Beyond Earnings Management: Using Ratios to Predict Enron's Collapse

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Abstract

This paper proposes a revised analytical model for accounting professionals that can be used to evaluate the financial well being of innovative companies that rely on earnings management practices (EM) for their growth. Through an analysis of corporate governance, financial reporting standards, and ratio analysis this paper reaches the conclusion that Enron extended previously researched earnings management practices that could have been detected in early 2000. Results of the analysis indicate that by using price book, price earnings multiple, net margin percentage, and return on assets, and taking into consideration the so-called risk management activities which seemed to disguise highly volatile speculative derivative-based activities, Enron was headed for implosion at least one year before its collapse.

Keywords: Earnings management, ratio analysis, analytical model

1. Introduction

Theoretically, the proposed model builds on the existing accounting research on earnings management and its effect on earnings quality, which is addressed in part in the Introduction. Practically, the proposed analytical model is derived from the lessons learned from the Enron case that may help financial managers, financial analysts, and auditors to assess past performance and to predict the probability of profitable future performance for such market focused companies through the use of financial ratio analysis to validate earnings quality. Therefore, Enron's birth, dramatic growth, and abrupt collapse are first briefly overviewed.

Further, the key Enron governance mechanisms are examined second, along with key accounting and reporting standards that either existed or that came into force during the 1995-2001 time period of Enron's phenomenal growth and sudden collapse. Third, the role independence and forward-looking and pro-forma information played in the Enron situation is explained. Fourth, as a learning experience from the Enron situation, Enron's financial performance, with focus on 1997-2000, is analyzed within the context of earnings management and financial ratio analysis in order to decode the ambivalent cues included in the company's financial reports. Finally, guidelines for development of the revised analytical model and future research are outlined. The emerging accounting research into earnings management offers insight into the primary objectives of EM, the managerial incentives to engage in EM, the effects of EM on quality of earnings, the ethical considerations of EM practices, the increasing SEC attention to EM practices, and, the legal implications for auditors.

The Enron case, which is used throughout this paper as a basis for discussion, has exposed some additional innovative practices that appear to go beyond the primary EM objectives of: reporting positive profits, sustaining recent performance, and meeting ana-

lysts' expectations. Evidence that was presented during Congressional testimony and in the subsequent investigative report after Enron's collapse, indicates that management may have used certain off-balance sheet entities, specifically, special purpose entities (SPE) to hide debts and losses that were subsequently excluded from the consolidated financial statements. The exclusions were justified by Enron and Arthur Andersen (Andersen), Enron's auditor, based on the SPE meeting Securities and Exchange Commission (SEC) guidelines for SPE exclusion from consolidation. Enron subsequently issued revised financial statements for the period 1997 through second quarter 2001, stating that the SPEs were mistakenly excluded from the original reports. The restatements reduced Enron consolidated stockholders' equity by approximately 10% or $1.2 billion.

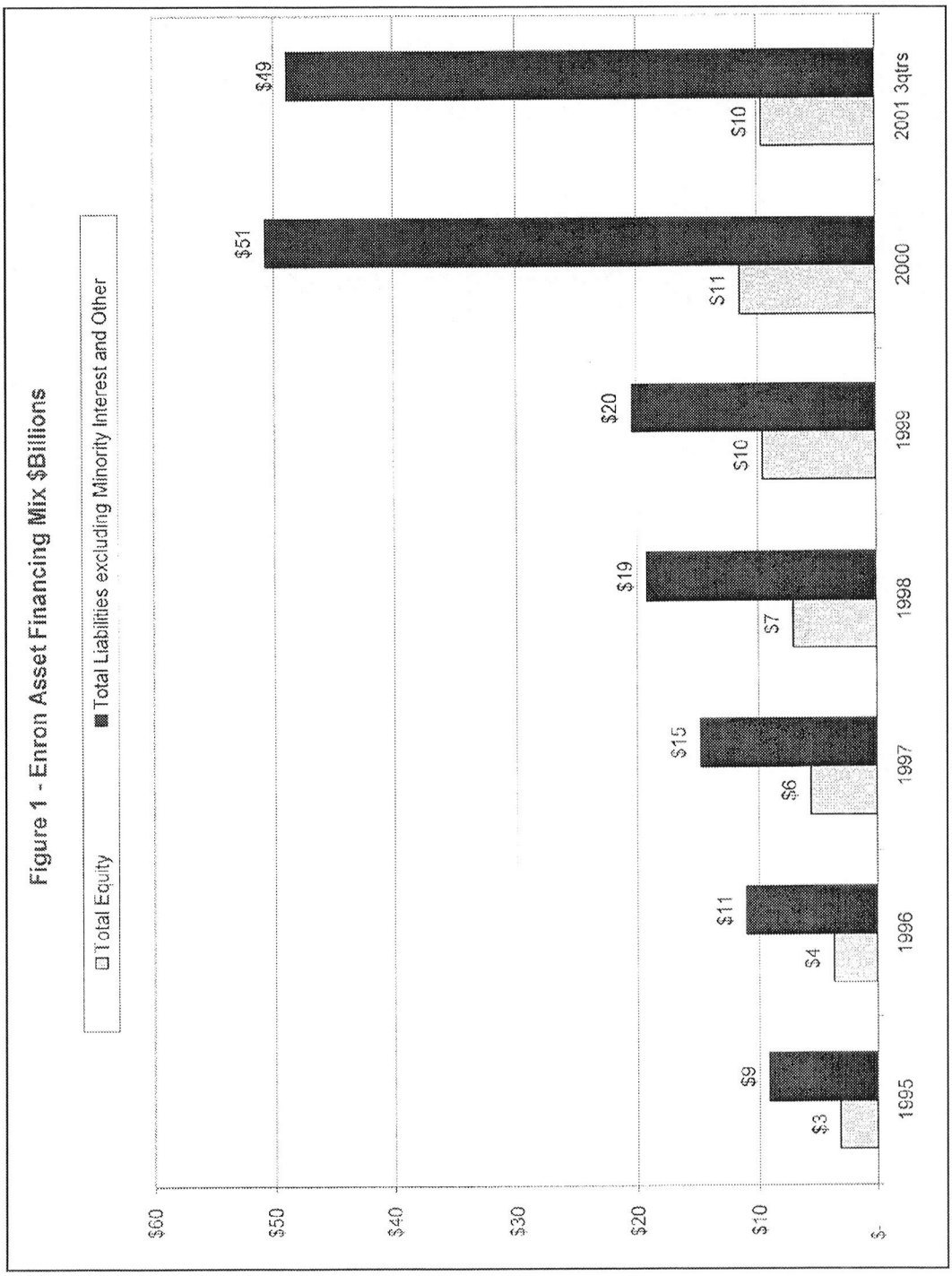
Some questions arise from the restatements. First, excluding the SPE from consolidation explains how certain SPEs assets, liabilities, and equity would be omitted from Enron's consolidated financial statements. Assuming that Enron made some initial and possibly some subsequent investments in the SPEs, the equity method of accounting used for unconsolidated subsidiaries would obligate Enron to account for its proportionate share of profits and losses arising from its investment in the SPEs. Second, while the off-balance sheet SPEs may have initially been created for EM purposes, evidence has been presented that top management obtained ownership interest in some of these entities. Through the ownership interests top management caused certain distributions and payments directly to their own benefit, thus raising the stakes in EM incentives. (For a comprehensive review of EM in accounting literature, see Baginski et a12002; Barton 2001; Jackson and Pitman 2001; Dechow and Skinner 2000; and, Erickson and Wang 1999). The following section presents an overview of Enron's birth and subsequent collapse that was brought on by investors' ultimate interpretations of Enron's innovative business and accounting practices.

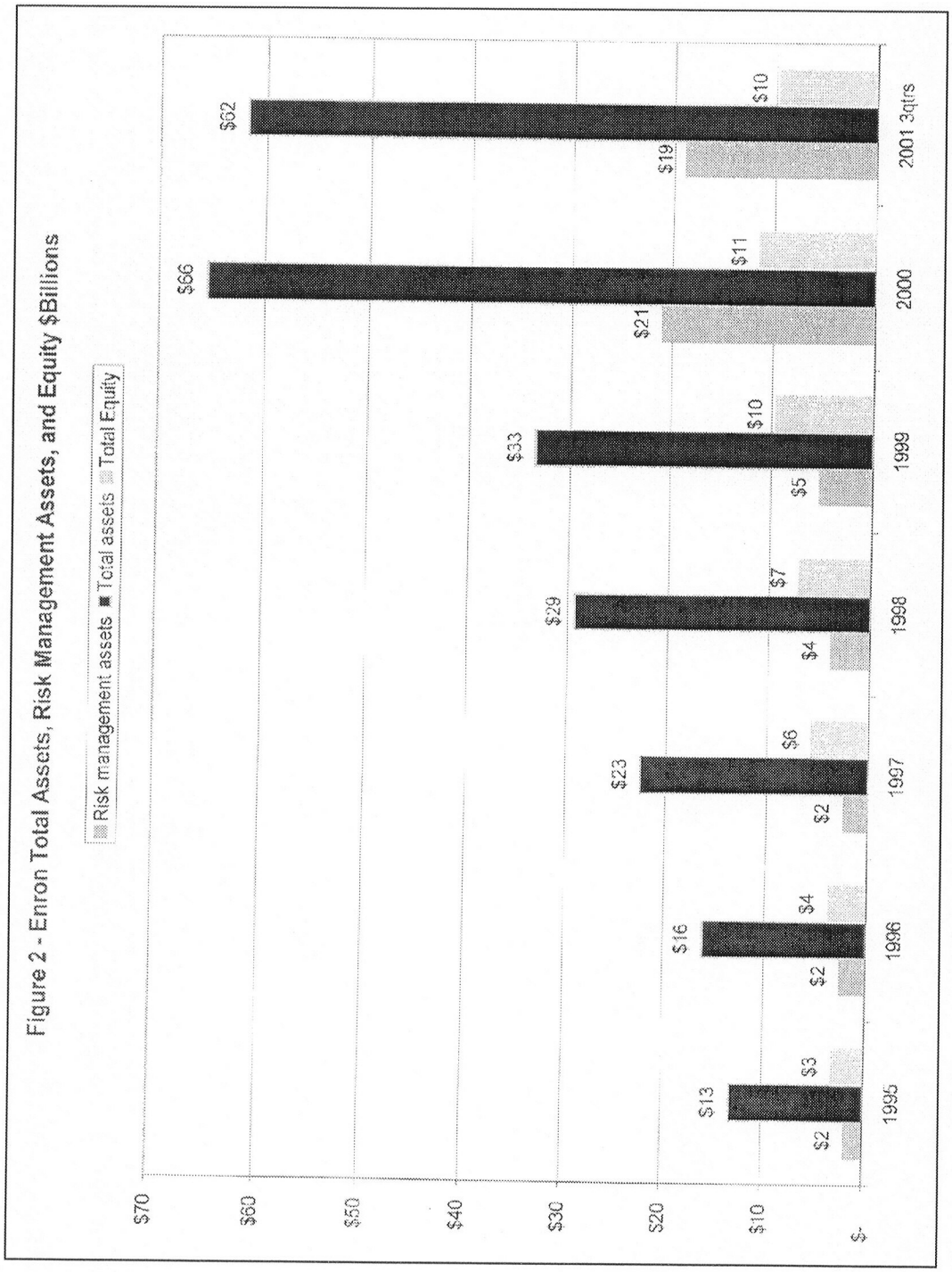
2. Brief Overview of Enron's Birth and Collapse

Enron's predecessor, Northern Natural Gas Company was incorporated in Delaware on April 25, 1930. There were hundreds of acquisitions and new sub-entity creations from that date through July 1985 when the company acquired Houston Natural Gas Corporation. On April 10, 1986 the company changed its name to Enron Corporation. Eventually, in excess of 3,000 entities, which operated as subsidiaries of Enron or its subsidiaries in 2001, were listed (Mergent 2001). Fueled to a certain extent by mergers and acquisitions, Enron's revenue grew from $13.5 billion in 1991 to $138 billion through 3rd quarter 2001. Although the revenue increase is approximately 1000 percent, it has not evolved in a linear manner. At first, revenues in 1992 declined to $6.3 billion and did not reach $13 billion again until 1996. Later, from 1995-2001 much of the dramatic increase in revenue came as a result of a fundamental strategic shift in Enron's business model from producing and selling energy to trading energy-, weather-, broadband-, and Enron stock-based contracts. Enron's new strategy is stated in the 1999 Annual Report, "To Our Shareholders:"

> "By structuring our operations as flexible networks, we can accelerate our growth with minimum capital expenditures. Physical assets play a strategic, but not central, role in the way we earn our money, and this reduced emphasis on merely earning a return on physical assets allows us to divest non-strategic assets and re-deploy capital into higher growth and stronger-return businesses."

Figures 1 and 2 indicate that during the time of Enron's shift from physical assets to higher growth and stronger-return businesses, Enron also dramatically leveraged the balance sheet.





The increasing use of financial leverage that is depicted in Figure 1 could be explained by fixed asset and business acquisitions financed entirely with debt. However, as depicted in Figure 2, the asset mix was changing from production-based assets to trading-

based risk management assets during the same period. Enron's shift from physical asset production to intangible risk management instrument trading may have been interpreted by investors as evidence of phenomenal group. Asset growth coupled with equally phenomenal reported revenue growth may have further inspired investors to regard Enron as comparable to high-tech and dot.com companies rather than to compare Enron to its more established and modestly profitable utility industry peer group. Particularly the dot.coms were viewed as having great potential regardless of the financial reporting evidence that dot.coms were either unprofitable or were only marginally profitable.

The equity markets initially responded to Enron's strategic shift with a growing enthusiasm that eventually turned into a collapsing flight of "irrational exuberance". To put Enron's collapse into some perspective, the $65 billion decline in Enron's capitalized market value from September 30, 2000 ($87 per share) to December 31, 2001 ($.60 per share) exceeds the aggregate GDP of the 44 smallest countries of the world. Only 62 countries of the 197 listed for 1999 GDP data had GDP exceeding $65 billion.

Next, the paper examines the mechanisms and accounting standards governing Enron's strategy and performance from 1995 to 2001.

3. Mechanisms and Accounting Standards Governing Enron's Strategy and Performance

3.1 Corporate Governance

In general, corporate failures seldom occur because of incompetence of their governing boards but rather because of factors biasing their independent judgment (Pound 1995). In Enron's case, directors have always been experientially diverse, well-educated, and highly visible professionals. In the year 2000, for example, Enron's board of directors was composed of 17 members, 11 of whom were considered to be independent in terms of professional affiliation. By comparison, there were 14 directors in 1996, eight of whom were independent.

The independence factor is particularly critical for audit committee members as quality of earnings, measured in terms of market reactions to earnings announcements, significantly increases subsequent to the formation of an audit committee (Wild 1996). The Enron audit committee, formed initially in the early 1990s, became fully independent in 2000 when it consisted of six members. These independent members were all able to understand fundamental financial statements, and at least one had past experience in accounting or financial management.

In addition to board of directors/audit committee, executive compensation is another important governance mechanism (Financial Executive Institute 1997 and Meyer 2000). Enron directors' cash compensation for 2000 averaged $79,107, which is approximately mid-range for S&P 500 companies in 2000. During 2000 each board member also received 10,775 options to purchase Enron common stock. The directors' option plan has been in place since 1991, with the number of options offered and the new option strike price subject to change each year. Sixteen board members directly controlled 17,249,333 shares of Enron common stock. The independent directors controlled 316,089 of these shares. The closing market price for Enron common shares on December 31, 2000 was $83.125 per share. The market value of all directors' common shares on that date was $1,433,850,806 of which amount $26,274,898 was controlled by independent directors. While many of the

board members were considered to be independent by affiliation and New York Stock Exchange rules, there is a question of whether the directors' decisions could have been, in some cases, biased by their personal investment in the company. One of the duties of the audit committee is to oversee the company's financial reporting practices.

3.2 Accounting Standards and Financial Reporting

From 1996-1999 the US Financial Accounting Standards Board (FASB) issued standards to specifically address EM. In so doing FASB may have created the opportunities for other more innovative business practices that go beyond earnings management.

In 1997, the Securities and Exchange Commission (SEC) issued Financial Reporting Release No. *48, Disclosure of Accounting Policies for Derivative Financial Instruments and Derivative Commodity Instruments and Disclosure of Quantitative and Qualitative Information about Market Risk Inherent in Derivative Financial Instruments, Other Financial Instruments, and Derivative Commodity Instruments* (FRR No. 48). The FASB initiated the financial instruments and off-balance-sheet financing project in 1986. New standards related to this project have since been issued including SFAS 133, *Accounting for Derivative Instruments and Hedging Activities,* which is effective for reporting periods ending after June 15, 2000. In some respects the disclosure requirements of SFAS 133 and FRR No. 48 are similar. Derivatives are used extensively for risk management purposes. The large-scale introduction of derivatives and other risk management assets onto the balance sheet to some extent also shifts the balance sheet away from a historical cost basis toward a fair value basis. Yet, as noted next, only one set of financial statements is prepared.

The FASB, in its Statement of Financial Accounting Concept #1, prescribes that the enterprise prepare one set of general-purpose financial statements containing information that is both relevant and reliable and that must serve the needs of a wide range of financial statement users. The term earnings quality, though it has no absolute elements, relates to comparative integrity, reliability, and predictability of the financial reports (Bernstein and Siegel 1979). These attributes are particularly critical relative to the consolidated financial statements and the consequent inclusion or exclusion of SPEs.

Consolidation is a central issue with Enron because certain SPEs that were subsidiaries were not consolidated in the 1997-2001 financial statements until restated financial statements were published in October 2001. US accounting standards provide specific rules for companies that invest in other companies, regardless of the legal form of the investee (corporation, partnership, joint-venture). If entity A controls entity B then A must prepare consolidated financial statements with two limited exceptions, neither of which seems to apply to Enron. Balance sheet build-up of risk management instruments and the implementation of SFAS 133 overlapped the financial restatement period.

Balance sheet build-up of reported risk management instruments began noticeably in 1996. The build-up may have been in anticipation of the proposed accounting and disclosure requirements of SFAS 133 and FRR No. 48. Enron's build-up of risk management instruments is depicted in Figure 2. Enron reported $2.5 billion in risk management assets in 1996 and $21 billion in 2000. The initial balance sheet build-up may have included some pre-existing risk management instruments beginning in 1996. Investors' and analysts' interpretations of the extent to which the reported risk management instruments and other derivatives have always been a part of successful strategic risk management activi-

ties of companies and the extent to which risk management instruments are an integral part of new economy companies is not yet fully disclosed in research. Certain of the assets and liabilities of the unconsolidated SPEs were risk management instruments and other derivative instruments that were indexed or linked to Enron securities. Next, some of the biasing factors that might have influenced Enron's strategy and performance during the financial restatement period are discussed.

4. Biasing Factors That Might Have Influenced Enron's Strategy and Performance

4.1 Independence

The board composition and its independence were previously discussed. Independence applies to both the accounting and reporting standards-setting process and corporate governance including the external auditor. News accounts of the unfortunate communication between David Duncan, a lead Andersen audit partner on the Enron engagement, and Paul Voelker, in his capacity as chairman of the IASB, concerning fund-raising are a good indicator of how sensitive the perceptions of independence in accounting standard-setting can be (Hitt and Schroeder 2002b). Voelker solicited a $500,000 contribution from Enron to help fund the IASB budget. Duncan responded to Voelker on Enron's behalf, asking what influence the contribution would gain for Enron in the standard setting process. Auditor independence is dealt with by the SEC, US Generally Accepted Audit Standards (GAAS), and in the AICPA Code of Professional Conduct:

> "Independence is a highly subjective term, because it concerns an individual's ability to act with integrity and objectivity. Integrity relates to an auditor's honesty, while objectivity is the ability to be neutral during the conduct of the engagement and the preparation of the auditor's report."

Remedies have been proposed to reduce the probability of the audit firm losing its independence with regard to the client. The remedies include: barring auditors from subsequent employment with the client, requiring companies to rotate audit firms every few years, and to prohibit audit firms from providing audit clients with certain consulting services. The Sarbanes-Oxley Act of 2002 (SOA) has further strengthened these remedies along with commissioning a study into the use of pro- forma financial information. SOA does not directly address the topic of forward looking financial information.

4.2 Forward-Looking Financial Information

Forward-looking financial information is normally juxtaposed with audited financial statements within the published annual report. The SEC prohibited the disclosure of forward-looking information until the early 1970s because of the SEC's perception that such forward-looking information was "inherently unreliable, and that unsophisticated investors would place undue emphasis on the information in making investment decisions." Based on a lengthy inquiry and investigation the SEC later created specific rules that permitted and encouraged the disclosure of forward-looking information by companies. Dissemination of forward-looking financial information via the Internet has made such information available on a virtual basis to all who are interested in it. Pro-forma financial information and forward-looking financial information are commonly used to put a posi-

tive spin on otherwise negative or mediocre financial performance and other earnings-related announcements.

5. Analyzing Enron's Performance Within the Governing Framework and in the Context of Earnings Management and Financial Ratio Analysis

5.1 Earnings Management

Past research findings indicate that some earnings management is expected and should exist in capital markets (Dechow and Skinner 2000). Audit programs and procedures should be designed to identify and quantify the effect of earnings management applied through the use of year-end accrual adjustments (Jacks on and Pittman 2001). Enron's reliance on pro-forma and forward looking financial information could have affected the company's securities prices (Baginski et al 2002). It is indicative that during the period 1996-2001, while Enron's revenue increased dramatically, net income decreased from 5.66 percent to .97 percent respectively. During the same period, the general stock market was rising dramatically, fueled in part by the dot-com and high-tech phenomenon. The general stock market began its decline during the first quarter of 2000. Enron's *P/E* ratio rose to 74 times earnings and its *P/B* ratio rose to 6.4 times during the last half of 2000. Investors and analysts seem to have given significance to revenue, asset, and liability growth together with Enron's latest reported innovation, so long as some profits resulted.

As previously noted, Enron's buildup of risk management instruments occurred during this same period. Research indicates that managers may use derivatives as substitutes for discretionary accruals for the purpose of smoothing earnings. This assertion is supported by empirical results that show that firms holding derivative portfolios with large notional amounts have lower absolute levels of discretionary accruals. The results also suggest that the magnitude of notional amounts and discretionary accruals are most likely the result of a joint decision to manage risks and earnings (Barton 2001). Given the existence of these earnings management methods, accounting professionals may need additional tools to analyze performance in light of increased risk management activities. Modified ratios may be useful in this analysis.

5.2 Financial Ratios and Enron's Results and Condition

Financial ratio analysis is used primarily for two purposes: a) to compare with a standard, and b) to predict future prospects. To accommodate the first purpose, research firms publish comparative ratios for various industries, further breaking down those industries by either asset size or total revenue. As for predictive purposes there are two: a) to forecast future variables, and b) assess risk, assign credit ratings, and to predict corporate failure (Barnes 1987). Chartered Financial Analysts rated 60 industry ratios according to the significance of the ratio to measure liquidity, long-term debt-paying ability, profitability, and other (some other aspect of financial health). Liquidity was most significantly measured by the current ratio, quick ratio and quick assets\total assets. Debt was most significantly measured by debt to assets, times interest earned, and fixed charge coverage. Profitability was most significantly measured by net profit margin after tax and net profit margin before tax, followed by seven other profitability ratios. The most significant other ratio measure was stock price as a percentage of book value (P/B), followed by price earnings *(P/E)* ratio and dividend yield (Gibson 1987). Enron exhibits some interesting ratios and financial statistics.

From 1996-2001 Enron's revenue increased by 1000 percent and total assets increased from $13.2 billion to $65.5 billion. During the same period Enron's "assets from price risk management activities" increased from $1.8 billion to $21 billion (see Figure 2). Additionally, some pre-existing risk management instruments (with maximum contract life range of 6-29 years according to the Enron 2000 annual report) had to be identified, measured, and recorded. The increase in risk management instruments and other derivatives would indicate a significant shift in Enron's way of doing business, which is consistent with its stated philosophy, its pro-forma and its forward-looking financial announcements.

Past research indicates that companies are twice as likely to disclose financial forecast information during periods of large negative earning news (Kasznik and Lev 1995). During 1996-1999 Enron reported fully-diluted EPS of $2.16, $.32, $1.01 and $1.10 respectively. Enron's common share price rose from $18 to $44 during the same period. During the first three quarters of 2000 its share price vaulted to $90.75. In the 1999 Annual Report "To Our Shareholders," issued early in 2000, Enron states:

> "When you define a New Economy company, you define Enron. A New Economy enterprise exhibits four traits:
>
> 1. Its strength comes from knowledge, not just from physical assets.....
> 2. A New Economy player must operate globally-effortlessly transferring ideas, people and services from region to region.....
> 3. New Economy companies understand that constant innovation is their only defense against competition. Enron often introduces a product before the competition even senses a market exits. Cross-commodity trading, weather derivatives, energy outsourcing and 1999's two major initiatives - Enron Online and Enron Broadband Services - demonstrate our resourcefulness.....
> 4. Success in the New Economy requires the adroit use of information to restructure an organization and boost productivity"

Within the new economy, investors are forced to look beyond the financial statements to assess future benefits from innovations-in-progress (Healy and Palepu 2001). Enron's derivative transactions included some which were indexed to its own share price. While these transactions may have been properly accounted for, it is noted that improper revenue recognition is the most common fraud technique in the technology sector (Beasley et al 2000).

6. Proposed Framework for a Revised Analytical Model

Accounting professionals may benefit from the use of a revised analytical model drawing on existing research in financial ratios that can be used to evaluate the financial well-being of innovative companies that rely on EM practices for their growth. Past research indicates that the price-earnings *(P/E)* ratio and market (or price)-to-book value *(P/B)* ratio both reflect future growth expectations of the entity. The *P/E* ratio indicates future growth in earnings which is positively related to expected future return on equity and negatively related to current return on equity. The *P/B* ratio reflects only expected future return on equity (Penman 1996). *P/B* may reflect market values of common equity leading book value

by as much as six years (Beaver and Ryan 1993). This reflection would be most justified in a reporting environment in which the financial statements are prepared purely on a historical cost basis. In the present environment a significant dollar amount of assets is reported at fair value. For example, Enron's 2000 year end financial statements include fair valued assets of 52.3% of total reported assets. The profit percentage, and return on assets ratio may also be useful in the revised model.

Innovative companies often invest heavily in research and other developmental expenditures that, under current US accounting and reporting standards, cannot be capitalized. If these noncapitalized expenditures are expensed when incurred and the expenditures successfully accomplished their objectives, then return on assets should increase in the future since the reported asset base excludes these non-capitalized expenditures. If the return on assets ratio decreases in future periods, then the non-capitalized expenditures would seem not have been successful and, therefore, should not be taken into investor account in justifying excess *P/B and P/E* ratios.

Figure 3 depicts Enron's ratio ranking among 11 of the top 15 revenue producing companies in the United States based on the Fortune 500 based on Figure 4. The 11 companies were ranked according to highest to lowest based on the 4 ratio calculations from 1997-2000: *P/E, P/B*, Net Margin, and ROA. The underlying ratios were extracted from Morningstar.com. Four companies are omitted from the analysis: Citigroup, Chevron Texaco, Philip Morris, and American International Group. Figure 3 shows that Enron's *P/E and P/B* were generally increasing relative to the comparative companies, while Net Margins were consistently at the bottom of the group. ROA is erratic compared to the group.

Figure 3;
Eleven of Top 15 Revenue Producers' Ratios with Enron Ratios ranked high (1) to low (11)

	P/E	P/B	Net Margin	ROA
2000	1	4	11	9
1999	2	7	11	5
1998	5	8	10	8
1997	1	8	11	11

An increasing *P/E* would indicate increasing earnings expectations implicitly indicating investor perception that past earnings performance is not adequate to reflect future earnings performance of the enterprise. As previously noted, an increasing *P/B* would indicate that investors perceive that US GAAP and historical cost accounting do not adequately reflect the fair value of the enterprise based on its present book value and earnings performance. Thus, *P/B* increases to reflect increasing expectations of future returns on equity. Decreasing net margins would indicate that, in Enron's case, while revenues and assets showed phenomenal group during the four year period, expenses were increasing at equally phenomenal rates. Additionally, Enron's ROA was at best, marginal and inconsistent during this period. Of course, the dramatic increase in risk management instruments and other derivatives may also influence ROA. Thus, the low ROA could also indicate that expenditures made for development of future prospects and other asset investments, at least during the four year period, were not successful.

The proposed revised analytical model can be applied to Enron' s position at December 31, 2000 (based on originally reported information): *P/B* ratio 6.4; *P/E* ratio 74;

Figure 4 -Comparative Ratios 1996-2000 and Ratio Predictions for 2000

IBM	P/E	P/B	Net Margin %	ROA
2000 prediction	30.0	10.5	8.6%	8.5%
2000	19.1	7.9	9.2%	9.2%
1999	26.2	9.5	8.8%	8.8%
1998	28.0	8.8	7.7%	7.3%
1997	17.4	5.1	7.8%	7.5%
1996	12.4	3.6	7.1%	6.7%
Verison				
2000 prediction	25.7	6.8	10.7%	5.9%
2000	11.6	4.0	16.7%	6.6%
1999	20.7	6.1	12.7%	6.7%
1998	30.2	6.5	9.5%	5.4%
1997	24.1	5.5	8.1%	4.5%
1996	16.2	3.8	13.3%	7.0%
AEP				
2000 prediction	12.5	1.5	7.6%	2.4%
2000	56.0	1.9	2.2%	0.6%
1999	10.6	1.3	7.5%	2.4%
1998	15.4	1.9	8.4%	2.8%
1997	19.1	2.1	10.1%	3.7%
1996	13.3	1.7	10.0%	3.7%
Duke				
2000 prediction	14.6	2.4	4.0%	2.9%
2000	17.9	3.2	3.6%	3.1%
1999	12.3	2.0	3.9%	2.5%
1998	18.8	2.9	7.2%	4.7%
1997	22.2	2.6	6.0%	4.1%
1996	16.6	1.9	15.3%	5.4%
AT&T				
2000 prediction	29.4	2.9	6.4%	3.0%
2000	19.7	0.6	7.1%	1.9%
1999	29.2	2.1	5.5%	2.0%
1998	21.9	5.2	9.8%	8.8%
1997	17.3	4.4	8.7%	7.8%
1996	12.2	3.5	10.7%	10.3%
Wal-mart				
2000 prediction	52.4	10.8	3.4%	8.3%
2000	38.6	8.1	3.3%	8.1%
1999	37.9	9.4	3.4%	7.9%
1998	57.6	9.1	3.2%	8.9%
1997	41.1	4.8	3.0%	7.8%
1996	18.1	3.2	2.9%	7.7%

GM	P/E	P/B	Net Margin %	ROA
2000 prediction	10.8	3.2	2.7%	1.7%
2000	7.6	2.4	2.4%	1.5%
1999	7.9	3.6	3.3%	2.2%
1998	17.1	2.6	1.9%	1.1%
1997	7.0	2.0	4.0%	2.9%
1996	7.2	2.5	3.1%	2.2%
Ford				
2000 prediction	4.3	1.7	4.7%	2.8%
2000	10.2	2.3	3.2%	1.2%
1999	5.8	1.4	4.5%	2.6%
1998	2.1	1.8	4.2%	2.6%
1997	5.5	0.7	4.5%	2.5%
1996	3.4	0.5	3.0%	1.7%
Exxon				
2000 prediction	38.2	4.6	5.4%	5.9%
2000	17.3	4.9	7.8%	10.7%
1999	35.8	4.4	4.9%	5.5%
1998	32.1	4.1	6.4%	7.0%
1997	18.2	3.5	7.0%	8.8%
1996	14.9	2.8	6.4%	7.9%
GE				
2000 prediction	48.9	11.7	9.6%	2.6%
2000	37.7	9.4	9.8%	2.9%
1999	48.2	12.0	9.7%	2.6%
1998	36.6	8.6	9.3%	2.6%
1997	29.5	7.0	9.3%	2.7%
1996	20.3	5.2	9.3%	2.7%
Enron				
2000 prediction	45.9	3.2	1.8%	2.4%
2000	74.2	6.4	1.0%	1.5%
1999	40.3	3.6	2.5%	3.2%
1998	28.3	2.8	2.2%	2.7%
1997	129.9	2.1	0.5%	0.5%
1996	18.6	3.1	4.4%	4.0%

Net Margin percentage .97%; and, Return on Assets ratio 1.49%. Applying the worksheet "growth function" on 19971999 ratios produces the following ratio predictions for 2000: *P/B* ratio 3.2; *P/E* ratio 46; Net Margin percentage 1.8%; and, Return on Assets ratio 2.4%.

Figure 4 depicts the 4 ratios for all 11 companies from 1996-2000: *P/B, P/E,* Net Margin percentage, and ROA. Using the growth function for 1996-1999 ratios for 2000 are predicted. During the same period, Enron's beta ranged from .8-.45 indicating Enron's share price increases less that the market as a whole in an up market. The equity market as a whole began its major decline in early 2000. As noted in Figure 4, Enron's *P/B* is 100% higher than the growth prediction, *P/E* is 60% higher than the growth prediction, and net margin percentage is 37% lower than the growth prediction. Also as previously noted, Enron's revenue was dramatically increasing during the 5 year period with a 150% surge from 1999 to 2000. Additionally, Enron's pro-forma and forward-looking financial data during this period seems to have influenced the market to bid up Enron's price well beyond what might have been expected in a declining market and given Enron's weak net margins and ROA. The fleeing capital, particularly from the NASDAQ, may have sought an unrealistically optimistic alternative in Enron. During late 2000 and early 2001, it must have come to the attention of Enron's top management that financial modeling of the company was out of control.

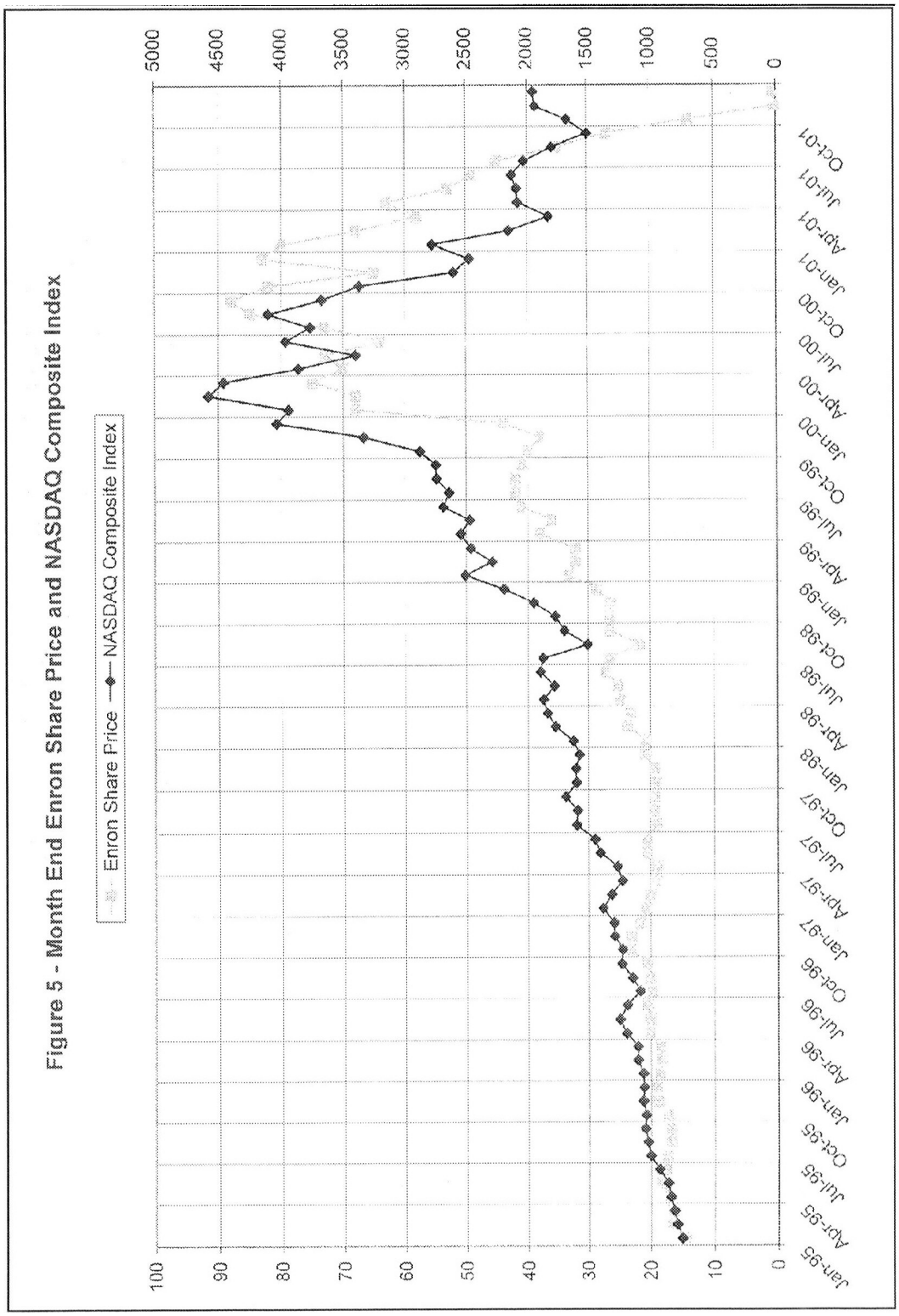
7. Conclusions

There are inevitable weaknesses in this proposal. The Enron case may be unique. If it is, then the value of this revised analytical model would decrease. Ratio calculation methodology varies among analytical sources and also across industries. The eleven companies included in the analysis presented in Figures 3 and 4 are taken from Morningstar.com and are from several different industries. The ratio predictions generated with the worksheet "growth function" are unsophisticated and would be influenced by the number of periods used to predict the next ratio. Economic and other environmental events would also influence the results for the period of the analysis.

Opportunities may exist for further research on this analytical model. For example, similar analysis may be conducted using other "top ten lists", or among companies in the same industry, or for different time frames. A more sophisticated prediction tool might be used in place of the worksheet "growth function." A similar analysis concentrating on only New York Stock

Exchange or NASDAQ traded securities might reveal different results. For example, Figure 5 depicts an interesting relationship between Enron's share price and the NASDAQ Composite Index from January 1995-October 2001. As previously noted, Enron traded primarily on the NYSE, yet during the period depicted in Figure 5, Enron's share price shows a curiously strong correlation to the NASDAQ Composite Index, especially from 1995-1999. The correlation is .94 for this period.

A wide range of theories have been advanced in recent literature published both in traditional peer reviewed journals and in electronic and the news media. Some theories are highly complex, some find single explanations for the Enron phenomenon, and others find multiple explanations, others simply express outrage. This proposal concentrates on governance, financial reporting standards, and ratio analysis to reach its conclusion that Enron extended previously researched earnings management practices that could have been de-



tected in early 2000. Enron management may have modeled the company to inspire investor enthusiasm for phenomenal revenue and asset growth in the face of mediocre profits, which were controlled at the margin by elaborate and innovative earnings management practices. During 2000-2001, the Enron model seems to have developed a malignancy evidenced by a flurry of insider trading and hasty management resignations. As investors considered these actions, they appear to have lost confidence in the company.

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