Separating Facts from Forecasts in Financial Statements[*]

Jonathan Glover
Yuji Ijiri
Carolyn B. Levine
Pierre Jinghong Liang

Tepper School of Business – Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA 15213

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1. INTRODUCTION

Much of the Financial Accounting Standards Board's (FASB's) focus has been on improving the relevance of financial reporting, as exemplified by the increasing use of fair values in financial statements. Standards on pensions, investments in securities, derivatives, long-lived asset impairments, asset retirement obligations, and derivatives serve as examples. In the area of derivatives, the FASB concludes: "fair values for financial assets and liabilities provide more relevant and understandable information than [historical] cost or cost-based measures (SFAS 133, ¶ 221)." Fair values continue to be emphasized in the FASB's ongoing projects.

Arguably, many of the FASB's particular standards have also adversely affected the reliability of financial statement reporting.[1,2] Part of the motivation for the FASB's recent Proposed Statement of Financial Accounting Standards on Fair Value Measurements is that "many constituents have raised concerns about the ability to develop reliable estimates of fair value in certain circumstances, in particular, in the absence of quoted prices" (FASB, 2004b). The proposed standard is intended to partly remedy the situation by providing more unified guidance on fair values and developing a reliability-oriented hierarchy for fair values. The reliability-oriented hierarchy plays a role in both measurement and disclosure. The hierarchy emphasizes subjectivity in managerial inputs (estimates/forecasts) that have to be relied on when market prices or

[1] The FASB has repeatedly emphasized that reliability does not imply certainty or precision but instead encompasses neutrality, verifiability, and representational faithfulness (CON 2, ¶ 72). They also write: "Verifiability can be measured by looking at the dispersion of a number of independent measurements of some particular phenomenon (CON 2, ¶ 84)." If the phenomenon of interest is fair value *per se* rather than fair value measured with a particular model and with particular inputs, then measurements that rely heavily on subjective managerial estimates can be difficult to verify and hence unreliable. Auditors prefer detailed rules for precisely this reason: it is easier to determine whether rules have been applied correctly than to evaluate representational faithfulness.

[2] This trade-off between "relevance" and "reliability" has been at the forefront of the debate over formal inclusion vs. exclusion of "softer" numbers (Johnson and Storey, 1982). Timely accounting recognition typically allows softer information while less timely information can be much harder. Liang (2001) provides a historical review of these debates over accounting recognition. See Antle and Demski (1989), Liang (2000), and Dutta and Zhang (2002) for explicit considerations of recognition in consumption planning and managerial evaluation settings and Antle, Demski, and Ryan (1994), and Liang (2000) for explicit considerations of the presence of other non-accounting information sources. In particular, Liang (2000) shows late accounting recognition may be preferred (to early recognition) if an earlier but softer non-accounting source is already present. This is because later recognition allows accounting information to serve a disciplining role.

other market inputs are not available and labels such estimates Level 3 Estimates (the least reliable).

In the Public Company Accounting Oversight Board's (PCAOB's) September 2004 Standing Advisory Group Meeting, one of the sessions was devoted to verifiability concerns regarding fair values. At that meeting, some participants expressed the opinion that accounting estimates pose broader problems beyond computing fair values, and investors need to be educated about the role of estimates in financial statements.[3]

In this paper, we suggest an extension to the existing accounting model to allow users to better understand the role of estimates/forecasts in financial statements.[4] Our approach relies on a matrix presentation of financial statements. We call the newly generated statements "intertemporal financial statements." Their amounts are presented in three columns, "fact," "forecast," and "total," where the total column is exactly the same as those in conventional statements. If it is a fact, it will always be a fact. If it is a forecast, it will appear in the forecast column. When sufficient uncertainty surrounding the transaction has been resolved, the relevant amounts will be transferred to the permanent fact accounts.

There are many potential benefits to separating facts from forecasts in financial statements. Such intertemporal financial statements would indicate to investors which numbers are more reliable and which less reliable, thus providing them with decision-useful information. Another role of accounting is in facilitating the stewardship relationship between managers and owners. For stewardship purposes, it is even more important to know which information is reliable, yielding benefits to both owners and managers (stewards). Auditors would also welcome a clear differentiation of account balances, classes of transactions and supplemental disclosures for which level of assurance obtained is high, versus those items for which the level of assurance is not as high.[5] The separation would not let managers or auditors off the hook for improper behavior, but instead hold them to different standards across different types of transactions.

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[3] Similarly, The American Assembly (2004) recently suggested that it would be useful to consider financial statements containing a range of numbers, or numbers calculated under different sets of assumptions.
[4] In this paper, we do not employ the conventional distinction between accounting estimates and forecasts.
[5] Communication with Tim Bell of KPMG.

Of course, providing additional information is usually costly. Commonly discussed costs include those of information transmission, reception, and processing. To the extent that intertemporal financial statements require new information be tracked by the accounting system, the cost of transmission (including preparation) may be important. The significance of the costs of information reception and processing is less clear. Our hope is that intertemporal financial statements will, in fact, make information easier to process (understand). Another potential cost of additional information is that it may rule out insurance opportunities (Hirshleifer 1971). As one obvious example, the ability of shareholders to recover their losses from lawsuits may be diminished. (The corresponding benefit is decreased litigation costs and, we hope, better investor decisions in the first place.) Finally, intertemporal financial statements may provide competitors with proprietary information.

The paper proceeds as follows. Section 2 discusses the current political and legal environment and other reliability-oriented approaches to disaggregating information within the financial statements. Section 3 develops alternative sorting rules for classifying financial statement amounts as facts or forecasts. Section 4 presents an example of intertemporal financial statements, and Section 5 concludes the paper.

2. BACKGROUND

The Current Political and Legal Environment

In the FASB's response to the SEC's study on the adoption of principles-based accounting, they express concern that "many preparers and auditors have become less willing to exercise professional judgment in areas involving accounting estimates, uncertainties, and inherent subjectivity (FASB, 2004a)." Financial statements that clearly provide additional information on the varying reliability of financial statement amounts could help mitigate the problem. Presumably, shareholders will be less successful in litigation claims against managers when *ex post* cash flows turn out to be different from *ex ante* forecasts if such amounts are clearly labeled as such. One could take this further and allow managers partial or full safe harbor protection if forecasted information differs from realized outcomes, as long as forecasts are made in good faith and on a reasonable basis. We next build a case for such (partial or full) safe harbor protection.

One of the most significant changes in financial accounting practice in the United States was initiated in July 2002 by the passage of the Sarbanes-Oxley Act of 2002. In particular, Section 302(a), requires CEOs and CFOs to certify in each annual or quarterly report that the officer has reviewed the report, based on the officer's knowledge, the report does not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which such statements were made, not misleading and the financial statements, and other financial information included in the report, fairly present in all material respects the financial condition and results of operations of the issuer as of, and for, the periods presented in the report…."[6]

The Act is expected to spur investor lawsuits. Joseph Grundfest, a professor at Stanford University law school and former SEC commissioner commented "It is more opportunities for the plaintiffs' lawyers, there's no doubt about that (Schmitt, Schroeder, and Murray 2002)." Furthermore, certification changes the legal status of CEOs and CFOs. According to a Wall Street Journal article, "Currently, top executives [sign] on behalf of the company and not a personal endorsement… a criminal case based on lying in a sworn statement is generally much easier to prove than a complex accounting fraud (Beckett 2002)." Criminal penalties in the Sarbanes-Oxley Act are very severe, including fines up to $5,000,000 and up to 20 years imprisonment.

Shouldn't corporate executives be held responsible for the accuracy of their financial reporting and punished when they commit fraud? Undoubtedly, yes. The problem is that nearly all current financial reporting standards require estimates and forecasts, which are inherently uncertain. Even the most scrupulous executive will make forecast errors, since the future cannot be perfectly foreseen. The problem with CEO certification is that it requires executives to take responsibility for the facts they report as well as the forecasts they report, as the two are aggregated in the financial statements.

FASB Statement of Concepts 2 (¶ 73) states:

> *Different uses of information may require different degrees of reliability and, consequently, what constitutes a material loss or gain in reliability may vary*

[6] The remaining paragraphs (4)~(6) of Section 302(a) deal with certification of internal control and audit which are not directly related to the main issue in this paper, hence they are omitted.

> *according to use. An error in timekeeping of a few seconds a day will usually be acceptable to the owner of an ordinary wristwatch, whereas the same error would normally cause a chronometer to be judged unreliable. The difference is linked to use—a wristwatch is used for purposes for which accuracy within a few seconds (or perhaps a few minutes) is satisfactory; a chronometer is used for navigation, scientific work, and the like, uses for which a high degree of accuracy is required because an error of a few seconds or a fraction of a second may have large consequences. In everyday language, both the wristwatch and the chronometer are said to be reliable. By the standard of the chronometer, the wristwatch, in fact, is unreliable. Yet the watch's owner does not perceive it to be unreliable, for it is not expected to have the accuracy of a chronometer.*

Suppose the navigator is forced to give up his chronometer (i.e., a law is passed outlawing chronometers) and it is replaced by the wristwatch mentioned above. The ship still relies on his measurements in the same way as before. When the ship gets lost, the navigator is fired and sued. Is this fair? We contend that the answer is no. *Ex ante*, everyone knows that the watch is less accurate, and not capable of performing the same functions as the chronometer. Yet the contract under which the navigator is working has not changed to adjust for the expected inaccuracies.

Similarly, the standards of what constitutes financial misreporting have changed, but the accounting system has not. The accounting system is like the watch. It may not have the precision required to distinguish between a manager willfully misleading investors and inaccuracies from unavoidable forecast errors. The managerial certification suggests that being wrong (not necessarily intentionally) may be sufficient to sue and punish management. Managers' only tool is the watch, but we are not adjusting for its known characteristics. Explicit full or partial safe harbor for forecasts embedded in the financial statements may be called for. Reliability-based disclosures by themselves would likely provide a degree of implicit safe harbor.

Other Reliability-Based Approaches to Disaggregation

The idea of presenting information in the financial statements in reliability-based columns is not new. Paton and Littleton (1940, p. 118), note that while "the use of estimated values, such as current replacement prices, results in less dependable net income figures than the use of costs actually incurred … [a]ccounting sets no limits on supplying interpretive information in financial statements through footnotes, account

titles, parenthetic figures, or extra columns for estimated current values" … and that "the rule of 'cost or market' should be replaced by the practice of reporting losses of current assets in the income statement only when realized, and reporting current assets in the balance sheet with a parenthetic showing of the amount of the estimated difference between cost and current value if the amount is substantial." Another approach is Ronen and Sorter's (1972) "relevant accounting," which includes a balance sheet with columns for historical cost, exit value, specific advantage, and total economic value.

Standard setters have also been exploring related approaches in recent years. The International Accounting Standard's Board (IASB) and the FASB have a joint project on reporting financial performance. Before the joint project, each board had separate projects. A central feature of the IASB's project was an income statement with three columns: total, before remeasurements, and remeasurements.[7] Barker (2004) describes this matrix presentation. He argues that an important distinction between remeasurements and initial measurements (and their allocation) is that remeasurements typically have a low rate of recurrence and, hence, little predictive value. In this framework, depreciation reflects the allocation of an initial measurement of the asset and is, hence, presented in the "before remeasurements" column. In contrast, an asset impairment or a gain on the disposal of an asset are both remeasurements. Pension service cost is an initial measurement, while actuarial gains and losses are remasurements.[8]

Our approach differs from these approaches in its focus on uncertainty rather than market values or remeasurements. For example, pension service cost is both an initial measurement and a highly uncertain amount. The historical cost of an asset purchased for cash is both an initial measurement and a certain amount. After all, not only do remeasurements fail the test of predicting future value changes, they fail to predict actual benefits. At the same time, we are broadly supportive of any approach that enhances information about differing degrees of reliability of various financial statement amounts and, in particular, of approaches oriented toward providing reliable performance measures. We prefer to think of our study as exploring an appealing approach to a

[7] The rows are organized into categories of business, financing, tax, and discontinued operations.
[8] Wahlen (2000) also makes this point related to mark-to-market changes in the value of debt or derivatives.

reliability-based disaggregation in the financial statements, without ruling out any other approach.

Existing disclosure (as opposed to recognition) proposals also focus on estimates. Lev (2003) suggests routine (one year and three year) earnings revisions based on realizations of previously forecasted amounts. Lundholm (1999) proposes financial statements that include *ex post* reports on the accuracy of past estimates in the form of revised ("actual" as opposed to originally "reported") financial statements. We use the example from Lundholm (1999) to highlight how our approach "settles up" problems on an ongoing basis as individual forecasts become facts rather than waiting until every forecast reported in a particular period is resolved. From a practical standpoint, waiting for all forecasts in a given set of financial statements to be resolved may require an extremely long wait (for example, in the case of pension forecasts). While one can make direct inferences about the accuracy of forecasts in Lundholm's example, the inferences are indirect in our method. If the firm's activities are similar over time, but the ratio of facts to forecasts is not then we can surmise that forecasts were inaccurate.

3. WHAT IS A FACT?

While the classification of a transaction into fact or forecast is binary, the underlying concept is not. Within the spectrum of uncertainty in transactions, the location of the dividing line will be a source of considerable debate and discussion. Nonetheless, any effort to separate financial statements into facts and forecasts must begin with a working definition of each. In this section, we discuss the source of uncertainty in financial reporting, and propose two possible "sorting" rules.

Operating under a historical cost system, as we move from "cash accounting" to "deferral accounting" to "accrual accounting," journal entry data becomes more and more forward looking.[9] In the most primitive system of accounting, cash flow and income flow occur simultaneously. Cash receipts other than owners' contributions are viewed as revenues and cash disbursements other than dividends/distributions to owners are

[9] After accrual accounting, there is so-called "contractual accounting" or "commitment accounting" where journal entries start with a signing of a contract with neither side performing yet. Capital leases and transactions involving financial instruments are examples. However, this accounting practice has not been spread to contracts in general, hence we will stop at accrual accounting for brevity.

expenses. A lending (borrowing) of money is an expense (revenue) because the anticipated collection (refund) is not linked with the loan. There is no need for forecasts, as recording is simply delayed until cash flow occurs. This extreme form of cash accounting is our benchmark to examine the other forms of accounting.

"Deferral accounting" adds deferrals to cash accounting, where deferrals are of two kinds—debits (or expenses) and credits (or revenues). In both cases, deferrals are characterized by the fact that cash is paid or received now but corresponding expenses or revenues do not occur until a later point in time. Deferrals require asset or liability accounts that will serve as buffers between cash disbursements/receipts and incurrence of expenses/revenues. There is no uncertainty in the transaction that creates the asset or liability. However, partial consumption or delivery is common and we must use "volume" as a basis of cost or revenue allocation. The allocation entries introduce forecasts (and consequently, uncertainty) into the accounting system. We label this type of uncertainty "volume uncertainty."

Finally, in an "accrual accounting" system, if goods and services change hands now and cash changes hands later, the goods and services at recorded at forecasted amounts (price aggregates). Since the amounts are themselves forecasts, we label this type of uncertainty "amount uncertainty."

Uncertainty is resolved with the passage of time. Consider a firm that decides to restructure on 12/31/01. Prior to any restructuring activities, it records a charge and an obligation for restructuring. At that point, there is amount uncertainty, as the firm does not know exactly the costs that will be incurred. The degree of uncertainty may be different across different restructuring activities; certain activities may have an explicit "exit" clause causing the restructuring amounts to be well known or well defined. Over the next two years, the firm executes the restructuring. As cash is paid, the restructuring expense moves from fact to forecast. When the restructuring is complete, there is no remaining uncertainty.

We now turn to the question of what is a fact, or in other words, how much uncertainty can we tolerate and still include an amount in the fact column?

Sorting Rule #1 (SR1): *Transactions without uncertainty are facts. All others are forecasts.*

Returning to the restructuring example, the expense and liability are forecasts when initially recorded. As the obligation is settled with cash and uncertainty is resolved, the amounts move from the forecast column into the fact column. By the end of the restructuring, nothing remains in the forecast column, and the fact column contains the actual costs incurred. It's important to note that the separation of facts and forecasts according to Sorting Rule #1 may be possible using existing financial statements, at least at an aggregate level.[10] We believe that even if the information is available, its presentation in an easy to understand and less aggregated manner is important.

While **SR1** takes a fairly literal definition of fact, we would like to consider the inclusion of certain transactions in the fact column that contain some "bounded" uncertainty. To allocate the cost of a fixed asset to the periods in which it is used requires two forecasts: estimated service life and salvage value. Thus the recording of depreciation expense involves both volume and amount uncertainty, and the expense and associated accumulated depreciation are forecasts under **SR1**. Let depreciation be separated into two components, the allocation of the full asset's cost (which contains only volume uncertainty) and the residual value component (which involves amount uncertainty). Recognizing that forecasts with only volume uncertainty are bounded by the initial purchase amount, Sorting Rule #2 classifies transactions with volume uncertainty as facts. When the asset is sold, the residual value becomes a fact, and the amounts in the forecast column will be converted into the fact column.

Another type of transaction we propose for inclusion in the fact column is a non cash sale or purchase with a fixed purchase price. Again, we can separate the amount uncertainty in the price aggregates into two components: the fixed purchase price and an adjustment for performance risk through the use of a contra-account. This way, all of the amount uncertainty resides in the contra-account. This may appear to allow any account

[10] A similar criticism might be made of the statement of cash flows that can be derived using the income statement and balance sheet. However, the FASB notes that "[t]he more detailed the categories of operating cash receipts and payments to be reported, the more complex the procedure for determining them" (SFAS 95, ¶ 115).

balance to be decomposed into a fact portion and a forecast portion, but this is not correct. Instead, the separation is only possible when the amount is bounded (a maximum that will be received for an asset and a maximum that will be paid for a liability). Allowing the original transaction to have fact status is a significant departure from cash flow accounting. That is, credit sales would be facts, but bad debt expense (and the allowance for doubtful accounts) would be a forecast.

Sorting Rule #2 (SR2): *Transactions without amount uncertainty are facts. All other transactions are forecasts.*

Back to our discussion of depreciation, consider the residual value estimate. A firm might estimate that it can sell the asset at the end of five years for $10. However, when the time comes, the asset may sell for considerably more (e.g., the asset has become a collector's item) or less than the forecasted amount (e.g., there is no buyer and environmental remediation costs).

Extending the framework to deal with fair values is delicate. Namely, which fair values, if any, are facts? A fair value based on management's subjective view of the economy, the company's strategic plan, and past data seems inherently to be a forecast. A market price based on actual trades on an active exchange seems inherently factual in nature.[11] However, if we maintain a balance sheet date precisely, these market prices will often be stale and, hence, represent forecasts of would-be (hypothetical) transactions at a different time. Put in the language of our sorting rules, there is now uncertainty about the amount of the would-be exchange. Continuing with this line of thought, one can argue that all fair values revaluations are forecasts of would-be transactions, since the reporting entity has not itself engaged in an exchange.[12] From this perspective, our sorting rules would classify all revaluations as forecasts as they contain amount uncertainty.

If we are to categorize all revaluations as forecasts because of lack of actual exchange, one might consider differentiating between *official* and *unofficial* forecasts.

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[11] This point of view seems to underlie the FASB's exposure draft on fair value measurements.

[12] Ijiri (1975) uses this link between historical cost and actual exchanges — exchanges management chose to engage in — to argue that historical cost is a useful way of evaluating the effectiveness of past decisions (p. 88). Verifiability is also emphasized, both by Ijiri (1975) and Paton and Littleton (1940).

Official forecasts are forecasts whose computations follow explicit rules.[13] Official and partially official forecasts do not necessarily improve the accuracy of forecasts but they eliminate total or partial discretions that forecasters have in making forecasts (or, "bad faith" forecasts). The broader point is that the distinction between facts and forecasts is subtle and more continuous than our binary classification rules suggest.

Thus far, we have considered a two column breakdown, where transactions are classified as either facts or a forecasts. Why not three, four, or five columns? A transaction's "forecastability" can depend on both the forecast horizon and the types of uncertainty. For example, bonds issued by a company are expected to be paid at maturity. The can be easily forecasted. On the other hand, collectibility of long-term loans to suppliers is more difficult to forecast. For over half a century in U.S. accounting practice, firms have classified items into *current* (within 1 year) and *non-current* (more than one year). If an extension to further highlight the uncertainty within forecasts is desirable, a short-term/long-term classification seems like a reasonable place to start.[14] [15]

4. THE MECHANICS

From Transactions to Financial Statements

In this section, we provide transactions for a hypothetical firm, apply the two sorting rules and present the resulting financial statements.[16]

The firm begins in year 1, and we will follow it for 3 years. Using $100 of invested capital, the firm purchases a fixed asset for cash in the beginning of the first year. It forecasts the useful service life and residual value of the asset and takes an annual depreciation charge each December. In the final year of the asset's life (which

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[13] An example of an official forecast is the use of end-of-period (current) market price for valuing securities. Still, current market price does not and cannot overrule the actual benefit amount; if the benefit amount were known, current market price would be irrelevant. This means that current market price is a surrogate for the benefit amount when it is not known.

[14] An extension, including facts, short-term forecasts and long-term forecasts, raises the question of how to treat the middle column. Are short-term forecasts more like facts or more like forecasts? If short term forecasts are sufficiently "like" either of the other two columns, then we are back to our original two column presentation. We would define our sorting rule to include in the first column facts and short term forecasts together.

[15] A disclosure-based approach to differentiating among levels of amount uncertainty would be to disclose confidnece intervals related to all financial statement amounts. The broader the interval (for the same % confidence), the more the amount represents a forecast rather than a fact. The confidence intervals would represent the range of possible future settlement amounts.

[16] The example borrows heavily from Lundholm (1999).

may differ from the forecasted final year), the true service life and residual value are known.[17] For this example, we assume the firm correctly forecasts a four year life for the asset and no residual value.

Each fiscal year, the firm makes two credit sales, one in February and one in August. The first sale in year 1 is for $110, and each subsequent sale increases by $10. Six months after each sale, the firm collects $90. Although sales increase every six-months, collections do not; thus the bad debt costs are escalating. Each July, the firm collects $90 on the February sale. The remaining amount is deemed permanently uncollectible and is written off.

Collections on the August sale will take place in January of the following fiscal year. Consequently, the firm must create a reserve and take a charge for expected uncollectibles in December. The company uses the ending accounts receivable method to record its allowance for doubtful accounts. The firm creates an (optimistic) allowance equal to ten percent of the gross receivables outstanding at the end of the year.

Figure 1 shows a chronological depiction of the transactions for year 2, and Table 1 presents the journal entries. Consider the sales made on account in February of year 2 (labeled #2 in Table 1). Under traditional accounting, we would debit *Accounts Receivable* and credit *Sales*, each for $130. Under intertemporal accounting, we need to incorporate the journal entry's fact or forecast status. **SR1** classifies credit sales as a forecast due to amount uncertainty (the sales amount is not necessarily the collection amount). **SR2** classifies credit sales as a fact because there is a fixed (contracted) sales price and collection date. The collection risk will be adjusted using a contra account (which will appear in the forecast column).

In July, the firm collects $90. Traditional accounting requires us to debit *Cash* for $90, debit *Allowance for Doubtful Accounts* for $40 and credit *Accounts Receivable* for $130. The passage of time converts the sales classified as a forecast (**SR1**) into a fact. Following the journal entries under #3 in Table 1, the original entry is reversed and rewritten in the fact column. The collection is a fact, so we credit the *Receivables* $130 and debit *Cash* for $90 (for the good sales) or *Allowance* for $40 (for the bad sales).

[17] In a more realistic example, the firm would have a pool of assets, so that at any point in time, some assets are in an intermediate life stage and others are expiring.

Under **SR2** the collection and writeoff are considered facts and the entries resemble traditional accounting.

Things get more interesting but more complicated when we come to the end of the fiscal year. Collections on the sales made in August are expected in January of the following year. The firm assumes that 10% of the outstanding receivables will not be collected. Since outstanding receivables are 140, the allowance must be 14. In the forecast column (due to the uncertainty), the firm debits *Bad Debt Expense* and credits *Allowance for Doubtful Accounts* for 14. There is nothing left from previous periods in the forecasted allowance portion, since any previous allowances have been transferred to fact when the receivables are either collected or written off. Additionally, an accrual for depreciation is taken in December. Since the allocation requires a forecast of residual value and the service life, there is uncertainty. Both Sorting Rules debit to *Depreciation Expense* and credit *Accumulated Depreciation* for $25, but **SR1** classifies depreciation expense as a forecast because of its volume uncertainty, while **SR2** considers it a fact, since there is no amount uncertainty.[18]

The financial statements for years 1-3 are presented in Table 2, with year 2 highlighted. Consider the year 2 financials using **SR1**. Notice that in year 2, the bad debts in the fact column come from two sources. In July, collections are $90, compared to the February sales of $130. The remaining $40 is written off, and is a fact for the period. Additionally, in January, the firm collected $90 on the sales of $120 made the previous August. The firm had created an insufficient allowance of $12 to accommodate the bad debts. Consequently, an additional 18 (to reflect the $120-$90-$12) is taken from the fact column, since there is no remaining uncertainty about the transaction.

Inferences Based on Intertemporal Financial Statements

How can we determine whether the forecasts are high quality? The optimism seems easy to spot when we break down income into facts and forecasts.[19] To provide a

[18] It is worth pointing out in year 4 the depreciation charge would be a fact under SR1 as well since there is no remaining uncertainty. While this will throw off the ratios in this example, it is only because the firm has one single asset. If instead there were some assets expiring and some assets continuing each period, the classification as fact in the final year would not seem as awkward.

[19] We are using the financial statements created by SR1 for this discussion, but the conclusions would be similar under SR2.

benchmark, we provide the financial statements of a firm with the same transactions, but which has a "correct" allowance (of sales minus collections) in Table 3. To be sure, both firms are less profitable over time, as the declining margins in the total bars of Figure 2 show. Still, two particular trends are worth noting for the optimistic firm. First, the relative contribution from the fact column is shrinking, while the contribution from the forecast column is increasing. Second, margins in the forecast column are increasing overall (Figure 2: Panel A). In contrast, the perfect foresight firm has the fact column contributes more to the firm's profitability than the forecast column and the margins of both columns are going in the "same" direction as the total (Figure 2: Panel B).

5. CONCLUSION

Recent accounting scandals prompted lawmakers and regulators to reevaluate the existing requirements and obligations of financial reports and the people who prepare them. We believe that it is also time for a reassessment of the basic financial reporting model. Over time, more and more relevant information has been added to audited financial statements. This increased relevance has come at the cost of decreased reliability. This paper proposes intertemporal financial statements that separate facts from forecasts as a way of reminding investors of the varied reliability of financial statement numbers. We hope others will extend our work to (1) more explicitly deal with fair values and (2) explore alternative reliability-oriented classifications and disclosures.

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Figure 1: Timeline of transactions

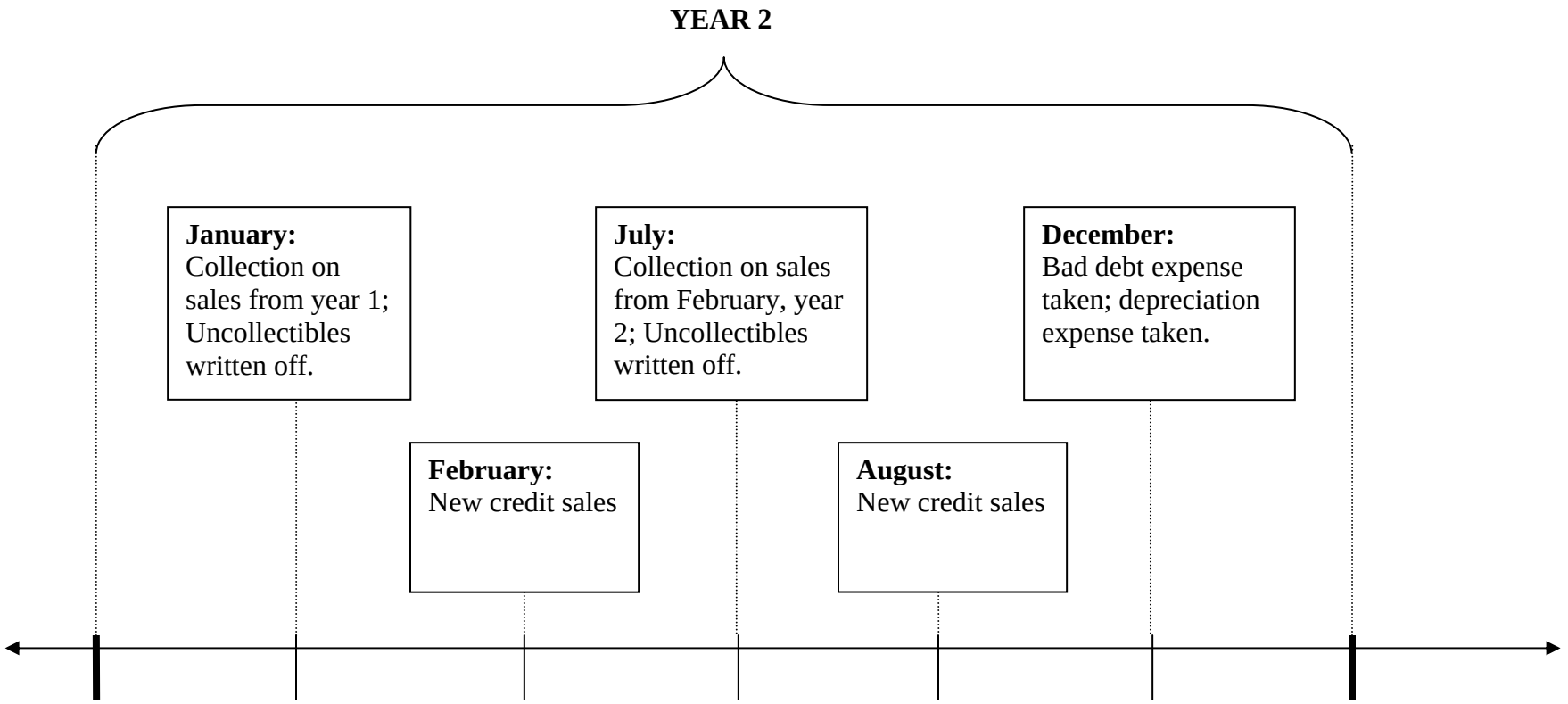

Table 1: Intertemporal journal entries

	SORTING RULE 1			SORTING RULE 2		
#1	**1/1/2002: Collections made on previous year's sales**					
	RE (forecast)	120		Cash (fact)	90	
	Accounts receivable (forecast)		120	Accounts receivable (fact)		90
	Allowance (forecast)	12		Allowance (forecast)	12	
	RE forecast		12	Retained Earnings (forecast)		12
	Accounts receivable (fact)	120		Retained Earnings (fact)	12	
	RE (fact)		120	Accounts receivable (fact)		12
	Cash (fact)	90		Allowance (fact)	18	
	Accounts receivable (fact)		90	Accounts receivable (fact)		18
	Allowance (fact)	18				
	Accounts receivable (fact)		18			
	RE (fact)	12				
	Accounts receivable (fact)		12			
#2	**2/1/2002: New credit sales**					
	Accounts Receivable (forecast)	130		Accounts Receivable (fact)	130	
	Sales (forecast)		130	Sales (fact)		130
#3	**7/1/2002: Collections made on February's credit sales**					
	Sales (forecast)	130		Cash (fact)	90	
	Accounts receivable (forecast)		130	Accounts receivable (fact)		90
	Accounts receivable (fact)	130		Allowance (fact)	40	
	Sales (fact)		130	Accounts receivable (fact)		40
	Cash (fact)	90				
	Accounts receivable (fact)		90			
	Allowance (fact)	40				
	Accounts receivable (fact)		40			
#4	**8/1/2002: New credit sales**					
	Accounts Receivable (forecast)	140		Accounts Receivable (fact)	140	
	Sales (forecast)		140	Sales (fact)		140
#5	**12/31/2002: Bad debt and depreciation expense taken**					
	Bad debt expense (forecast)	14		Bad debt expense (forecast)	14	
	Allowance for doubtful accts (forecast)		14	Allowance for doubtful accts (forecast)		14
	Bad Debt expense (fact)	58		Bad Debt expense (fact)	58	
	Allowance for doubtful accounts (fact)		58	Allowance for doubtful accounts (fact)		58
	Depreciation expense (forecast)	25		Depreciation expense (fact)	25	
	Accumulated Depreciation (forecast)		25	Accumulated Depreciation (fact)		25

Table 2: Financial Statements Under SR1 and SR2, Optimistic Allowance.

Optimistic Firm: SORTING RULE #1

	YEAR 1			YEAR 2			YEAR 3		
	Fact	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**
REV	110	120	230	130	140	270	150	160	310
EXP	20	37	57	58	39	97	96	41	137
NI	$ 90	$ 83	$ 173	$ 72	$ 101	$ 173	$ 54	$ 119	$ 173
CASH	90	-	90	270	-	270	450	-	450
AR	-	120	120	-	140	140	-	160	160
Allow	-	(12)	(12)	-	(14)	(14)	-	(16)	(16)
PPE	100	-	100	100	-	100	100	-	100
Acc Dep	-	(25)	(25)	-	(50)	(50)	-	(75)	(75)
TOTAL A	$ 190	$ 83	$ 273	$ 370	$ 76	$ 446	$ 550	$ 69	$ 619
CS	100	-	100	100	-	100	100	-	100
RE	90	83	173	270	76	346	450	69	519
TOTAL SHE	$ 190	$ 83	$ 273	$ 370	$ 76	$ 446	$ 550	$ 69	$ 619

Optimistic Firm: SORTING RULE #2

	YEAR 1			YEAR 2			YEAR 3		
	Fact	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**
REV	230	-	230	270	-	270	310	-	310
EXP	45	12	57	83	14	97	121	16	137
NI	$ 185	$ (12)	$ 173	$ 187	$ (14)	$ 173	$ 189	$ (16)	$ 173
CASH	90	-	90	270	-	270	450	-	450
AR	120	-	120	140	-	140	160	-	160
Allow	-	(12)	(12)	-	(14)	(14)	-	(16)	(16)
PPE	100	-	100	100	-	100	100	-	100
Acc Dep	(25)	-	(25)	(50)	-	(50)	(75)	-	(75)
TOTAL A	$ 285	$ (12)	$ 273	$ 460	$ (14)	$ 446	$ 635	$ (16)	$ 619
CS	100	-	100	100	-	100	100	-	100
RE	185	(12)	173	360	(14)	346	535	(16)	519
TOTAL SHE	$ 285	$ (12)	$ 273	$ 460	$ (14)	$ 446	$ 635	$ (16)	$ 619

Table 3: Financial Statements Under **SR1** and **SR2**, Perfect Foresight Allowance

Perfect Foresight Firm: SORTING RULE #1

	YEAR 1			YEAR 2			YEAR 3		
	Fact	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**
REV	110	120	230	130	140	270	150	160	310
EXP	20	55	75	40	75	115	60	95	155
NI	$ 90	$ 65	$ 155	$ 90	$ 65	$ 155	$ 90	$ 65	$ 155
CASH	90	-	90	270	-	270	450	-	450
AR	-	120	120	-	140	140	-	160	160
Allow	-	(30)	(30)	-	(50)	(50)	-	(70)	(70)
PPE	100	-	100	100	-	100	100	-	100
Acc Dep	-	(25)	(25)	-	(50)	(50)	-	(75)	(75)
TOTAL A	$ 190	$ 65	$ 255	$ 370	$ 40	$ 410	$ 550	$ 15	$ 565
CS	100	-	100	100	-	100	100	-	100
RE	90	65	155	270	40	310	450	15	465
TOTAL SHE	$ 190	$ 65	$ 255	$ 370	$ 40	$ 410	$ 550	$ 15	$ 565

Perfect Foresight Firm: SORTING RULE #2

	YEAR 1			YEAR 2			YEAR 3		
	Fact	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**	**Fact**	**Forecast**	**Total**
REV	230	-	230	270	-	270	310	-	310
EXP	45	30	75	65	50	115	85	70	155
NI	185	(30)	155	205	(50)	155	225	(70)	155
							-	-	
CASH	90	-	90	270	-	270	450	-	450
AR	120	-	120	140	-	140	160	-	160
Allow	-	(30)	(30)	-	(50)	(50)	-	(70)	(70)
PPE	100	-	100	100	-	100	100	-	100
Acc Dep	(25)	-	(25)	(50)	-	(50)	(75)	-	(75)
TOTAL A	285	(30)	255	460	(50)	410	635	(70)	565
							-	-	-
CS	100	-	100	100	-	100	100	-	100
RE	185	(30)	155	360	(50)	310	535	(70)	465
TOTAL SHE	285	(30)	255	460	(50)	410	635	(70)	565

Figure 2: Gross Margins: Facts, Forecasts and Totals