# The Quality of Financial Statements: Perspectives from the Recent Stock Market Bubble

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**SYNOPSIS:** During the recent stock market bubble, the traditional financial reporting model was assailed as a backward looking system, out of date in the Information Age. With the bursting of the bubble, the quality of financial reporting is again under scrutiny, but now for not adhering to traditional principles of sound earnings measurement, asset and liability recognition. This paper is a retrospective on the quality of financial reporting during the 1990s. Did reporting under U.S. GAAP perform well during the bubble, or is its quality suspect? My premise is that financial reporting should serve as an anchor during bubbles, to check speculative beliefs. With a focus on the shareholder as customer, the paper asks whether shareholders were well served or whether financial reporting helped to pyramid earnings and stock prices. The scorecard is mixed. A number of quality features of accounting are identified. Inevitable imperfections due to measurement difficulties are recognized, as a quality warning to analysts and investors. And a number of failures of GAAP and financial disclosures are identified which, if not recognized, can promote momentum investing and stock market bubbles.

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## Introduction

Concerns about the quality of accounting intensify as economies turn down, companies flounder, and investors lose. With the bursting of the recent stock market bubble, the quality of accounting is again under scrutiny. This essay questions the quality of financial reporting against the backdrop of the stock market bubble.

Bubbles work like a pyramiding chain letter. Speculative beliefs feed rising stock prices that beget even higher prices, spurred on by further speculation. Momentum investing displaces fundamental investing. One role of accounting is to interrupt the chain letter, to challenge speculative beliefs, and so anchor investors on fundamentals. Poor accounting feeds speculative beliefs. Warren Buffet recognized the dot.com boom of the late 1990s as a chain letter, with investment bankers the "eager postmen."[1] He might well have added their assistants, the analysts, many of whom shamelessly disregarded fundamentals.[2] But was accounting also to blame?

GAAP accounting certainly came in for criticism during the bubble. Commentators argued that the traditional financial reporting model, developed during the Industrial Age, is no longer relevant in the Information Age. Is this bubble froth or something to be taken seriously? In their statement responding to the Enron-Andersen debacle, the Big 5 accounting firms blamed the "broken financial-reporting model." [3] Is this an insight or a self-serving defense?

Consider the view, common among new-technology analysts during the bubble, that "earnings no longer matter." Untested metrics like clicks and page views became the substance of "value reporting" for the Information Age. Price-earnings ratios over 50 were viewed as

acceptable, with the implicit criticism that earnings are deficient. These views are less compelling in retrospect. We now understand that the losses reported by dot.coms were a good predictor of outcomes. The statement that earnings don't matter was bubble froth. The high P/E ratios of the 1990s are now seen as more to do with the quality of prices rather than the quality of earnings. Joe Berardino, chief executive of Enron's auditor, Arthur Andersen, claimed (in a "wake-up call") that "Enron's collapse, like the dot-com meltdown, is a reminder that our financial reporting model is out of date."[4] Others might argue that accounting served us well during the dot-com meltdown. But accounting was an issue in the Enron affair. What is a balanced view?

My commentary provides a way of thinking about accounting quality, and then applies that thinking to prepare a list of good and bad features of financial statements. I identify poor features of GAAP, but also, in response to the criticisms during the bubble, point out quality features of the traditional model. Some problematic features of GAAP are inevitable, given inherent measurement difficulties, so are discussed, not with a view to reform, but to underscore the limitations of accounting and as a quality warning to analysts who must appreciate these imperfections and accommodate them. Some of the points I make are opinionated, for one must be normative about quality. Opinions are to be reacted against, to be accepted or rejected with better thinking. Most points follow from stated premises, however, so it is these premises that the reader must challenge. Many of the points arise in my classes on financial statement analysis. They appear on a list of complaints about accounting that I encourage students to prepare during the semester as they run into frustrations in analyzing financial statements to value shares.

An initial premise is already implicit in the discussion: stock market bubbles – inefficient capital markets – are damaging to economies. People form unreasonable expectations of likely

returns and so make misguided consumption and investment decisions. Entrepreneurs with poor business models raise cash too easily in hot market IPO markets, deflecting it from firms that can add value for society. Managers holding shares or options join the chain letter and make money from stock price movements rather than running firms efficiently. Investors borrow to buy paper rather than real productive assets. Debt burdens become intolerable. Banks that feed the borrowing run into trouble. Risk is mispriced, so upsetting risk sharing in the economy. The crash of 1929, the Japanese post-bubble experience of the 1990s, and the more recent U.S. experience teach these lessons. Public accounting serves the public interest if it works against the chain letter that conflicted entrepreneurs, corporate management, investment bankers, consultants, and even directors and auditors are tempted to perpetuate.

In reviewing the quality of accounting practice and proposing remedies, one must be careful in identifying the source of the problem. There are three reasons for poor accounting. *First* is the subversion of sound accounting principles. Many of the recent practices assailed in the press – excessive restructuring charges, front-end revenue recognition, capacity swapping, cookie jar reserving, and off balance-sheet financing, for example -- are violations of sound principles of revenue recognition, expense matching, and debt recognition, not the failure of principle. The press has appropriately focused on the conflicts of interest -- on the part of directors, auditors, regulators and politicians – that lead these actors to subvert practice. The *second* reason is the form of the regulation of accounting. I refer to "bright line" prescriptions that encourage form over substance, the compliance with regulations rather than capturing the economics. The debate about "true and fair" overrides is to this issue. But, *third*, poor practice also comes from poor thinking as well as the subversion of good thinking and the gaming of poor regulation. It is the question of poor thinking that I deal with. Many suspect practices are

sanctioned by GAAP. The FASB refers to a Conceptual Framework. Many of the practices have been associated with quality names, like IBM, Microsoft, General Electric, Xerox, and Cisco, not just once-quality names like Lucent and Enron. The actors involved may be conflicted, but is there also a failure in thinking about what good accounting should be?

## Coming to Terms with Accounting Quality

The notion of accounting quality is vague, often discussed in wishy-washy terms. Demanding that financial statements reflect "economic reality" is not very helpful, a self-evident statement. "Relevance" and "true and fair" are criteria that do not get us very far. We must be concrete. It seems that accounting quality is in the mind of the beholder. Pro forma earnings numbers – measures other than GAAP earnings – proliferated during the bubble, each advanced by particular constituents as a relevant quality number for their purpose.

The trouble is that accounting is by fiat, a matter of design; accounting can be whatever we want it to be. We cannot address the issue of accounting quality unless we agree on what accounting is supposed to do. In formal terms, a premise must be stated. Accounting is a utilitarian endeavor, so the premise pertains to the presumed user. Financial reports then take on meaning as products supplied to a customer. The performance criterion must be: What would a quality accounting product look like – to the customer? Answering this question forces the concreteness we seek.

### Shareholders as Customers

I see shareholders as the primary customers to whom financial reports are made. In the parlance of accounting theory texts, I embrace the *proprietorship perspective: prepare financial statement for the common shareholders*. Accounting theory texts contrast the proprietorship

perspective with the *entity perspective* (where the accounting is performed for the firm, without respect for specific stakeholders).[5] The entity perspective and proprietorship perspective lead to quite different accounting, and some of the problems of GAAP result from a confusion of the interests of the shareholders with those of the firms (as I will later explain).

The proprietorship view is hardly controversial. It is articulated in the fiduciary duties of directors. Auditors report to shareholders. The Securities and Exchange Commission acts under a congressional mandate to guard the interests of investors. Indeed, what CEO, company director, or auditor would go to press and argue that the financial statements are not primarily reports to shareholders? The notion that "we work for the shareholders" defines a conflict of interest for these people.

The proprietorship perspective is the simplest and most natural of concepts: the shareholders are the owners. The proprietorship perspective is at the heart of the "contracting perspective" of accounting. It recognizes that accounting is concerned with the division of property rights – between shareholders and bondholders, between shareholders and management, and between shareholders and auditors -- and with the efficient contracting over those property rights that is so essential for the functioning of an economy. Enforcing property rights is a particular concern when ownership is separated from control. The entity view is silent on property rights, about the division of claims to the firm, and so leads to non-discriminating and even ambiguous accounting.

It is surprisingly difficult to get students to think in these terms. They think of the firm, an entity view. How does a particular transaction affect the firm, they ask, rather than how it affects shareholders. Students are not alone in their fuzzy thinking. U.S. senators lobbied the FASB against stock compensation accounting. Indeed, the Council of Institutional Investors,

which represents shareholders, argued against the (unsuccessful) 1997 Levin and McCain Senate bill to require stock options to be booked as an expense. The Council offered the common argument that options were not an expense because firms do not use cash to award them.[6] This fails to distinguish the firm from the owners of the firm. The argument also fails to appreciate the principles of accrual accounting, designed not account for cash flows but for value flows. Accrual accounting recognizes there is no loss in shareholder value when an asset is purchased with cash, but there is a loss as its value depreciates (with no cash flow). Indeed accrual accounting recognizes depreciation on assets that are acquired with no use of cash – in exchange for stock, for example. Similarly, stock options do not use cash, but they do reduce shareholder value.

The "traditional accounting model" embodies the shareholder perspective. The last entry in the accounting cycle is the closing entry to shareholders' equity: after recording transactions and adjusting entries to determine earnings (for shareholders), equity is updated. Updating shareholders' equity is the very essence of the traditional model. In assailing this traditional model during the bubble, commentators advocated a redefinition of the corporation, and spoke of the "boundary-less corporation" and of the "disintegration" of the traditional corporation. Assets, of course, can be organized in many ways to generate value (for shareholders), in strategic alliances, in joint ventures, and in special purpose entities, but the ultimate question must be in terms of how the arrangements affect shareholders. What goes into that final closing entry? The traditional model anchors us to this perspective.

**The Modified Shareholder Perspective**

A principle of democratic capitalistic societies maintains that public welfare is served by well-functioning, efficient capital markets. The United States has chosen to achieve this

objective through regulation, so this principle underlies the SEC's mandate. Public accounting is a means to that end.

For public accounting, the strict proprietorship perspective needs to be slightly restated. Shareholders are in the market to sell shares (either their own or through share issues by the firm), and also sell other claims on the firm, like bonds. Their interest may be to promote stock prices (and bubbles) by inflating earnings, and so sell at higher prices. Accordingly, accounting that promotes shareholders' interests may damage the public interest. The public interest insists on focusing on shareholders' claims, but also on the fair valuation of those claims for trading in capital markets. In short, public accounting improves the efficiency of capital markets. The attributes "true and fair" and "faithfully representing" are quality prescriptions in the public interest, for promoting "fair" market prices. Accordingly, accounting quality must be discussed not only in terms of shareholders' interests, but also in terms of the fair valuation of those interests.[7]

With this perspective, I turn to the analysis of the quality of earnings and the quality of financial reporting.

## The Quality of Earnings

I take the view that shareholders "buy earnings," so earnings quality is a particularly important feature of the financial reporting product. This idea, I think, is also not controversial. Stated simply, shareholders buy firms to make money, and earnings are an answer to the question, "What did I make this year?" To value their shares, investors ask, "How much does the firm expect to make (for the shareholder) in the future?" Analysts forecast earnings as an indication of how much a stock is worth. The market focuses on earnings as a primary summary

measure; if a firm misses an earnings projection, the market reacts accordingly. Accounting-based valuation models formally justify the focus on earnings.[8]

Investors do not buy current earnings, of course. So the quality of earnings is, first and foremost, a question of the quality of forward earnings. What earnings measure should an analyst forecast? If he forecasts GAAP earnings, will he misvalue the firm because GAAP earnings are deficient? The answer is yes, as I explain below.

The perspective of buying future earnings also frames the question as to the quality of current (reported) earnings. Current earnings are an input to forecasting future earnings. Current earnings are of good quality if they are a good indication of future earnings.

The controversy over pro forma earnings is to the point. Pro forma numbers have been advanced for both forecasting (as in First Call) and for reporting actual results (in press releases). Many of these numbers have been criticized as low quality earnings numbers -- EBS, Everything but the Bad Stuff, was Lynn Turner's quip when he was Chief Accountant at the SEC. But, conceivably, one might justifiably focus on a pro forma number if GAAP earnings are of poor quality. What pro forma forward number should a quality analyst forecast to compensate for the deficiencies of GAAP? What current earnings number should he defer to as an indication of future earnings power?

Experience in the recent bubble suggests a criterion for answering this question: *earnings cannot be used in a pyramid scheme* to promote speculative beliefs (and promote bubbles). Momentum investing generates momentum in stock prices and looks to momentum in earnings to feed the momentum in stock prices. The pyramiding scheme works in two ways. First, earnings momentum can be created in the purely mechanical way in which revenues are aggressively recognized or expenses ignored. But, second, the momentum can be levered up as

managements engage in activities to enhance the pyramiding number, to the ultimate detriment to the (unwary) investor.

Pro forma earnings that ignore interest expense, for example, promote a scheme involving increased borrowing in order to report even more earnings before interest. (Off-balance sheet financing is one vehicle for this scheme.) This bubble can burst dramatically as the pyramiding leads to default. An investor who buys earnings before interest (ebit) makes a mistake, and an analyst or corporate press release (like those of Amazon.com) that advocates such a number leads the investor into the pyramid scheme. The premiere pro forma number, ebitda, ignores depreciation (and taxes) in addition. Investment bankers like this number for their comparable analysis in IPOs, for they like to create IPO bubbles. Ebitda ignores a real cost. Factories rust and become obsolescent. Overcapacity in telecom networks is a cost. Ebitda promotes substitution of capital for labor, creating excess capacity, but creating more editda. Ebitda also provides incentives to capitalize expenses. WorldCom, while promoting ebitda as the "gauge of vigorous growth," capitalized operating expenses in a $3.8 billion fraud exposed in 2002. By shifting the expenses to depreciation, these operating costs never affected the ebitda on which we were asked to focus. Combine ebitda with revenues recognized from (excess) capacity swaps (as in the recent case of Global Crossing), and one has a telecom bubble going. But the bubble bursts. (GAAP earnings recognizes interest, depreciation and amortization, of course, so challenges ebitda schemes).

**A Loose Anchor: The Poor Quality of GAAP Earnings**

GAAP violates the shareholder perspective ways that promotes pyramiding. Let the buyer of earnings beware. And let the dedicated fundamental analyst make adjustment.

## 1. *Violating the Shareholders' Interest: The Accounting for the Statement of Shareholders' Equity*

The statement of shareholders equity is not usually seen as a primary statement. It is not even required in the United States, although a reconciliation of beginning to ending equity must be supplied in the notes. The analyst cannot ignore this statement, however, for it is the statement that focuses on the shareholders' interest. It is also a statement where that interest is neglected: the accounting is poor quality. I tell students that, if you don't clean up this poor accounting, you will misread the profitability and value the equity incorrectly.

The shareholder invests to add value. He or she therefore wants a clear distinction between changes in equity that are due to investment and disinvestment (share issues, share repurchases and dividends) from changes in equity that are from earnings that add value. GAAP confuses earnings with share transactions.

**Comprehensive Income and Dirty Surplus Accounting.** A shareholder perspective demands comprehensive income reporting: earnings must include all sources of value added to the shareholder. In a narrow sense, comprehensive income reporting demands clean-surplus accounting, that is, booking all recognized income to the income statement rather than the equity statement. In a wider sense, comprehensive income reporting demands that all gains and losses to shareholders be recognized in income. Earnings that exclude depreciation (discussed above) are not comprehensive (under both an entity perspective and a proprietorship perspective). Earnings that exclude interest expense (also discussed above) are comprehensive income to the entity (under an entity perspective) but not comprehensive income to shareholders (under a proprietorship perspective). Comprehensive income reporting is the key to avoiding pyramid schemes in earnings.

FASB Statement 130, *Reporting Comprehensive Income*, has of course made a significant step to remedy the confusion introduced by dirty-surplus accounting, but most firms choose the option to present "other comprehensive income" in the equity statement. A firm can thus cherry pick realized gains on its investment portfolio into GAAP net income and recognize unrealized losses off the income statement. Maintained for a few years, this practice creates a net income and earnings-per-share pyramid. The competent analyst evaluates the performance of the whole portfolio. (FASB 130 also leaves deferred compensation in the equity statement, rather than treating it as an asset [like any other deferred charge], so its amortization looks like a share issue.)

Dirty-surplus accounting is often justified on the basis that it separates out items of a more transitory nature from net income. But dirty accounting is not a clean solution to dealing with transitory items, for many more are left in the income statement. Still, the point is well taken: comprehensive income reporting must be accompanied by classifications in the income statement that distinguish earnings components valued differently by shareholders.[9] I take up this point when discussing financial reporting quality.

**Hidden Expenses.** The loss of shareholder focus is nowhere more evident than in the accounting for share issues that involve operations. Accounting for stock compensation, prevalent during the bubble, is most disturbing. One of the fundamental principles in finance says that buying and selling shares in an efficient market does not add value (they are zero net present value transactions). Correspondingly, issuing shares at less than fair market value – selling a share for less than it is worth -- loses value for the current shareholders. Comprehensive income must include the loss if it is to report faithfully value gained and lost for shareholders.

GAAP violates this precept. Stock options are, of course, a legitimate way to motivate management, the shareholders' employees, to produce revenues. But expenses must be matched against revenues to report (comprehensively) the net gain to shareholders. The difference between the market price and exercise price upon exercise of options is the expense to the shareholder and compensation to the employee. The employee certainly sees it as such, but not GAAP. The IRS sees it as such, giving a tax deduction to the issuer (for non-qualifying options), but not GAAP. By not recognizing the expense, but recording the tax benefit, GAAP is perverse. Firms report an increase in shareholders' equity from the exercise of options, rather than a net decrease, with the tax benefit recorded (inappropriately) as an issue of shares (in paid-in capital). Further, the benefit is included in cash from operations ($2.5 billion for fiscal 2000 for Cisco, $5.5 billion for Microsoft, $0.8 billion for Intel, etc.). So a tax benefit is recognized in cash flows without the matching grossed-up expense. Firms boost reported cash flow from operations by issuing options, so if an analyst who is doubtful about the integrity of accruals and defers to cash from operations, she finds that number corrupted also.

Clearly, this GAAP accounting promotes pyramiding. A firm that substitutes stock compensation for cash compensation increases reported earnings, an "egregious" way to inflate earnings, as Jeffrey Skilling, former Enron CEO, testified to Congress.[10] Given the accounting for tax benefits, a firm can also pyramid cash flow from operations.

The FASB, of course, attempted to deal with the problem in Statement 123, *Accounting for Stock-Based Compensation,* but was frustrated by politicians who served interests other than shareholders. The International Accounting Standards Board (IASB) proposed a rule in July, 2002 requiring the expensing of stock option compensation. Both boards took the position that an expense should be recognized at grant date (recommended but not required by the FASB). But

grant date accounting does not solve the problem, even if firms follow Boeing Company and Winn-Dixie Stores in recording the expense to income (as many are now doing). Shareholders lose at grant date only in expected terms, requiring recognition of a contingent liability. If options lapse, no value is lost. (One can imagine firms reporting a pro forma number before compensation expense with the argument that options may never be exercised.) Shareholders lose more in (expected) value as options go into the money.

Under Statement 123, there is no settling up: if options lapse, the expense recorded at grant date is not reversed, leaving a permanent difference between price and book value; if options are exercised, no further cost to shareholders is recognized. Further, if the tax benefit from exercise is included (appropriately) in comprehensive income, income is actually inflated in the exercise year. The fudge, of course, is to treat the tax benefit as proceeds from the share issue, but that treatment ventures on the absurd (and certainly confuses value added from operations with share issues).

The appropriate accounting (for shareholders) recognizes a contingent liability at grant date for the amount of the option value (and a corresponding deferred compensation asset), then marks the liability to market as the option goes into the money, with a final settling up to expense on exercise. (But see point 6 in this section below.) Amortization of deferred compensation follows the principle of matching costs to revenue (over a vesting period, for example). This accounting is, effectively, that for Stock Appreciation Rights that differ from stock options in form, but differ little in economic substance. The wealth realized by management from options in recent years, but not reported in the accounts, is appalling to the new-technology shareholder who often was left with nothing. The failure was a cultural

phenomenon. Neither Congress, regulators, corporate boards, nor accountants kept in mind the notion of faithfully reporting to shareholders.

Congress may be coming to its senses on stock compensation, but a similar criticism applies to GAAP accounting for all contingent equity contracts – options, warrants, convertible bonds, and convertible preferred stock. Consider the case of a convertible preferred share paying no dividends but with generous conversion terms. From the common shareholders point of view, preferred stock is debt. However, no expense is recorded in income available to common before the conversion and no loss is recorded under GAAP on conversion. So it appears that the borrowing came with no cost. Textbooks once talked of the "market value method" for conversions, a method that records the loss to shareholders. GAAP practices the "book value method."

**Put Options.** A particular abuse arises when firms – like Microsoft, Intel, and Dell – write put options on their own stock. Dell, in effect, runs two types of operations, one involving computer sales, the other trading these options. For a few years, these options lapsed, so shareholders gained. GAAP, however, reports the gains as an equity issue, not comprehensive income. But for fiscal year ending February 2, 2002, options were exercised, and Dell repurchased 68 million shares at an average price over $44 (a total of $3.0 billion) with the stock trading around $25 (a total of $1.7 billion), for loss of about $1.3 billion, not recorded. Del recorded the full $3.0 billion as a stock repurchase; the appropriate entry records the repurchase at market value of $1.7 billion, with a loss recorded for the difference between market value and the amount paid for the repurchase. That is, apply the "market value method." Shareholders lose when the price of their shares drop, but the firm levers the losses if it has written put options. However, the loss is not reported under GAAP. Options of this type may serve as hedges (against exercise of employee

stock options for example), but the effect of the outcome of both positions should be part of comprehensive income.

**2. *Debt versus Equity***

The FASB has been grappling with the issue of defining debt and equity. Their problem seems to arise because the Conceptual Framework defines a liability as arising from the *entity's* obligation to transfer assets to others in the future. Correspondingly, equity is defined as the residual interest *in the assets of the entity* that remains after deducting liabilities. The definition takes an entity view. Settling contingent equity claims with the issuance of common shares does not require a use of the firm's assets, so the entity view does not see a contingent equity as a liability. Preferred stock is not debt under an entity view. The holders of outstanding common shares – with their proprietary perspective -- see it differently. For valuing the common share, a liability (to the common shareholders) arises from an obligation, created by the firm (management), to transfer shareholder wealth to others.

**Contingent Equity Securities**. Settling contingent equity claims involves a loss to shareholders because shares are issued for less than fair market value. Prior to settlement in common shares, these claims are contingent liabilities, to be booked as such if they satisfy measurement criteria (of the type in FASB Statement No. 5). The liability for convertible debt and convertible preferred stock is understated by GAAP (and losses on conversion are not recognized). Secured equity-linked loans (sometimes classified as nonrecourse!) are similar, as they call for a contingent issue of stock, possibly at much reduced share prices from when the loan was negotiated, resulting in a loss for shareholders.

Put options on the common stock also create a contingent liability for common shareholders usually not recognized by GAAP. At the end of its 2002 fiscal year, Dell had put

obligations for 51 million shares at an average striking price of $45. With the stock trading at $26, these options were under water by over $1 billion. Unless hedged, this represents a liability for the common shareholder to purchase stock well below market price. If a firm sets up an off-balance sheet partnership, issues stock to the partnership along with put options on the stock (as with some Enron partnerships), and the partnership, in exchange, assumes some of the firm's debt, it appears that the firm has reduced its obligations. GAAP obscures the indebtedness of the common shareholder, so promoting pyramiding of off-balance sheet debt. Appropriate accounting places the debt – the put obligation -- back on the balance sheet as the put options go into the money and the shareholders become liable.

**Knowledge Liabilities.** During the bubble, accounting was faulted for not recognizing knowledge assets, particularly for new technology firms (more on this below). But it was often overlooked that GAAP is remiss in not recognizing knowledge liabilities. Knowledge resides with the human capital of individuals; it is not necessarily the asset of the firm, nor the shareholders. Firms acquire knowledge by buying it, from engineers, scientists, and inventors, and knowledge must be paid for. To what extent does Microsoft's knowledge belong to the shareholders or to the employees?

In recent years, firms acquired knowledge by offering stock options. From the shareholders' perspective, employee stock options create a liability to issue stock at less than market value – to pay for the knowledge from which shareholders benefit -- and the amount of this liability increases as options go into the money, to be settled upon exercise. GAAP does not recognize this liability (and the corresponding knowledge cost). Microsoft surely has knowledge assets, but its offsetting option overhang – its knowledge liability – has been enormous. What is its *net* knowledge asset?

### 3. *Prices in Financial Statements*

If accounting is to challenge price bubbles, it must not be influenced by bubble prices. Investors look to financial reports to assess whether stocks are fairly priced, so want measures that are independent of prices. If the accounting reflects that pricing – particularly inefficient pricing – the investor loses an anchor. How well does GAAP perform on this criterion?

**Mark-to-Market Accounting for Equity Investments.** Mark-to-market accounting defers to market prices to measure assets in the balance sheet. For assets that involve borrowing and lending, marking to market is reasonable, for most people see debt securities (traded in liquid markets) as fairly priced. (Thinly traded instruments raise questions about "fair value," of course.) For equity securities, mark-to-market is appropriate for trading securities where the trader is making money from betting on price movements. But for investment in the operations of other companies, mark-to-market is dangerous. Witness the large investment gains reported by firms such as Cisco and Intel during the bubble of 1997-99, compared with the losses reported during 2000-01 as the bubble burst. Better to report shares of profits in those operations, using the equity method or proportional consolidation. (Many of the firms for which large gains were recognized during 1997-99 were reporting GAAP losses that anticipated subsequent outcomes.) Cost basis for held-to-maturity securities avoids the problem, but then the statements give no indication of the performance of investments.

**Pension Assets Gains.** GAAP pension expense is net of gains on pension assets. The gain is calculated as the expected rate of return on the assets multiplied by the market value of pension assets. If the market values of pension assets are bubble prices, earnings reflect the bubble. If a firm's pension fund holds the firm's own shares (they are, by law, limited to 10 percent of the fund), pension expense even includes gains in the firm's own shares. An unperceptive analyst

who tries to price a firm on the basis of GAAP earnings gets a bubble price; the circularity feeds the bubble. The pyramiding is exaggerated if firms also increase expected rates of return because of recent realized return experience in their pension portfolios (as, indeed, they have). During the late 1990s, pension gains were a significant part of earnings reported by firms like General Electric and IBM, due partly to bubble prices and increases in expected rates of returns.[11] These gains proved to be unsustainable as the bubble burst.

**4. *Gains and Losses from Trading in the Firm's Shares***

Shareholders make money by buying and selling the firm's shares in the stock market. But the firm also buys (repurchases) and sells (issues) shares in the stock market on behalf of the shareholders. As a shareholder, I can trade shares myself, or I can have my fiduciaries in the firm do it on my behalf.

If markets are efficient, issuing and repurchasing shares does not add value. Just as a shareholder trading in an efficient market does not expect to earn an abnormal return, so a share transaction by the firm is a zero net present value transaction. Firms add value only from business operations. However, inefficient markets provide the opportunity to issue shares at more than fair value and repurchase them at less than fair value (and to make money from options on the stock).[12] Stock market bubbles provide a particular opportunity.[13] With inside information and anonymous trading this ability is enhanced, even if stock prices are efficient with respect to public information.

GAAP treats all share transactions at market value as if they were at fair value (even those issued at less than market value in exercise of employee stock options!), so comprehensive income does not reflect gains or losses from these transactions. This is not to suggest that GAAP should require such recognition – the measurement problems are considerabe – but it does mean

that we must recognize an imperfection in the accounting. Residual earnings and earnings growth valuation models, as applied in practice and in academic research, forecast GAAP earnings. These models misvalue the equity because they ignore potential gains and losses on these transactions; the shareholder who buys future GAAP earnings (and an analyst who forecasts GAAP earnings) misses an aspect of value that can be generated (or lost) for shareholders.[14]

Accounting regulation and disclosure mandates are designed to minimize the ability of firms to make gains from share issues and repurchases, by promoting efficient markets in which these trades are at fair value. Poor accounting and disclosure enhances that ability: use poor accounting to promote earnings and price momentum, then issue shares. The sequence leads to even more degraded earnings because the gains from share issues are not recognized.

**5.** ***Accounting for Value from Mergers and Acquisitions***

A case in point is the issue of shares in mergers and acquisitions. Firms potentially add value in acquisitions in three ways. First, so-called synergies come into play. In an efficient market this is the only source of value. But, second, if the acquiree's shares are underpriced in the market, the acquiring shareholders add value; they find a bargain. Third, if the acquirer's shares are overpriced in a deal involving an exchange of shares, the acquiring shareholders add value; they use their own overvalued shares as "currency" in the transaction. The exchange ratio captures all three features.

GAAP earnings do not include the last two sources of value, reasonably so given the measurement difficulties. The effect must be anticipated through future denominator effects on earnings per share rather than numerator earnings. There are, however, second-order effects on GAAP earnings. Firms make acquisitions during bubbles, as the spate of acquisitions in the late 1990s attests. If a firm pays a bubble price for another firm, it overpays, and application of FASB

Statement 142 (in good faith) subsequently recognizes the overpayment with an impairment charge against earnings. However, if the acquiring firm makes the acquisition with its own overvalued stock as currency, such that the exchange ratio is the same as if both shares were efficiently priced, it did not overpay, yet the impairment charge is the same as if the firm had overpaid. Indeed, acquiree shareholders might demand a higher price if they perceive the currency they are to receive to be overvalued and wish to remain long-term shareholders, so the impairment then represents a decline in value of the acquirer's own stock. Impairment of goodwill is appropriate from an asset measurement (balance sheet) point of view, for the accounting has booked a bubble price into the balance sheet. But the loss on impairment is not necessarily a loss of shareholder value. What are we to make of AOL Time Warner's expected $54 billion write off of goodwill last year? Is it not possible that, in the takeover of Time Warner by AOL during the bubble, AOL shares (at over 100 times earnings at the time) were more overvalued than those of Time Warner? Sorting out, from the accounting, whether that merger was a successful one is not an easy task. It is hard to find an anchor. Nor is the appropriate accounting remedy clear (at least to me).

**6.** ***Back to Employee Stock Options***

The issuance of stock to employees in exercise of stock options is a loss to shareholders if the issue is at fair value, and should be recognized as such, as argued above. Suppose, however, that options are exercised at bubble prices? If the market price exceeds fair value, not all of the difference market and exercise prices of shares issued amounts to a loss to shareholders. Expensing the difference as compensation builds the bubble into the expense. The number of shares sharing in future earnings is the same as if they had been exercised with market prices at fair value. One might argue that the issued shares at bubble prices could have been used to raise

cash (to pay wages, for example), so an opportunity cost arises from the loss of a gain from a share issue. But this assumes a limit of the supply of shares that can be issued, or some elasticity of stock price with respect to the supply of shares.

The dilemma for measuring the cost of stock compensation is clear. Should the accountant try to develop cash equivalent compensation measures (without reference to prices) as a matter of accrual accounting? Recognizing contingent liabilities for the outstanding option overhang based on bubble prices also brings bubble prices into the financial statements. Take this point, together with the point above on impairment of goodwill purchased during bubbles, and one concludes that accounting has inherent difficulty in dealing with value effects on shareholders during bubbles. That's a shame, because we want accounting to puncture bubbles.

**7. *GAAP Inflates Rates of Return and Earnings Growth***

Investors buy earnings, and they pay more for earnings growth. They also look for high rates of return on investment. But they should only pay for earnings growth and returns that add value. Accounting, however, has two features that also induce earnings growth and rates of return, with no value added: conservatism and leverage can grow earnings. What follows is not a recommendation for changing GAAP, but a commentary on the features on GAAP that an investor must be aware of in using the product. *Caveat emptor*.

**Conservative Accounting.** Conservative accounting – maintaining low asset values in the balance sheet – is sometimes view as quality accounting. But consistent application of conservative accounting creates higher book rates of return and earnings growth with no economic justification.[15] Pooling accounting for acquisitions (no longer allowed) is an example. It creates more earnings on low book values, and, if perpetuated with more and more poolings, creates an earnings pyramid that may not be related to value. But any accounting method that

keeps assets off the balance sheet, or carries assets at low amounts, can result in pseudo growth (because there are fewer assets to expense later). The investor is protected from misreading this growth by filtering forecasted rates of return and earnings growth through a residual income valuation model or an Ohlson and Jeuttner-Nauroth earnings growth model, for these models accommodate this feature of the accounting. But, without that discipline, the investor can misread growth.

Conservative accounting has another feature that can have adverse effects on earnings quality. The unrecorded assets are effectively hidden reserves that can be released to inflate earnings temporarily by slowing investment. The effect is perverse: less investment creates more earnings. LIFO valuation of inventory is conservative accounting, the LIFO reserve is an unrecorded asset, and the reserve can be used to inflate earnings with LIFO dipping. The same phenomena can arise in any application of conservative accounting with immediate expensing or rapid depreciation.[16]

**Leverage.** Standard formulas show that increased borrowing relative to equity typically creates higher return on equity and creates earnings growth.[17] Yet, if borrowing is a zero net present value activity, value is not created. Add stock repurchases (at fair market value), financed by borrowing, and one levers up expected accounting returns and growth in earnings and earnings-per-share considerably.

Investors must be careful in buying the higher expected earnings from leverage. They buy higher earnings but take on higher risk. The extensive stock repurchases financed by borrowings in the 1990s created earnings growth but also riskier balance sheets. Financial reporting can help the investor isolate the effect of leverage by clearly separating financial activities from operating activities in the financial statements, for it is growth in operating income (before the effect of

financing) on which the analyst needs to focus. For example, interest is a financing expense, so the GAAP practices of capitalizing interest on construction into operating assets, aggregating interest income with operating income, and including interest in cash from operations are not helpful.

**A Secure Anchor: The Good Features of GAAP Earnings**

**1. *Prices not in Financial Statements***

During the technology boom, commentators who justified high stock prices relative to book values assailed accounting for not recognizing the intangible assets of the Information Age. One saw calculations where analysts measured the value of intangibles as the difference between the value of tangible assets (with some premium applied) and (bubble) market values for the whole firm. With the exceptions noted above, GAAP does not make this mistake; GAAP does not bring prices into financial statements. Quality accounting recognizes that market prices are inherently speculative, for they are based on beliefs about the future. Losses reported for dot.coms while stock prices soar must be respected.

**2. *Revenue Recognition and Matching***

Shareholders buy future earnings and thus speculate as to what those earnings might be in setting stock prices. But sound accounting understands that the shareholder is best served if you don't mix what you know with speculation about what you don't know. This restatement of the reliability criterion, embraced under the FASB's *Conceptual Framework*, is also a maxim of fundamental investing that separates information by reliability class.[18]

Sound accounting recognizes that a firm only adds value for shareholders if it, first, gets customers and, second, receives more value from customers than is given up in servicing customers. Shareholder value is added in the stock market, but the source of that added value is

value added from the firm's trading with customers in product markets and suppliers in the input markets. It is this source of value that the shareholder wants to understand: how much was earned this period from trading with customers and suppliers? The investor uses this hard information, uncontaminated by speculative information, to speculate on the firm's ability to generate earnings from customers in the future.

We are talking, of course, of revenue recognition and matching, the hallmark of the traditional financial reporting model. Regrettably, the principle has been abused in practice. Excessive write-downs, merger charges, cookie jar reserving, front-end revenue recognition, and under- or over-estimating of allowances for credit losses, warranties, and deferred tax assets (to name a few) – with the associated intertemporal shifting of earnings – are failures of management, directors, and auditors in applying basic accounting, not a failure of principle. Our auditing and corporate governance institutions need to enforce unbiased revenue recognition and matching. Society fines and even incarcerates transgressors against the revenue recognition principle, so strong is the imperative.

This view maintains that quality earnings are an imperfect indication of price. Earnings report value added from trading with customers. Stock prices presumably recognize this value added; however, prices also speculate on value to be added from future customers. Thus a quality measure of earnings is not necessarily that which correlates perfectly with stock returns (as many academic studies would have us believe), for correlation with returns is, in part, correlation with changes in speculative beliefs.

These move to more and more "fair value" accounting -- currently under discussion among standard setters – should proceed with care, particularly for non-financial institutions. The danger is that we lose the information from revenue realization and matching and substitute

(possibly bubble) market prices or biased and imprecise fair value estimates. Historical cost accounting provides information (about the profitability of trading with customers) to inform about prices. Fair value accounting often gets the information from prices, so may destroy the ability to inform about prices.

**3. *Accrual Accounting***

Accounting does, of course, invite some speculation in the estimation of accruals that are needed to match revenues with expenses. This is the tension in earnings measurement: quality earnings require accruals, but accruals are estimates that can be poor quality. Auditors and directors are a check (ideally), but some expenses – like amortization and depreciation – are intrinsically hard to measure. For some costs, there may be no accounting solution. Expensing R&D expenditures, for example, results in (gross) mismatching. But to capitalize and amortize may just introduce arbitrary amortizations into the matching. The reliability criterion overrides. Be it as it may, accounting quality is the less for the inability to measure.

Measurement problems call for responses. *First*, accountants must work on the technology of measurement to improve the product. Introducing "technical feasibility" criteria to the capitalization of R&D, like those for software development, and developing schedules for R&D amortization rates from experience, like those for tangible assets, are areas worth exploring. *Second*, consideration should be given to deferring to management and auditors, who know more of the operations, to come up with objective measurements (of amortization rates, for example). This requires a certain faith in the willingness of shareholders' agents to provide a "true and fair" view, but the FASB seems to have taken that leap in relying on impairment testing of goodwill in FASB Statement No. 142. "Bright line" rules are a last-resort response to the failure of auditing, for those rules (for amortization, for example) often do not reflect

economic reality. *Third*, financial disclosure should include information to help evaluate accruals -- indicating, particularly, the effect on current earnings of changes in estimates for the past accruals.[19] *Fourth*, earnings should be supplemented with disclosures of other information that helps shareholders forecast the future earnings they are buying. This is the substance of "value reporting." It, too, is necessarily speculative. *Fifth*, analysts and investors must recognize the accounting imperfections, and understand where accounting ends and (speculative) analysis begins. They must appreciate what we know and what we don't know.

**4. *Knowledge Assets***

The traditional financial reporting model was assailed during the bubble for not recognizing the value of knowledge assets. No one knows what the value of a knowledge asset is (or even precisely what it is!). One suspects that commentators were imputing these assets from bubble prices. Recognizing the value of these assets in the balance sheets would be pure speculation, and subsequent fuzzy amortization of a fuzzy number would destroy information in matching. Do we really want to entertain the idea that Dell Corporation should recognize the value of its supply chain, its direct-to-customer strategy, its culture and organization on its balance sheet – and then amortize these assets to income? Or do we want to relegate such notion to fantasy, ill-conceived ideas of a bubble mentality? Do we rather not want to stick to the (Industrial Age) notions of revenue recognition and matching so that the value of such assets is recognized when a firm gets a customer and the associated expenses are also recognized to get a measure – accounting income—of value added from these assets?

Financial statements actually do report on knowledge assets, not in balance sheets, but (eventually) in income statements. Knowledge assets have value because they lead to earnings from customers. Earnings are reported, but only as customers are booked. Accounting confirms

whether investor's speculation about the value of knowledge assets is justified, but does not engage in the speculation. Baruch Lev has it correct: one infers the value of knowledge assets (imperfectly) from earnings, not from prices.[20]

## The Quality of Financial Reporting

Financial statements report details beyond earnings calculations – line items and footnote information, in particular. However, the focus on buying future earnings also guides the broader product features of financial reporting. Current earnings cannot be a sufficient statistic for forecasting future earnings. Indeed quality earnings, if they are to be comprehensive (and so include all effects of operations on the shareholder), inevitably contain transitory items. Accordingly, financial reporting is judged on how well it aids the investor to determine how the future earnings she is buying will be different from current earnings. In the parlance of analysts, quality financial reporting identifies sustainable earnings.

### GAAP is Forward Looking

The Big-5 letter after the Enron collapse echoed the complaint during the bubble that accounting is "backward looking." The words "historical cost" suggest so, but research, from Ball and Watts (1970) and Beaver (1970) onwards, has consistently shown that current earnings, on average, are an indicator of future earnings; by following the revenue recognition and matching principle, accrual accounting allocates revenues and costs to periods to yield a measure of current income that forecasts underlying profitability for the future. The losses of dot.com firms were forward looking; those losses reported that, in the absence of further information about improvements in profitability, the dot.com business model was very speculative. Further, that information would have to be hard enough to predict *accounting* profits within a couple of years.

Of course, current earnings are not a sufficient statistic for future earnings. But research has consistently shown that wider financial statement analysis aids in forecasting. In effect, the wider information in financial statements provides a commentary on the quality of earnings and serves to correct a forecast of future earnings that relies on current earnings alone. See Ou and Penman (1989), Lev and Thiagarajan (1993), Abarbanell and Bushee (1997), Lipe (1986), Sloan (1996), Fairfield and Yohn (2001), Fairfield, Whisenant and Yohn (2001), Chan, Chan, Jagadeesh and Lakonishok (2001), Thomas and Zhang (2002), and Penman and Zhang (2002a, 2002b) for examples.

Financial statement analysis aids forecasting because of a (quality) structural feature of the financial reporting model. Focusing on operating income (that is, net income adjusted for the after-tax effect of net borrowing in financing activities), it is always the case, if income is comprehensive, that

Operating income = free cash flow + change in net operating assets.

This relationship is implemented through double entry accounting: one cannot affect earnings without affecting something else in the financial statements; accounting for earnings leaves a trail, and sound financial analysis follows that trail by investigating the investments and accruals that determine the growth in net operating assets. If a firm reports unusual growth in net operating assets or unusual changes in its components (by type of assets and by cash versus accrual components) its earnings are likely to be of poor quality. Most of the research in the above papers analyzes one aspect of changes in net operating assets. Figure 1, from Penman and Zhang (2002b), shows that, synthesizing the financial statement analysis in many of the above papers, one predicts differences in one-year ahead return on net operating assets (before

extraordinary and special items) of 4.1 percent on average (that's large!) for firms initialized on current return on net operating assets. GAAP statements are forward looking.

Indeed, research shows that such analysis predicts stock returns. That is (a risk interpretation aside), investors do not appreciate the forward-looking information in the financial statements. The traditional financial statement model is richer than it is given credit for. How richer might it be if there were adequate disclosure to carry out an appropriate analysis?

**GAAP Disclosure**

Unfortunately, disclosure in U.S. financial statements frustrates the analyst. Here are some consumer complaints and requests:

- The income statement is a disgrace. Often it is reduced to a few lines.
- There is little detail on S G & A expense. This item is typically 20 percent of sales, but there is little breakdown on the multitude of sins that it covers. Firms even credit gains from asset sales to S G & A. It would seem a simple matter to report executive compensation, gains on pension fund assets (distinguished from service costs), gains and losses from asset sales, and reversals of restructuring charges (to name a few) as separate lines on the face on the income statement. With before-tax operating profit margins typically less than 12 percent of sales, an investor's request to report any expense greater than 2 percent of sales -- along with more sensitive lesser items such executive, director and auditor compensation -- seems reasonable.
- An analysis of net revenue, a reconciliation of gross revenue to net revenue, and a breakdown of booked and deferred revenue is needed.

- Highlight operating income, cleanly distinguished from financing income, so the reader can see where growth is coming from. Correspondingly, operating and financing assets and liabilities should not be aggregated, so the reader can determine the return on operating assets.
- Transitory items need to be clearly displayed on the income statement, so the reader can get an understanding of core operating earnings.
- The obscurity introduced by consolidations is troubling. The reader cannot get a clear picture of how assets and liabilities are structured – through joint ventures, alliances, special entities, R&D partnerships and other "networking" relationships. Transparency can be improved with organizational diagrams, disaggregated reporting, and proportionate presentations, for example.
- A presentation of how current earnings are affected by changes in estimates in prior periods is needed. This table would include amounts bled back to earnings from reversals of restructuring charges, dipping into cookie jar reserves, reducing deferred tax asset allowances, and bad debt and loan loss experience relative to prior estimates.[21]
- Also needed is a discussion of accruals for which there is particular uncertainty and a ranking of accrual estimates by their perceived uncertainty, giving the reader a better sense of what numbers are "hard" and "soft" and a better appreciation of the likelihood that earnings will be sustainable.
- Include a "quality of earnings statement" by management, supplemented by a statement of significant uncertainties by auditors, would place the obligations for quality reporting where they belong.

Relative to the difficult problems of accounting measurement, these remedies are easy to implement for a manager or auditor who has the shareholders' interest at heart and a regulator desiring to promote efficient capital markets.

**Cash Flow Reporting**

As accrual accounting contains tentative estimates (and can be manipulated), investors often defer to cash flow for confirmation. High accruals-to-cash flow raises a red flag; indeed, Sloan (1996) shows that accrual components of income are less persistent than cash flows. Unfortunately, GAAP rules result in confused measures of cash from operations and free cash flow from operations in the cash flow statement.

GAAP cash flow from operations includes interest, so it confuses cash flows from operations with the cash flows from financing operations. Under a recent EITF ruling, GAAP cash flow from operations includes tax benefits from exercise of employee stock options that are not even in net income. As discussed above, there is no recognition of the matching implicit cash compensation expense from the exercise that produced the tax benefit. Under GAAP, cash from investment activities and thus free cash flow (cash from operations minus cash investment) include investment in and liquidations of financial assets. Thus a firm that sells its T-bills because cash from operations is declining is seen as increasing free cash flow from operations. Trading in financial assets (and paying interest) are financing activities and should be classified as such. For elaboration, see Nurnberg (1993), Ohlson (1999), and Penman (2001a, Chapter 10).

## Conclusion: The Tale of a 1990s Firm

To conclude, consider the hypothetical case of a 1990s firm that summarizes many of the points made above. That firm began the 1990s announcing a transformation from an old economy manufacturing company to an information age company. Value was to be "generated"

from “knowledge” and “brand building.” The stock market greeted the large estimated restructuring charges during the recession of 1990-1991 as positive steps for transforming the company. The firm invested in brand building with an intensive two-year advertising campaign. It boosted research expenditures, but through an off-balance sheet R&D shell to which the firm sold expertise, so recording revenues. To acquire expertise, the firm attracted a team of chemistry and engineering PhDs and marketing MBAs with successful careers on Madison Avenue, with grants of stock options rather than cash, to “share in the upside potential of this dynamic firm.” Management was also compensated with stock options. Investment bankers advised financing with convertible bonds and an issue of preferred stock, with a low dividend rate but generous terms for conversion to common stock, to “minimize the impact on earnings.” The traditional well-funded defined benefit plan was retained and the valuation allowance on the resulting deferred tax assets was increased at the time of the restructuring. As a matter of accounting policy, the firm decided to take a conservative stance. Revenue recognition would be delayed as much as possible (with deferred revenues recognized), and allowances against revenue would tend towards the high end. The CEO, supported by the audit committee and board, demanded one thing: “We will never engage in aggressive revenue recognition.”

In terms of delivering GAAP earnings, the strategy paid off well, and the market rewarded the reported earnings growth handsomely, increasing the P/E ratio from 13 in 1993 to 28 in 1996 and 37 in 1999. Ebitda, the pro forma number that analysts preferred and the firm emphasized in press releases, grew even faster. Privately, management admitted that the stock price was benefiting from a bubble, but felt they were to be congratulated for “unlocking value.” They would do all in their power to satisfy the market’s expectations. They stuck to their non-aggressive revenue recognition stance. But, to further earnings growth, they made numerous

acquisitions, increasing earnings further. Some of these acquisitions were for less than 20 percent ownership interest and were subsequently marked to market, some were poolings, and others were purchases with a write down of the acquirees' tangible assets prior to merger and sizable merger charges. Many of the acquisitions were of firms with forward P/E ratios over 80 when the firm's own stock traded as less than thirty times forward earnings. Earnings growth was supported by a reduction in advertising outlays after the initial campaign, bleeding back the earlier restructuring charges, and recognizing some previously deferred revenue. Noting that IBM increased its required return on pension plan assets to 10 percent from 7.0 percent in the early 1980s (even though interest rates had fallen), the firm did likewise. It also invested excess cash in the pension fund, to over-fund a plan where key employees were beneficiaries. Combined with the large appreciation in the value of pension assets from rising stock prices (partly due to a 10 percent holding of the firm's own shares), 24 percent of pre-tax earnings were gains on pension assets, and pension expense was negative. With the rising stock market, the firm sold off investments where gains had been highest, reporting these realized gains in "other income." Unrealized losses were cherry-picked into other comprehensive income in the equity statement. Gains on asset sales were credited to SG&A expense. The firm began a regular program of stock repurchases, financed by borrowing, increasing earnings-per-share growth. These repurchases were at P/E ratios over 30.

The firm met analysts' earnings expectations every quarter from 1995 to 1999. The quarterly conference call was a joy to all as the firm proudly pointed to the drop in SG&A expense and compensation expense as a percentage of sales. Analysts at the Wall Street firms maintained strong buy ratings, pleasing their investment banking colleagues who fought hard for the firm's aquisition business. Talking heads on the financial networks raved. They pointed to

the firm's "knowledge assets," its "structural capital," and its "entrepreneurial culture." Managers reinforced this chatter with talk of the "the weightless corporation" that de-emphasized tangible assets, and of the "disintegrated corporation." They were invited to speak at academic conferences on intangibles where they were gratified to see academic papers that showed stock returns correlated with clicks and page views. More stock options were granted as a reward for these achievements. Graduating MBAs saw the firm as a place to be. Some commentators pointed to the large option overhang, but the firm responded by pointing out that it was repurchasing stock, albeit at very high prices, to maintain shares outstanding at the same level, "to prevent dilution." So confident were the managers that they wrote put options on the firm's stock to private investors for which the firm received handsome premiums. With encouragement from its bankers, a special entity was set up to assume some of the firm's growing debt from financing stock repurchases. This entity was issued stock in the firm, in part consideration for a note, with put options on the stock to protect the entity "in the unlikely event" of the firm's condition deteriorating.

The story does not have a happy ending. The decade ended and the stock market bubble burst. Sales growth began to slow. The firm's auditors insisted that residual values on sales-type lease receivables, predicated on the assumption that the technology leased would endure, be revised downward. In 2000 the firm maintained some growth in earnings on a decline in sales by booking realized gains on some appreciated investments, by reducing deferred revenue, and revising its deferred tax asset allowance. Managers also pointed to "robust" cash flow from operations (though closer inspection would reveal that 45 percent of this cash flow was tax benefits from the exercise of employee stock options). The market value of the firm's equity

investment portfolio fell dramatically as the bubble burst, but, in accordance with GAAP, the unrealized losses were booked, not to income, but to equity.

But, in 2001, the put options were called after a dramatic drop in the firm's stock price. To raise cash for the consequent stock repurchase, the firm was forced to sell off some losing investments, bringing previously recorded unrealized losses into the income statement. The considerable debt raised to finance share repurchases was downgraded, increasing borrowing costs. Equity-linked loans were called. The obsolescence that had led to the write-down of lease receivables, also caught up with inventory that was also written down. Following most other firms, the expected return on pension plan assets was reduced because of lowered expectations of stock returns, so reducing earnings.

With the drop in stock price and their options under water, employees who had the knowledge that was key to the firm's product development began to leave. In response, the firm repriced some options, taking a charge to earnings which, along with increased cash compensation to replace options, depressed earnings further. So desperate was the CEO to retain key employees, he promised privately that, to avoid repricing charges under FASB Interpretation No. 44, he would "talk the stock price down" with bad news over a six month period, so establishing a low strike price for fresh option grants while honoring the GAAP "bright line." (U.S. Senators who had vigorously opposed the FASB's attempt to account for stock options in the early 1990s were said to be "disturbed" when this practice was mentioned in subsequent congressional hearings.) In the second quarter of 2002, the firm took a large impairment charge on goodwill acquired during the 1990s, followed by a large restructuring charge in the third quarter as auditors realized prior depreciation charges had been too low; obsolescence was a

factor, but the firm had also invested in too much capacity through its acquisitions and its pursuit of ebitda.

This is partly a tale of management folly. It is partly a tale of speculation disappointed. It might also be a tale of conflicted individuals gaming the system. It is not a tale of fraud (technically defined). One might have sympathy for human behavior that is carried away with the prevailing speculative culture, although less forgiving of the gaming. However, this is also a tale of financial statements not checking this behavior. This firm's accounting was in accordance with GAAP, as annual audit certificates stated. Some of the poor accounting was due to prescriptions of GAAP, some to using GAAP to draw a picture of earnings growth. More proactively, some of the behavior was induced by GAAP. The momentum in GAAP earnings reinforced the stock price bubble.

The tale is also one of analysts who adopted speculative analysis rather than fundamental analysis. Had they pursued the latter, they would have been frustrated by the GAAP quality but, with an understanding of the deficiencies of the GAAP, they would have identified the quality aspects of the traditional financial reporting model on which they could anchor.

Shareholders, whom the endeavor is meant to benefit, lost. They understood that management and employees had done well from their options. Investment bankers had done well. Analysts had become stars of the new age. Auditors had collected their fees, with considerable consulting fees to boot. But, looking at their post-bubble stock price, shareholders questioned what value their agents had generated for the legal owners. Indeed, they asked, what did the firm really earn in the 1990s.

## References

American Accounting Association Financial Accounting Standards Committee. 1997. Comprehensive income. *Accounting Horizons* 11 (June): 120-126.

Abarbanell, J. and B. Bushee. 1997. Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research* 35 (Spring): 1-24.

Baker, M., and J. Wurgler. 2002. Market timing and capital structure. *Journal of Finance* 57 (February): 1-32.

Ball, R., and R. Watts. 1972. Some time series properties of accounting income. *Journal of Finance* 27 (June): 663-682.

Beaver, W. 1970. The time series behavior of earnings. *Journal of Accounting Research* 8 (Supplement): 62-99.

Bens, D., V. Nagar, D. Skinner, and F. Wong. 2002. Employee stock options, EPS dilution, and stock repurchases. Unpublished paper, University of Chicago and University of Michigan.

Chan, K., L.Chan, N. Jagadeesh, and J. Lakonishok. 2001. Earnings quality and stock returns: the evidence from accruals. Working paper, National Taiwan University and University of Illinois at Urbana-Champaign.

Fairfield, P., J. Whisenant, and T. Yohn. 2001. Accrued earnings and growth: implications for earnings persistence and market mispricing. Unpublished paper, Georgetown University.

Fairfield, P., and T. Yohn. 2001. Using asset turnover and profit margin to forecast changes in profitability. *Review of Accounting Studies* 6 (December): 371-385.

Greenwald, B., J. Kahn, P. Sonkin, and M. van Biema. 2001. *Value Investing: from Graham to Buffet and Beyond*. New York: John Wiley & Sons, Inc.

Gu, F. and B. Lev. 2001. Intangible assets. Unpublished paper, New York University on **www.baruch-lev.com**.

Hendriksen, E. 1970. *Accounting Theory*, revised ed. Homewood, Ill.: Irwin.

Ikenberry, D., J. Lakonishok, and T. Vermaelen. 1995. Market underreaction to open market share repurchases. *Journal of Financial Economics* 39: 181-208.

Jung, K., Y. Kim, and R. Stulz. 1996. Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics* 42: 159-185.

Lev, B., and S. Thiagarajan. 1993. Fundamental information analysis. *Journal of Accounting Research* 31 (Autumn): 190-215.

Lipe, R. 1986. The information contained in the components of earnings. *Journal of Accounting Research* 24 (Supplement): 37-64.

Lundholm, R. 1999. Reporting on the past: a new approach to improving accounting today. *Accounting Horizons* 13 (December): 315-322.

Nurnberg, H. 1993. Inconsistencies and ambiguities in cash flow statements under FASB Statement No. 95. *Accounting Horizons* 7 (June): 60-75.

Ohlson, J. 1999. Prescriptions for improved financial reporting. Unpublished paper, New York University.

Ohlson, J. 2000. Residual income valuation: the problems. Unpublished paper, New York University.

Ohlson, J., and Juettner-Nauroth. 2001. Expected EPS and EPS growth as determinants of value. Unpublished paper, New York University and Johannes Gutenberg University.

Ou J., and S. Penman. 1989. Financial statement analysis and the prediction of stock returns. *Journal of Accounting and Economics* 11 (4): 295-329.

Penman, S. 2001a. *Financial Statement Analysis and Security Valuation*. New York: McGraw-Hill Companies.

Penman, S. 2001b. Fundamental analysis: lessons from the recent stock market bubble. *Security Analysts Journal* (Japan) 39 (December): 106-115.

Penman, S., and X. Zhang. 2002a. Accounting conservatism, quality of earnings, and stock returns. *The Accounting Review* 77 (2): 237-264.

Penman, S., and X. Zhang. 2002b. Modeling sustainable earnings and P/E ratios with financial statement analysis. Unpublished paper, Columbia University and University of California, Berkeley.

Sloan, R. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71 (3): 289-315.

Thomas, J., and H. Zhang. 2002. Inventory changes and future returns. Forthcoming, *Review of Accounting Studies.*

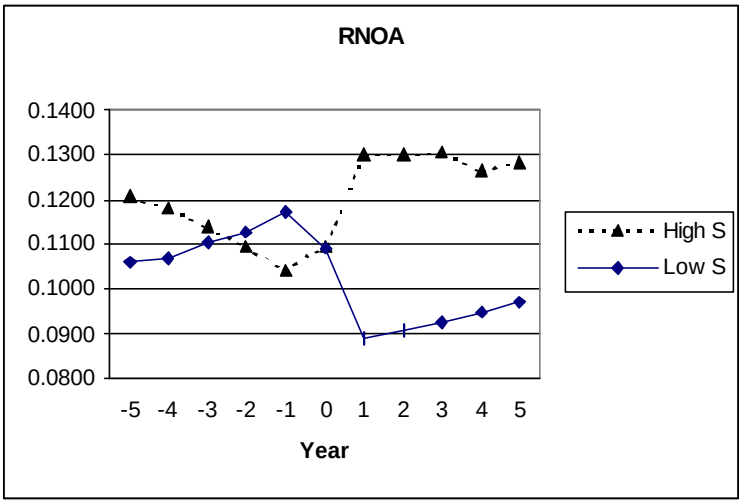
White G., A. Sondhi, and D. Fried. 1998. *The Analysis and Use of Financial Statements*, 2nd ed. New York: John Wiley & Sons, Inc.

Zhang, X. 2000. Conservative accounting and equity valuation. *Journal of Accounting and Economics* 29: 125-149.

Zhang, X. 2001. conservatism, growth, and the analysis of line items in earnings forecasting and equity valuation. Unpublished paper, University of California, Berkeley.

**Figure 1**

Mean return on net operating assets before extraordinary and special items (RNOA) over five years before and after Year 0 when firms are scored (with an "S score") on the likelihood that their operating earnings are sustainable. "High" firms are those with the top third of scores and "low" firms are those with the bottom third of scores for firms grouped on approximately the same RNOA. Sustainability scores are based solely on information about the sustainability of earnings in the financial statements from 1979 to 1999.




Source: Penman and Zhang (2002b)

## Endnotes

[1] See Buffet's annual letter to shareholders in Berkshire Hathaway's 2000 annual report.

[2] I discuss the misguided analysis during the bubble in "Fundamental Analysis: Lessons from the Recent Stock Market Bubble," a speech to the Japanese Society of Security Analysts. See Penman (2001b, in Japanese). An English version is available from the author.

[3] See *The New York Times*, December 5, 2001, page C9. See also comment by Stephen Butler, Chairman of KPMG LLP in PR Newswire, January 31, 2002.

[4] See *The Wall Street Journal*, op-ed page, A18, December 4, 2001.

[5]See, for example, Hendriksen (1970), Ohlson (1999).

[6] From a report in *The New York Times*, February 10, 2002. The Council reversed itself on response to a revival of the Senate bill in February, 2002.

[7] The prescription does not necessarily imply regulation. True and fair reporting could evolve without regulation as shareholders respond to buyers' demands for assurance when selling claims.

[8] The residual income model and the recent Ohlson and Jeuttner-Nauroth (2001) model produce valuations based on forecasting earnings that are equivalent to pricing expected dividends.

[9] For more discussion on these points, see the AAA Financial Accounting Standards Committee (1997) paper on the FASB exposure draft for Statement 130.

[10] Mr. Skilling said, "essentially what you do is you issue stock options to reduce compensation expense, and therefore increase your profitability," as reported in *The Wall Street Journal*, March 26, 2002, p. 1.

[11] IBM's pension gain in 1998 was $4.9 billion, 53 percent of pre-tax earnings, and $5.4 billion for 1999, 46 percent of pre-tax earnings. General Electric's numbers were $3.0 billion for 1998 and $3.4 billion for 1999, both 22 percent of pre-tax earnings. The two firms were using an expected rate of return on plan assets of 10 percent and 9.5 percent, respectively, up from 7.5 percent in the 1980s.

[12] Evidence the firms buy low and sell high in share transactions is found in Ikenberry, Lakonishok, Vermaelen (1995), Jung, Kim, and Stultz (1998), and Baker and Wurgler (2002).

[13] Curiously, many firms repurchased shares during the bubble at high prices (and ran up debt to do so). Repurchases were justified to keep shares outstanding roughly the same after issuing shares for exercises of stock options, to "prevent dilution" it was said. Of course it did nothing of the sort; rather shareholders lost on the exercise of options and then lost again as shares were

repurchased at high prices. Bens, Nagar, Skinner, and Wong (2002) find a link between employee stock options and share repurchases.

[14] Ohlson (2000) makes this point. Penman (2001a, 511) shows how to adjust for anticipated share transactions in applying the residual income model.

[15] Zhang (2000, 2001) models the effect. Penman (2001a, Chapter 17) gives a demonstration.

[16] Penman and Zhang (2002) develop a metric to capture the effect of conservative accounting on the quality of earnings.

[17] See White, Sondhi and Fried (1998, p. 184) and Penman (2001a, 339), for example, for the formula for the effect of leverage on return on equity; Penman (2001a, 540-541) demonstrates how leverage increases earnings growth rates.

[18] See Greenwald, Kahn, Sonkin, and van Biema (2001), pp. 34-35 in a restatement of Graham and Dodd.

[19] Lundholm (1999) argues for this type of reporting.

[20] See *Fortune*, April 2001, pp.192-194 and Gu and Lev (2001).

[21] With respect to restructurings, firms might unjustifiably charge operating expenses against the restructuring reserve. Ohlson (1999) recommends a cash (pay as you go) basis for recognizing these charges.