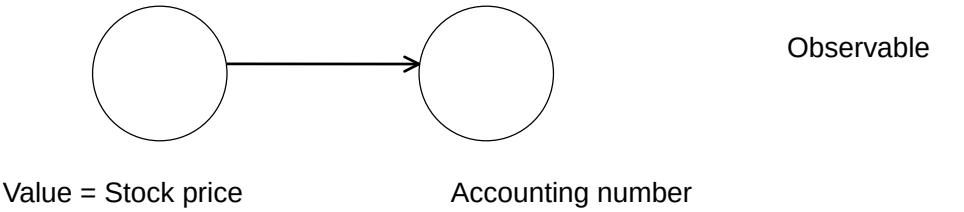


Figure 4: Equilibrium Relation Theory of Value

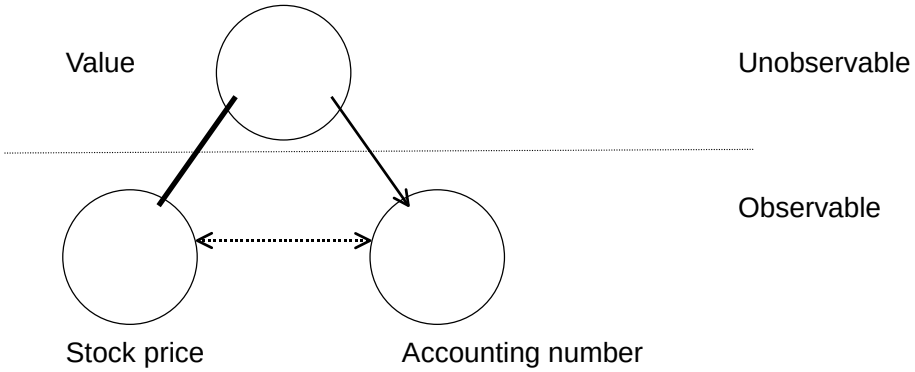
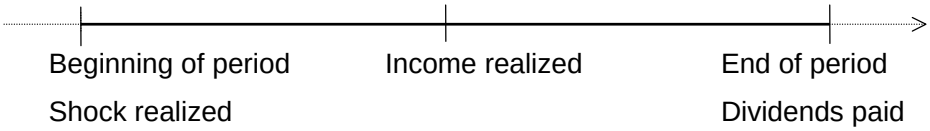


Figure 5: Time frame



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