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ACADEMY OF ACCOUNTING AND FINANCIAL STUDIES JOURNAL

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LETTER FROM THE EDITORS

Welcome to the *Academy of Accounting and Financial Studies Journal,* an official journal of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The *AAFSJ* is a principal vehicle for achieving the objectives of the organization. The editorial mission of this journal is to publish empirical and theoretical manuscripts which advance the disciplines of accounting and finance.

Dr. Janet Dye, University of Alaska Southeast, is the Accountancy Editor and Dr. Denise Woodbury, Weber State University, is the Finance Editor. Their joint mission has been to make the *AAFSJ* better known and more widely read.

As has been the case with the previous issues of the *AAFSJ*, the articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

The Editors work to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. They will continue to welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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MANUSCRIPTS

ANALYSTS' RESPONSES TO ALTERNATIVE METHODS OF REPORTING UNREALIZED GAINS AND LOSSES ON DERIVATIVES

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Satish Thosar, University of Technology, Sydney
David N. Wiest, University of Hartford

ABSTRACT

With the publication of two statements on accounting for derivatives (SFAS 133 and SFAS 138), the Financial Accounting Standards Board (FASB) has taken another substantial step on the path toward its goal of requiring the reporting of all financial instruments at market value, generally with unrealized gains and losses included in income. This study investigates whether reporting an unrealized gain or loss in a separate line item on the income statement, as opposed to disclosure only in a footnote, affects how financial analysts use and evaluate information on such gains and losses. The vehicle for this research is unrealized gains or losses on derivatives. The study consisted of short financial analysis cases, presented to financial analysts and executives primarily through mail surveys. Each subject received one of the four different possible combinations of derivative gain or loss and disclosure type. When the unrealized derivative gain/loss was included as a separate line item in the income statement, analysts included the gain/loss significantly more often in their P/E ratios, and were more likely to list the derivative as a factor affecting their investment recommendation, than when the derivative gain/loss was disclosed only in a footnote. Moreover, regardless of disclosure type, analysts included unrealized losses on derivatives in their P/E ratios significantly more often than unrealized gains, and were more likely to list the derivative as a factor affecting their investment recommendation when there was a loss as opposed to a gain. Perhaps more interesting, given the FASB's disclosure rules in Statement 133 (FASB, 1998), was the fact that when the gain/loss was presented as a separate line item in the income statement a substantial minority of analysts (44 percent) chose to exclude the gains from their P/E ratios, whereas only 17 percent chose to exclude losses. Finally, results from a subset of participants who were asked to think aloud while analyzing the case suggest that analysts are less likely to consider information regarding derivatives when it is contained only in a footnote. In addition, the protocols suggest that if participants acquire the information on derivatives, they may give as much as, if not more consideration to that information, and evaluate it more negatively, when it is disclosed in a footnote rather than on the income statement.

This study contributes to knowledge in the area of financial statement disclosure in two primary ways. First, it provides evidence with respect to disclosure alternatives for unrealized

derivative gains and losses that is consistent with inferences drawn from prior capital markets studies regarding disclosure issues, and indicates that disclosure format may affect analysts' use of information, contrary to a strict interpretation of the efficient markets hypothesis. Second, it suggests that a substantial minority of analysts seem to prefer to exclude unrealized derivative gains and losses, particularly gains, when evaluating earnings for analysis, especially if the amount of those gains and losses is clearly disclosed and readily available. This further supports the need for full disclosure of unrealized derivative gains and losses included in income.

INTRODUCTION

This paper investigates whether reporting unrealized losses or gains on financial instruments as a separate line item in the income statement, as opposed to disclosure only in a footnote, affects financial analysts' use and evaluation of information about those gains and losses. We use information on derivatives as the specific vehicle for this investigation. Until implementation of SFAS 133 after June, 2000 (FASB, 1998), in order to find detailed information on a company's investments in derivatives, investors have had to sort through voluminous notes to the financial statements (Roulstone, 1999). Although the new Financial Accounting Standards Board (FASB) standard on derivatives is intended to give investors more readily available information on the value of derivatives held by companies and improve the quality of financial reporting, implementation of the complex new standard on derivatives may be costly and difficult (Reinstein & Lander, 2000; FASB, 1999a; MacDonald, 1997), overly complicated (Wilson, 1998), and could lead to increased volatility in companies' reported earnings and equity (Lesak, 1998). Moreover, it seems likely that where unrealized gains and losses on derivatives are included in income (the general model under Statement 133) they will not generally be shown as a separate line item, but rather lumped in with other miscellaneous non-operating income items under an "other" category. Also, the FASB specifically eliminated any requirements to separately disclose gross gains and losses on derivatives, in some cases substituting requirements for disclosure of net gains or losses. The FASB justified these decisions because they "could reduce the cost of applying the Statement without a significant reduction in the benefits to users" (FASB, 1998, paragraph 506).

As the FASB continues with its project on reporting financial instruments at fair value, and as researchers continue to raise questions about market efficiency (see, e.g., Kothari, 2001; Lee, 2001) further study is needed to investigate to what extent, if any, disclosure format affects the use of information about fair value of financial instruments. If, consistent with the efficient markets hypothesis, disclosure format does not affect the use of information about financial instruments, then incurring the costs associated with implementing standards for fair value measurement may not be warranted. If disclosure format does matter, then assumptions about costs and benefits may need to be reassessed. This has implications beyond the United States because harmonized international accounting standards are gaining in importance with the enormous increase in global investing and

lending (Pacter, 1998). International Accounting Standards Committee (IASC) Standards 32 and 39 (IASC, 1998a; 1998b), for instance, include requirements for accounting and reporting for derivatives that closely resemble those in SFAS No. 133 (FASB, 1999b). In addition, both the FASB and IASC are working toward reporting fair-value recognition of all financial instruments in the financial statements (FASB, 2001; JWG, 2000).

This study also investigates whether analysts will be more likely to include unrealized losses on derivatives in their P/E ratios as opposed to unrealized gains. Research in psychology, finance, and accounting, including recent research by Koonce et al. (2001), suggests that investors place more weight on loss probabilities and outcomes than they do on gain probabilities and outcomes. Therefore, analysts may be more likely to include unrealized losses on derivatives in their P/E ratios than to include unrealized gains. The FASB has, by substituting reporting of net gains and losses for reporting of gross gains and losses, deprived analysts of the information needed to exercise this tendency toward conservatism in interpretation of at least some financial information. While the FASB has expressed its own rejection of conservatism as an objective for financial reporting, it is not clear that they benefit users by imposing equal treatment for unrealized financial instrument gains and losses by allowing net reporting. Moreover, Koonce et al. (2001) indicate that financial statement users view derivatives as riskier than other financial items even when the underlying exposure is held constant, so even unrealized gains on derivatives may be viewed by analysts as risky. Therefore, research on the financial reporting of unrealized gains and losses on derivatives is important and needed.

To investigate these issues, we asked 81 financial analysts to review the financial statements and footnotes of a hypothetical company and to calculate P/E ratios for three years. Of the 81, 17 analysts completed the task in the presence of one of the authors and were asked to think out loud while performing the task. The hypothetical company had either an unrealized gain or an unrealized loss on derivatives in the third year, which was either recognized as a separate line item in the income statement or disclosed only in a footnote.

The results of this study suggest that, contrary to a strict interpretation of the efficient markets hypothesis, the use of derivatives information in the decision-making of relatively sophisticated financial statement users is affected by whether information is reported as a line item in the income statement or disclosed only in a footnote. These findings are consistent with inferences drawn from prior research and extend those prior findings to the topic of reporting for derivatives. In addition, the results of this study suggest that analysts weigh losses on derivatives more heavily than gains on derivatives. Although most analysts included losses on derivatives in their P/E ratios when losses were clearly displayed on the income statement, and a few even included them when they were only disclosed in a footnote, many analysts removed gains on derivatives when such information was shown on the income statement and none included gains when they were only disclosed in a footnote.

In addition, results from a group of analysts who were asked to think aloud while analyzing the case suggest that analysts are less likely to acquire information regarding derivatives when it is contained only in a footnote. The verbal protocols also suggest that, among those who acquired the derivatives information, analysts may have been more concerned about derivatives when the information was disclosed in a footnote instead of being clearly displayed on the income statement. These findings extend previous research on financial statement recognition versus disclosure of information by providing direct evidence about whether information disclosed in a footnote is: a) not acquired by financial statement users or b) acquired but given less weight than information shown in the financial statements. The findings of this study suggest that derivatives information disclosed in a footnote is less likely to be acquired by financial statement users, but if acquired it may be given equal or more weight than information disclosed in financial statements.

This study provides support for the value of including information as a separate line item on the face of the financial statements when it is thought to be important to financial statement users. Currently, companies are still allowed to include derivative amounts in "other" on the balance sheet and income statement. The results of this study suggest that if the objective is to make information readily available and clear, a separate financial statement line item may be needed. As a result of the adoption of net gain or loss reporting, even investors who are willing and able to sort through footnotes for more detailed information may not find quantitative data that they would want to use in their decisions if it were available. The disclosure decisions adopted by the FASB in the interest of cost reduction and reduction of disclosure of proprietary information may not prove as low-cost to many users as the Board supposed, in that they may deprive users of information that might well affect their investment decisions.

THEORY AND HYPOTHESES

A derivative is a financial instrument that derives its value from an "underlying" such as an "interest rate, security price, commodity price, foreign exchange rate, index of prices or rates, or other variable" (FASB, 1998, paragraphs 6 & 7). Derivatives are used as speculative investments, as well as to hedge against risk. Currently, about seventy-five percent of corporations and almost all financial institutions use derivatives (Lesak, 1998). Derivatives can be very complex and are potentially volatile investments that may result in gains or losses much greater than the amount of initial investment, which typically is very small. Even companies that carefully developed strategies for using derivatives as hedges (e.g., Procter & Gamble) have experienced disastrous results (Stanko, 1996). In some cases corporate (e.g., Showa Shell Sekiyu) and government (e.g., Orange County) losses from derivatives have exceeded $1 billion.

Recent research suggests that companies typically do not provide enough detail regarding their quantitative disclosures about derivatives (SEC, 1998). Roulstone (1999), for example, found that many companies included gains and losses related to derivatives in "other revenues" so that it

is not possible to determine the exact impact of derivatives on earnings. Only one of the 25 firms Roulstone studied indicated the exact amount of actual derivatives losses incurred during the year. In addition, the majority of companies studied also favored more complex disclosure formats that do not indicate the underlying positions in derivatives over a simpler, more revealing tabular format. Although Roulstone's study predated implementation of SFAS 133, Statement 133 does not expand the amount of quantitative information required for derivatives, nor does it specify formats.

In response to: 1) several highly publicized situations in which investors and creditors were surprised by large unexpected losses on derivatives, 2) the fact that many companies reported derivatives at historical cost or failed to report them at all, and 3) differing treatment of different types of derivatives, the FASB issued SFAS Nos. 133 (FASB, 1998) and 138 (FASB, 2000). Statement 133 is effective for all fiscal quarters of all fiscal years beginning after June 15, 2000 (FASB, 1999a). SFAS No. 133 is intended to provide a consistent set of rules for accounting for derivatives that would allow investors and creditors access to information needed to properly assess the effects of a company's use of derivatives. It requires companies to recognize all derivatives as either assets or liabilities in the balance sheet and to measure derivative instruments at fair value. Accounting for changes in the fair value of a derivative (i.e., gains or losses) depends on its intended use and resulting designation. In general, for a derivative designated as a fair value hedge (i.e., intended to hedge against exposure to changes in the fair value of an asset or liability), the gains or losses on the derivative, whether realized or not, are recognized in earnings. Offsetting value changes in the hedged items are also recognized in earnings. In addition, realized and unrealized gains and losses on derivatives not designated as hedging instruments are recognized in earnings. Gains and losses on derivatives designated as cash flow hedges are deferred by being recognized as other comprehensive income until the hedged item affects income. Ineffective portions of cash flow hedges are included in income. Similarly, gains and losses on derivatives designated as foreign currency hedges are included in other comprehensive income to the extent the instrument is an effective hedge. (See Wilson, 1998 and Gastineau et al., 2001) for detailed examples of the various types of hedges addressed by SFAS No. 133 and the characteristics that qualify a financial instrument as a derivative).

Research in psychology suggests that the information presentation format (IPF) will influence the way information is used and evaluated to make judgments and decisions (Painton & Gentry, 1985; Klienmuntz & Schkade, 1993). IPF is the manner, style or arrangement used to display information (Russo, 1977). For example, Johnson, Payne and Bettman (1988) suggest that individuals may change their strategies to search for information to fit the form of the information display. In addition, the performance of the individuals in their study improved when information was presented in decimal format rather than fractions that were difficult to process (e.g., 0.83 vs. 535/642). These findings suggest that information displays should be designed to make it easier for decision makers to employ strategies that will result in better decisions. Similarly, Russo (1977) found that when price information was displayed in a per unit format on an organized list, consumer

spending decreased and market shares of store brands increased. Russo concluded that in order for individuals to use information it must be both readily available and easily processed.

The IPF of financial statements may influence the information processing of financial statement users in a similar way. Maines and McDaniel (2000), for example, suggest that financial statement presentation format influences how nonprofessional investors weight comprehensive-income information when making judgments regarding management effectiveness. Specifically, Maines and McDaniel found that M.B.A. students place significant weight on their volatility assessments of unrealized gains when unrealized gains were shown in SFAS No. 130's statement of comprehensive income, but not when gains were shown in the statement of stockholders' equity under either SFAS No. 130 or SFAS 115. A related study by Hirst and Hopkins (1998) found that analysts are more likely to use information on unrealized gains and losses on marketable securities when that information is displayed in the statement of comprehensive income as opposed to the statement of stockholders' equity. In addition, Hopkins (1996) found that placing a financial instrument in the liabilities section versus the equity section of the balance sheet affected the impact of the financial instrument on analysts' stock valuations.

An important issue related to financial statement presentation format is whether information is placed in the financial statements or footnotes. Accounting standards require that certain information must be recognized on the face of the financial statements (e.g., as a line item in the income statement) while other information may be disclosed in footnotes. Bernard and Schipper (1994) theorize that financial statement users may "process footnote data incompletely" or view information disclosed in footnotes as less reliable than information recognized in the body of financial statements. In a lease accounting context, Imhoff, Lipe and Wright (1995) investigated the issue of footnote disclosure versus financial-statement display. They found that capital markets react to obligations contained in the balance sheet, but respond in a naive manner to footnote disclosure. Based on these results, Imhoff et al. (1995) suggest that the form of disclosures and their ease of use may be important, even for sophisticated analysts. Similarly, Davis-Friday et al. (1998) found that the liability for post-retirement benefits other than pensions (PRBs) are capitalized at a higher rate by the stock market when the PRB liability is recognized in the financial statements as opposed to in a footnote. They posit that the market may treat information disclosed in footnotes as less reliable than similar information recognized in the financial statements. Amir (1993) also suggests that investors underestimated the effect of PRB liabilities on firm value when PRB information was disclosed in footnotes.

Most of the previous research in accounting related to financial statement recognition versus footnote disclosure has been in the capital markets area. Therefore, researchers have had to infer the effect of recognition versus disclosure on a diverse group of market participants using aggregate financial data. A limitation of this literature is that it provides little information about the reaction of individual investors, or their information processing (Wahlen et al., 2000). For example, it is unknown whether financial statement users: a) fail to acquire information in footnotes, or b) acquire

it but place less weight on that information than when it is displayed in the financial statements. However, there have been a few experimental studies that have examined this issue as well. An advantage of experimental research is that it can isolate the effects of variables on a specific group of financial statement users (McDaniel & Hand, 1996). To date, the evidence from these studies has been somewhat mixed.

Abdel-khalik, Thompson and Taylor (1981) found that most analysts and loan officers viewed a company more favorably if it did not capitalize leases than an otherwise identical company that did capitalize leases. One explanation for this finding is that if a company does not capitalize leases lenders and analysts will be less likely to include such leases in the company's debt to equity ratios. Similarly, in a pension accounting context, Harper, Mister and Strawser (1987) found that both sophisticated (bankers) and unsophisticated (accounting students) users of financial statements were more likely to include a pension liability in the numerator of a debt to equity ratio when the pension liability was recognized in the balance sheet rather than disclosed in a footnote to the financial statements.

Nevertheless, interviews conducted with loan officers in America, Singapore and Australia, and bank training literature, suggest that loan officers are aware of the effect of non-capitalized leases on debt to equity ratios and make adjustments to financial statements and cash flow projections accordingly when assessing loan risk and repayment ability (Wilkins & Zimmer, 1983). Moreover, the results of an experimental study with loan officers by Wilkins and Zimmer indicate that there was no association between alternative accounting treatments for financial leases (capitalization, footnote only) and credit decisions (ability to repay, maximum loan amount). Evidence from verbal protocols collected in this study suggest that while a minority of loan officers in the footnote condition performed written adjustments in their debt to equity ratios to capitalize lease commitments, all of them appeared to cognitively adjust financial statements to reflect lease commitments as liabilities.

Recently, Hirst et al. (2002) suggest that differences in fair value performance measurement and reporting format affect analysts' assessment of risk and value. Specifically, bank analysts' valuation judgments of high and low risk banks differed under full fair value accounting, where gains and losses were reported in a performance statement, but analysts did not distinguish between high and low risk banks when fair value gains and losses were reported in footnotes. Therefore, footnote disclosure did not appear to be a perfect substitute of financial statement recognition. Hirst et al. theorize that information provided directly in financial statements, rather than footnotes, is easier to link to the performance attribute being evaluated and thus is weighted more heavily.

Our paper extends these prior studies by using an experiment involving reporting of financial instruments at market value to further examine this phenomenon. Our paper not only examines in a new context whether analysts' reactions differ between footnote-only disclosure and inclusion in income, but also sheds light on whether any method short of specific line item display on the face of the income statement will actually achieve the objective of clearer and more useful information

for statement users. In addition, the use of verbal protocol analysis in this study provides detailed data on analysts' information processing (Ericsson & Simon, 1984; Bedard & Biggs, 1991). For example, previous research such as Bernard and Schipper (1994) and Hirst and Hopkins (1998) has theorized that as a result of the information presentation format financials statement users: 1) may not acquire information or 2) may view that information differently. In this study, verbal protocols will be used to evaluate whether analysts: 1) do not acquire information disclosed in a footnote, or 2) acquire it but evaluate that information differently than when it is highlighted in financial statements.

Moreover, previous research has not examined financial statement recognition versus footnote disclosure of information on derivatives. Given the current controversy about the use of derivatives in the financial press (e.g., MacDonald, 1997), financial statement users may view derivatives differently than other types of financial instruments. For example, recent research by Koonce et al. (2001) indicates that investors consider derivatives riskier than non-derivatives, even when the underlying economic exposure is held constant. Since derivatives have the potential to be highly risky investments that may lead to large losses for a company, analysts may view information on derivatives as important regardless of where is it divulged. In the current study, an experimental setting is used to focus on whether individual line item disclosure versus footnote disclosure of derivatives information affects financial analysts' use and evaluation of that information. Based on the aforementioned research in psychology and accounting which suggests that format may affect how information is used several hypotheses emerge:

H1:	*Financial analysts' P/E ratios will be more likely to include unrealized losses or gains on derivatives when such information is disclosed as a separate line item in the income statement rather than solely in footnotes.*
H2:	*Financial analysts will be more likely to list losses or gains on derivatives as a factor that affected their investment recommendation when such information is disclosed as a separate line item in the income statement rather than solely in footnotes.*

Research in psychology has suggested that individuals have a tendency to weigh losses more heavily than gains (Kahneman & Tversky, 1979). For example, based on the results of fourteen experiments, Gneezy and Potters (1997) conclude that individuals are more sensitive to losses than gains, and become more risk averse the more frequently returns are evaluated. Research in economics involving theoretical simulations suggests that investors weigh losses about twice as heavily as gains when they evaluate their portfolios (Benartzi & Thaler, 1995). In accounting research, Rapaccioli and Schiff (1991) found evidence that managers are more likely to report gains on sales of business segments "above the line" in income from continuing operations, and losses on business segments "below the line" in income from discontinued operations. In addition, Revsine (1991) suggests that managers prefer "loose" financial reporting standards that allow them to defer recognition of investment gains in order to offset current operating losses. Therefore, financial

analysts may be more skeptical of gains on derivatives than losses. Moreover, Koonce et al. (2001) found that investors place more weight on loss probabilities and outcomes than they do on gain probabilities and outcomes. Similarly, analysts may weigh unrealized losses on derivatives more heavily than unrealized gains on derivatives. However, there has been relatively little research devoted to the issue of analysts' evaluation of unrealized gains versus unrealized losses, particularly with regard to derivatives. It is possible that analysts may view any information on derivative holdings negatively, even if there is an unrealized gain. This study will use the verbal protocol data to evaluate if analysts view unrealized gains and losses on derivatives favorably, unfavorably, or neutrally. Two hypotheses follow:

H3:	*Financial analysts' P/E ratios will be more likely to include unrealized losses on derivatives than unrealized gains on derivatives, regardless of presentation format.*
H4:	*Financial analysts will be more likely to list unrealized losses on derivatives as a factor that affected their investment recommendation than unrealized gains, regardless of presentation format.*

METHODS

An experiment was used to investigate the effect of financial statement versus footnote disclosure of unrealized derivatives gains/losses on financial analysts' use of information about derivatives. Participants were 81 buy-side equity analysts, portfolio managers, and business managers. On average, participants had 9.88 years of financial statement analysis experience (standard deviation 10.79 years). Participants were randomly assigned to one of four experimental conditions (income statement/loss, footnote/loss, income statement/gain, footnote/gain) described below. The Appendix contains the complete income statement/loss and income statement/gain conditions, along with the pertinent changes contained in the footnote/loss and footnote/gain conditions.

The experimental materials for this study were developed with the assistance of a certified financial analyst. The materials consisted of three years of summary income statement and balance sheet information for a hypothetical company, footnotes to the financial statements, a P/E ratio calculation, an investment recommendation task, and a post-experimental questionnaire. Earnings projections for the company and its stock price were also included in the case materials. Finally, the price-earnings ratio for the industry was provided in the materials to give participants a basis of comparison when making their investment recommendation. The company-specific information in the case was based on an actual company. None of the participants recognized the identity of the company. Financial statement data was held constant across conditions, except for the gain or loss on derivatives. The company was subject to interest rate risk, which is one of the most common risks faced by companies that hold derivatives (Roulstone, 1999).

Since the data gathering began before issuance of SFAS 133 and the dates of the comparative financial statements are 1993-1995, the disclosures do not attempt to simulate exactly the disclosures required under that statement. However, they do reflect directly on the requirements of SFAS 133. In practice we can expect many, if not most, companies to include the unrealized gains and losses in an unspecified "other" category (Roulstone, 1999). The effect of this would be very similar to our "footnote only" condition, since analysts would need to refer to a footnote to separate the derivative results from other non-operating items. In fact, since only net derivative gains and losses must be disclosed under SFAS 133, our "footnote only" condition still gives more specific information than would be required for a company with more than one derivative instrument on its balance sheet. Although SFAS 133 does not require it explicitly, truly material net gains or losses from non-hedge derivatives might be reported in a separate line item on the income statement in much the same way as our "separate line item" condition.

After reviewing the financial statements and footnotes, participants were asked to calculate price-earnings (P/E) ratios for the company for the last three years, compare the company's P/E ratio for the most recent year with the industry average, make an investment recommendation (buy, hold, sell), and list factors in order of importance that affected their recommendation. Finally, we gathered demographic information from participants with a post-experimental questionnaire.

The first independent variable was the financial reporting format of the derivative information (FORMAT). This variable was assigned a value of 1 if the unrealized derivative loss/gain was disclosed as a separate line item in the income statement, and 0 if it was disclosed only in a footnote. The second independent variable was whether there was a gain or a loss on the value of derivative investments (CHANGE). This variable was assigned a value of 1 if there was a loss on derivatives, and 0 if there was a gain.

The first dependent variable, PEWD, was assigned a value of 1 if the derivative loss or gain was included in the analyst's P/E ratio, and 0 if the derivative loss/gain was not included in the analyst's P/E ratio. The second dependent variable, FACTOR, was assigned a value of 1 if the derivative gain or loss was included in analysts' list of factors that affected their investment recommendation, and 0 if the derivative was not on the list.

Concurrent verbal protocols are generally considered to be the most appropriate method to obtain evidence of what subjects are thinking about as they perform a task (Ericsson & Simon, 1984; Bedard & Biggs, 1991). Verbal protocols were collected from a subset of 17 participants at their place of business to further examine the way they processed the information about derivatives. These participants were evenly divided among the four experimental conditions and asked to "think aloud" as they performed the task. A researcher was present to operate a tape recorder and remind the participants to think aloud.

Verbal protocols were coded using the following procedures. First, audio tapes of verbalizations were transcribed into phrases. Next, one author and a graduate student with public accounting experience independently coded the transcribed verbal protocols. Differences in coding

were reconciled between the coders. The protocols were first examined to identify all statements pertaining to derivatives in order to assess if analysts acquired the derivatives information. Then, to further examine analysts' information processing about derivatives, statements about derivatives were coded by type: factual, evaluations, inferences or queries. Statements coded as factual simply expressed that the company had derivatives (i.e., "the company engaged in some interest rate swaps"). Statements coded as evaluations expressed an opinion about the derivatives (i.e., "the only thing that concerns me is the unrealized loss on derivatives"). Evaluations were further coded as unfavorable (see above), or not important ("unrealized gains on derivative transactions, who cares?"). Favorable evaluations regarding derivatives were searched for but not found. Statements coded as inferences involved a supposition about the derivatives (i.e., "I guess it must be the gain is due to derivative transactions"). Finally, statements coded as queries expressed a desire for more information about the derivatives (i.e., "I would call the company and find out why their unrealized loss…happened and would it happen again").

RESULTS

The first hypothesis asks if financial analysts' P/E ratios will be more likely to include losses or gains on derivatives when such information is disclosed in the income statement rather than in the footnotes. As shown in Panel A of Table 1, approximately 71 percent of analysts in the income statement disclosure condition included the derivative gain/loss in their P/E ratios, as opposed to 5 percent of the analysts in the footnote disclosure condition (Chi square = 37.0; p = 0.001). Multiple regression analysis was used to determine if these results are significantly different from chance (Panel B of Table 1). FORMAT is statistically significant (t = 8.10; p = 0.00001), indicating that analysts in the income statement condition included the derivative loss/gain in their P/E ratios significantly more often than analysts in the footnote condition.

The second hypothesis asks if financial analysts will be more likely to list losses or gains on derivatives as a factor that affected their investment recommendation when such information is disclosed in the income statement rather than in footnotes. As shown in Panel A of Table 2, approximately 29 percent of analysts in the income statement disclosure condition included the derivative gain/loss in their list of factors that affected their investment recommendation, as opposed to 10 percent of the analysts in the footnote disclosure condition (Chi square = 4.74; p = 0.02). As shown on Panel B of Table 2, FORMAT is significant (t = 1.94; p = 0.028), indicating that analysts' in the income statement condition included the derivative loss/gain in their list of investment recommendation factors more often than analysts' in the footnote condition.

The third hypothesis asks if financial analysts' P/E ratios will be more likely to include losses on derivatives than gains on derivatives. As shown in Panel A of Table 1, 51 percent of financial analysts included unrealized derivative losses in their P/E ratios, as compared to 25 percent of financial analysts who included unrealized derivative gains in their P/E ratios (chi square = 5.89;

p = 0.01). It is interesting to note that none of the analysts in the footnote/gain condition brought the unrealized gain into their P/E calculation, while 44 percent of those in the income statement/gain condition took out the unrealized gain before calculating their P/Es. As reported in Panel B of Table 1, CHANGE is significant (t = 2.23; p = 0.014), indicating that analysts included derivative losses in their P/E ratios significantly more often than derivative gains.

Table 1: Analysis of Financial Analysts' P/E Ratios

Panel A: Percentage of Analysts Who Included

Derivative Gain/Loss in Their P/E Ratios

Format	Loss	Gain	Total
Income Statement	0.83	0.56	0.71
	n = 23	n = 18	n = 41
Footnote	0.11	0.00	0.05
	n = 18	n = 22	n = 40
Total	0.51	0.25	0.38
	n = 41	n = 40	n = 81

Panel B: Multiple Regression Analysis of Analysts' P/E ratios

Model: pewd = f (Format, Change)

F-Statistic = 38.2P-Value = 0.00001Adjusted R-Square = 0.49

Variable	Beta	T-Statistic	P-Value
Format	0.65	8.10	0.00001
Change	0.18	2.23	0.014

Key:
Pewd = 1 if derivative loss/gain included in P/E ratio, 0 if derivative loss/gain not included in P/E ratio
Format = 1 if derivative loss/gain reported in the income statement, 0 if derivative loss/gain in footnote
Change = 1 if derivative loss, 0 if derivative gain

The fourth hypothesis asks if financial analysts will be more likely to list losses on derivatives as a factor that affected their investment recommendation than gains. As shown in Panel A of Table 2, approximately 29 percent of analysts in the loss condition included the derivative in their list of factors that affected their investment recommendation, as opposed to 10 percent of the analysts in the gain condition (chi square = 4.74; p = 0.02). Interestingly, analysts appeared equally likely to include the derivative information in their list based on FORMAT (whether or not it was shown in the income statement or a footnote) and CHANGE (whether it was a gain or a loss). As reported in Panel B of Table 2, CHANGE is significant (t = 1.94; p = 0.028), indicating that analysts

in the loss condition included the derivative in their list of investment recommendation factors significantly more often than analysts' in the gain condition.

Table 2: Analysis of Financial Analysts' Investment Recommendation Factors

Panel A: Percentage of Analysts Who Included

Derivative Gain/Loss in Investment Recommendation Factors

Format	Loss	Gain	Total
Income Statement	0.39	0.17	0.29
	n = 23	n = 18	n = 41
Footnote	0.17	0.05	0.10
	n = 18	n = 22	n = 40
Total	0.29	0.10	0.20
	n = 41	n = 40	n = 81

Panel B: Multiple Regression Analysis of Analysts' Investment Recommendation Factors

Model: FACTOR = f (FORMAT, CHANGE)

F-Statistic = 4.31P-Value = 0.01Adjusted R-Square = 0.079

Variable	Beta	T-Statistic	P-Value
FORMAT	0.17	1.94	0.028
CHANGE	0.17	1.94	0.028

Key:
FACTOR = 1 if derivative loss/gain included analysts' list of factors that affected their investment recommendation, 0 if derivative loss/gain not included in the list
FORMAT = 1 if derivative loss/gain reported in the income statement, 0 if derivative loss/gain in footnote
CHANGE = 1 if derivative loss, 0 if derivative gain

The verbal protocols of 17 participants were analyzed to further investigate if reporting losses or gains on derivatives in the income statement, as opposed to a footnote, affect financial analysts' use of derivatives information. First, to examine the effect of format on analysts' information acquisition, the number of participants who did not mention the derivative at all was examined. Three out of eight analysts in the footnote conditions did not acquire the derivative information, as opposed to one out of nine analysts in the income statement conditions. Therefore, the majority (three out of four) of participants who made no mention of the derivative were in the footnote conditions. While almost half of the participants in the footnote conditions missed the derivative, only one analyst in the income statement conditions did not notice the derivative. Interestingly, all of the analysts in the income statement/loss condition acquired the derivatives information, whereas at least one member of each of the other groups failed to consider that information. Although these numbers are small, participants appeared more likely to notice the

information on derivatives when it was shown as a separate line item in the financial statements, providing further and more direct evidence that disclosing information on derivatives in footnotes may fail to make that information readily available and clear to financial statement users.

Second, to gain further insight into analysts' reactions to the derivative information, statements about derivatives were coded as facts, evaluations, queries or inferences. The results are shown in Table 3. The average number of statements coded as facts, evaluations, inferences and queries are displayed on Panel A of the table by condition (IS/Gain, IS/Loss, Footnote/Gain, Footnote/Loss). Surprisingly, Panel B shows that negative evaluations of derivatives were made more often in the footnote conditions as opposed to the financial statement conditions (mean 0.25 vs. 0.11), suggesting that analysts may have been more suspicious of management intentions when derivative information was disclosed in a footnote. In contrast, the income statement/gain condition was the only condition where there were no negative evaluations of the derivatives, perhaps because the information was clearly disclosed and gains were viewed more positively than losses.

As shown on Panel C, for statements coded as facts, it appears that participants in the loss conditions mentioned the derivatives about twice as often as participants in the gain conditions (1.11 vs. 0.5 statements on average). Consistent with the idea that losses are weighed more heavily than gains, the derivatives were deemed unimportant more often in the gain conditions as opposed to the loss conditions (0.5 vs. 0.11 on average). However, no favorable evaluations of derivatives were found in any of the conditions, suggesting that even when there was an unrealized gain on derivatives, analysts' reactions were neutral at best. This finding suggests analysts may view unrealized gains on derivatives as more inherently risky than unrealized gains on other types of financial instruments. Results were similar across conditions with regard to inferences. Participants in the income statement/loss condition made the most queries on average (1.4), almost twice as many as any other group (0.25, 0.5, 0.75 respectively), providing further evidence to suggest that participants may have been more concerned about losses on derivatives than gains, particularly when such losses were clearly displayed on the income statement.

Third, another analysis of the protocols was conducted excluding those subjects who failed to acquire the derivatives information. Since the majority of analysts who did not consider the derivatives information were in the footnote conditions, the previous results may have been overstated for the income statement conditions, and understated for the footnote conditions. The results of this analysis are shown in Table 4. Similar to the previous results, Panel B shows that negative evaluations of derivatives were made more often in the footnote conditions as opposed to the financial statement conditions (mean 0.4 vs. 0.125), and Panel C shows that the derivatives were deemed unimportant more often in the gain conditions as opposed to the loss conditions (0.67 vs. 0.14 on average). Also, Panel C shows for statements coded as facts, it appears that participants in the loss conditions mentioned the derivatives about twice as often as participants in the gain conditions (1.42 vs. 0.67 statements on average).

Table 3: Results of Verbal Protocol Analysis

Panel A: Average Number of Statements by Condition

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
IS/Loss n = 5	1.00	0.20	0.20	0.60	1.40	3.40
Foot/Loss n = 4	1.25	0.25	0.00	0.50	0.25	2.25
IS/Gain n = 4	0.50	0.00	0.50	0.50	0.50	2.25
Foot/Gain n = 4	0.50	0.25	0.50	0.75	0.75	2.75
Overall n = 17	0.82	0.18	0.29	0.59	0.76	2.71

Panel B: Income Statement vs. Footnote

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
IS n = 9	0.78	0.11	0.33	0.56	1.00	2.88
Footnote n = 8	0.88	0.25	0.25	0.63	0.50	2.50

Panel C: Loss vs. Gain

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
Loss n = 9	1.11	0.22	0.11	0.56	0.89	2.89
Gain n = 8	0.50	0.125	0.50	0.63	0.63	2.50

Key:

[a] Statement Types:

Fact = factual statement about derivatives (i.e., "the company engaged in some interest rate swaps").
Eval-UF = unfavorable evaluation of the derivatives (i.e., "the only thing that concerns me is the unrealized loss on derivatives").
Eval-NI = derivative evaluated as unimportant (i.e., "unrealized gains on derivative transactions, who cares?").
Inference = a supposition about the derivatives (i.e., "I guess it must be the gain is due to derivative transactions").
Query = expressed a desire for more information about the derivatives (i.e., "I would call the company and find out why their unrealized loss…happened and would it happen again")

[b] Conditions:

IS/Loss = Loss on derivatives shown as a line item on Income Statement
IS/Gain = Gain on derivatives shown as a line item on Income Statement
Foot/Loss = Loss on derivatives disclosed in a footnote
Foot/Gain = Gain on derivatives disclosed in a footnote

Table 4: Results of Verbal Protocol Analysis: Excluding Analysts Who Did Not Acquire the Derivatives Information

Panel A: Average Number of Statements by Condition

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
IS/Loss n = 5	1.00	0.20	0.20	0.60	1.40	3.40
Foot/Loss n = 2	2.5	0.50	0.00	1.00	0.50	4.50
IS/Gain n = 3	0.67	0.00	0.67	0.67	0.67	3.00
Foot/Gain n = 3	0.67	0.33	0.67	1.00	1.00	3.67
Overall n = 13	1.08	0.23	0.38	0.77	1.00	3.53

Panel B: Income Statement vs. Footnote

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
IS n = 8	0.875	0.125	0.375	0.625	1.125	3.25
Footnote n = 5	1.4	0.40	0.40	1.00	0.80	4.00

Panel C: Loss vs. Gain

	Statement Types[a]					
Condition[b]	Fact	Eval-UF	Eval-NI	Inference	Query	Total
Loss n = 7	1.43	0.29	0.14	0.71	1.14	3.71
Gain n = 6	0.67	0.17	0.67	0.83	0.83	3.33

Key:

[a] Statement Types:

Fact = factual statement about derivatives (i.e., "the company engaged in some interest rate swaps").
Eval-UF = unfavorable evaluation of the derivatives (i.e., "the only thing that concerns me is the unrealized loss on derivatives").
Eval-NI = derivative evaluated as unimportant (i.e., "unrealized gains on derivative transactions, who cares?").
Inference = a supposition about the derivatives (i.e., "I guess it must be the gain is due to derivative transactions").
Query = expressed a desire for more information about the derivatives (i.e., "I would call the company and find out why their unrealized loss…happened and would it happen again")

[b] Conditions:

IS/Loss = Loss on derivatives shown as a line item on Income Statement
IS/Gain = Gain on derivatives shown as a line item on Income Statement
Foot/Loss = Loss on derivatives disclosed in a footnote
Foot/Gain = Gain on derivatives disclosed in a footnote

However, Panel A shows that factual statements about the derivatives were mentioned most often in the footnote/loss condition (mean 2.5) and this condition also had the highest number of statements about derivatives overall (mean 4.5). In addition, Panel B shows that analysts in the footnote conditions made more factual statements (mean 4.00 vs. 3.25), unfavorable evaluations (mean 0.4 vs. 0.125), inferences (mean 1.00 vs. 0.625), and comments about the derivatives overall (mean 4.00 vs. 3.25) than analysts in the income statement conditions. Therefore, it appears that if analysts in the footnote conditions acquired the derivatives information, they were likely to give it as much as, if not more consideration than analysts in the income statement conditions, and may have judged it more harshly. These findings shed light on the results of previous research (e.g., Bernard and Schipper 1994), which has raised questions about whether financial statement users fail to acquire information in footnotes, or evaluate it differently than information in financial statements. The results of the verbal protocols suggest that, after excluding those analysts who did not acquire the derivatives information, the remaining analysts may have actually given greater consideration to the derivatives information, and evaluated it more negatively, when it was disclosed in a footnote rather than the income statement.

CONCLUSIONS

This study investigates whether disclosure of an unrealized gain or loss on derivatives as a separate line item in the income statement, as opposed to in a footnote, affects financial analysts' information processing. Specifically, the study examines if the information presentation format of the unrealized derivative gain or loss influences whether the gain or loss will be included in analysts' P/E ratios. The results of this study indicate that when the derivative gain/loss was included as a separate line item in the income statement, analysts included the gain/loss significantly more often in their P/E ratios, and were more likely to list the derivative as a factor affecting their investment recommendation, than when the derivative gain/loss was disclosed only in a footnote. The findings of this study also indicate that analysts included losses on derivatives in their P/E ratios significantly more often than gains, and were more likely to list the derivative as a factor affecting their investment recommendation when there was a loss as opposed to a gain.

Previous research has speculated that financial statement users may: a) fail to acquire information in footnotes, or b) place less weight on information if it was disclosed in the footnotes as opposed to the financial statements. The results of verbal protocol analysis from this study provide evidence that participants appeared less likely to consider information regarding derivatives when it was contained in the footnotes. However, after excluding those analysts who did not acquire the derivatives information, the remaining analysts may have actually given greater consideration to the derivatives information, and evaluated it more negatively, when it was disclosed in a footnote. Therefore, these results suggest that previous research findings may have been driven more by financial statement users failing to acquire information in footnotes, rather than placing less weight

on that information. Although the verbal protocol results were based on a small sample size, they echo the findings of the larger sample regression results, and provide additional and more direct evidence that analysts may be more likely to consider disclosures on derivatives when they are displayed in the financial statements rather than the footnotes.

Currently, both the FASB and IASC are working toward reporting fair-value recognition of all financial instruments in the financial statements (FASB, 2001; JWG, 2000). This study responds to calls for more research on disclosure and the potential effects of changes in accounting rules (Johnson, 1992; Beresford & Johnson, 1995; Hussein & Rosman, 1997). The results of this study have implications for accounting standard setters, accounting educators, auditors, and users and preparers of financial statements. The findings of this study suggest that financial analysts will be more likely to include changes in the value of derivatives in their P/E ratios when this information is reported as a separate line item in the income statement as opposed to in a footnote. Moreover, analysts' investment recommendations may be more likely to be influenced by changes in value of derivatives when such information is included as a separate line item in the financial statements, particularly when there is a loss. However, this study also shows that many analysts, when provided with sufficient, clearly presented information, will choose to exclude unrealized derivative gains from their P/E ratios. This suggests that when financial instruments are reported at fair value with unrealized gains and losses reported in income, net reporting of gains and losses, along with reporting of those gains and losses in other than separate line item format, may frustrate the intent of providing statement readers with more useful information.

It is also important to examine the relevance of disclosure-type research in the context of the efficient markets hypothesis. As Kothari (2001, 110) points out: "Choice between disclosure in footnotes and recognition in financial statements… is less contentious from the perspective of its effect on security prices in an efficient market. Naturally, the opposite would be true …if markets were not efficient." Therefore, if capital markets are in fact efficient in a semi-strong form sense, our results have far less salience. However a consensus appears to be emerging in the financial economics and accounting literature that capital markets are far less efficient than previously thought. Kothari (2001, 109) observes: "The belief that 'price convergence to value is a much slower process than prior evidence suggests' (Frankel & Lee, 1998, 315) has acquired currency among leading academics, spurring research on fundamental analysis". If fundamental analysis (including ratio analysis) does have a role to play in price discovery, then our results suggest that the outcome of the fundamental analysis depends on the disclosure format. We believe that experimental studies (such as ours) complement capital markets research directions suggested by Kothari (2001), Lee (2001) and others.

REFERENCES

Abdel-khalik, A. R., R. B. Thompson & R. E. Taylor (1981). *The Economic Effects of Leases on FASB Statement No. 13, Accounting for Leases.* Stamford, CT: Financial Accounting Standards Board.

Amir, E. (1993). The market valuation of accounting information: The case of post-retirement benefits other than pensions. *The Accounting Review* (October), 703-24.

Bedard, J. & S. Biggs (1991). Processes of pattern recognition and hypothesis generation in analytical review. *The Accounting Review, 66* (July), 622-42.

Benartzi, S. & R. Thaler (1995). Myopic loss aversion and the equity premium puzzle. *Quarterly Journal of Economics, CX*, 73-92.

Beresford, D. R. & L. T. Johnson (1995). Interactions between the FASB and the academic community. *Accounting Horizons* (December), 108-117.

Bernard, V. & K. Schipper (1994). Recognition and disclosure in financial reporting. Working paper, University of Chicago.

Biehal, G. & D. Chakravarti (1982). Information-presentation format and learning goals as determinants of consumers' memory retrieval and choice processes. *Journal of Consumer Research, 8*, 431-41.

Bierstaker, J., J. Bedard & S. Biggs (1999). The effect of problem representation shifts on auditor performance in analytical procedures. *Auditing: A Journal of Practice and Theory* (Spring), 37-54.

Davis-Friday, P.Y., L. B. Folami, C.S. Liu & H.F. Mittelstaedt. (1998). Does recognition instead of disclosure matter to the users of financial statements?: Evidence from SFAS No. 106. Working paper, University of Notre Dame.

Ericsson, K. & H. Simon (1980). Verbal reports as data. *Psychological Review, 87,* 215-51.

Financial Accounting Standards Board. (1998). *Statement of Financial Accounting Standards No. 133: Accounting for Derivative Instruments and Hedging Activities.* Stamford, CT: FASB.

Financial Accounting Standards Board.(1999a). *Statement of Financial Accounting Standards No. 137: Accounting for Derivative Instruments and Hedging Activities-Deferral of the Effective Date of FASB Statement No. 133-an amendment of FASB Statement 133.* Stamford, CT: FASB.

Financial Accounting Standards Board.(1999b). *The IASC-U.S. Comparison Project: a Report on the Similarities and Differences between IASC Standards and U.S. GAAP.* Stamford, CT: FASB.

Financial Accounting Standards Board.(2000). *Statement of Financial Accounting Standards No. 138: Accounting for Certain Derivative Instruments and Certain Hedging Activities: An amendment of FASB Statement No. 133.* Stamford, CT: FASB.

Financial Accounting Standards Board.(2001). *Fair Value: Summary of Tentative Board Conclusions through October 17, 2001.* http://www.FASB.org. Norwalk, CT: FASB.

Frankel, R. & C. Lee (1998). Accounting valuation, market expectation, and cross-sectional stock returns. *Journal of Accounting and Economics, 25* (June), 283-319.

Gastineau, G., D. J. Smith & R. Todd (2001). *Risk Management, Derivatives, and Financial Analysis Under SFAS No. 133.* Charlottesville, VA: Association for Investment Management and Research.

Gneezy, U. & J. Potters (1997). An experiment on risk taking and evaluation periods. *The Quarterly Journal of Economics* (May), 631-45.

Hirst, D. E. & P. E. Hopkins. (1998). Comprehensive income reporting and analysts' valuation judgments. *Journal of Accounting Research* (Supplement), 47-84.

Hirst, D. E., P. E. Hopkins & J. Wahlen (2002). Fair Values, Performance Reporting, and Bank Analysts' Risk and Valuation Judgments. Working Paper.

Hopkins, P. E. (1996). The effect of financial statement classification of hybrid financial instruments on financial analysts' stock price judgments. *Journal of Accounting Research*, *34* (Supplement), 33-50.

Hussein, M. E. & A. J. Rosman (1997). The ex ante role of behavioral research in setting financial accounting policy. In V. Arnold & S. G. Sutton (Eds.), *Behavioral Accounting Research: Foundations and Frontiers*. Sarasota, FL: American Accounting Association.

International Accounting Standards Committee (1998a). *IAS 32: Financial Instruments: Disclosure and Presentation,* London, U.K.: IASC.

International Accounting Standards Committee (1998b). *IAS 39: Financial Instruments: Recognition and Measurement.* London, U.K.: IASC.

Imhoff, E. A., R. C. Lipe & D. W. Wright (1995). Is note disclosure an Adequate alternative to financial statement recognition? *Journal of Financial Statement Analysis* (Fall), 70-81.

Johnson, L. T. (1992). Research on disclosure. *Accounting Horizons* (March), 101-103.

Johnson, E. J., J. W. Payne & J. R. Bettman (1988). Information displays and preference reversals. *Organizational Behavior and Human Decision Processes* (August), 1-21.

Joint Working Group of Standard Setters (2000). *Recommendations on accounting for Financial Instruments and Similar Items*. Norwalk, CT: Financial Accounting Standards Board.

Klienmuntz, D. N. & D. A. Schkade (1993). Information displays and decision processes. *Psychological Science, 4*, 221-27.

Kahneman, D. & A. Tversky (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47* (March), 263-91.

Koonce, L., M. L. McAnally & M. Mercer (2001). How do investors judge the risk of derivative and non-derivative financial items? Working paper, University of Texas.

Kothari, S.P. (2001). Capital markets research in accounting. *Journal of Accounting and Economics, 31* (September), 105-231.

Lee, C. (2001). Market Efficiency and accounting research: A discussion of 'Capital Markets Research in Accounting' by S.P. Kothari. *Journal of Accounting and Economics, 31* (September), 233-253.

Lesak, M. S. (1998). FASB's folly: A look at the misguided new rules on derivatives valuation and disclosure. *Loyola University Chicago Law Journal*, (Spring), 649-679.

MacDonald, E. (1997). Bankers assail FASB's proposal on derivatives. *Wall Street Journal,* (October 2), A6.

Maines, L. A. & L. S. McDaniel (2000). Effects of comprehensive-income characteristics on nonprofessional investors' judgments: The role of financial-statement presentation format. *The Accounting Review*, (April), 179-207.

McDaniel, L. S. & J. R. M. Hand (1996). The value of experimental methods for practice-relevant accounting research. *Contemporary Accounting Research, 13* (Spring), 339-352.

Pacter, P. (1998). International accounting standards: The world's standards by 2002. *The CPA Journal*, (July), 15-21.

Painton, S. & J. W. Gentry (1985). Another look at the impact of information presentation. *Journal of Consumer Research, 12*, 240-244.

Rapaccioli, D. & A. Schiff.(1991). Reporting sales of segments under APB Opinion No. 30. *Accounting Horizons, 5* (December), 53-59.

Reinstein, A. & G. H. Lander (2000). Are the new rules relating to disclosures of derivative financial instruments workable? *International Advances in Economic Research,* (February), 95-100.

Revsine, L. (1991). The selective financial misrepresentation hypothesis. *Accounting Horizons, 5* (December), 16-27.

Roulstone, D. (1999). Effect of SEC financial reporting release No. 48 on derivative and market risk disclosures. *Accounting Horizons, 13* (December), 343-363.

Russo, J. E. (1977). The value of unit price information. *Journal of Marketing Research, 14*, 193-201.

Securities and Exchange Commission (SEC) (1998). *SEC Staff Report on Market Risk Disclosures-Review of the First Phase of Filings of Disclosures of Quantitative and Qualitative Information about Market Risks Inherent in Derivative Instruments and Other Financial Instruments*. (July). Washington, D.C.: SEC.

Stanko, B. B. (1996). Dangerous derivatives. *Business & Economic Review*, (July-September), 1-7.

Wahlen, J. M., J. R. Boatsman, R. H. Herz, G. J. Jonas, K. G. Palepu, S. G. Ryan, K. Schipper, C. M. Schrand & D. J. Skinner (2000). Response to the FASB preliminary views: Reporting financial instruments and certain related assets and liabilities at fair value. *Accounting Horizons, 14* (December), 501-508.

Wilkins, T. & I. Zimmer (1983). The effect of leasing and different methods of accounting for leases on credit evaluations. *The Accounting Review*, (October), 749-764.

Wilson, A. C. (1998). The decision on derivatives. *Journal of Accountancy* (November): 1-10.

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Appendix

Experimental Instrument (Format slightly modified to match publication specifications.)
(Note: bold and italics added to highlight line item on derivative transactions to assist reader; no such highlighting was done in the experimental version)

Case A: Losses on Derivatives accrued in Financial Statements.

ACME INC.

The following summaries set forth selected financial data for the Company for each of the three years in the period ended December 31, 1995. Selected financial data should be read in conjunction with selected notes to accounts and other industry data provided.

Statement of Operations Data ***(Dollars and shares in thousands except per share amounts)***

	Years Ended December 31		
	1995	**1994**	**1993**
Revenues and Gains			
Net Sales	$ 546,165	$ 484,118	$ 522,166
Royalty income	761	1,705	2,148
Interest income	949	1,023	342
Total revenues and gains	547,875	486,846	524,656
Expenses and Losses			
Cost of products sold	277,109	247,340	252,217
Selling, distribution and administrative expenses	227,863	218,642	194,872
Interest expense	7,737	7,803	9,380
Unrealized loss on derivative transactions/settlement, net	***5,689***	0	0
Income (loss) before income taxes	29,477	13,061	68,187
Income taxes	11,909	5,076	26,303
Net Income (loss)	17,568	7,985	41,884
Net Income (loss) per share	$1.09	$ 0.50	$ 2.61
Dividends per share	$ 0.40	$ 0.39	$ 0.36
Average common shares	16,103	16,104	16,039

Selected Financial Data ***(Dollars and shares in thousands except per share amounts)***

	December 31		
	1995	**1994**	**1993**
Plant and equipment, net	$ 116,900	$ 112,712	$ 110,769
Total assets	574,759	501,104	544,261
Long-term debt	74,365	70,175	71,079
Debt due within one year	66,187	31,911	71,208
Shareholder's equity	315,397	303,341	300,743
Working Capital	211,509	224,261	215,011
Capital expenditures	31,049	30,970	31,736
Market Price per share	23.00	8.80	37.50
Industry Price/Earnings Ratio	19.20	17.60	14.30

Growth Projections: Acme company's operating earnings are expected to grow at the industry average for the foreseeable future.

Selected Notes to Financial Data
Years Ended December 31, 1995, 1994, 1993

Cash and equivalents: Cash and equivalents are stated at cost. Cash equivalents include time deposits, money market instruments and short-term debt obligations with original maturities of three months or less. The carrying amount approximates fair value because of the short maturity of these instruments.

Inventories: Inventories are stated at the lower of cost (first-in, first-out) or market.

Plant and equipment: Plant and equipment are stated at cost. Plant and equipment, except for leasehold improvements, are depreciated over their related estimated useful lives, using the straight-line method. Leasehold improvements are amortized over the terms of the respective leases, using the straight-line method. Expenditures for maintenance and repairs are charged to operations currently; renewals and betterments are capitalized.

Other assets: Other assets include deferred and prepaid costs, goodwill and other intangibles. Deferred and prepaid costs represent costs incurred relating to long-term customer sales agreements. Deferred and prepaid costs are amortized ratably over the terms of agreements, generally three to six years. Goodwill and other intangibles are amortized over periods ranging from three to twenty years, using the straight-line method.

Interest rate swap agreements: The Company periodically enters into interest rate swap or derivative transactions with the intent to manage the interest rate sensitivity of portions of its debt. The difference between the amount of interest paid and the amount of interest received under interest rate swap agreements due to changing interest rates is charged or credited to interest expense over the life of the agreements. All interest rate swaps are marked-to-market, i.e. the unrealized gains/losses on outstanding agreements are recognized in the income statement and stockholders equity. At December 31, 1995, the Company had four outstanding rate swap/derivative positions with a total notional amount of $ 96 million. The fair value of interest rate swaps (used for risk management purposes) is the estimated amount that the company would receive or pay to terminate the swap agreements at the reporting date.

Case B: Losses on Derivatives disclosed in a footnote (selected information).
(Note: some of the information held constant between conditions is omitted).

Statement of Operations Data ***(Dollars and shares in thousands except per share amounts)***

	Years Ended December 31		
	1995	**1994**	**1993**
Revenues and gains			
Net Sales	$ 546,165	$ 484,118	$ 522,166
Royalty income	761	1,705	2,148
Interest income	949	1,023	342
Total revenues	547,875	486,846	524,656
Expenses and Losses			
Cost of products sold	277,109	247,340	252,217
Selling, distribution and administrative expenses	227,863	218,642	194,872
Interest expense	7,737	7,803	9,380
Income (loss) before income taxes	35,166	13,061	68,187
Income taxes	14,209	5,076	26,303
Net Income (loss)	20,957	7,985	41,884
Net Income (loss) per share	***$ 1.30***	$ 0.50	$ 2.61
Dividends per share	$ 0.40	$ 0.39	$ 0.36
Average common shares	16103	16104	16039

Selected Notes to Financial Data

Years Ended December 31, 1995, 1994, 1993

(Note: Bold and italics added to show differences between Case A notes and Case B notes)

Interest rate swap agreements: The Company periodically enters into interest rate swap or derivative transactions with the intent to manage the interest rate sensitivity of portions of its debt. The difference between the amount of interest paid and the amount of interest received under interest rate swap agreements due to changing interest rates is charged or credited to interest expense over the life of the agreements. At December 31, 1995, the Company had four outstanding rate swap/derivative positions with a total notional amount of $ 96 million. The fair value of interest rate swaps (used for risk management purposes) is the estimated amount that the company would receive or pay to terminate the swap agreements at the reporting date. ***Based on the estimated cost of terminating these positions, the Company has an unrealized net loss at December 31, 1995 of $ 5.689 million.***

Case C: Gains on Derivatives accrued in Financial Statements.

(Note: bold and italics added to highlight line item on derivative transactions.)

ACME INC.

The following summaries set forth selected financial data for the Company for each of the three years in the period ended December 31, 1995. Selected financial data should be read in conjunction with selected notes to accounts and other industry data provided.

Statement of Operations Data ***(Dollars and shares in thousands except per share amounts)***

	Years Ended December 31		
	1995	**1994**	**1993**
Revenues and Gains			
Net Sales	$ 546,165	$ 484,118	$ 522,166
Royalty income	761	1,705	2,148
Interest income	949	1,023	342
Unrealized gain on derivative transactions/settlement,net	***5,689***	0	0
Total revenues and gains	553,564	486,846	524,656
Expenses and Losses			
Cost of products sold	277,109	247,340	252,217
Selling,distribution and administrative expenses	227,863	218,642	194,872
Interest expense	7,737	7,803	9,380
Income (loss) before income taxes	40,855	13,061	68,187
Income taxes	16,505	5,076	26,303
Net Income (loss)	24,350	7,985	41,884
Net Income (loss) per share	$ 1.51	$ 0.50	$ 2.61
Dividends per share	$ 0.40	$ 0.39	$ 0.36
Average common shares	16,103	16,104	16,039
Selected Financial Data ***(Dollars and shares in thousands except per share amounts)***			
Plant and equipment, net	$ 116,900	$ 112,712	$ 110,769
Total assets	581,541	501,104	544,261
Long-term debt	74,365	70,175	71,079
Debt due within one year	66,187	31,911	71,208
Shareholder's equity	322,179	303,341	300,743
Working Capital	218,291	224,261	215,011
Capital expenditures	31,049	30,970	31,736
Market Price per share	27.00	8.80	37.50
Industry Price/Earnings Ratio	19.20	17.60	14.30

Growth Projections: Acme company's operating earnings are expected to grow at the industry average for the foreseeable future.

Selected Notes to Financial Data
Years Ended December 31, 1995, 1994, 1993

Cash and equivalents: Cash and equivalents are stated at cost. Cash equivalents include time deposits, money market instruments and short-term debt obligations with original maturities of three months or less. The carrying amount approximates fair value because of the short maturity of these instruments.

Inventories: Inventories are stated at the lower of cost (first-in, first-out) or market.

Plant and equipment: Plant and equipment are stated at cost. Plant and equipment, except for leasehold improvements, are depreciated over their related estimated useful lives, using the straight-line method. Leasehold improvements are amortized over the terms of the respective leases, using the straight-line method. Expenditures for maintenance and repairs are charged to operations currently; renewals and betterments are capitalized.

Other assets: Other assets include deferred and prepaid costs, goodwill and other intangibles. Deferred and prepaid costs represent costs incurred relating to long-term customer sales agreements. Deferred and prepaid costs are amortized ratably over the terms of agreements, generally three to six years. Goodwill and other intangibles are amortized over periods ranging from three to twenty years, using the straight-line method.

Interest rate swap agreements: The Company periodically enters into interest rate swap or derivative transactions with the intent to manage the interest rate sensitivity of portions of its debt. The difference between the amount of interest paid and the amount of interest received under interest rate swap agreements due to changing interest rates is charged or credited to interest expense over the life of the agreements. All interest rate swaps are marked-to-market, i.e. the unrealized gains/losses on outstanding agreements are recognized in the income statement and stockholders equity. At December 31, 1995, the Company had four outstanding rate swap/derivative positions with a total notional amount of $ 96 million. The fair value of interest rate swap (used for risk management purposes) is the estimated amount that the company would receive or pay to terminate the swap agreements at the reporting date.

Case D: Gains in Derivatives disclosed in a footnote (selected information).
(Note: some of the information held constant between conditions is omitted).

Statement of Operations Data ***(Dollars and shares in thousands except per share amounts)***

	Years Ended December 31		
	1995	**1994**	**1993**
Revenues and gains			
Net Sales	$ 546,165	$ 484,118	$ 522,166
Royalty income	761	1,705	2,148
Interest income	949	1,023	342
Total revenues	547,875	486,846	524,656
Expenses and Losses			
Cost of products sold	277,109	247,340	252,217
Selling, distribution and administrative expenses	227,863	218,642	194,872
Interest expense	7,737	7,803	9,380
Income (loss) before income taxes	35,166	13,061	68,187
Income taxes	14,209	5,076	26,303
Net Income (loss)	20,957	7,985	41,884
Net Income (loss) per share	***$ 1.30***	$ 0.50	$ 2.61
Dividends per share	$ 0.40	$ 0.39	$ 0.36
Average common shares	16103	16104	16039

Selected Notes to Financial Data

Years Ended December 31, 1995, 1994, 1993

(Note: Bold and italics added to show differences between Case C notes and Case D notes)

Interest rate swap agreements: The Company periodically enters into interest rate swap or derivative transactions with the intent to manage the interest rate sensitivity of portions of its debt. The difference between the amount of interest paid and the amount of interest received under interest rate swap agreements due to changing interest rates is charged or credited to interest expense over the life of the agreements. At December 31, 1995, the Company had four outstanding rate swap/derivative positions with a total notional amount of $ 96 million. The fair value of interest rate swap (used for risk management purposes) is the estimated amount that the company would receive or pay to terminate the swap agreements at the reporting date. ***Based on the estimated cost of terminating these positions, the Company has an unrealized net gain at December 31, 1995 of $ 5.689 million.***

REEXAMINATION OF THE FIRM VALUE AND WEIGHTED AVERAGE COST OF CAPITAL CONCEPT

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ABSTRACT

The decision to accept or reject an investment project is dependent on the capitalization rate of and the concept of the project free cash flow. This paper analyzes the impact of the definition of free cash flow that recognizes debt payments as obligations of the firm, and debt as capital resource supplied by outsiders to the firm, on the appropriate capitalization rate for projects and the definition of firm value.

INTRODUCTION

The value of a firm has traditionally been viewed as the sum of the market value of the firm's equity and debt. This view is derived from the accounting balance sheet identity wherein the sum of asset accounts is equal to the sum of liability and equity accounts. This identity merely expresses the source of funding for the asset acquisition, and hence can be misleading when applied to asset valuation. Moreover, this concept of valuation gave birth to the weighted average cost of capital, a crucial variable in the capital budgeting process. The objective of this paper is to show that the current firm valuation process, by ignoring the fact that debt holders have a fixed claim on the assets of the firm, and using the weighted average cost of capital for making investment decisions, can lead to investment decisions that are contrary to the objective of maximizing shareholder wealth.

ORIGIN OF THE WEIGHTED AVERAGE COST OF CAPITAL

Copeland and Weston (1988) provide a detailed derivation of the weighted average cost of capital (WACC). The derivation starts off by showing that when the cash flow is a perpetuity, the free cash flow for an all equity firm is equal to the after-tax operating income. For a levered firm, the free cash flow is defined as the net income available to equity holders plus the interest payment to the creditors. Following the Modigliani and Miller (1958) (M&M) definition of firm value, and the requirement that "shareholders will require the rate of return on new projects to be greater than the opportunity cost of the funds supplied by them and bondholders," the WACC was derived to be:

$$WACC = \rho\left(1 - \tau_c \frac{\Delta B}{\Delta I}\right) \tag{1}$$

where ρ is the cost of funds for the unlevered firm, τ_c is the corporate tax rate, ΔB is the change in debt, and ΔI is the new investment.

This definition of the WACC was shown to be the same as:

$$WACC = (1 - \tau_c) k_b \frac{B}{B+S} + k_s \frac{S}{B+S} \tag{2}$$

where k_b is the cost of debt, k_s is the cost of equity for a levered firm, and B and S are the market values of the debt and equity of the firm, respectively. Thus, the derivation of the WACC was based on two key identities: (1) interest payment on debt is a free cash flow; (2) the value of a firm is the sum of the firm's equity and debt. These two concepts are responsible for the inappropriateness of the weighted average cost of capital as a capital budgeting tool. Ross, Westerfield and Jordan (2003) distinguish between marketed versus non-marketed claims against a corporation's cash flow. The marketed claims represent claims by shareholders and creditors. Non-marketed claims are government and potential litigant claims. The total of the marketed claims is M&M's definition of the value of the firm.

CONCEPTS OF VALUE

The value of a firm is a concept that is economic unit specific. Warren (1999), writing on environmental land deals, notes "that environmental attributes valuable to Audubon are probably different from agricultural attributes valuable to Farmer Jones". In the same light, the value placed on a firm by a creditor is not the same as the value placed on that same firm by its owners. Value is a concept that is tied to the utility expected from the consumption of that good or service. To the shareholders, the value of the firm is the present value of the cash flow that the resources (part of the resources employed by the firm is capital supplied by its creditors) employed by the firm is expected to generate in excess of their costs. This is the intrinsic value of the firm. Other measures of value include the replacement value, liquidation value, book value, and market value.

The replacement value of an asset or a collection of assets (a firm) is what it will cost today to replace those assets with similar ones in order to start a new business with the same earning power as the one whose value is sought. Liquidation value is the amount of cash proceeds if the various items that make up the firm's assets are sold off separately. Book value is an accounting concept that represents the sum of the amount of funds supplied by the owners directly and the net additions from earnings. Market value on the other hand is akin to intrinsic value. It is the consensus market

estimate of the present value of the expected cash flow that will accrue to its shareholders. Jaconetty (2000) reports the following definitions of market value:

"the highest price in terms of money which a property will bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently, and assuming the price is not affected by undue stimulus." (California Supreme Court)
"what the property would bring at a voluntary sale where the owner is ready, willing and able to sell but not compelled to do so, and buyer is ready, willing and able to buy but not forced to do so." (Illinois Supreme Court)
"market value means the fair value of the property as between one who wants to purchase and one who wants to sell ……It is what it would bring at a fair public sale, when one party wanted to sell and the other to buy." (Kansas Supreme Court)
"...value may be deemed to be the sum which, considering all the circumstances, could have been obtained for it; that is , the amount that in all probability would have been arrived at by fair negotiations between an owner willing to sell and a purchaser desiring to buy." (United States Supreme Court)

Even though these legal concepts of value are based on property, it is readily applicable to firms whose assets also include property. The central point in these definitions is the irrelevance of the method of payment for the property in the definition of its value. The fact that the buyer may borrow some of the funds needed to pay for the asset in no way affects the price asked by the seller, nor the price the buyer is willing to pay. This is in agreement with the M&M capital structure irrelevance proposition.

The M&M definition of the value of a firm ignores the contingent nature of the magnitude of the cash flow due to equity holders. Payment to shareholders is subordinated to payments to creditors. Thus the equation:

$$FCF = NI + k_dD \tag{3}$$

where FCF is free cash flow, NI is net income, and k_dD is the interest payment, assumes that NI and k_dD are two independent variables whose sum determine FCF. This independence leads to the M&M definition of firm value as the sum of the present values of both streams of cash flow discounted at their respective recipient's opportunity cost. This definition ignores the residual nature of the equity holder's claim. The value of debt and the value of equity are not two independent variables. To the firm, the interest payment on outstanding debt is independent of changes in the market interest rate, which leads to changes in the market value of the outstanding debt. As a result, the M&M firm value definition is an identity relating the distribution of the proceeds from the sale of an asset. The random variable is the firm value. The value of debt is its face value or book value, and it is independent of the value of the firm. Given the value of the firm, the value of equity is the leftover after debt claims have been satisfied.

INTEREST PAYMENT OBLIGATION

The present concept of firm value uses as its starting point the free cash flow available to the suppliers of capital (creditors and shareholders), despite the fact that interest payment is an obligation of the firm. For a firm to continue as a going concern, it must meet its obligations. Interest payment is an expense that the firm must pay, just like payment of rent on a building occupied by the firm. This payment is not at the discretion of the firm unless the firm opts for bankruptcy, an undesirable option for the shareholders, who must turn over the assets of the firm to the debt holders. Hence, including interest payment as part of free cash flow is a misrepresentation. The concept of equity as an option on the firm's assets is well established. (c.f., Ross, Westerfield, and Jordan, 2003:68-471). If the value of the firm is less than the value of the firm's debt at maturity, the shareholders allow the option to expire by turning over the assets of the firm to the creditors. Otherwise, the firm pays off the debt and assumes clear title to the assets of the firm. Inability to payoff the debt is not the goal of the firm.

Graham, Lemon, and Schallheim(1998) note that they " document a negative relation between operating leases and tax rates, and a positive relationship between debt levels and tax rates", and conclude that "low tax rate firms lease more, and have lower debt levels, than high tax rate firms". Consider a situation where an economic unit buys a facility and subsequently leases the facility to Firm A, who incidentally had requested a loan from the economic unit for the express purpose of buying said facility. The lease payment on the facility, like debt, is considered an obligation of the firm with the lease arrangement a substitute for debt. The lease nonetheless is not considered as part of the firm's capital even though they are substitutes driven by tax rate.

In the literature and every finance textbook, authors often refer to the favorable treatment accorded to debt financing by the government. Because interest expense is tax deductible, the argument goes, the value of a leveraged firm increases by the present value of the tax shield. The government therefore seems to favor the use of debt by subsidizing interest payment. Interest payment is rental expense and therefore a legitimate expense of the firm. Governments use income as a means of allocating the cost it incurs in the provision of public goods to the economic units that consume those goods. It could use a consumption based tax (sales tax) or property taxes. If the tax deductibility of interest expense is a subsidy, then the same holds for all the expenses that firms incur that are tax-deductible. The conclusion, all expenses of the firm provide a tax shield. Consider a firm that has a marginal tax rate of 40%. For each dollar of any expense, interest payment included, the firm gets back 40 cents in lower taxes. The net payment by the firm is 60 cents. Spending a dollar to save on the marginal tax cannot be considered a true shield. Manuel and Politte(1992) have shown that leverage differences for firms with highly correlated pretax output suggest a positive relationship between debt and non-debt tax shields. Downs (1993) investigated the relationship between non-debt tax shield and corporate leverage and concludes that: "firms with substantial cash flow from depreciation exploit their higher debt capacity by maintaining a capital

structure with significantly more debt than otherwise". These findings support the position that ability to service debt and profitability of a proposed project are key determinants of a firm's debt usage.

The "gain from leverage" is not due to an increase in the cash flow generated by the assets of the firm, but rather is a result of the government decision, in essence, to give-up a portion of its claim in order to encourage economic growth. Leverage increases the scale of investment, which is an increase in the economy's output, one of the main goals of fiscal policy. This diversion of cash flow from taxes to shareholders leads to an increase in return to the equity holders. This in turn increases the probability that a project will be accepted. This is also the same reason Congress every so often institutes an investment tax credit.

FIRM'S DEBT AS A RESOURCE

Friedman(1990:200) defines a firm as "a group of people combining inputs to produce an output", while Nicholson(1992:290) defines it as "institutions that coordinate the transformation of inputs into outputs". Essentially, a firm uses factors of production (land, labor and capital) to provide goods and services. The composition of a firm can vary from groups of people to institutions. The most widely accepted objective of the firm is the maximization of the value of the firm. Since the firm is by definition a group of people or institution converting inputs into outputs, the objective of the firm must of necessity be the maximization of the value of the firm to this group of people or institution (its owners).

Firms acquire inputs (factors of production: land, labor and capital) to produce goods and services. The success or failure of a firm therefore depends on how well they utilize these resources in the conversion process. This can be measured by the residual from the revenues generated by these goods and services after payment for the factors of production. This residual has traditionally been called the net income. The capital supplied by outsiders to the firm has traditionally been called debt. And the payment for the use of this capital is referred to as interest. The government recognizes this concept of debt. It classifies interest payment by the firm as an expense and therefore exempt from the definition of income, which is used as a driver in allocating the cost of public goods. Thus, the inclusion of the market value of debt as a component of the value of the firm is misleading and inappropriate.

CAPITALIZATION RATE FOR SHAREHOLDER CASH FLOW

The current practice of capitalizing the after-tax operating cash flow using the WACC to obtain the present value of the expected cash flow from the acceptance of an investment is aimed at maximizing the value of the firm. The Net Present Value of the project is thought of as the expected increase in the value of the firm resulting from undertaking that particular project (Moyer

et al, 2001:342). The question arises as to whom the value is maximized. Since the firm belongs to the shareholders, it is appropriate to evaluate the acceptability of a project in light of its impact on the wealth of the shareholders. The valuation based on shareholder wealth treats interest payment and the repayment of principal as obligations of the firm. Thus, only cash flows to and from shareholders are used in evaluating the profitability of an investment. For a project with a finite life, this cash flow is defined as:

$$ECF = \{EBIT - k_d D\}\{1 - T\} + DEP - \Delta NWC \quad (4)$$

where:

ECF is the cash flow to the firm net of obligations to outside suppliers of resources
EBIT is operating income
k_d is the cost of debt
D is the book or face value of debt
DEP is annual depreciation (straight line method of depreciation is assumed)
ΔNWC is the change in net working capital

The terminal cash flow of the project includes a cash outflow D, representing a return of the principal to the creditors. The initial investment is the contribution by the shareholders, the amount financed with equity. For a perpetuity, the depreciation is assumed to be equal to the level of investment required to maintain the earning capacity of the asset. This is inline with M&M procedure. The capitalization rate is the cost of equity as opposed to the WACC. This approach is in accordance with the flows to equity (FTE) method of valuation discussed by Taggart (1991), except for the use of the risk adjusted cost of equity that is consistent with the actual variability in the cash flow to the firm's equity holders. A corresponding valuation is also performed using the WACC and the after tax operating income as the relevant cash flow. Ratios of the net present value of the two valuation approaches are presented.

For the analysis, a project with the following characteristics is assumed:

EBIT = $1,500
Total Initial cost of project = $10,000
Tax rate = 40%
Cost of Equity = 12%
Cost of Debt = 7%
Project Life (n years) = 5, 10, 20, and 4
ENPV = Project Net Present Value with Debt Payments Treated as Firm Obligation
WNPV = Project Net Present Value with Debt Payments Treated as Free Cash Flow
Net Present Value Ratio = $\frac{WNPV}{ENPV}$

This is accomplished by capitalizing the cash flow to the shareholders at the shareholders' required return; the cost of equity. The relevant cash flow will depend on the life of the project. Two types of projects will be presented. The first will assume a perpetuity while the other will be based on a

project with a finite life. In each case, the corresponding analysis using the WACC will be presented and compared.

ANALYSIS

The net present value is conceptually the expected increase in the value of a firm if the investment under consideration is accepted. Since shareholders have residual claim on the firm's cash flow and the creditors a fixed claim, increases in the value of the firm should accrue to the shareholders. This follows directly from the relation:

$$\text{Value of Equity } (V_E) = \text{Value of the Firm } (V_F) - \text{Book Value of Debt } (D) \quad (5)$$

Equation (5) is in agreement with the concept of equity as a call option on the firm's assets. If the value of the firm's asset is less than the maturity value of the firm's debt, the equity holders turn over the firm to the creditors, letting their option expire. Consequently, the net present value of a project as determined using the weighted average cost of capital should be equal to the net present value calculated using the cash flow available to share holders and the cost of equity.

TABLE 1: NET PRESENT VALUE RATIO

		LIFE OF PROJECT (YEARS)			
DEBT RATIO (%)	WACC (%)	5	10	20	∞
90	4.98	0.858	0.996	1.311	2.409
80	5.76	0.849	0.973	1.198	2.083
60	7.32	0.836	0.932	1.131	1.639
50	8.1	0.833	0.916	1.081	1.481
40	8.88	0.833	0.904	1.036	1.35
20	10.44	0.857	0.901	0.968	1.149*
10	11.22	0.896	0.924	0.952	1.07*
0	12.0	1.0	1.0	1.0	1.0

* Ratio of negative net present values

The result of the exercise conducted in this analysis and presented in Table 1, clearly shows that both methods do indeed differ. For shorter-lived projects, the WACC net present value is consistently lower than the NPV calculated with the method that treats debt payments as obligations of the firm. On the other hand, the situation is reversed for longer-lived projects. This implies that the current method of valuation will tend to reject projects that have the potential to enhance shareholder's wealth (short lived projects) and accept projects that has the potential to reduce

shareholder's wealth (longer lived projects). This situation is obviously not in the best interest of shareholders and the objective of the firm. It can be argued that the difference could be eliminated if the WACC is adjusted to reflect changing debt ratio and firm's market value over the life of the project. This poses a practical problem since it requires the determination of the impact of the project on value of the firm, at each stage of the project life, before the calculating the WACC which is critical in evaluating the acceptability of the project, an obvious "catch-22" situation.

CONCLUSION

One of the primary objectives of a firm is the maximization of shareholders' wealth. To achieve this objective, management accepts projects that are expected to add to shareholder's wealth. The discounted cash flow method is the primary method of assessing the extent to which the acceptance of a project will enhance shareholders' wealth, by calculating the projects expected net present value. Traditionally, the weighted average cost of capital has been used as the capitalization rate, with the after tax operating cash flow used as the relevant free cash flow. This paper has tried to show that the concept of the WACC is based on a definition of firm value that ignores both the contingent and residual nature of shareholders' claim and the obligatory nature of the claim of creditors on the assets of the firm. This paper proposes the use of the actual free cash flow of the firm wherein debt payment is treated appropriately as an obligation of the firm and the cost of equity as the capitalization rate. This definition and the resulting net present value will measure directly the expected increase in the shareholders' wealth if the project is accepted. Moreover, this method is equivalent to the WACC method when the firm is unlevered.

REFERENCES

Copeland, T. E. & J. F. Weston. (1988). *Financial Theory and Corporate Policy*. New York: Addison-Wesley Publishing Company.

Downs, T. W. (1993). Corporate leverage and nondebt tax shields: Evidence on crowding-out, *The Financial Review. 28*(4), 549-583.

Friedman, D. D. (1990.) *Price Theory*. Cincinnati: South-Western College Publishing

Graham, J. R, M. L. Lemmon & J. S. Schallheim. (1998). Debt, leases, taxes, and the endogeneity of corporate tax status, *Journal of Finance, 53*(1), 131-161.

Jaconetty, T. A. (2000). Valuation corner: What is fair market value? *Journal of Property Tax Management, 12*(2), 64-67

Manuel, T. & E. Pilotte. (1992). Production technology, nondebt tax shields, and financial leverage, *Journal of Financial Research, 15*(2), 167-179.

Modigliani, F. & M. H. Miller. (1958). The cost of capital, corporation finance and the theory of investments, *The American Economic Review, 48*(3), 261-297.

Moyer, C. R., J. R. McGuigan & W.J. Kretlow. (2001). *Contemporary Financial Management.* Cincinnati: South-Western College Publishing

Nicholson, W. (1992). *Microeconomic Theory*. New York: The Dryden Press

Ross, S. A., R. W. Westerfield & B. D. Jordan. (2003). *Fundamentals of Corporate Finance*. New York: McGraw-Hill Irwin

Taggart, R. A. (1991). Consistent valuation and cost of capital expressions with corporate and personal taxes, *Financial Management,* 8-20.

Warren, C. (999). Toward environmental valuation. *Assessment Journal, 6*(2), 29-33.

THE TAX REFORM ACT OF 1986 AND THE HOUSING AFFORDABILITY CRISIS: IS IT TIME FOR A HOME MORTGAGE INTEREST CREDIT?

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ABSTRACT

The purpose of this paper is to propose a home mortgage interest credit (HMIC) as an alternative to the current home mortgage interest deduction (HMID). The proposed HMIC will encourage homeownership among lower income taxpayers and create a more equitable distribution of tax benefits. We use simulated tax returns for taxpayers at the 20th, 40th, 60th, 80th, and 95th percentiles of 1999 household income to show the effect of the proposed HMIC and the current HMID on taxpayers at different income levels. We show that the HMID provides very little tax benefit to lower- and middle-income households. The majority of the tax benefit goes to taxpayers above the 80th percentile of household income. A 20 percent HMIC would leave all but the highest income taxpayers better off, and the tax benefits to lower- and middle-income households would make homeownership a more affordable option.

INTRODUCTION

The U.S. Department of Housing and Urban Development (HUD) recently submitted its Strategic Plan for FY 2000 - FY 2006 to Congress. In this document, HUD reports that while the United States is currently enjoying the longest economic expansion in its history, the availability of affordable housing has actually decreased in recent years (FY 2000-FY2006 Strategic Plan).

This shortage of affordable housing primarily affects very-low-income (family income of less than 30 percent of the area median) and low-income (family income of less than 50 percent of the area median) families. This affordability problem also appears to be moving up the income scale. Stegman, et al. (2000) suggest that this "critical housing problem" increased by 17 percent among working families between 1995 and 1997. They suggest that not only is this problem a threat to the families involved, but also to the communities in which they live. For instance, the inability of middle-class working families to obtain affordable housing might cost a community a substantial number of its policemen, firemen, and teachers over time.

Among its other responses to this problem, HUD has called for an increase in national homeownership rates from 67.2 percent in the second quarter of 2000 to 70 percent in 2006 (FY 2000-FY2006 Strategic Plan). HUD hopes to accomplish this goal by reducing the homeownership gap between minorities and non-minorities (by 15 percent) and between higher-income and lower-income householders (by 25 percent).

Historically, one method used by Congress to increase housing affordability (and thus homeownership rates) has been to provide various subsidies to homeowners through the Internal Revenue Code (IRC). Examples of these subsidies including the home mortgage interest deduction (HMID), the deduction for state and local property taxes, and since May, 1997, an exclusion of any capital gains on the sale of a personal residence for all but the wealthiest of taxpayers. Green and Vandell (1996) suggest that two basic justifications are commonly cited as public-policy grounds for these types of tax subsidies for homeownership. The first is based on the theory that an increase in homeownership will result in an increase in household wealth accumulation over time. This increase in household wealth, in turn, should produce a number of positive benefits for the overall economy. The second is based on the theory that an increase in homeownership will result in greater neighborhood stability and upkeep. It is assumed that owners take better care of their homes than renters (it is the owner's investment) and tend to stay in their homes longer. Such long-term stakeholders will presumably take the necessary action to maintain property values and the standard of living in such neighborhoods.

This article focuses on one of these tax subsidies: the HMID. We report findings suggesting that the changes made by the Tax Reform Act of 1986 (TRA86) resulted in a HMID that is not equitably distributed among taxpayers. Worse yet, the HMID has become worthless to most, if not all, lower-income taxpayers. It continues to lose value for other taxpayers as the standard deduction increases each year with inflation. As a result, the loss in value of the HMID continues to climb up the income ladder. Therefore, it has little remaining value to many middle-income taxpayers as well. As homeowners lose this tax subsidy, housing affordability decreases.

Of course, the argument can be made that the standard deduction contains an element representing the housing-related expenses incurred by taxpayers. To the extent this is the case, the financial well being of lower-income taxpayers improves each year due to the increase in the standard deduction. A counter argument is that it is the perceptions of taxpayers that dictate their behavior. Since all taxpayers receive the standard deduction regardless of the housing acquisition choice made (i.e., rent vs. buy), the perception on the part of taxpayers is that the term "tax benefit" actually means any "extra" reduction in taxable income (TI) based on this housing acquisition choice. Viewed in this way, the only perceived tax benefit related to the "buy decision" (vs. renting) is the "extra" reduction in TI that results from the purchase of a personal residence. Since the word "extra" is commonly perceived to mean over and above the standard deduction, this perceived benefit decreases as the standard deduction increases (i.e., the perceived tax benefit is inversely related to the standard deduction).

One approach to this problem (i.e., of a perceived decrease in the tax benefit associated with the HMID) would be to replace the HMID with a credit (HMIC). This credit would provide taxpayers, at all income levels, with the same amount of subsidy per dollar of home mortgage interest paid. Tax returns of taxpayers at different income levels are simulated using the current HMID and the proposed HMIC. Comparisons of the results demonstrate that the proposed HMIC would provide a more equitable distribution of tax benefits across income levels than the current HMID provides.

The remainder of the article will be presented as follows. The HMID and the significant changes made regarding this deduction by TRA86 will be discussed in the next section. The third section identifies the related literature and discusses the contribution of this study. The assumptions used in the analysis are explained in the fourth section, followed by a presentation and discussion of the simulated tax returns. The conclusions and recommendations follow.

THE HMID AND TRA86

Under current tax law, the HMID provides homeowners with a potential deduction for the amount of mortgage interest they pay each year. However, the deduction provided is an "itemized" deduction. This means that the HMID is only deductible if the total amount of the allowable itemized deductions exceeds the allowable standard deduction amount. Therefore, whether a particular amount of HMID ultimately results in a reduction of a taxpayer's tax liability (i.e., produces a tax benefit for the taxpayer) is contingent on a number of issues related to the individual taxpayer's situation. Included are such issues as the amount of a particular taxpayer's standard deduction, the amount of the taxpayer's itemized deductions "other" than the HMID, and the amount of home-mortgage interest paid.

TRA86 significantly decreased the tax-related value of the HMID in three ways. First, it re-introduced the standard deduction into the IRC. Prior to tax years beginning in 1987 (following the passage of TRA86), a zero bracket amount was used. TRA86 also provided that the standard deduction for each filing status would increase by a set amount in 1988. It also provided that beginning in 1989 the standard deduction would be tied to (indexed for) inflation. As a result, it continues to increase each year. For some taxpayers this means that their home mortgage interest expense will never be deductible because their mortgage is too small to result in an interest expense amount that is in excess of the standard deduction. For those taxpayers that are initially able to take advantage of the HMID, this annual increase in the standard deduction represents a creeping threat to that deduction.

Second, TRA86 reduced the amount of certain "other" itemized-deduction types that can be included as an itemized deduction on a given taxpayer's return in a given tax year. A new category labeled "miscellaneous-itemized deductions" was created that resulted in a limitation on formerly includible items. For example, items like tax-return preparation fees, non-interest-related

investment expenses, and non-reimbursed employee expenses were deductible without any adjustments prior to TRA86. After TRA86, they are only included to the extent that the total of such deductions exceeds 2 percent of adjusted gross income (AGI). Also, most consumer-interest expense (e.g., credit-card loans, automobile loans, etc.) can no longer be included as an itemized deduction as was the case prior to the passage of TRA86. The result of these changes is that a given taxpayer's total itemized deductions will most likely be a smaller amount than would have been the case prior to the passage of TRA86.

Third, overall tax rates were cut by TRA86. As a result, the tax subsidy available to those still able to use the HMID has been decreased. This last provision is of less concern to lower/middle-income taxpayers, however, since many of them are ineligible to take the HMID anyway for the reasons discussed above.

Table 1 contains an example that demonstrates how the standard deduction works to make the HMID less valuable to lower-income taxpayers. The assumption is made that neither taxpayer has any "other" itemized deductions. The presence of such "other" deductions would change these results. However, higher-income taxpayers are more likely than lower-income taxpayers to incur substantial amounts of these "other" deductions (e.g., contributions to charity, state income taxes, property taxes, etc.) because they have more money to spend on such items. Therefore, the skewness of the results presented in Table 1 would most likely be exacerbated were these "other" itemized deductions included in the model.

Table 1: Lower vs. Higher Income Taxpayers - Tax Year 1999

Information	Lower-Income	Higher-Income
Adjusted Gross Income	$15,000	$150,000
Filing Status	Married Joint	Married Joint
Mortgage	$37,500	$375,000
Interest Rate	9%	9%
Home Mortgage Interest	$3,364	$33,646
Standard Deduction	$7,200	$7,200
Deductible Mortgage Interest	$0	$26,446
Marginal Tax Rate	15%	31%
Home Mortgage Tax Benefit	$0	$8,198

Table 2 contains an example that demonstrates how the growth of the standard deduction, that occurs due to the indexing for inflation, makes the HMID subsidy of a particular homeowner

less valuable over time. Of course, the real effect would be worse than indicated by the results in Table 2. This is the case because the amortization of the mortgage will result in a lower interest element being paid each year. Therefore, at the same time that the interest amount eligible for the HMID is decreasing, the standard deduction amount is increasing. The result is less tax benefit to the taxpayer from the HMID each year.

Table 2: Year 1988 Vs. Year 1999 Results for the Same Taxpayer

Information	Tax Year 1988	Tax Year 1999
Adjusted Gross Income	$25,000	$25,000
Filing Status	Married Joint	Married Joint
Mortgage	$62,500	$62,500
Interest Rate	9%	9%
Home Mortgage Interest	$5,608	$5,608
Standard Deduction	$5,000	$7,200
Deductible Mortgage Interest	$608	$0
Marginal Tax Rate	15%	15%
Home Mortgage Tax Benefit	$91	$0

RELATED LITERATURE

Green and Vandell (1996) state that in the late 1960s and early 1970s homeowners were enjoying increasing wealth accumulation at the same time that federal budget problems were also increasing. They suggest that as a result, articles began to appear that took a critical look at the tax subsidies provided to homeowners by the IRC. An example of this early literature is Aaron (1979a; 1979b) who performed an analysis of the revenue costs to the federal treasury associated with the HMID and the property-tax deduction.

More recently, in a series of articles, Follain and several related authors (e.g., Follain & Ling, 1991; Follain, et al., 1993; Follain & Dunsky, 1997; Follain & Melamed, 1998) examine the efficiency and neutrality issues associated with the housing subsidies provided under the federal tax laws. A tax is efficient if it accomplishes its goal at the least possible cost (e.g., if housing costs are subsidized and housing affordability is increased at the lowest overall cost to the federal treasury). A tax is neutral if it treats different taxpayers in a similar manner (e.g., homeowners and renters).

Follain et al. (1993) conclude that TRA86 was a mixed bag. On the one hand, by lowering the overall tax rates and by raising the standard deduction amount, TRA86 increased both the efficiency and neutrality of homeowner-related subsidies. On the other hand, these same changes resulted in a federal tax law that contains an "anti-mortgage bias." This bias results in a distribution

of the homeowner tax subsidies that is skewed in favor of higher-income taxpayers (i.e., it is regressive). This bias works against lower-income taxpayers precisely because it is these taxpayers that most depend on a mortgage to finance housing. These taxpayers have higher loan-to-value (LTV) ratios as a group than do higher-income taxpayers. Therefore, this "anti-mortgage" bias has apparently resulted in a decrease in the affordability of home ownership for those in the lower-income groups.

Follain et al. (1993) suggest that one method of addressing this bias is to make home mortgage interest deductible "for AGI" and not deductible "from AGI" as an itemized deduction. While this would overcome the problem faced by many taxpayers (i.e., the inability to deduct any portion of the HMID), an inequity between lower-income and higher-income taxpayers would remain. Given that lower-income taxpayers are in a lower-tax bracket, they would not receive as much subsidy per dollar of home mortgage interest expense as would higher-income taxpayers. One solution to this problem is to change the HMID to a credit (HMIC). At least two prior studies have examined the feasibility of adopting a HMIC. Rosen (1979a; 1979b) ran a simulation of the impact of a 25 percent credit. This credit was based on the amount of the HMID plus the amount of the property tax paid. Green and Vandell (1996) also looked at the impact of a HMIC. Their proposed credit is one based on the property's value. The focus of both of these studies was to determine the impact of these credits on housing consumption and tenure figures.

A study that demonstrates the impact that changing the HMID to a HMIC on simulated tax returns will have on different groups of taxpayers is needed at this time. The primary reason such a study is needed is the continuing increase in the standard deduction due to inflation adjustments. The effect of these continuing increases in the standard deduction on housing affordability needs to be examined every few years. Intuitively, these increases in the standard deduction seem to be decreasing the affordability of housing for an increasingly larger section of the population by reducing the tax benefit associated with the HMID subsidy. A secondary reason is that a number of changes have occurred since the prior studies cited herein were conducted.

As discussed above, Green and Vandell (1996) examined the impact a HMIC, based on the property's value, would have on housing consumption and tenure. Because it is related to housing affordability, the focus of the current study is different.

The Rosen (1979a; 1979b) studies, which propose a credit much more similar to the one proposed herein, were conducted prior to the passage of TRA86. Therefore, all of the differences discussed regarding that tax law change suggest a new study is needed.

ASSUMPTIONS OF THE ANALYSIS

We assume that consumers exhibit rational economic behavior. Consistent with this assumption, we assume consumers are more likely to purchase a home, ceteris paribus, the lower the cost of homeownership.

In order to construct simulated tax returns it is necessary to make certain assumptions about the size of the mortgage relative to the income level, the financing terms, the filing status and number of dependents, and the amount of "other" itemized deductions. We assume the taxpayer purchases a home and obtains a mortgage equal to 2.5 times annual income. The mortgage is assumed to be a 30-year, fixed-rate mortgage with monthly principal and interest payments and a 9 percent interest rate. We do not incorporate property taxes into the analysis, since property taxes vary greatly depending on the location of the property. Also, in an effort to simplify the analysis, we assume there are no "other" itemized deductions.

We assume the taxpayer is married filing a joint return with two dependents (i.e., is eligible for a total of four exemptions). We focus on the married-filing-jointly status because income surveys indicate the majority of taxpayers fall into this category. Changing this assumption does impact the findings; therefore, we also simulate the tax returns of a single taxpayer with no dependents for comparison purposes. Population statistics from the U.S. Bureau of the Census indicate that 52.8 percent of households are comprised of married couple families, while 31.3 percent are non-family households. The remaining 16 percent are families with one parent not present (U.S. Census Bureau, Current Population Reports, 2000).

We simulate tax returns for five different income levels, representing the 20th, 40th, 60th, 80th, and 95th percentiles of household income in 1999 (U.S. Census Bureau Current Population Surveys, 2000) . We also simulate tax returns for the mean income within each of the five income categories (0-20%, 21-40%, 41-60%, 61-80%, 81-95%, and 96-100%) to determine the approximate cost per 100 taxpayers of the HMID and the proposed HMIC. The 1999 household income levels by quintile are shown in Table 3.

Table 3: 1999 Household Income

Percentile	Upper Limit	Mean
0-20%	$17,196	$9,940
21-40%	$32,000	$24,436
41-60%	$50,520	$40,879
61-80%	$79,375	$63,555
81-95%	$142,021	$102,071
>95%	NA	$235,392

SIMULATED TAX RETURNS

The simulated tax returns for married-filing-jointly status are shown in Table 4. The returns are simulated using 1999 tax law and 1988 tax law to determine the loss in value of the HMID over

that time period. The net HMID is the first year's mortgage interest minus the standard deduction. The tax benefit calculations are based on the net HMID.

The HMID has lost considerable value to taxpayers at the 60th percentile of household income. The simulated returns for taxpayers with income at the 60th percentile indicate that such taxpayers would receive a tax benefit of $1,773 under the tax structure in effect in 1988, compared to a benefit of only $620 using 1999 tax law.

Table 4: Simulated Tax Returns for Married-Filing-Jointly Taxpayers

Panel A: Tax Returns Using 1999 Tax Rates and Rules					
	1999 Household Income Percentiles				
Information	20th	40th	60th	80th	95th
Adjusted Gross Income	$17,196	$32,000	$50,520	$79,375	$142,021
Exemption Amount	$11,000	$11,000	$11,000	$11,000	$11,000
Standard Deduction	$7,200	$7,200	$7,200	$7,200	$7,200
Net HMID	$0	$0	$4,132	$10,604	$24,656
Marginal Tax Rate	15%	15%	15%	28%	31%
Tax Benefit	$0	$0	$620	$2,969	$7,643
Tax Benefit of 15% HMIC	$0	$1,077	$1,700	$2,671	$4,778
Tax Benefit of 20% HMIC	$0	$1,436	$2,266	$3,561	$6,371
Panel B: Tax Returns Using 1988 Tax Rates and Rules					
	1999 Household Income Percentiles				
Adjusted Gross Income	$17,196	$32,000	$50,520	$79,375	$142,021
Exemption Amount	$7,800	$7,800	$7,800	$7,800	$7,800
Standard Deduction	$5,000	$5,000	$5,000	$5,000	$5,000
Tax. Inc. before net HMID	$4,396	$19,200	$37,720	$66,575	$129,221
Net HMID	$0	$2,178	$6,332	$12,804	$26,856
Marginal Tax Rate	15%	15%	28%	28%	33%
Tax Benefit	$0	$327	$1,773	$3,585	$8,862

Table 4 also compares the tax benefit of the HMID to a HMIC of 15 percent and 20 percent. A taxpayer with income at the 60th percentile of household income would be much better off with a 15 or 20 percent HMIC than under the current HMID. Under the current HMID, the tax benefit would be $620. A 15 percent HMIC would produce a tax benefit of $1,700 and a 20 percent HMIC would provide a benefit of $2,266. Taxpayers at the 80th percentile of household income would be slightly worse off under a 15 percent HMIC (tax benefit of $2,671) than under the current HMID

(tax benefit of $2,969). Taxpayers at the 80th percentile would be better off with a HMIC of 20 percent (tax benefit of $3,561) than under the current HMID. Taxpayers at the 95th percentile would be better off with the HMID than with either a 15 or 20 percent HMIC.

The impact of a 15 percent HMIC on lower-income taxpayers can be seen by evaluating taxpayers at the 40th percentile of household income. These taxpayers receive no tax benefit under the current HMID, but would receive a benefit of $1,077 ($89.75 per month) with a 15 percent HMIC. This is based on an $80,000 mortgage financed for 30 years at 9 percent interest. The additional benefit would decrease the effective monthly house payment by approximately 14 percent (from $643.70 to $553.95).

Table 5 shows the loss in value of the HMID from 1988 to 1999 by computing the tax benefit as a percentage of the mortgage interest paid. Lower-income taxpayers lost very little because the HMID was already worthless to them in 1988. The loss in value of the HMID as a percentage of annual home mortgage interest was significantly higher for taxpayers at the 60th percentile of household income than for higher-income taxpayers. A taxpayer in the 95th percentile of household income would receive a tax benefit of 27.82 percent of their home mortgage interest in 1988, compared to 23.99 percent in 1999. A taxpayer in the 60th percentile of household income would receive a tax benefit of 15.65 percent of their home mortgage interest in 1988, compared to only 5.47 percent in 1999. Higher-income taxpayers receive a significantly higher HMID than middle-income taxpayers and lower-income taxpayers receive no HMID. The significant reduction in the value of the HMID for middle income taxpayers has resulted in the HMID becoming a deduction for the wealthy at the expense of middle- and lower-income taxpayers.

Table 5: HMID Tax Benefit as a Percent of Total Interest Paid

Taxpayer	1988	1999
20th percentile income	0.00%	0.00%
40th percentile income	4.56%	0.00%
60th percentile income	15.65%	5.47%
80th percentile income	20.14%	16.68%
95th percentile income	27.82%	23.99%

The simulated tax returns for single taxpayers are shown in Table 6. Since single taxpayers receive a lower standard deduction than taxpayers that are married filing jointly, the HMID is more valuable to them. A single taxpayer in the 60th percentile of household income receives a slightly larger benefit under the current HMID than with a 15 percent HMIC. Single taxpayers with income levels above the 60th percentile of household income would be significantly worse off with a 15 percent HMIC than under the current HMID. However, single taxpayers generally have lower income levels than family households. The median family household income in 1999 was $49,940

compared to $24,566 for nonfamily households (U.S. Census Bureau, Current Population Reports (2000)). This indicates that a low proportion of single taxpayers would be adversely impacted by moving to a 15 percent HMIC.

Table 6: Simulated Tax Returns for Single Taxpayers

Panel A: Tax Returns Using 1999 Tax Rates and Rules					
	1999 Household Income Percentiles				
Information	20th	40th	60th	80th	95th
Adjusted Gross Income	$17,196	$32,000	$50,520	$79,375	$142,021
Exemption Amount	$2,750	$2,750	$2,750	$2,750	$2,750
Standard Deduction	$4,300	$4,300	$4,300	$4,300	$4,300
Tax. Inc. before net HMID	$10,146	$24,950	$43,470	$72,325	$134,971
Net HMID	$0	$2,878	$7,032	$13,504	$27,556
Marginal Tax Rate	15%	15%	28%	31%	36%
Tax Benefit	$0	$432	$1,969	$4,186	$9,920
Tax Benefit of 15% HMIC	$579	$1,077	$1,700	$2,671	$4,778
Tax Benefit of 20% HMIC	$771	$1,436	$2,266	$3,561	$6,371
Panel B: Tax Returns Using 1988 Tax Rates and Rules					
	1999 Household Income Percentiles				
Information	20th	40th	60th	80th	95th
Adjusted Gross Income	$17,196	$32,000	$50,520	$79,375	$142,021
Exemption Amount	$1,950	$1,950	$1,950	$1,950	$1,950
Standard Deduction	$5,000	$5,000	$5,000	$5,000	$5,000
Tax. Inc. before net HMID	$12,246	$27,050	$45,570	$74,425	$137,071
Net HMID	$857	$4,178	$8,332	$14,804	$28,856
Marginal Tax Rate	15%	28%	33%	33%	28%
Tax Benefit	$129	$1,170	$2,750	$4,885	$8,080

The approximate cost of a 15 percent HMIC, a 20 percent HMIC, and the current HMID are shown in Table 7. The cost is calculated as a cost per 100 taxpayers. The cost of the HMID is estimated to be $193,425 per 100 taxpayers. The cost of a 15 percent HMIC is estimated to be $177,810 and the cost of a 20 percent HMIC is estimated to be $237,105. This indicates that a 15 percent HMIC would actually create higher tax revenues for the federal government. Given the current surplus, the 20 percent HMIC would be more desirable. Only the wealthiest of taxpayers would be worse off with a 20 percent HMIC than under the current HMID. Taxpayers at the mean

income of the 81-95 percentiles would receive a tax benefit of $4,579 under a 20 percent HMIC compared to $4,395 under the HMID.

Table 7: Simulated Tax Returns for Married-Filing Jointly Taxpayers Using Mean Incomes for Each Quintile and the Top 5 Percent

	1999 Household Income					
Information	0-20%	21-40%	41-60%	61-80%	81-95%	>95%
Adjusted Gross Income	$9,940	$24,436	$40,879	$63,555	$102,071	$235,392
Exemption Amount	$11,000	$11,000	$11,000	$11,000	$11,000	$11,000
Standard Deduction	$7,200	$7,200	$7,200	$7,200	$7,200	$7,200
Tax. Inc. before net HMID	$0	$6,236	$22,679	$45,355	$83,871	$217,192
Net HMID	$0	$0	$1,969	$7,056	$15,695	$45,600
Marginal Tax Rate	15%	15%	15%	28%	28%	36%
Tax Benefit	$0	$0	$295	$1,976	$4,395	$16,416
Tax Benefit of 15% HMIC	$0	$822	$1,375	$2,138	$3,434	$7,920
Tax Benefit of 20% HMIC	$0	$1,096	$1,834	$2,851	$4,579	$10,560

CONCLUSIONS AND RECOMMENDATIONS

Based on our findings, it appears that a HMIC provides a solution to several problems inherent in the HMID. The HMID provides tax relief to the homeowners that need it the least, and provides virtually no benefit to taxpayers below the 60th percentile of household income. Based on our assumptions, a HMIC would provide the same tax benefit to all homeowners: a fixed percentage of the mortgage interest paid. A HMIC of 15 percent would lower the effective monthly house payment for a taxpayer at the 40th percentile of household income by approximately 14 percent. A 20 percent HMIC would lower the effective monthly payment by approximately 19 percent.

Given the current housing affordability crisis, and the homeownership goals that have been set by HUD, changes need to be made to the tax code to provide tax benefits to those who need them most. A HMIC could lower monthly payments for a large proportion of taxpayers and might be the difference in them being able to afford to purchase a home. It should be noted that higher-income taxpayers will not lose all of the tax benefits associated with their annual home mortgage interest expense should the HMIC proposed herein be adopted. We are merely promoting the idea that the tax benefit should be a fixed percentage of the mortgage interest paid. The wealthiest taxpayers will continue to receive the largest tax benefits because they pay more in mortgage interest (because they purchase more expensive homes). A HMIC is an equitable method to spread the tax benefits across income levels and, at the same time, make housing more affordable for a large percentage of the population.

REFERENCES

Aaron, H. (1972). *Shelter and Subsidies,* Washington, D.C.: The Brookings Institution.

Follian, J. R. & D. C. Ling. (1991). The federal tax subsidy to housing and the reduced value of the mortgage interest deduction, *National Tax Journal, 44*(2), 147-68.

Follian, J. R., D. C. Ling & G. A. McGill. (1993). The preferential income tax treatment of owner-occupied housing: Who really benefits?, *Housing Policy Debate, 4*(1), 1-24.

Follian, J. R. & L.S. Melamed. (1998). The false Messiah of tax policy: What elimination of the home mortgage interest deduction promises and a careful look at what it delivers, *Journal of Housing Research, 9*(2), 179-99.

Green, R. K. & K. D. Vandell. (1996). Giving Households Credit: How Changes in the Tax Code Could Promote Homeownership, Working Paper No. 96-10, University of Wisconsin, Center for Urban Land Economics Research, August.

Rosen, H. S. (1979a). Housing decisions and the U. S. income tax: An econometric analysis, *Journal of Public Economics, 11,* 1-23.

Rosen, H. S. (1979b). Owner occupied housing and the federal income tax: Estimates and simulations, *Journal of Urban Economics, 6*, 247-66.

Stegman, M., R. Quercia & G. McCarthy. (2000). Housing America's working families, *New Century Housing, 1*(1), 1-48.

U.S. Census Bureau, Current Population Reports, (2000). *P60-209, Money Income in the United States: 1999* Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau, Current Population Surveys, selected March supplements (2000). Retrieved October 12, 2000 from the World Wide Web: http://www.census.gov/hhes/income/histinc, Tables H-1 and H-3.

U.S. Department of Housing and Urban Development FY 2000-FY 2006 Strategic Plan, (2000), September, 1-97. Retrieved October 8, 2000, from the World Wide Web: http://www.hud.gov/reform/strpln.html.

MINIMIZING THE EXPECTATION GAP

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ABSTRACT

Given the growing list of financial reporting scandals (Enron, WorldCom, Parmalat, etc.), financial reporting is once again at a crossroad (Sutton, 2002, 319). Similarly, the auditing "expectation gap" continues to exist (McEnroe & Martens, 2001) and the investing public is again challenging the auditing profession to develop mechanisms to increase audit effectiveness and thus restore confidence in independent audits (Sutton, 2002). Thus the auditing profession again finds itself amidst a crisis and again it needs to look inward to restore confidence in financial reporting, in general, and the independent audit, specifically. In this regard, we analyze the expectation gap with respect to illegal acts in an effort to improve audit effectiveness.

The analysis is grounded in the expectation gap paradigm developed by Porter (1993). In turn, the results of the analysis suggest two broad findings. First, in addition to unreasonable public expectations, deficiencies in the professional standards may have also contributed to the results of McEnroe and Martens (2001). That is, deficiencies in the professional standards may be contributing to the expectation gap. Second, the current professional guidance regarding illegal acts may need to be revisited in order to improve audit effectiveness and, in turn, narrow the expectation gap with respect to illegal acts.

INTRODUCTION

Given the growing list of financial reporting scandals (Enron, WorldCom, Parmalat, etc.), financial reporting is once again at a crossroad (Sutton, 2002, 319). Predictably, both the government and the auditing profession have reacted to these scandals (see Luehlfing, 1995). For example, the government passed *The Sarbanes-Oxley Act of 2002*. Additionally, the American Institute of Certified Public Accountants (AICPA) issued *Statement on Auditing Standards (SAS) No. 99* (AICPA, 2002a), *Consideration of Fraud in a Financial Statement Audit*, and has also issued a proposed SAS (AICPA, 2002b), *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement.* While we believe that these recent actions have addressed many of the issues underlying these scandals, we also believe that more can and should be done. In particular, we believe that, in order to improve audit effectiveness, the auditing profession[1] must revisit the auditors' responsibility to detect illegal acts. As summarized below, the logic underlying this notion is grounded in McEnroe and Martens (2001), as well as, Porter (1993).

McEnroe and Martens (2001) report that expectation gaps continue to exist in six dimensions of the audit - including fraud, internal controls, and illegal acts. As suggested by Porter (1993), we analyze these expectation gaps in order to identify possible remedial actions, that is, actions that may narrow the expectations gaps identified by McEnroe and Martens (2001). The analysis initially focuses on actions of the AICPA[2] - subsequent to McEnroe and Martens (2001) - regarding fraud and internal controls. Thereafter, the analysis focuses on the current professional guidance regarding illegal acts. Two broad findings are suggested by the results of the analysis. First, in addition to unreasonable public expectations, deficiencies in the professional standards may have also contributed to the results of McEnroe and Martens (2001). Second, the current professional guidance regarding illegal acts may need to be revisited in order to improve audit effectiveness and, in turn, narrow the expectation gap with respect to illegal acts.

BACKGROUND

Sutton (2002, 321) believes that the auditing profession needs to do three things in order to restore and maintain confidence in the independent audit:

- Embrace a role that is fully consistent with high public expectations;
- Tackle fraudulent financial reporting as a distinct issue with a distinct goal - zero tolerance; and,
- Accept and support necessary regulatory processes that give comfort to investors and the public that the profession is doing all that it can do to prevent future episodes of failed financial reporting.

In essence, the above thoughts of Sutton (2002, 321-322) are grounded in the auditing "expectation gap" literature. In this regard, McEnroe and Martens (2001, 345) provide the following parsimonious definition:[3]

> *The auditing "expectation gap" refers to the difference between (1) what the public and other financial statement users perceive auditors' responsibilities to be and (2) what auditors believe their responsibilities entail.*

Porter (1993, 50) states that the expectation gap should more appropriately be entitled "the audit expectation-performance gap" and "be defined as the gap between society's expectations of auditors and auditors' performance, as perceived by society." Furthermore, Porter (1993, 50) decomposes the expectation gap into two major components - a reasonableness gap and a performance gap. She defines the *reasonableness gap* as "a gap between what society expects auditors to achieve and what they can reasonably be expected to accomplish." In turn, she defines

the *performance gap* as "a gap between what society can reasonably expect auditors to accomplish and what they are perceived to achieve."

Continuing, Porter (1993, 50) further decomposes the performance gap into two categories - a deficient performance gap and a deficient standards gap. She defines the *deficient performance gap* as "a gap between the expected standard of performance of auditors' existing duties and auditors' perceived performance, as expected and perceived by society." In turn, she defines a *deficient standards gap* as "a gap between the duties which can be reasonably expected of auditors and auditors' existing duties as defined by the law and professional promulgations." Significantly, Porter (1993, 66) concludes…

> *...that once a discrepancy between society's expectations of auditors and auditors' perceived performance is detected (that is, once auditors' performance of, or failure to perform, a duty is criticized by a significant proportion of society, or of an interest group), the duty in question should be analysed to identify which component of the gap it represents. Once a duty is associated with a specific component of the gap, appropriate corrective action is almost self-evident.*

Thus Porter (1993, 66) suggests the following approach to narrowing the expectation gap:

- Detect expectation gaps;
- Categorize each expectation gap;
- Take appropriate corrective action.

McEnroe and Martens (2001, 345) identify several expectation gaps between "audit partners' and investors' perceptions of auditors' responsibilities involving various dimensions of the audit." Specifically, McEnroe and Martens (2001, 356) report that the investing public does not want auditors to issue an unqualified opinion unless:

1.	every item of importance to investors and creditors has been reported or disclosed;
2.	auditors have been "public watchdogs;"[4]
3.	the internal controls are effective;
4.	the financial statements are free of misstatements resulting from management fraud;
5.	the financial statements are free of misstatements intended to hide employee fraud; and,
6.	the financial statements are free of misstatements intended to hide the firm has not engaged in illegal operations.[5]

As a result of these findings, McEnroe and Martens (2001, 354-356) conclude that an expectation gap exists in each of the above dimensions of the audit. Specifically, McEnroe and Martens (2001, 357) state that:

> *The areas of the attest function cited as evidence of the expectation gap are, with the exception of the Supreme Court's "public watchdog" function, required in the course of the audit by the authoritative guidance (SASs). Therefore, it might well be the case that the public has unreasonable expectations of the nature and scope of the attest function. According to Porter's (1993) classification scheme, this would be categorized as a "reasonableness gap."*

McEnroe and Martens (2001, 357) suggest that the "appropriate action to reduce these expectations might be in public education." In summary, they suggest two public education strategies. First, include as part of the annual report, a uniform explanation of what the attest function is designed to accomplish. This might include a condensed summary of the authoritative guidance regarding auditors' responsibilities. Second, have auditors provide a similar explanation at the annual shareholders' meeting. This might include a question and answer session regarding the nature and scope of the audit.

In the best of all worlds, educating stakeholders on what an audit is designed to accomplish and communicating what the auditor's responsibilities are, will reduce the gap between what stakeholders expect the auditor to achieve and what they can reasonably achieve, that is, the reasonableness gap. Thus, the two public education strategies delineated above are appropriate corrective actions for the reasonableness gap component of the expectation gap as defined by Porter (1993). However, deficient standards may have also contributed to the findings of McEnroe and Martens (2001). We explore this notion immediately below.

RECENT ACTIONS OF THE AICPA

For convenience, we summarize the expectation gaps noted by McEnroe and Martens (2001, 356) as follows:

1. Full disclosure;
2. Public watchdog;
3. Effective internal controls;
4. Management fraud;
5. Employee fraud; and,
6. Illegal acts.

While recent actions of the AICPA have not directly addressed items 1. and 2. above, such is not the case with respect to items 3. through 5. Specifically, since the publication of McEnroe and Martens (2001), the AICPA has issued SAS No. 99 (AICPA 2002a), *Consideration of Fraud in a Financial Statement Audit*, and has also issued a proposed SAS (AICPA 2002b), *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement.* SAS No. 99 provides additional guidance on the auditor's responsibility for assessing risk of material misstatement whether due to error or fraud. The AICPA issued this SAS as the cornerstone to its Anti-Fraud Program to improve the likelihood that misstatements due to fraud will be detected. Thus SAS No. 99 relates to improving professional standards directly relating to items 4 and 5. While not yet approved, the proposed SAS provides additional guidance to the auditor for obtaining a sufficient understanding of the entity and its environment, including its internal controls, for assessing the risks of material misstatement (a theme also stressed in SAS No. 99). The AICPA issued this proposed SAS to increase the rigor and specificity of the auditing procedures to improve audit effectiveness. Thus the proposed SAS relates to improving professional standards directly relating to item 3.

Specifically, both SAS No. 99 and the proposed SAS emphasize the auditors' responsibility to expand their understanding of the entity and its environment beyond the accounting and financial aspects of the entity. Auditors are encouraged to make inquiries of others within the entity, including production, marketing, sales, and other personnel. In other words, to assess the risk of material misstatement of the financial statements whether due to error or fraud, the auditor should not only obtain an understanding of the accounting and financial aspects of an entity, but also the operational aspects of an entity.

With respect to restoring confidence in independent audits, Sutton (2002, 321) concludes with the following:

> In the past, the auditing profession responded to challenges to its performance with arguments that, on the whole, audits are effective and that public expectations of the independent audit are unrealistic. As the dialogue continued, attention inevitably turned to the standards that govern financial reporting and auditor performance. After extended debate, some changes were proposed and some were adopted.

Thus Sutton (2002, 231) suggests that the auditing profession has, in the past, taken the following chronological approach to addressing expectation gaps.

- Deny the existence of deficiencies-specifically deficient standards.
- Entertain suggestions for improvements.
- Agree to accept some, but not all, proposed suggestions.

In this regard, we believe that the recent actions of the AICPA (noted above) represent prima facie evidence that a deficient standards gap (as defined by Porter 1993) not only existed at the time

of McEnroe and Martens (2001), but also contributed to the findings of McEnroe and Martens (2001). Significantly, we believe deficient standards continue to exist with respect to illegal acts (i.e., item 6). As discussed immediately below, SAS No. 99 currently relates to some, but not all, illegal acts.

DETECTING ILLEGAL ACTS

SAS No. 54, *Illegal Acts by Clients* (AICPA 1988b), as well as SAS No. 99, provide the current professional guidance with respect to detecting illegal acts. SAS No. 54 classifies illegal acts as either those with a direct effect on the financial statements (AICPA 2003, AU 317.05) or those with an indirect effect on the financial statements (AICPA 2003, AU 317.06). Those with a direct effect on the financial statements generally relate to the financial and accounting aspects of an entity. Those with an indirect effect on the financial statements generally relate to the operational aspects of an entity.[6] Significantly, the auditor's responsibilities for considering "direct" illegal acts are delineated in SAS No. 99 while the auditor's responsibilities for considering "indirect" illegal acts are delineated in SAS No. 54.[7]

SAS No. 99 indicates that the responsibility of the auditor to detect direct illegal acts is the same as their responsibility to detect errors or fraud (AICPA 2003, AU 316.01, footnote 1). Stated otherwise, the "auditor has a responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused from error or fraud" (AICPA 2003, AU 110.02) or whether caused by illegal acts "having a direct and material effect on the determination of financial statement amounts" (AICPA 2003, AU 316.01, footnote 1). In contrast, SAS No. 54 (AICPA 2003, AU 317.07) states that "an audit made in accordance with generally accepted auditing standards provides no assurance that [indirect] illegal acts will be detected or that any contingent liabilities that may result will be disclosed."[8] In turn, we believe that the current auditing standards continue to be deficient with respect to illegal acts - especially in view of the requirements of Statement of Financial Standards (SFAS) No. 5, *Accounting for Contingencies* (Financial Accounting Standards Board, 1975).

REPORTING ILLEGAL ACTS

Loss contingencies can result when an entity engages in illegal operations. SFAS No. 5 provides management with the authoritative guidance for reporting material loss contingencies. In contrast to both SAS 54 and SAS No. 99, SFAS 5 does not differentiate between illegal acts with a direct effect on the financial statements or those with an indirect effect on the financial statements. Thus, with respect to illegal acts, a disparity exists between the auditing authoritative guidance and the reporting authoritative guidance. In other words, management has a responsibility under SFAS No. 5 to report all material loss contingencies, while the auditor has limited responsibility to detect

loss contingencies arising from illegal acts than have an indirect effect on the financial statements. Again, we believe that this disparity represents prima facie evidence that a deficient standards gap also contributed to the findings of McEnroe and Martens (2001).

Additional evidence of an existing expectation gap resulting from deficient standards regarding auditing indirect illegal acts lies in the reporting (or lack thereof) of environmental liabilities. There have been numerous studies that document a pattern of underreporting environmental liabilities (See Ingram & Frazier, 1980; Wiseman, 1982; Rockness, 1985; Freedman & Wasley, 1990; Price Waterhouse, 1992; Cormier & Magnan, 1997; Freedman & Stagliano, 1995; Gamble et al., 1995; Stanny, 1998).

Significantly, environmental liabilities lie within the gap between the reporting requirements of SFAS No. 5 and the auditing requirements of SAS No. 54.

MINIMIZING THE EXPECTATION GAP

As previously stated, Porter (1993, 66) concludes that once auditors' performance is criticized by a significant proportion of society (that is, once an expectation gap exists) it is important to identify which component of the expectation gap exists. Once the specific component is identified the "appropriate corrective action is almost self-evident." McEnroe and Martens (2001, 357) suggest that the expectation gaps they found resulted from the reasonableness gap component of Porter's (1993) classification scheme. However, as described above, it could be that the deficient standards gap component of Porter's (1993) classification scheme could also be contributing to the McEnroe and Martens (2001) expectation gaps. In this regard, we offer two possible options that should be explored as the appropriate corrective action to reduce the expectation gap with respect to illegal acts.

First, adopt the McEnroe and Martens (2001) educational strategies. SAS No. 54 (AICPA 2003, AU 317.06) indicates that an auditor ordinarily does not have sufficient basis for recognizing possible violations of operational laws and regulations. Thus, the investing public may have unreasonable expectations of the auditor for identifying these types of illegal acts. However, this option only addresses the reasonableness gap and thus may not be sufficient to reduce the expectation gap with respect to indirect illegal acts.

Second, in addition to public educational strategies, amend SAS No. 54 to require the auditor to take a more active approach to detecting indirect illegal acts. The amendment could provide specific guidance for detecting indirect illegal acts while still emphasizing the inherent limitations regarding the auditor's ability to detect indirect illegal acts. Significantly, much of the specific guidance in the proposed SAS (AICPA, 2002b), *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement*, and SAS No. 99 (AICPA, 2002a), *Consideration of Fraud in a Financial Statement Audit*, can be extrapolated to indirect illegal acts. Thus, a foundation for the amendment already exists. Additionally, the amendment can reiterate the inherent limitations

concerning detecting indirect illegal acts as SAS No. 54 currently describes. In summary, the auditor would employ a more active approach for considering indirect illegal acts without compromising the spirit of SAS No. 54.

Significantly, this second option addresses both the reasonableness gap (education strategies) and the deficient standards gap (amendment to SAS No. 54). Thus, it would be consistent with the AICPA's efforts for improving audit effectiveness as evidenced by its recent actions on internal controls and fraud (items 3-5). Additionally, amending SAS No. 54 could eliminate or at least reduce the disparity between this auditing standard and SFAS No. 5. Finally, amending SAS No. 54 would be consistent with Sutton's (2002) suggestions for restoring and maintaining confidence in the audit of financial statements.

CONCLUSION

McEnroe and Martens (2001) found that an expectation gap exists in six dimensions of the audit. They recommended that public education may reduce the expectation gap in the areas they found, with the exception of the "public watchdog" function, thus suggesting that the reasonableness gap component was the contributing factor to the expectation gaps they found. However, as discussed above, the recent actions of the AICPA and the disparity between the reporting and auditing requirements of indirect illegal acts indicate that a deficient standards gap may also be contributing to these expectation gaps.

Given the pressures on the auditing profession to increase audit effectiveness and thus reduce audit failures, the profession should once again look inward. As Porter (1993) suggests, the profession should categorize each expectation gap in order to determine the appropriate corrective action. Amending SAS No. 54 to include additional guidance for assessing the risk of material misstatement due to indirect illegal may be the needed appropriate correction action to reduce the expectation gap regarding illegal acts (item 6). As Sutton (2002) suggests, the profession should embrace a role that is consistent with the high public expectations.

ENDNOTES

1 The Sarbanes-Oxley Act of 2002 (The Act) created the Public Company Accounting Oversight Board (PCAOB), a private sector non-profit corporation to oversee the auditor of public companies. Specifically, Section 101 of The Act provides that the PCAOB shall establish auditing, quality control, ethics, and independence standards to be used by registered public accounting firms in the preparation and issuance of audit reports. However, given that the promulgatory domain of the PCAOB is currently limited to audits of public companies, the AICPA continues to promulgate generally accepted auditing standards (GAAS) with respect to audits of non-public companies. Thus the term auditing profession encompasses not only auditors, but also the two promulgating bodies (i.e., the PCAOB and the AICPA).

2 As discussed in endnote 1, there are two promulgating bodies that establish GAAS. Initially, the PCAOB decided not to exercise its authority to designate or recognize any professional group of accountants to propose standards for audits of public companies (PCAOB, 2003a). Subsequently, the PCAOB adopted GAAS, as promulgated by the AICPA, as the interim PCAOB standards (PCAOB, 2003b). However, on December 17, 2003 the PCAOB announced its intentions to supercede, or effectively amend the existing professional standards as promulgated by the AICPA for public companies (PCAOB, 2003c).

3 Please see the following references for additional definitions and related background information regarding the expectation gap: Commission on Auditors' Responsibilities, 1978; Guy and Sullivan, 1988; AICPA, 1993; Epstein and Geiger, 1994; U.S. Government Accounting Office, 1996; Sweeney, 1997; and, Wolf et al, 1999.

4 In United States v. Arthur Young & Co., the U.S. Supreme Court portrayed the independent audit as a "public watchdog" function.

5 An illegal operation is an illegal act. The professional standards define illegal acts as violations of laws or governmental regulations (AICPA 2003, AU 54.03).

6 For example, indirect illegal acts may arise from violations of operational laws and regulations relating to, for example, securities trading, occupational safety and health, food and drug administration, equal employment, and price-fixing and other antitrust violations (AICPA 2003, AU 317.06).

7 SAS No. 54 originally referred the auditor to SAS No. 53, The Auditor's Responsibility to Detect and Report Errors and Irregularities (AICPA, 1988a) with respect to considering direct illegal acts. In 1997, SAS No. 53 was superseded by SAS No. 82, Consideration of Fraud in a Financial Statement Audit (AICPA, 1997). Thereafter, SAS No. 82 was superseded by SAS No. 99 in 2002.

8 Carmichael (1988, 40) reports that the "ASB believed it simply isn't feasible to design an audit to provide reasonable assurance of detecting all illegal acts that could have a material effect on the financial statements." Additionally, Carmichael (1988, 41) suggests that auditors "usually aren't trained to spot" indirect illegal acts.

REFERENCES

American Institute of Certified Public Accounts (AICPA). (1988a). *The Auditor's Responsibility to Detect and Report Errors and Irregularities. Statement on Auditing Standards No. 53.* New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (1988b). *Illegal Acts by Clients. Statement on Auditing Standards No. 54.* New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (1993). *The Expectation Gap Standards: Progress, Implementation Issues, and Research Opportunities.* Edited by D. Guy & A. Winters. New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (1997). *Consideration of Fraud in a Financial Statement Audit. Statement on Auditing Standards No. 82.* New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (2002a). *Consideration of Fraud in a Financial Statement Audit. Statement on Auditing Standards No. 99.* New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (2002b). *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement. Proposed Statement on Auditing Standards.* New York, NY: AICPA.

American Institute of Certified Public Accounts (AICPA). (2003). *Codification of Statements on Auditing Standards.* New York, NY: AICPA.

Carmichael, D. R. (1988). The auditor's new guide to errors, irregularities and illegal acts. *Journal of Accountancy* (September) *166*, 40-48.

Commission on Auditors' Responsibilities (CAR). (1978). *Report, Conclusions, and Recommendations.* New York, NY: AICPA.

Cormier, D. & M. Magnan. (1997). Investors' assessment of implicit environmental liabilities: An empirical investigation. *Journal of Accounting and Public Policy, 16,* Spring, 215-241.

Epstein, M.J. & M.A. Geiger. (1994). Recent evidence of the expectation gap. *Journal of Accountancy*. (January) *177*, 60-66.

Financial Accounting Standards Board (FASB) (1975). *Accounting for Contingencies. Statement of Financial Accounting Standards No. 5.*

Freedman, M. & C. Wasley. (1990). The association between environmental performance and environmental disclosure in annual reports and 10ks. *Advances in Public Interest Accounting,* ed. Marilyn Newmark, 183-193. Greenwich, Connecticut: JAI Press, Inc.

Freedman, M. & A.J. Stagliano. (1995). Disclosure of environmental cleanup costs: The impact of the superfund act. *Advances in Public Interest Accounting, 6*, 163-176.

Gamble, G.O., K. Hsu, D. Kite & R.R. Radtke. (1995). Environmental disclosures in annual reports and 10ks: An examination. *Accounting Horizons, 9*(3), September, 34-54.

Guy, D.M. & J.D. Sullivan. (1988). The expectation gap auditing standards. *Journal of Accountancy* (April), 36- 46.

Ingram, R.W. & K.B. Frazier. (1980). Environmental performance and corporate disclosure. *Journal of Accounting Research, 18*(2), Autumn, 614-621.

Luehlfing, M.S. (1995). The politics of self-imposed regulations - Has a new day dawned? *Accounting Horizons* (June), 68-76.

McEnroe, J.E. & S.C. Martens. (2001). Auditors' and investors' perceptions of the "expectation gap". *Accounting Horizons* (December), 345-358.

Porter, B. (1993). An empirical study of the audit expectation - performance gap. *Accounting and Business Research* (Winter) *93*, 49-68.

Price Waterhouse (1992). *Accounting for environmental compliance: Crossroad to GAAP engineering, and government*, Price Waterhouse, 1-34.

Public Companies Accounting Oversight Board (PCAOB). (2003a). *Release No. 2003-005 Statement regarding the establishment of auditing and other professional standards. April 18, 2003.* Washington, D.C.

Public Companies Accounting Oversight Board (PCAOB). (2003b). *Release No. 2003-006 Establishment of interim professional auditing standards. April 18, 2003.* Washington, D.C.

Public Companies Accounting Oversight Board (PCAOB). (2003c). *Release No. 2003-26 Technical amendments to interim standards rules. December 17, 2003*. Washington, D.C.

Rockness, J.W. (1985). An assessment of the relationship between U.S. corporate environmental performance and disclosure. *Journal of Business Finance & Accounting, 12*(3), Autumn, 339-354.

Stanny, E. (1998). Effect of regulation on changes in disclosure of and reserved amounts for environmental liabilities. *Journal of Financial Statement Analysis, 3*(4), Summer, 34-49.

Sutton, M.H. (2002). Financial reporting at a crossroads. *Accounting Horizons* (December), 319-328.

Sweeny, B. (1997). Bridging the expectations gap-on shaky foundations. *Accountancy Ireland* (April) *29*(2), 18-20.

United States v. Arthur Young & Co., 465 U. S. 805 (1984)

U.S. Congress (2002). *The Sarbanes-Oxley Act. 2002. 107th congress of the United States of America. H.R. 3763*. Washington, D.C.: Government Printing Office.

U.S. Government Accounting Office (1996). *The Accounting Profession: Major Issues: Progress and Concerns*: Washington, D.C.: Government Printing Office.

Wiseman, J. (1982). An evaluation of environmental disclosure made in corporate annual reports. *Accounting, Organizations and Society, 7*(1), 53-63.

Wolf, F. M., J. A. Tackett & G. A. Claypool. (1999). Audit disaster futures: antidotes for the expectation gap? *Managerial Auditing Journal, 14*(9), 468-478.

DEBT COVENANT SELECTION: AN EMPIRICAL EXAMINATION

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ABSTRACT

How are debt covenants selected? Which firm and industry factors are significant in the covenant selection process? Previous research by the current authors examined individual debt covenants to determine if identifiable patterns exist and if there is a significant difference in debt covenant utilization among industry classifications. The evidence suggested that not only are there identifiable patterns, but that debt covenants are systematically grouped into packages. A theory of debt covenant utilization was offered to explain the theoretical significance of each of the independent variables that appear to influence selection. This paper offers additional insight. It develops a model to test the significance of the independent variables and the patterns and predictability of use. After identifying the significant variables, the authors explain the implications of their findings to current financial management.

INTRODUCTION

Equity investors enjoyed years of a bull market from 1982 to early 2000, when the value of U. S. common stocks peaked at approximately $17 trillion in market value of the Wilshire 5000 index. The stock market slide began in the year 2000, and this downward trend continued in the days following the September 11, 2001 terrorist attacks on the United States' homeland. Throughout 2002, as equity markets struggled to stage several comeback rallies, the market's bad news shifted to huge business failures and bankruptcies, due to deceit and outright fraud in Fortune 100 companies such as Enron, Tyco, and Worldcom. The Wilshire 5000 index further declined during 2002 to end the year at a market value of only about $10 trillion, a stunning paper loss approximating $7 trillion over the three year period (Browning, 2003). Indeed, investor confidence in equities has deteriorated so much, that one major Canadian investment broker recently stated that "investors have totally lost faith in the stock market" (Wahl, 2002).

For many of these stock-shy investors, both corporate and individuals, investing in corporate bonds is becoming an increasingly attractive alternative, despite historically low interest rates. The increased attractiveness of bonds is due not only to the recent volatility of equity markets, but also

to the reduced transactions costs and increased liquidity of corporate bonds for individual investors. Previously, corporate bond issues were funneled through only a few Wall Street dealers, resulting in bond prices being controlled by this small group. In recent years, more bonds are being issued in smaller increments without substantially increasing transactions costs, thus making them more attractive to individual purchasers. Additionally, research and analysis on thousands of bond issues has recently become available to the investing public on the Internet (Updegrave, 2001). The combined result of these factors is that non-institutional bond investors can buy investment grade corporate bond issues more easily and at more competitive prices than before.

With many investors fleeing equity markets seeking to preserve their investment capital, perceived risk will be a critical factor in bond selection. Spurned equity investors are likely to examine bond covenants more now than at any other time in recent decades. In addition to the usual decisions made with new debt offerings, financial managers may need to be particularly attentive to bond covenant selection. While they may be more important to investors still reeling from equity portfolio shrinkage and corporate fraud scandals, covenants can be quite costly to issuers. The challenge to management will be to include only those covenants which are necessary to make the issue marketable, and no more. The number and characteristics of the necessary covenants will vary considerably by issuer and by issue at any given point in time.

This study provides insight into debt covenant selection for financial managers of companies considering new debt offerings. The study includes a large sample covering a period that includes the stock market Crash of 1929, the Great Depression that ensued, the World Wars, and the prosperity that followed. The sample period spans recession, depression and prosperity, thus increasing its relevance and applicability.

BACKGROUND

Prior to the actual issuance of bonds, companies negotiate with the bond trustee specifically on which financial covenants are to be included in the debt contract. The trustee, acting on behalf of the bondholders, requires specified covenants be included in debt contracts in order to restrict management behavior that may be harmful to bondholders (Jensen and Meckling, 1976). In the absence of these covenants, a firm's management may be free to employ strategies that serve to expropriate wealth from bondholders to the benefit of the shareholders of the firm. The benefit of restrictive covenants is readily apparent; however, this benefit must be weighed against the costs associated with their selection, inclusion and enforcement.

Smith and Warner (1979) explained in their costly contracting hypothesis that a tradeoff is often made between the increase in firm value from including the covenants and the additional costs associated with the writing and monitoring of the contracts and the indirect costs resulting from reduction of management discretion related to management decisions. These costs may be offset by the higher prices bondholders are willing to pay for the firm's debt given the added protection

afforded by the covenants. As a result, the value of the firm increases. In an effort to reduce contracting costs, thus producing a net increase in the value of the firm through the use of covenants, Smith and Warner suggested that systematic patterns of debt covenants would exist across debt covenants. At the time the bond contract is developed, the bondholders make predictions regarding the investment, financing and dividend policies available to the stockholders. Based on these predictions, bondholders propose the inclusion of selected covenants to control potential wealth transfers from the bondholders to the stockholders. The potential increase in firm value resulting from higher bond prices serves as the incentive for stockholders to oblige. The firm is then faced with making decisions concerning the number and type of covenants to include. Once it becomes evident which covenants are effective in reducing the varying levels of perceived conflict, systematic patterns of covenant use will evolve to reduce contracting costs. Identifying these covenant packages and the variables that influence their inclusion could provide valuable information to the manager in the negotiation process.

THE IDENTIFICATION OF DEBT COVENANT PACKAGES

Previous research by the authors (2000) examined the type and incidence of restrictive covenants used in debt contracts. The sample surveyed consisted of 327 public debt issues for 28 different companies. The issues were chosen from the time period of the early 1920s to 1993. Five industries were represented in the sample: petroleum, food, steel, paper and plastics. These industries were chosen because they represent companies in existence during the time period studied. The industry factor was included in the survey to later analyze whether it was a significant variable in the determination of debt covenant selection. Only companies with at least three public issues of non-convertible, senior debt in at least three decades over the period of study were included.

Table 1: Incidence of Individual Covenant Use

Individual Restrictive Covenant	%Issues Containing
Rights on Default	85.9%
Callable Covenant	76.1%
Sinking Fund Requirement	59.3%
Security Requirement	17.1%
Dividend Restriction	22.6%
Debt/Priority Restriction	26.9%
Sales/Lease Restriction	53.2%

It was noted that very few debt agreements contained a covenant for merger restriction, a covenant requirement for maintenance of assets, a covenant for a restriction on investments, a covenant for a restriction on disposition of assets, or a covenant for an indirect investment restriction. The results support the premise that some covenants are more efficient in controlling sources of conflict than others.

This initial analysis led to the elimination of several covenants from further study of the patterns of covenant grouping. The callable provision was eliminated because it was present in 76.1% of the packages and further analysis revealed that the debt agreements that did not contain this covenant were primarily short-term agreements. The rights on default condition was also eliminated since it was included in 85.9% of the covenants. The sales/lease restriction was eliminated because further analysis revealed it was included only in the more recently written debt agreements. Other covenants were excluded from further analysis (merger restriction, requirement for maintenance of assets, restriction on investment, restriction on disposition of assets, and indirect investment restriction) due to the small number of debt agreements containing these covenants. The covenants that were included for further analysis of debt covenant package existence were the sinking fund covenant, the debt priority restriction, the security requirement, and the dividend restriction. As previously reported by the authors (2002), four different but systematic covenant packages were identified. The covenants included specifically protect assets for the bondholder in terms of claim dilution, asset substitution, dividend payout and underinvestment. These covenants are among a subset of covenants that appear consistently in public debt contracts over the time period of the study as determined by a review of the literature and a preliminary study. The analysis also showed that the covenants are ordered in the amount of protection they offer the bondholder.

The first covenant package (PACK A) includes none of the four covenants that are the focus of the study and offers no protection to the bondholder in the event of default. The second covenant package (PACK B) offers only a sinking fund covenant out of the four covenants studied, adding one additional layer of protection. The third covenant package (PACK C) includes a sinking fund covenant and a direct security covenant and/or a direct debt priority covenant. This package adds a second layer of protection. The fourth and final package (PACK D) includes a dividend covenant to the previous package of covenants, adding a third layer of protection. The packages were ordered in this manner based on observations from a survey of the sample and the theorized level of benefit that each covenant provides to the bondholder.

The survey of 327 packages of covenants from the study supports the theory that the covenants are ordered. Table 2 illustrates that out of 208 issues including covenants in their debt contracts, all but 21 include a sinking fund covenant. Of the 65 issues including a dividend covenant, only nine issues include this covenant without a related sinking fund and security or debt priority covenant. Of the 93 issues including either a security covenant or debt covenant, only four issues do not include a sinking fund covenant.

Table 2: Priority Levels of Covenants Packages					
PACKAGE		FREQUENCY		PERCENTAGE	
PACK A - No covenants			119		36.4%
PACK B - Sinking Fund Only			98		30.0%
PACK C - Sinking fund/Security		4		.2%	
	- Sinking fund/Security & Debt Priority	13		4.0%	
	- Sinking fund/Debt Priority	16	33	4.9%	10.1%
PACK D - Sinking fund/Security & Dividend		25		7.6%	
	- Sinking fund/Dividend &Debt Priority	3		.9%	
	- Sinking fund/Dividend/Debt Priority & Security	2	56	8.6%	17.1%
ALL OTHER					
	Dividend Only		9		2.8%
	Security/Dividend/ Debt Priority		4		1.2%
	Other		8		2.4%
TOTAL ALL ISSUES			327		100.00%

A THEORY OF DEBT COVENANT UTILIZATION

Previous research had clearly explained the desirability of covenant inclusion and the current authors' 2000 study identified patterns of individual and packaged covenant use. In an effort to further develop the field of research in this area, Carter, Hadley and Thomson (2001) developed a model to explain both the existence and ordering (ranking) of patterns of debt covenant packages. Toward this end, a model was developed to identify independent variables that have been observed to influence debt covenant package selection. These include, the size of the firm, financial leverage of the firm, the firm's trend in profitability, the firm's industry, and the length of the debt contract.

THE VARIABLES

Size of the firm (SIZE). The literature in this area suggests that larger, well-established firms have reputations in the market and hence are subject to more analysis than smaller firms. Their investment opportunity set is considered to be available public information. The market has shown trust in the firm by allowing it to grow. If the firm had caused any of the sources of conflict to be

realized in the past, the firm's ability to raise funds in the future would be altered (Malitz 1986). The size of the firm was measured by the natural log of total assets.

Financial leverage of the firm (LEV). It is hypothesized that the closer a firm is to bankruptcy, the more likely the bondholders will include a covenant to protect against claim dilution (i.e. secured debt covenant). Therefore, firms with higher financial leverage are theorized to have a greater probability of issuing bond packages with higher levels of protection than firms with lower financial leverage. The financial leverage variable of the firm was measured by the ratio of total debt to total assets determined by issue year numbers.

Rate of Return (ROR). In the event of declining earnings, the firm has an incentive to maintain dividend payouts at the expense of new investment, thus creating an underinvestment conflict. Firms with higher levels of earnings are not impacted by this conflict because the earnings are available for dividends. Firms with positive profitability trends have a greater probability of issuing bonds with covenant packages that have lower levels of protection than firms with lower average rates of return. The rate of return variable was measured by the average rate of return of the issuing firm for the three years prior to year of issue.

Time to Maturity (MAT). Time to maturity is predicted to be a significant factor in debt covenant selection. The longer the contract, the greater the need will be to control possible sources of conflict. Therefore, the longer the contract, the greater the probability of including a debt covenant package with a higher level of protection. The time to maturity variable was divided into three categories: long term (15 years or longer), medium term (10-14 years), and short term (less than 10 years).

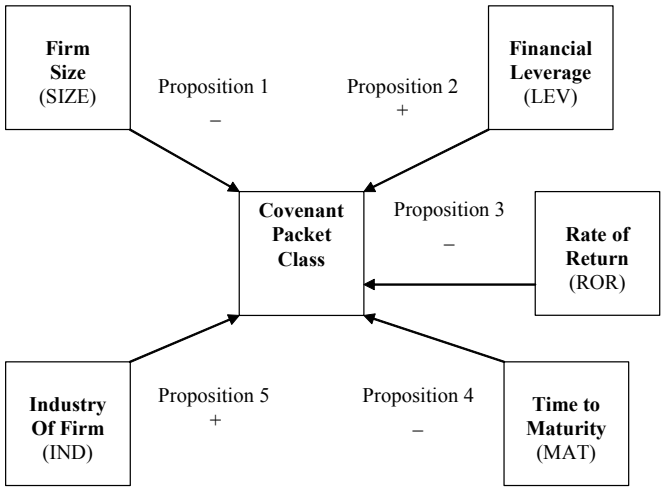
Industry of the issuing firm (IND). While it is not clear which covenant packages will be attractive to particular industries, it is clear that industry is likely to be a significant variable due to the nature and desirability of the firm's assets. The industry of the firm is particularly related to the need to control the conflict related to asset substitution. The more specialized a firm's resources, the less likely the firm will benefit from asset substitution (Smith and Warner). The industries included petroleum, paper, plastic, steel, and food. Table 3 summarizes the independent variables and the type of measurement variable.

THEORETICAL MODEL

The theoretical model is displayed in Figure 1, setting forth the proposed relationships between each independent variable and the issuing company's covenant packet membership. The figure shows that two propositions (P2 and P5) should be positively related to more restrictive covenant membership, since these two variables are perceived to increase risk. On the other hand, three propositions (P1, P3, and P4) should be negatively related to more restrictive covenant membership, since these three variables are perceived to reduce risk. This model does not imply cause and effect; it only indicates the proposed positive or negative relationship.

Table 3: Independent Variable Measurement			
	Measurement Variable	Variable Name	Type of Measurement Variable
H_1	The size of the issuing firm as measured by natural log of total assets	SIZE	Continuous
H_2	Alternative leverage ratios of the issuing firm as measured by (4) Current year ratio of total debt/total assets	LEV4	Continuous
H_3	The average rate of return of the issuing firm for the three years prior to year of issue	ROR	Continuous
H_4	Maturity or type measured by length in years of issue	MAT	Dummy Variable: 0 = long term (15 years or more) 1 = medium term (10-14 years) 2 = short term (less than 10 years)
H_5	Industry of the issuing firm	IND	Dummy Variable: 0 = Petroleum 1 = Paper 2 = Plastic 3 = Steel 4 = Food

Figure 1: Theoretical Model



METHODOLOGY

After initial descriptive statistics were obtained, the issues in the sample were segregated into four groups for the testing of the theory of the factors significant in debt covenant selection using an ordered probit model. The issues were segregated into PACK A, those issues that did not contain any of the covenants in questions; PACK B, those issues with only a sinking fund covenant; PACK C, those issues with the sinking fund covenant, a direct debt/priority covenant and/or a direct security covenant; PACK D, a sinking fund covenant, a dividend covenant, and either a direct debt priority covenant or a direct security covenant.

Ordered probit was used to construct the model indicating the significance of the independent variables in covenant package selection. It is similar to OLS regression analysis where independent variables are used to explain the dependent variables and the independent variable can be continuous, discrete, or ordered. However, with an ordered probit model the dependent variable is a discrete choice rather than a continuous intervally scaled variable as it is in OLS regression analysis. The dependent variable is scored as selected or not selected based on a function of the independent variables. Ordered probit is preferable to multinomial logit as multinomial logit yields multiple equations that can be difficult to interpret. Also multinomial logit ignores the natural ranking of the dependent variables.

The model estimated to test the hypotheses was specified by the equation that follows. The significance of the individual independent variables was measured by the p statistic.

$$\text{Package of Covenants} = b_1(\text{SIZE}) + b_2(\text{LEV}) + b_3(\text{ROR}) + b_4(\text{MAT}) + b_5(\text{IND})$$

The dependent variable is a dummy variable representing the levels of covenant packages and was coded "0" for PACK A, "1" for PACK B, "2" for PACK C, and "3" for PACK D. The independent variables utilized to test the hypotheses table are outlined along with their measurement base in Table 3.

Alternatively, the model can be stated in terms of probability with PACK A, where y=0 going to PACK D, where y = 3.

The general form of the model is as follows:

$$\Phi^1(p_1) = \alpha_1 + \beta'x$$
$$\Phi^1(p_1 + p_2) = \alpha_2 + \beta'x$$

$$\Phi^1(p_1 + p_2 ... + p_k) = \alpha_k + \beta'x$$
$$\text{and } p_1 + p_2 ... + p_{k+1} = 1$$

The equation can also be stated equivalently, as follows:

$$p_1 = \Phi(\alpha_1 + \beta'x)$$
$$p_1 = \Phi(\alpha_2 + \beta'x) - \Phi(\alpha_1 + \beta'x)$$

$$p_k = \Phi(\alpha_k + \beta'x) - \Phi(\alpha_{k-1} + ß'x)$$
$$p_{k-1} = 1 - \Phi(\alpha_k + ß'x)$$

In the equation, Φ^1 is in the inverse of the cumulative standard normal distribution function, also referred to as the probit. The Φ denotes the cumulative standard normal distribution function. The probit model used (LIMDEP7) produced, in addition to the coefficients, an intercept and two additional cut points that are thresholds between the levels of the ordered dependent variables. There are four dependent variables, one constant term and two thresholds (Mu).

SIGNIFICANCE OF THE OVERALL MODEL

Since ordered probit analysis does not produce a measure analogous to the r2 statistic of traditional regression models, the log likelihood ratio statistic is utilized to test the overall significance of the models. This ratio is based on the theory that the coefficients of the model are not significantly different than zero, with the exception of the constant. The ratio follows a chi-square distribution and the number of degrees of freedom is equal to the number of parameters tested. An additional consideration of the significance of the overall model is the calculation of a classification table as seen in Table 6. The table shows frequencies of predicted and actual outcomes for the four categories of the dependent variable. From this table, the percentage of outcomes accurately predicted can be calculated.

THE RESULTS

The first step in the statistical analysis was to eliminate from the original sample of 327 issues those issues that did not contain either PACK A, PACK B, PACK C, or PACK D covenants in their debt contract. This resulted in the elimination of 23 issues from the sample reducing it to 304 issues. Table 4 reports the statistics for each of the independent variables.

The first hypothesis predicted that packages of covenants with higher levels of protection are more likely the smaller the size of the issuing firm. This hypothesis was supported by the model. The coefficient for size (the log of total assets) was significant at the 0.001 level. Also, the coefficient was negative indicating that as the size of the firm increases, the probability of including a package of covenants with higher levels of protection decreases.

Table 4: Statistics for the Independent Variables				
Variable	Mean	Std. Dev.	Minimum	Maximum
LEV4	44.94	13.62	14.57	83.92
ROR	11.81	06.30	00.00	36.18
SIZE	11319	20786	140	304578
MAT	00.43	00.75	00.00	02.00

The second hypothesis predicted that the packages of covenants with higher levels of protection are more likely the higher the leverage ratio of the issuing firm. The leverage ratio, measured by total assets to total debt in the issue year, was significant in the model. However, this ratio did not act in the direction predicted. This may be the result of having used actual debt ratios. Long-term debt to total capitalization and total debt to total assets may not have appropriately captured the leverage of the firm. A better ratio may have been long-term debt to the market value of the equity of the firm. The contrary performance may also have been the result of the other variables for size, industry, and maturity of the debt being more significant predictive factors, thus outweighing the leverage factor.

The third hypothesis predicted that packages of covenants with higher levels of protection are more likely the lower the prior average rate of return of the issuing firm. The independent variables measuring the average three prior year rate of return (ROR) was significant at the .10 level in the revised model (as measured by the p statistic). However, this variable also acted in the opposite direction predicted. It was predicted that as the average prior rate of return increases, the probability of selecting a package of covenants with a higher level of protection should decrease producing a negative coefficient. Additionally, based on correlation analysis, this variable was significantly correlated with the LEV4 variable. When the LEV4 variable was dropped from analysis, this variable (ROR) was no longer significant. The effect of this variable on the hypothesis is inconclusive.

There are several possible reasons that the prior three year average rate of return did not behave as predicted. First of all it is an average number and may not necessarily represent a trend in the rate of return. A better measure of the effect of rate of return on probability of default on the debt may be a variable measuring the volatility of earnings rather than the average rate of return. Additionally, the variable for size may be a better indicator of the probability of default on debt since it is a significant variable in the model. Also, the factors for industry and length to maturity were significant variables for the four packages of debt covenants.

The fourth hypothesis predicted that covenants with higher levels of protection were more likely for issues with longer maturities than issues with medium or short-term issues. This hypothesis was supported by the model. The coefficient for maturity of the debt was dummy coded

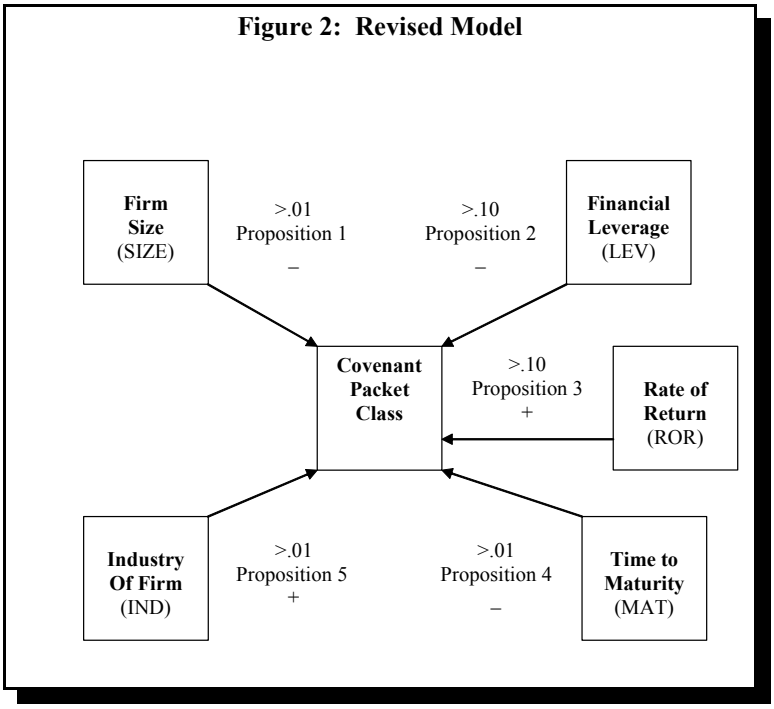
based on long term (coded 0), medium term (coded 1), and short term (coded 2). The coefficient was negative in the model supporting the theory that medium term and short -term issues are less likely to include covenant packages with a higher level of protection.

The final hypothesis predicted that the industry of the issuing firm was a significant factor in the selection of debt covenant packages. The industry factors were significant in the model. The coefficient for petroleum was zero indicating that this industry was not as likely to issue packages with higher levels of covenants. The coefficients for paper and plastic were less than 1.0 indicating also that these industries were not as likely to issue packages with higher protection. The coefficients for the food industry and the steel industry were greater than the petroleum coefficient indicating that these industries were more likely to include covenant packages with higher levels of protection than the other industries.

REVISED MODEL

The revised model, after the statistical analysis, is displayed in Figure 2. All five variables were found to be significantly related to covenant packet membership: size of the firm, financial leverage, rate of return, time to maturity, and industry of the issuing firm.

Figure 2: Revised Model



CONCLUSION

Overall, the model (Table 5) provided a good fit for the data. The log likelihood ratio statistic supports the model's significance. The Chi2 was 312.227 at the .0000 significance level. Additionally, the table comparing predicted and actual outcomes (Table 6) indicated a correct classification percentage of 68.75%.

Table 5
Ordered Probit Model

Variable	Coefficient (p Statistic)
Constant	5.051 (0.000)**
Food Industry	1.740 (0.000)**
Steel Industry	1.851 (0.000)**
Paper Industry	0.299 (0.223)
Plastic Industry	0.568 (0.013)**
Medium Term	-2.167 (0.000)**
Short Term	-2.409 (0.000)**
LEV4	-0.16E-01 (0.009)**
Prior Rate of Return	0.232 (0.068)*
Size	-0.469 (0.000)**
Dependent Variable Cutoff Points	
MU(1) Threshold	1.737 (0.000)**
MU(2)Threshold	2.426 (0.000)**
Statistics:** significant at the .05 level	Statistics:**significant at the .10 level
Log likelihood	-234.370
Restricted Log Likelihood	-390.484
Chi-squared	312.227
Significance level	0.000

Table 6: Classification Table for Final Model					
	PREDICTED OUTCOME				
ACTUAL OUTCOME	PACK A	PACK B	PACK C	PACK D	TOTAL
PACK A	91	27	0	0	118 (38.8)
PACK B	12	78	0	7	97 (31.9)
PACK C	0	11	0	22	33 (10.9)
PACK D	1	15	0	40	56 (18.4)
TOTAL	104 (34.2)	131 (43.1)	0 (0.00)	69 (22.7)	304 (100.0)

The results of this study provide valuable information to managers when negotiating which debt contracts are to be included in a debt agreement. As noted above, each of the five variables was statistically significant at the .10 level, or better. The following section addresses what these findings may mean to financial managers who are contemplating new debt offerings.

MANAGERIAL IMPLICATIONS

Of the findings made by this study, the one with the most significant implications for financial managers is the tendency of bond covenants in actual debt offerings to be grouped together in packages. The results of this research show that debt covenants tend to cluster into four packages, beginning with the least restrictive number of covenants in package one, ranging through progressively more restrictive covenants in packages two and three, to the most restrictive covenants contained in package four. It is important to note that covenants are not necessarily negotiated individually. Investors tend to require clusters of covenants based, at least in part, on the factors noted below.

Size does matter. The larger the firm the less likely it is that it will need to include covenant packages with higher levels of protection in the debt agreement. This finding is partly intuitive. Large firms project an image of greater stability. While this has been the case in the past, the recent collapse of Fortune 100 companies such as Enron, Tyco and Worldcom, may serve to result in large firms being held up to greater scrutiny in the future. So while size does matter, we predict that it might matter less in the future. Debt ratio will likely become a more significant determinant of investors' debt covenant expectations than firm size.

Profitability plays a part. Clearly the lack of earnings or declining earnings will increase both the number and cost of the covenants required. It might be important to note, however, that since debt is not serviced by profits, profitability will be more significant for those firms with high or long-standing dividend expectations.

Time matters as well. Since time increases uncertainty and risk, as the maturity is extended, it becomes more likely that the firm will need to include covenant packages with high degrees of protection.

Covenant expectations will vary by industry. Although this study did not attempt to predict covenant package requirements by industry, the findings do suggest that industry differences exist. While further examination is needed, industry differences are likely the result of the level of investment and marketability of firm assets.

Debt covenants may be costly to the issuing firms, but they provide protection that investors require. Careful analysis of covenant selection patterns will assist financial managers in maximizing their control over firm assets and minimizing covenant costs.

REFERENCES

Browning, E.S. (2003). Year-end review of markets and finance, 2002, *Wall Street Journal*, January 2, 2003.

Carter, F. & L. Hadley. (2002). An empirical examination of the determinants of covenants in public debt contracts: An examination of accounting and non-accounting factors. *Conference Proceedings of the Academy of Accounting and Financial Studies*, 31-36.

Carter, F. & L. Hadley. (2001). A theory of debt covenant utilization in public debt contracts. *Conference Proceedings of the Academy of Accounting and Financial Studies*, 36-40.

Carter, F., L. Hadley & N. Thomson. (2000). A survey of debt covenants in public debt contracts. *Conference Proceedings of the Academy of Accounting and Financial Studies*, 82-86.

Jensen, M. C. & W.H. Meckling. (1976). On financial contracting: An analysis of bond covenants. *Journal of Financial Economics, 3,* 305-360.

Malitz, I. (1986). Financial contracting: The determinants of bond covenants. *Financial Management, 15*(1), 18-25.

Smith, C. W. Jr. & J. B. Warner. (1979). On financial contracting: An analysis of bond covenants. *Journal of Financial Economics, 7,* 117-161.

Wahl, A. (2002). Balancing act, *Canadian Business, 75*(19), Oct. 2002.

THE EFFECTS OF THE TAX REFORM ACT OF 1986 ON BUSINESS FAILURE MOMENTUM

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ABSTRACT

The Tax Reform Act of 1986 discouraged private workout arrangements in favor of corporate bankruptcy reorganization. We hypothesize by channeling failing firms into the more protracted Chapter 11 procedure, the Tax Reform Act of 1986 slowed the "domino effect" and reduced business failure momentum. We divide a sample of 228 continuous monthly observations of large and small business failures into pre- and post-event periods. For each period, we employ maximum likelihood estimation and regress the number of large and small business failures on business failure momentum. We find the Tax Reform Act of 1986 is associated with a significant reduction in business failure momentum for both large and small firms. Our results suggest private workout arrangements impose higher social costs than corporate bankruptcy reorganizations.

INTRODUCTION

In the early and mid 1980's many failing firms sought to avoid Chapter 11 bankruptcy reorganization by privately resolving conflicts among creditors and stockholders. For the period 1980-1986, 91 of the 192 defaulting New York Stock Exchange and American Stock Exchange companies were reorganized privately (Jensen 1999, p.20). In the late 1980's the trend toward private workout arrangements ended abruptly as changes in the Tax Code sought to curb "speculative excesses" in the highly leveraged transactions market. One tax law in particular, The Tax Reform Act of 1986, effectively discouraged private workout arrangements in favor of the Chapter 11 bankruptcy reorganization procedure. Several commentators have criticized such legal barriers for frustrating the normal market adjustment process, while others have argued private workouts should be discouraged due to the negative externalities they produce. The negative externalities of business failure has been describes as a "domino effect" in which the failure of one firm leads to the failure of another firm, and so on, until the memory of the original failure eventually fades (Campbell and Choudhury, 2002).

This paper investigates whether, by channeling failing firms away from private workouts and into bankruptcy reorganization, the Tax Reform Act of 1986 mitigated the negative externalities of business failure. We measure business failure momentum before and after the implementation of the Tax Reform Act using a time-series of 228 continuous monthly observations of the number of large

and small business failures. We control for the number of new business incorporations and use maximum likelihood estimation to avoid problems with autocorrelation. With the pre-event period providing a benchmark, we find the Tax Reform Act of 1986 is associated with a significant reduction in business failure momentum for both large and small firms. These results suggest the Chapter 11 bankruptcy reorganization procedure reduces the social cost of business failure by providing an orderly and transparent process of contractual disengagement.

Section two reviews the related literature. Section three describes the research design. Section four presents the results and section five contains some concluding remarks.

LITERATURE REVIEW

One of the more enduring issues in the business failure literature concerns the efficiency of corporate bankruptcy. Many scholars believe bankruptcy, particularly bankruptcy reorganization, is inefficient and should be eliminated in favor of an auction process (e.g. Roe, 1983; Baird, 1986; Jackson, 1986; Wruck, 1990; Bradley and Rosenzweig, 1992). White (1989) concludes, "The U.S. bankruptcy system, rather than helping the economy move toward long-run efficiency, in fact appears to delay the movement of resources to higher value uses" [p.130]. The primary criticisms of the Chapter 11 procedure involve the high costs and time delays imposed on bankrupt firms (Bradley and Rosenzweig, 1992). For large industrial firms, Weiss (1990) found direct Chapter 11 administrative costs averaged 2.8 percent of total asset book value at the fiscal year-end prior to bankruptcy and the average time spent in Chapter 11 was 2.5 years. For small firms, the time spent in Chapter 11 is shorter but the direct bankruptcy costs are proportionally much higher. Campbell (1997) found closely held firms averaged 1.3 years in Chapter 11 and direct bankruptcy reorganization costs averaged 8.5 percent of total asset book value at the start of the bankruptcy proceeding. The available evidence suggests the direct costs of private workout arrangements are about 10 percent of those incurred in Chapter 11 proceedings of comparable size (Gilson et al., 1990).

In addition to the direct costs, bankruptcy reorganization also involves substantial indirect costs. Indirect costs include lost sales, lost profits, the inability to obtain credit from suppliers, and lost investment opportunities (Titman, 1984). The time delays inherent in the Chapter 11 procedure produce higher indirect costs; however, private workouts usually take only a few months to negotiate and cost much less in terms of both direct and indirect costs (Jensen, 1999). Private workouts can be viewed as a natural market response to the inefficiency of corporate bankruptcy. "Such innovation is to be expected when there are such large efficiency gains to be realized from new reorganization and recontracting procedures [Jensen 1999, p.21]." Evidence from market studies suggests private workout agreements enhance firm value. Gilson, John and Lang (1990) provide statistical evidence consistent with stockholders being systematically better off if their firm's debt is restructured privately. Belker, Franks and Torous (1999) find once the result of a workout attempt

is known, the returns to shareholders are greater for firms which successfully complete a private workout arrangement.

Although many bankruptcy scholars have criticized the Chapter 11 procedure for the high costs and time delays imposed on the debtor firms, few have acknowledged any benefits to the Chapter 11 procedure, and those that have taken a more positive view (e.g. Belker, Franks and Torous, 1999) typically focus on strategic advantages for certain stakeholders, rather than the social benefits of the procedure itself. Perhaps the most important feature of Chapter 11 is that the parties negotiate new contractual arrangements in full public view with full disclosure. Baird and Picker (1991) argue such a bankruptcy procedure is needed because these negotiations should not be entirely the province of private contracting. "[T]he manager-shareholder and senior creditor cannot be relied on to protect the rights of third parties (Baird and Picker, 1991, p. 312)."

RESEARCH DESIGN

If the negative impact on third party contractual relationships is mitigated by having a public reorganization procedure, it would suggest different recontracting procedures have different social costs. Third parties include contracting parties without valuable claims on the debtor's assets, such as employees, customers, suppliers, and the local community. In this study we examine the social cost of disrupting third party relationships and test the following hypothesis in the alternative:

Hypothesis:	Relative to private workout arrangements, bankruptcy reorganization mitigates the negative externalities of business failure.

The Tax Reform Act of 1986 is the event of interest. This law altered the economic incentives to enter into private workout arrangements by severely restricting the use of net operating losses (NOLs) for tax purposes when the reorganization involves a "change of ownership." A change of ownership is defined to occur when old equity holders own less than 50% of any new equity issued. The law however provides an exception for firms reorganizing in Chapter 11, and thus by filing Chapter 11 the debtor preserves its NOL carryover tax benefits. The intent and ultimate affect was to direct firms away from private workouts and into the Chapter 11 procedure.

SAMPLE SELECTION

Our sample is a monthly time series of data obtained from Dun and Bradstreet Corporation beginning in October, 1979, with the implementation of the current Bankruptcy Code. The Code made several major changes in bankruptcy procedure. For example, under the former Bankruptcy Act of 1938 (the Chandler Act) there were different reorganization procedures for large and small firms. Chapter 11 of the Bankruptcy Code combines Chapters X, XI, and XII of the old Bankruptcy

Act into a single procedure for business reorganization. Such a major change in bankruptcy reorganization procedures could confound the results of the present study and therefore, we begin the monthly time series at the Code's implementation date. The sample period ends September, 1998, at the time Dun and Bradstreet reorganized and ceased reporting business failure statistics.

Thus, the sample period is a nineteen year window with 228 continuous monthly observations of the number of business failures and new business formations. The event date, January 1, 1987, is the date the Tax Reform Act of 1986 went into effect. We divide the sample observations into a pre-event period, October 1979 through December 1986, and a post-event period, January 1987 through September 1998. We analyze large and small firms separately. Table 1 presents summary statistics for the pre- and post-event periods for both large and small firms. A "failure" is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors" (Dun and Bradstreet's measures of failures, 1955-1998). All industrial and commercial enterprises petitioned into the Federal Bankruptcy Courts are considered business failures. Also included are: 1) concerns forced out of business through actions in the state courts such as foreclosures, executions, and attachments with insufficient assets to cover all claims; 2) concerns involved in court actions such as receiverships, reorganizations, or arrangements; 3) voluntary discontinuations with a known loss to creditors; and 4) voluntary out of court compromises with creditors. Thus, the number of business failures is broadly defined to include private workout arrangements, state court actions, and federal bankruptcy proceedings. A small business is defined as a concern having less than $100,000 in current liabilities; a large business is defined as a concern having more than $100,000 in current liabilities. Current liabilities include all accounts and notes payable, whether secured or unsecured, known to be held by banks, officers, affiliated companies, suppliers, or the Government. Not included in current liabilities are long-term publicly held obligations (Dun and Bradstreet's measures of failures, 1955-1998).

Table 1 shows the average number of small business failures rose dramatically over the nineteen year sample period. For the pre-event October 1979 through December 1986 period, small business failures averaged 1396 per month, while for the post-event January 1987 through September 1998 period small business failures averaged 4158 per month. The average number of large business failures also increased. For the pre-event period large business failures averaged 1561 per month, while for the post-event period large business failures averaged 1898 per month. Table 1 also presents the summary statistics for the number of new business incorporations. For the pre-event period, new business incorporations averaged 50,588 per month; for the post-event period, the number of new business incorporations averaged 59,393 per month.

EMPIRICAL TESTS OF THE HYPOTHESIS

We use correlation analysis and regression analysis to compare the momentum of business failure over the pre- and post-event periods. Campbell and Choudhury (2002) describe the negative

externalities of business failure as a "domino effect" and its momentum varies over time. Campbell and Choudhury also tested the cumulative lagged effects of business failures over time and found the "memory" for business failure can last up to two years from the point of failure. In the present study the number of business failures is regressed on a proxy measure for business failure momentum in both the pre-event and post-event periods. The variable, MOMENTUM, is a constant growth series beginning at one and growing by one each month. If the Tax Reform Act of 1986 is associated with a decrease in business failure momentum, then the coefficient for MOMENTUM should be less influential in the post-event period. To disentangle the effects of expanding business activity, the regression includes a control variable measuring the number new business incorporations.

Table 1: Summary Statistics for Large and Small Firm Failures for the PeriodsOctober 1979 - December 1986 and January 1987 - September 1998 (Monthly Data)[a]

Variables[b]	Period 19--	Monthly Means	Standard Deviations	Minimums	Maximums
SMFAIL	79-86	1396.23	912.62	242.00	3952.00
	87-98	4158.55	942.75	2476.00	6365.00
LGFAIL	79-86	1561.63	971.72	259.00	4145.00
	87-98	1898.54	363.22	1223.00	2778.00
NEWBUS	79-86	50588.47	5730.41	27234.00	68087.00
	87-98	59393.38	5439.17	48688.00	73060.00

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc

[b] Variable Definitions:
SMFAIL = number of small firm failures;
LGFAIL = number of large firm failures;
NEWBUS = number of new business incorporations.

Durbin-Watson statistics using ordinary least squares (OLS) estimates indicated the presence of positive autocorrelation. One consequence of autocorrelated errors (or residuals) is the formula variance [$\sigma^2 (X'X)^{-1}$] of the OLS estimator is seriously underestimated, where X represents the matrix of independent variables and σ^2 is the error variance (see Choudhury, 1994). This can result in misleading test statistics and confidence intervals. We evaluated the autocorrelation function and partial autocorrelation function of the OLS regression residuals using SAS procedure PROC ARIMA (see SAS/ETS User's Guide, 1993). This was necessary because the Durbin-Watson statistic is not valid for error processes other than first order (see Harvey 1981, pp. 209-210). We observed

the degree of autocorrelation and identified the order of the model that sufficiently described the autocorrelation. After evaluating the autocorrelation function and partial autocorrelation function, the residuals model was identified as a second order autoregressive model $(1 - \phi_1 B - \phi_2 B^2)\, v_t = \varepsilon_t$ (see Box, Jenkins, & Reinsel, 1994). The final specification of the regression model is of the following form for large (LGFAIL) and small (SMFAIL) failures respectively:

$$LGFAIL_t = \beta_0 + \beta_1 MOMENTUM_t + \beta_2 NEWBUS_t + v_t \qquad (1)$$

and $v_t = \phi_1 v_{t-1} + \phi_2 v_{t-2} + \varepsilon_t$

$$SMFAIL_t = \beta_0 + \beta_1 MOMENTUM_t + \beta_2 NEWBUS_t + v_t \qquad (2)$$

and $v_t = \phi_1 v_{t-1} + \phi_2 v_{t-2} + \varepsilon_t$.

Where:

MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period;
NEWBUS = the number of new business formations.

We use maximum likelihood estimation instead of two step generalized least squares to estimate the regression parameters in equations (1) and (2). Maximum likelihood estimation estimates both regression parameters and autoregressive parameters simultaneously and accounts for the determinant of the variance-covariance matrix in its objective function (likelihood function). In general, the likelihood function of a regression model with autocorrelated errors has the following form:

$$L(\beta, \theta, \sigma^2) = -\frac{n}{2}\ln(\sigma^2) - \frac{1}{2}\ln|\Omega| - \frac{(Y - X\beta)'\Omega^{-1}(Y - X\beta)}{2\sigma^2}$$

where,

Y- vector of response variable (number of failures),
X - matrix of independent variables (MOMENTUM, NEWBUS, and Intercept),
ß - vector of regression parameters,
θ - vector of autoregressive parameters,
σ^2 - error variance,
Ω - variance-covariance matrix of autocorrelated regression errors.

For further discussion on different estimation methods and the likelihood function, see Choudhury et al. (1999); also see SAS/ETS User's Guide, 1993, for expressions of the likelihood function.

RESULTS

In this section we report the results of tests investigating the association between the implementation of the Tax Reform Act of 1986 and business failure momentum. The strong but weakening correlations reflected in Table 2 suggest a strong memory of business failure that gradually weakens over time. The memory of large business failures is longer and stronger in the pre-event period than in the post-event period (the correlation statistic for a one month lag in the pre-event period is .88 while in the post-event period it is .77). Also, the positive correlations remain statistically significant for more than two years in the pre-event period, while in the post-event period the correlation ceases to be statistically significant after about 16 months. The correlation results reported in Table 2 for small business failures are similar to those reported for large. A one month lag in the number of small business failures has a .91 correlation in the pre-event period, compared to a .85 correlation in the post-event period. At 24 months the correlation remains strong at .89 in the pre-event period, but has weakened to .27 in the post-event period. These results suggest the Tax Reform Act shortened the memory of business failure for both large and small firms.

Table 2: Correlation between Number of Failures and Their Monthly Lags for the Periods October 1979 - December 1986 and January 1987 - September 1998

Monthly Lags[a]	Large Firm Failures[b]		Small Firm Failures[b]	
	Oct.79-Dec.86	Jan.87-Sep.98	Oct.79-Dec.86	Jan.87-Sep.98
FAILLAG1	0.87823 (<0.0001)	0.76594 (<0.0001)	0.91336 (<0.0001)	0.85561(<0.0001)
FAILLAG2	0.87129 (<0.0001)	0.73143 (<0.0001)	0.92202 (<0.0001)	0.83484(<0.0001)
FAILLAG3	0.81817 (<0.0001)	0.64610 (<0.0001)	0.92119 (<0.0001)	0.80535(<0.0001)
FAILLAG4	0.75185 (<0.0001)	0.50392 (<0.0001)	0.88898 (<0.0001)	0.75113 (<0.0001)
FAILLAG5	0.75779 (<0.0001)	0.54871 (<0.0001)	0.88991 (<0.0001)	0.79412 (<0.0001)
FAILLAG6	0.71762 (<0.0001)	0.48062 (<0.0001)	0.87171 (<0.0001)	0.74067 (<0.0001)
FAILLAG7	0.71184 (<0.0001)	0.46910 (<0.0001)	0.85140 (<0.0001)	0.72654 (<0.0001)
FAILLAG8	0.68256 (<0.0001)	0.41579 (<0.0001)	0.83895 (<0.0001)	0.67937 (<0.0001)
FAILLAG9	0.68120 (<0.0001)	0.43216 (<0.0001)	0.83825 (<0.0001)	0.66902 (<0.0001)

Table 2: Correlation between Number of Failures and Their Monthly Lags for the Periods October 1979 - December 1986 and January 1987 - September 1998

Monthly Lags[a]	Large Firm Failures[b]		Small Firm Failures[b]	
	Oct.79-Dec.86	Jan.87-Sep.98	Oct.79-Dec.86	Jan.87-Sep.98
FAILLAG10	0.66324 (<0.0001)	0.39391 (<0.0001)	0.79460 (<0.0001)	0.64135 (<0.0001)
FAILLAG11	0.68155 (<0.0001)	0.36121 (<0.0001)	0.82508 (<0.0001)	0.60979 (<0.0001)
FAILLAG12	0.70954 (<0.0001)	0.43185 (<0.0001)	0.85642 (<0.0001)	0.65161 (<0.0001)
FAILLAG13	0.67994 (<0.0001)	0.27081 (<0.0012)	0.81353 (<0.0001)	0.53713 (<0.0001)
FAILLAG14	0.71860 (<0.0001)	0.29078 (<0.0005)	0.85533 (<0.0001)	0.54068 (<0.0001)
FAILLAG15	0.63883 (<0.0001)	0.22843 (<0.0064)	0.83955 (<0.0001)	0.48146 (<0.0001)
FAILLAG16	0.62056 (<0.0001)	0.15580 (<0.0651)	0.82220 (<0.0001)	0.41738 (<0.0001)
FAILAG17	0.61673 (<0.0001)	0.20843 (<0.0131)	0.84967 (<0.0001)	0.43814 (<0.0001)
FAILLAG18	0.56125 (<0.0001)	0.07768 (<0.3599)	0.83383 (<0.0001)	0.33767 (<0.0001)
FAILLAG19	0.57335 (<0.0001)	0.06572 (<0.4388)	0.86171 (<0.0001)	0.33488 (<0.0001)
FAILLAG20	0.55410 (<0.0001)	0.00324 (<0.9696)	0.84768 (<0.0001)	0.31011 (<0.0002)
FAILLAG21	0.55311 (<0.0001)	-0.05888 (<0.4880)	0.84938 (<0.0001)	0.28239 (<0.0007)
FAILLAG22	0.55511 (<0.0001)	-0.03818 (<0.6531)	0.84120 (<0.0001)	0.27236 (<0.0011)
FAILAG23	0.53799 (<0.0001)	-0.07297 (<0.3899)	0.88060 (<0.0001)	0.26420 (<0.0015)
FAILLAG24	0.53625 (<0.0001)	-0.09331 (<0.2711)	0.89472 (<0.0001)	0.27123 (<0.0011)

( ) p-values

[a] Variable Definitions:
FAILLAG(J) = number of firm failures, large or small, lagged J months back in time

[b] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

The regression analysis results indicate an association between the implementation of the Tax Reform Act of 1986 and a slowdown in business failure momentum. Table 3 reports the regression results for the October 1979 through December 1986 pre-event period. The estimated coefficient for business failure momentum, MOMENTUM, in the pre-event period is statistically significant and positive for both large and small businesses. Interpreting these results for large businesses, if time is increased by one month, the number of business failures increases by 26 firms. Similarly, if time is increased by one month, the number of business failures increases by 32 firms. The control variable for new business formations, NEWBUS, is not significant in the pre-event period.

Table 3 Regression Results for Number of Large and Small Firm Failures for the Period October 1979 - December 1986 (Monthly Data)a : Maximum Likelihood Estimates

Independent Variables[b]	Large Firm Failures (corrected for autocorrelationd)	Small Firm Failures (corrected for autocorrelatione)
Intercept	8073.00C(-2.58)**	-10760.00(-6.35)***
MOMENTUM	25.78(2.95)***	32.16(6.55)***
NEWBUS	-0.003(-0.20)	0.001(0.12)
R-Squared	0.82	0.89
Durbin-Watson	1.96	2.18

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b] Variable Definitions:MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period;NEWBUS = the number of new business formations

[c] The t-statistics reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

[d] The regression residuals model was identified as, $(1- \Phi_1 \beta - \Phi_2 \beta^2)v_t = \epsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $(1 + 0.45\beta + 0.37\beta^2)v_t = \epsilon_t$.
Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

[e] The regression residuals model was identified as, $(1- \Phi_1\beta - \Phi_2 \beta^2)v_t = \epsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $(1 + 0.32 \beta \underset{(3.22)***}{} + 0.42 \beta^2)v_t = \epsilon_t$. $\underset{(4.16)***}{}$
Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

The regression results reported in Table 4 for the post-event period, January 1987 through September 1998, indicate a slowdown in business failure momentum. The estimated coefficient for MOMENTUM is not statistically significant in either the large or small firm regressions. The

estimated coefficient for MOMENTUM is close to zero for large business failures and less than five for small business failures; however, the estimated coefficient for the control variable NEWBUS is significant in both regressions. Overall, these results suggest the Tax Reform Act of 1986 is associated with a reduction in business failure momentum and the impact is slightly more pronounced for large businesses than for small businesses.

Table 4: Regression Results for Number of Large and Small Firm Failures for the Period January 1987 - September 1998 (Monthly Data)[a]: Maximum Likelihood Estimates

Independent Variables[b]	Large Firm Failures (corrected for autocorrelation[d])	Small Firm Failures (corrected for autocorrelation[e])
Intercept	847.09[c] (0.67)	-607.56 (-0.16)
MOMENTUM	0.6326 (0.24)	4.89 (0.64)
NEWBUS	0.0127 (2.57)**	0.04 (3.91)***
R-Squared	0.66	0.79
Durbin-Watson	1.96	2.05

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc

[b] Variable Definitions:
MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period;
NEWBUS = the number of new business formations;

[c] The t-statistics reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels

[d] The regression residuals model was identified as, $(1- \Phi_1 \beta - \Phi_2 \beta^2)v_t = \epsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $(1+0.51 \beta + 0.35 \beta^2 v_t = \epsilon_t$
6.26*** 4.31***
Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

[e] The regression residuals model was identified as, $(1- \Phi_1 \beta - \Phi_2 \beta^2)v_t = \epsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $((1+0.53 \beta + 0.38 \beta^2 v_t = \epsilon_t$
6.67*** 4.72*** .
Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

SUMMARY AND CONCLUSIONS

The Tax Reform Act of 1986 gave large and small businesses an economic incentive to restructure under the Chapter 11 procedure, rather than attempt a private workout arrangement. After controlling for increases in new business formations, we find strong evidence suggesting the implementation of the Tax Reform Act of 1986 is associated with a shorter the memory for business failure and a reduction in business failure momentum. Our results contribute to the literature by documenting the negative externalities of business failure and, for the first time, associating alternative recontracting procedures with differences in business failure momentum. The evidence suggests private restructurings impose greater social costs than the Chapter 11 corporate bankruptcy procedure. It is an open question whether the efficiency gains inherent in private workout arrangements can justify the additional social cost of the negative externalities.

REFERENCES

Baird, D. (1986). The uneasy case for corporate reorganization. *Journal of Legal Studies, 15,* 127-147.

Baird, D. & Picker, R. (1991). A simple noncooperative bargaining model of corporate reorganizations. *Journal of Legal Studies, 20*, 311-349.

Belker, B., Franks, J. & Torous, W. (1999). Are stockholders better off when debt is restructured privately. In E.I. Altman (Ed.), *Bankruptcy and Distressed Restructurings: Analytical Issues and Investment Opportunities* (pp. 391-400). Washington, D.C., Beard Books.

Box, G., Jenkins, G. & Reinsel, G. (1994). *Time Series Analysis: Forecasting and Control.* Englewood Cliffs, NJ: Prentice-Hall.

Bradley, M. & Rosenzweig, M. (1992). The untenable case for Chapter 11. *Yale Law Journal, 101,* 1043-1095.

Campbell, S. (1997). An Investigation of the direct costs of bankruptcy reorganization for closely held firms. *Journal of Small Business Management, 35*(3), 21-29.

Campbell, S. & Choudhury, A. (2002). An empirical analysis of the business failure process for large and small firms. *Academy of Entrepreneurship Journal, 8,* 107-120.

Choudhury, A. (1994). Untransformed first observation problem in regression model with moving average process. *Communications in Statistics: Theory and Methods, 23*(10), 2927?2937.

Choudhury, A., Hubata, R. & St. Louis, R. (1999). Understanding Time-Series Regression Estimators. *The American Statistician, 53*(4), 342-348.

Dunn and Bradstreet. (1998). *Business Failure Record.* New York, NY: Dunn and Bradstreet.

Gilson, S., Kose, J. & Lang, L. (1990). Troubled debt restructurings: An empirical study of private reorganization of companies in default. *Journal of Financial Economics, 27*, 315-354.

Harvey, A.C. (1981). *The Econometric Analysis of Time Series*. London: Philip Allan.

Jackson, T. (1986). *The Logic and Limits of Bankruptcy Law*. Cambridge, MA. Harvard University Press.

Jensen, M. (1999). Corporate control and the politics of finance. In E.I. Altman (Ed.), *Bankruptcy and Distressed Restructurings: Analytical Issues and Investment Opportunities* (pp. 3-43). Washington, D.C., Beard Books.

Roe, M. (1983). Bankruptcy and debt: A new model for corporate reorganization. *Columbia Law Review, 83*, 528-602.

SAS/ETS User's Guide. (1993). SAS Institute, Inc, Cary, North Carolina.

Titman, S. (1984). The effect of capital structure on a firm's liquidation decision. *Journal of Financial Economics, 13*, 137-152.

Weiss, L.A. (1990). Bankruptcy resolution: Direct costs and violation of priority of claims. *Journal of Financial Economics, 27*, 285-314.

White, M. (1989). The corporate bankruptcy decision. *Journal of Economic Perspectives, 3,* 129-151.

Wruck, K. (1990). Financial distress, reorganization, and organizational efficiency. *Journal of Financial Economics, 27*(2), 419-444.

SIMILARITIES AND DIFFERENCES BETWEEN THE SEXES IN FINANCIAL ANALYSIS AND SELF-CONFIDENCE

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ABSTRACT

This research investigates if gender influences a professional financial analyst's assessment of the financial condition of the business firm. Additionally, the research investigates if the analyst's self-confidence in their analysis differs by gender. A mailed survey to 450 professional financial analysts containing multi-year financial statements, a letter of explanation and a survey instrument to be completed and returned formed the basis of the research. The survey instrument asked the analysts to assess the business firm in a number of areas using the financial statements provided and to indicate a level of self-confidence for each area of assessment. One hundred and three surveys were completed and returned. Results indicated that both the male and the female analysts assessed the condition of the firm similarly. However, the self-confidence expressed by the male analysts in their assessments was significantly higher than the female analysts. The research extends the body of knowledge by examining for the first time both performance and self-confidence between the sexes in the area of financial analysis.

INTRODUCTION

This behavioral research seeks to determine if gender significantly influences an analyst's assessment of the financial condition of the firm as well as expressed levels of self-confidence in the results of one's analysis. The measurements of financial assessments and reported self-confidence are isolated for testing as both one's performance and one's self-confidence in performance are determining factors in making investment decisions or in giving financial advice. The research adds to the body of knowledge by demonstrating that previous psychological findings concerning self-confidence between the sexes are applicable to the subject of financial analysis.

LITERATURE REVIEW

Psychology literature on gender catalogs cognitive differences between the sexes. Meta-analyses (Maccoby & Jacklin, 1974; Hyde, 1981; and Linn & Petersen, 1986) indicate there are a variety of gender differences in mental abilities between the sexes. One difference, namely, that males perform better than females on tests of mathematical abilities is potentially significant for gender research in financial analysis; as such analysis is math or numbers based. Other psychology literature contains numerous studies using general measures of confidence, such as grade predictions or attitude scales, that point out females are less confident than males in their abilities in mathematics, problem solving, and science (Campbell & Hackett, 1986; Hornig, 1987; Johnson, 1989; Hyde, Fennema, Ryan, et al, 1990; Webster & Ellis, 1996). This gender difference in self-confidence seems to perpetuate itself through the educational process and then is carried into the professional world, where, according to (Clance & O'Toole, 1988), females often avoid jobs and careers involving quantitative based requirements. Few studies, however, have examined gender differences in both performance and self-confidence when dealing with business tasks such as financial analysis. In studies using business students and prospective business students, (Goldsmith & Goldsmith, 1997 and Goldsmith, Goldsmith, & Heaney,1997), found that male college business students expressed both higher perceived and real knowledge of financial investments than did female students. (Green, 1997), however, found that high-school females planning to major in business were more academically successful than their male counterparts, but were nonetheless less self-confident about their academic skills than were the males. Other literature (Bandura, 1997; Leo, 1998; & Johnson, 1998) also points to a lack of correlation between self-confidence and performance. Accounting and finance literature dealing with professional analysts however is silent concerning whether the actual results of financial analysis as well as self-confidence in one's analysis may be affected by one's sex.

Concepts closely related to self-confidence include self-concept and self-efficacy. In order of hierarchical ranking, self-concept would be the most general, entailing one's overall view of oneself. Self-efficacy relates to one's personal perception of their ability to muster the resources necessary to carry out a task. Self-efficacy toward a task precedes and may affect the level of self-confidence expressed after the task is completed. Self-efficacy, its measurement and its importance in understanding why people devote energy to activities or functions in life are based largely on the psychological work of (Bandura, 1977, 1982, 1986). The concept of measuring one's self-efficacy revolves around one's own beliefs about their personal ability to apply the required physical, intellectual, and emotional resources needed to accomplish a task (Bandura, 1986; Eden & Kinnar, 1991). Task specific self-efficacy may therefore be defined as the extent of belief in one's ability to successfully accomplish a specific task (Stone, Arunachalam, & Chandler, 1996). Examples of specific tasks might be taking an exam, giving a speech, or diagnosing a disease. The specific task involved in this research is assessing the financial condition of a business firm through

the analysis of financial statements. Upon completion of a task, levels of self-confidence in the results may be measured and analyzed.

This research seeks to add to the body of knowledge by investigating if male and female financial analysts reach similar outcomes in their financial assessments of the firm and if their expressed levels of self-confidence in their analysis is similar. The financial assessments of the firm (the performance measure) and the expressed levels of personal self-confidence (the self-concept measure) in the financial assessments of the business enterprise set the contextual parameters of the study.

PROBLEM STATEMENT

It is not known if financial analysis and self-confidence in performing financial analysis are affected by one's sex. The purpose of this study is to test whether the financial assessments of the firm and reported self-confidence in the assessments differ between professional male and female financial analysts.

SOURCES OF DATA

The data collected for this study consisted of responses to a questionnaire from a mailed survey to four hundred and fifty (450) financial analysts from the United States. A purchased mailing list of securities analysts specializing in the utility industry was used to develop the targeted sample. Accompanying the questionnaire was a complete set of multi-year comparative financial statements of a publicly traded utility company. The financial statements contained comparative balance sheets, income statements, equity statements, and cash-flow statements. The name and location of the firm were disguised. An electric utility company was used to minimize differences in accounting formats and procedures. The utility industry is somewhat unique in that commonality exists in the financial reporting format used by regulated electric companies.

The response instrument asked the respondents to assess six areas of the firm using the financial statements provided and then to report their level of self-confidence associated with each area of assessment. All twelve responses were recorded on a seven-point (1-7) scaled instrument.

Of the four hundred and fifty surveys mailed, one hundred and three were returned for a response rate of twenty-three percent. Of the one hundred and three respondents, thirty-one were female and seventy-two were male. Although the response was unequal by sex, the proportions were representative of the population surveyed, that is there are many more male than female analysts. Additionally, the statistical tests conducted do not require an equal number of observations in each data set.

After compilation of the returned surveys, potential nonresponse bias was investigated. (Larson & Catton, 1959) demonstrated a now commonly used proxy to test for nonresponse bias.

Using their general methodology, multivariate models were constructed to test for differences in early and late respondents from both the male and the female groups. In each case, no statistically significant differences were found between the early and late respondents, indicating than nonresponse bias was not likely to exist. Also, (Berdie, 1989) found that even in the event of nonresponse bias, typically the bias did not alter the survey findings. Therefore, nonresponse bias was deemed not to be problematic in this research.

NULL HYPOTHESES

1 Ho: A statistically significant difference does not exist between male and female financial analysts in assessing the financial condition of the firm. Six sub-hypotheses of the main hypothesis are as follows.

No difference exists between male and female financial analysts in assessing the:

a. Ability of the firm to meet its short-term financial obligations as they come due.
b. Ability of the firm to meet its long-term financial obligations as they come due.
c. Ability of the firm to continue paying its current cash dividend in the future.
d. Ability of the firm to increase its common stock cash dividend in the future.
e. Ability of the firm to increase its profitability in the future.
f. Over-all future financial condition of the firm.

2 Ho: A statistically significant difference does not exist between male and female financial analysts in reported self-confidence ratings in assessing the financial condition of the firm. Six sub-hypotheses are as follows.

No difference exists between male and female financial analysts in:

a. Self-confidence in assessing whether a firm can meet its short-term financial obligations as they come due.
b. Self-confidence in assessing whether a firm can meet its long-term financial obligations as they come due.
c. Self-confidence in assessing whether a firm can continue paying its current cash dividend in the future.
d. Self-confidence in assessing whether a firm can increase its common stock cash dividend in the future.
e. Self-confidence in assessing whether a firm can increase its profitability in the future.
f. Self-confidence in assessing the over-all future financial condition of the firm.

DESIGN OF THE STUDY

The design for this study was one in which a single categorical independent variable was measured in order to evaluate its effect on twelve metric (scaled) dependent variables. The independent class variable was gender.

The twelve scaled dependent variables (described later) included six measures of the financial condition of the firm and six measures of the individual user's confidence levels in assessing these financial aspects of the firm. These measurements were obtained from respondent scores in each area, using a seven-point Likert scale for each of the dependent variables. On the scale, one indicated very low ability/confidence and seven indicated very high ability/confidence in the assessment. The survey response instrument is shown as Appendix A.

The dependent variables were chosen after a review of the financial analysis literature which indicated that analysis should, as a minimum, incorporate measurements of liquidity, both short and longer terms, profitability, and cash flow (Block & Hirt, 1989; Strong, 2001). Additionally, (Kolb & DeMong, 1988; Mayo, 2000), as well as (Bodie, Kane, & Marcus, 2001) indicate that much of the analysis performed on a firm is done by persons external to the firm, and these analysts must make use of existing financial statements. All these authors assert that these parties are most interested in liquidity, profitability, and cash flow. These writers also agree that in addition to assessing individual financial areas, a combined assessment of the entity should be made prior to reaching a conclusion concerning the overall well being of the firm. The dependent variables were therefore chosen to incorporate the consensus of thought concerning important aspects of financial analysis utilizing financial statements.

METHODOLOGY

The data were analyzed using both Multivariate Analysis of Variance (MANOVA) and univariate Analysis of Variance (ANOVA). Both are concerned with differences between groups, or experimental treatments. MANOVA is termed a multivariate statistical procedure as it is used to assess group differences across multiple dependent metric variables simultaneously (Hair, et.al., 1998).

MANOVA is deemed a particularly useful when employed in conjunction with experimental designs in which the researcher controls and measures one or more independent variables to determine the effect on two or more dependent metric variables (Hair, et. al., 1998). Additionally, MANOVA does away with the problem of a series of individual F-tests (which may lead to increased type 1 errors) by testing the linear combination of all dependent variables simultaneously.

In the study, the twelve dependent variables are metric variables based upon a scaled input. The use of scale-based metric variables is a common practice and is demonstrated by (Hebert & Freeman, 1992; Hair, et. al., 1998; and Johnson & Wichern, 1998).

THE RESEARCH MANOVA MODELS

Model 1, below, was developed for the six variables associated with the actual financial analysis ratings. Model 2, below, was developed for the six variables associated with self-confidence expressed in the financial ratings. The general MANOVA model used was:

$Y_1\ Y_2\ Y_3\ Y_4\ Y_5\ Y_6 = X_1$

where: (in the Financial Analysis Model, Model 1)

Y_1	=	Assessment of the ability of the firm to meet its short-term financial obligations as they come due.
Y_2	=	Assessment of the ability of the firm to meet its long-term financial obligations as they come due.
Y_3	=	Assessment of the ability of the firm to continue paying its current cash dividend in the future.
Y_4	=	Assessment of the ability of the firm to increase its common stock cash dividend in the future.
Y_5	=	Assessment of the ability of the firm to increase its profitability in the future.
Y_6	=	Assessment of the over-all future financial condition of the firm.
X_1	=	Gender (Male or Female)

where: (in the Self-confidence Model, Model 2)

Y_1	=	Confidence in assessing the ability of the firm to meet its short-term obligations.
Y_2	=	Confidence in assessing the ability of the firm to meet its long-term obligations.
Y_3	=	Confidence in assessing the ability of the firm to continue paying its current cash dividend.
Y_4	=	Confidence in assessing the ability of the firm to increase common stock cash dividend in the future.
Y_5	=	Confidence in assessing the ability of the firm to increase future profitability.
Y_6	=	Confidence in assessing the over-all future financial condition of the firm.
X_1	=	Gender (Male or Female)

Twelve individual ANOVA models were constructed to test the dependent variables separately as *post hoc* tests to help explain the MANOVA results. Both MANOVA and ANOVA models were tested for significant differences between groups using an alpha level of 0.05.

RESULTS

Table I displays the results of the multivariate analysis of variance (MANOVA) on the performance variables. The results demonstrate that the vectors of mean scores of the six financial assessment variables are not significantly different between the sexes. This lack of difference

indicates that both male and female analysts arrived at substantially the same results when assessing the financial condition of the firm.

Although the MANOVA test demonstrated no significant statistical difference, post hoc analysis using individual ANOVAs to test the six dependent variables individually by gender was conducted. These individual tests would show if any differences existed between the sexes in any of the six areas of analysis that comprised the overall MANOVA model. Table II displays the mean and standard deviation for each of the six assessment variables, along with the F-test results and significance level for each variable by sex.

TABLE I: MANOVA Results of Financial Assessments
Male Versus Female

Wilks Lambda	Exact F Value	Significance of F
.879	2.034	0.078

Table II shows that two of the six means are significantly different between the sexes. These differences may explain why that while no overall significant difference was found in the vectors, the significance level of the MANOVA was approaching .05. The similarities between the sexes in four of the six categories shown in Table II are not surprising given that all participants were experienced professionals in the field of financial analysis.

TABLE II: Means, Standard Deviations, and ANOVA Results
Male Versus Female Financial Assessments (7-Point Scale)

Variables	Male n=72	Female n=31	F-test	Significance of F
Ability of the firm to meet its short-term financial obligations as they come due.	5.87 (1.07)	5.51 (1.18)	1.802	.184
Ability of the firm to meet its long-term financial obligations as they come due.	5.20 (1.23)	4.95 (1.15)	0.798	.376
Ability of the firm to continue paying its current cash dividend in the future.	5.20 (1.12)	4.47 (1.05)	7.039	.009
Ability of the firm to increase its common stock cash dividend in the future	4.17 (1.10)	3.79 (1.04)	1.990	.163
Ability of the firm to increase its profitability in the future.	4.18 (0.98)	3.62 (0.93)	5.682	.019
Over-all future financial condition of the firm.	4.84 (0.98)	4.46 (1.09)	1.816	.179

*standard deviation in parenthesis

Table III displays the results of the multivariate analysis of variance (MANOVA) on the self-confidence variables. The results demonstrate that the vectors of mean scores of the six self-confidence variables are significantly different between the sexes. This difference in expressed self-confidence levels between males and females indicates that although both sexes performed in similar fashion, that females demonstrated significantly less self-confidence in their performance vis-à-vis males.

TABLE III: MANOVA Results of Self-Confidence
Male Versus Female

Wilks Lambda	Exact F Value	Significance of F
0.817	3.078	0.009

Table IV displays the results of the post hoc ANOVAs for each of the six dependent self-confidence variables by sex. This post hoc analysis was done to determine if any differences existed between the sexes in any of the self-confidence variables. The table displays the mean score and standard deviation as well as the F-test results and significance levels for each of the six self-confidence variables. The results indicate that the expression of self-confidence in one's financial analysis is significantly different between the sexes for each of the dependent variables. These results are consistent with current literature detailing that men may be expected to exhibit a higher level of self-confidence than women in their analytical abilities.

TABLE IV: Means, Standard Deviations, and ANOVA Results
Male Versus Female Self-Confidence (7-Point Scale)

Variables	Male n=72	Female n=31	F-test	Significance of F
Self-confidence in assessing whether a firm can meet its short-term financial obligations as they come due.	5.59 (1.18)	4.55 (0.94)	13.523	.000
Self-confidence in assessing whether a firm can meet its long-term financial obligations as they come due.	5.02 (1.26)	4.21 (0.98)	7.170	.009
Self-confidence in assessing whether a firm can continue paying its current cash dividend in the future.	5.05 (1.25)	3.93 (0.91)	14.026	.000
Self-confidence in assessing whether a firm can increase its common stock cash dividend in the future.	4.52 (1.20)	3.47 (0.87)	12.660	.001
Self-confidence in assessing whether a firm can increase its profitability in the future.	4.16 (1.15)	3.31 (0.97)	9.873	.002
Self-confidence in assessing the over all future financial condition of the firm.	4.43 (1.17)	3.65 (1.09)	9.104	.003

*standard deviation in parenthesis

SUMMARY

The study demonstrated that financial analysis concerning the condition of the firm was not significantly affected by the gender of the analyst. The similarity in the results of the financial analysis between the sexes was not surprising as all participants were trained professionals in their field. The study also demonstrated that the self-confidence expressed in one's analysis differed significantly by sex. This finding supports the preponderance of the psychological literature that has found males express higher levels of self-confidence in mathematical and analytical abilities than their female counterparts. A limiting factor in the study may be the relatively small sample size of the female participants. The results however are new in that they test both performance and self-confidence together in the area of financial analysis for the first time. The overall findings of the study also adhere to the body of literature indicating that self-esteem or self-confidence is not related to performance.

FUTURE RESEARCH

Additional research should focus on how performance in the business professions is affected by the concept of self-efficacy. Specifically, studies should consider if race, national origin, and/or cultural background affect the relationship between performance and self-confidence in the business environment.

REFERENCES

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37,* 122-147.

Bandura, A. (1986). *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs: Prentice Hall.

Bandura A. (1997). *Self-efficacy, the exercise of control*, New York: N. H. Freeman and Company.

Berdie, D. (1989). Reassessing the values of high response rates to mail surveys. *Marketing Research, 1*, 52-64.

Block, S. B. & Hirt, G. A. (1989). *Foundations of financial management.* (5th ed.) Homewood, IL: Irwin.

Bodie, Z., Kane, A. & Marcus, A. J. (2001). *Essentials of investments.* (4th ed.) New York: McGraw-Hill/Irwin.

Campbell, N. D. & Hackett, G. (1986) .The effects of mathematics task performance on math self-efficacy and task interest. *Journal of Vocational Behavior, 28*, 149-162.

Clance, P. R. & O'Toole, M.A. (1988). The imposter phenomenon: an internal barrier to empowerment and achievement. *Women and Therapy, 6*(3), 1-64.

Eden, D. & Kinnar, J. (1991). Modeling galatea: boosting self-efficacy to increase volunteering. *Journal of Applied Psychology, 76*, 770-780.

Goldsmith, E. & Goldsmith, R. E. (1997). Gender differences in perceived and real knowledge of financial investments. *Psychological Reports, 80,* 236-238.

Goldsmith, E., Goldsmith, R. E. & Heaney, J. (1997). Sex differences in financial knowledge: A replication and extension. *Psychological Reports, 81*, 1169-1170.

Green, K. C. (1997). Undergraduate business degree decline as both men and women migrate from business to other disciplines. *Newsline, 27*(2), American Assembly of Collegiate Schools of Business, St. Louis, Missouri, 10-11.

Hair, J.F., Anderson, R. E., Tatham, R.L. & Black, W.C. (1998). *Multivariate data analysis,* (5th ed.), Upper Saddle River, NJ: Prentice Hall,

Herbert, M.G. & Freeman, R.J. (1992). Governmental fund operating statements: Should the format be standardized? *Accounting Horizons,* March, 17-35.

Hornig, L.S. (1987). Women graduate students: a literature review and synthesis, in L.S. Dix (Editor), *Women: Their Underrepresentation and Career Differentials in Science and Engineering,* Proceeding of a workshop at the National Academy of Sciences, Washington, D.C., National Academy Press, 103-122.

Hyde, J.S. (1981). How large are cognitive gender differences? American Psychologist, 36, 892-901.

Hyde, J.S., Fennema, E., Ryan, M., Frost, L.A. & Hoop, C. (1990). Gender comparisons of mathematics attitudes and affect: a meta-analysis. *Psychology of Women Quarterly, 14,* 299-324.

Johnson, J. (1989). Effects of successful female role models on young women's attitudes toward traditionally male careers. Presented at annual Conference of the Association for Educational Communication and Technology, Dallas, Texas.

Johnson, K. (1998). Self-image is suffering from lack of esteem. *New York Times*, May 5, F5.

Johnson, R.A. & Wichern, D.W. (1998). *Applied Multivariate Statistical Analysis*, Fourth Edition, Upper Saddle River, NJ: Prentice Hall.

Kolb, B.A. & R.F. DeMong (1988). *Principles of Financial Management,* Second Edition, Plano, Texas: Business Publications, Inc.

Leo, J. (1998). Damn, I'm good. *U.S. News and World Report*, May 18, 21.

Linn, M.C. & Petersen, A.C. (1986). A meta-analysis of gender differences in spatial ability: implications for mathematics and science achievement. In J.S. Hyde and M.C. Linn (Eds) *The Psychology of Gender: Advances Through Meta-Analysis*. Baltimore, Maryland: Johns Hopkins University Press.

Maccoby, E.E. & Jacklin, C.N. (1974). *The Psychology of Sex Differences*, Stanford, California.: Stanford University Press.

Mayo, H. B. (2000). *Investments: An Introduction* (6th ed), Fort Worth, TX: Dryden Press, Harcourt College Publishers,

Stone, D., Arunachalam, V. & Chandler, J. (1996). An empirical investigation of knowledge, skills, self-efficacy, and computer anxiety in accounting education. *Journal of Accounting Education, 11*(2), Fall, 345-376

Strong, R. A. (2001). *Practical Investment Management* (2nd ed.), Cincinnati, OH: South-Western College Publishing.

Webster, R.L. & Ellis, T.S. (1996). Men's and women's self-confidence in performing financial analysis. *Psychological Reports, 79*, 1251-1254.

APPENDIX A
FINANCIAL STATEMENT ANALYSIS
SURVEY RESPONSE SHEET

For each of the six items below, conduct your analytical assessment of the Company based on the enclosed Financial Statements. Then, after conducting your analysis, indicate your level of confidence in your assessment using the scale below.

Assessment and Self-confidence Response Scale:

Low						High
1	2	3	4	5	6	7

CIRCLE YOUR LEVEL OF ASSESSMENT/CONFIDENCE FOR EACH ITEM

1. Ability of the firm to meet its short term obligations as they come due.

1 2 3 4 5 6 7

My confidence in making the above assessment is:

1 2 3 4 5 6 7

2. Ability of the firm to meet its long term obligations as they come due.

1 2 3 4 5 6 7

My confidence in making the above assessment is:

1 2 3 4 5 6 7

3. Ability of the firm to maintain its current cash dividend on common stock.

1 2 3 4 5 6 7

My confidence in making the above assessment is:

1 2 3 4 5 6 7

4. Ability of the firm to increase its cash dividend on common stock in the future.

1 2 3 4 5 6 7

My confidence in making the above assessment is:

1 2 3 4 5 6 7

5. Ability of the firm to increase its level of profitability in the future.

1 2 3 4 5 6 7

My confidence in making the above assessment is:

1 2 3 4 5 6 7

6. The overall future financial condition of the firm.

1 2 3 4 5 6 7

IS FRAUD A PROBLEM IN GOVERNMENTAL ENTITIES?

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ABSTRACT

The Association of Certified Fraud Examiners estimates the loss from occupational fraud and abuse at approximately $600 billion per year, or about $4,500 per employee. The FBI has labeled fraud the fastest growing crime, and accordingly allocates a large portion of its resources to fighting fraud. There are many types of fraud, but all can be classified as those committed against the corporation or those committed on behalf of the organization.

This article reports the results of a survey developed by the authors and sent to members of the Government Finance Officers Association of Texas via electronic mail. Responses were received from 54 governmental entities. The results of the survey are compared to the KPMG 1998 U. S. Fraud Survey to determine if the fraud statistics from governmental entities echoed those from a national survey which primarily included large corporations.

With the Sarbanes-Oxley Act of 2002 and the implementation of SAS 99, management and auditors of publicly held companies will become more adept at recognizing fraud risk factors. Hopefully, some of this awareness and strengthening of internal control systems will transfer to the governmental sector.

INTRODUCTION

During most of the 19th century, fraud was somewhat ignored by both public and private companies. As a result, fraud thrived and cost companies an untold amount of money. At one time, the U. S. Chamber of Commerce estimated that the cost of employee and management fraud exceeded $100 billion annually (Davia, 2000). Other groups estimated a much higher figure.

In 1996 the Association of Certified Fraud Examiners (ACFE) published its first *Report to the Nation on Occupational Fraud and Abuse.* At that time, the results indicated fraud cost U. S. organizations more than $400 billion per year or roughly $9 per day per employee or 6 percent of the company's total annual revenue (The Association of Certified Fraud Examiners, 1996). Recently, the 2002 *Report to the Nation on Occupational Fraud and Abuse* was released. The latest report was more extensive than the first and was based on 663 occupational fraud cases which were reported to the ACFE by Certified Fraud Examiners and accounted for more than $7 billion in

losses. Only six years after the first fraud study, the ACFE now estimates the loss from occupational fraud and abuse at approximately $600 billion per year, or about $4,500 per employee (The Association of Certified Fraud Examiners, 2002). The percentage of fraud losses remained relatively constant at 3 percent of revenues. However, during the six-year period the Gross Domestic Product increased from approximately $7 trillion to about $10 trillion which accounted for the $200 billion increase in losses. For purposes of this research, *occupational fraud and abuse* is defined as: "The use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets" (Wells, 1997). Fraud embraces a wide variety of actions committed by company employees from the chief executive officer to the lowest level employee and ranges from sophisticated investment schemes to petty theft. Abuse covers a multitude of activities often accepted by both employees and employers as a cost of doing business. Abusive activities include such things as padding expense accounts, taking long, unapproved lunch breaks and employees falsely claiming sick leave. Obviously, flagrant abuses are normally reprimanded or prosecuted, but lessor offenses are often overlooked.

The FBI has labeled fraud the fastest growing crime and, accordingly, allocates a large portion of its resources to fraud investigation. On a continual basis, the bureau is investigating several hundred fraud and embezzlement cases involving amounts in excess of $100,000 per case (Albrecht, 2003).

At the Principles of Fraud Examination Conference held in June 2003, Toby Bishop, ACFE President and CEO, was asked the question, "What is the state of fraud in this country?" He replied, "Booming. It appears that people's willingness to rationalize committing fraud is much greater than before and fraud is much more pervasive than before. In the past, fraud was viewed as a rare event that happened to unlucky organizations. Now it is commonly accepted that fraud is taking place at virtually every organization, every business" (The Fraud Examiner, 2003).

Fraud losses to an organization are very costly because they impact dollar per dollar the organization's bottom line. How much additional revenue will be required for an organization to financially recover a fraud loss? Assuming that an organization has a $100 fraud loss and their normal profit is 10 percent, it will take $1,000 in additional revenue to offset the $100 loss. Obviously, the amount of additional revenue organizations must generate to recover their fraud losses will vary from organization to organization due to the difference in their profit margins.

PERPETRATOR PROFILE

Researchers have compared the psychological and demographic characteristics of white collar criminals, violent criminals and the general public and found significant differences between the white collar and violent criminals. Surprisingly, the characteristics of white collar criminals, those who commit illegal activities within the realm of their occupation, and the general public are basically the same. They tend to have a college education, upper/middle-class socioeconomic

background and no previous criminal record. White collar criminals tend to spend the profits from their fraudulent schemes and become dependent on their increased income. Many perpetrators steal relatively insignificant amounts/items, and when they are not caught immediately, their theft becomes more frequent and/or increases in magnitude. If the fraud is allowed to continue, the perpetrator eventually gets greedy, over confident and/or careless which leads to mistakes and the ultimate detection of the fraudulent activity.

According to the ACFE's report, frauds are more likely to be committed by males (53.5%) than females (46.5%), and the median fraud loss for males ($200,000) was 3.3 times higher than that of females ($60,000). There was a direct correlation between the age of the perpetrator and the median loss. Persons under the age of 26 were only responsible for 6 percent of the reported frauds with a median loss of $18,000. The median losses for the 30 to 40-age group were $100,000 and increased dramatically after age 40. Individuals over the age of 40 perpetrated 47.3 percent of the frauds. Employees more than 60 years of age were responsible for the largest median loss, $500,000.

Only 7 percent of the perpetrators in the cases reported had prior convictions, while 3 percent were known to have been accused of fraud-related offenses but were not convicted. The highest percentage (69%) had never been charged or convicted of a fraud-related activity. The results relating to the education level of the offender were somewhat surprising. Unlike the *1996 Report* which showed that median losses increased as the perpetrator's education level increased, the *2002 Report* showed that median losses caused by perpetrators who had a college degree were approximately $80,000 higher than those caused by individuals having a postgraduate degree. The highest percentage of offenders (57%) had a high school education or less; however, the median loss for this class was 3.5 times lower than offenders with a bachelor's degree.

The above results support the premise that knowledge and access are a dangerous combination. Employees with higher educations and those who are older have more knowledge and normally occupy higher-ranking positions within the organization; therefore, they have greater access to revenues, assets and other resources. The correlation between gender and median loss is probably due to the "glass ceiling" phenomenon. The presence of women in the accounting profession has become a norm, but in many organizations, males still occupy the vast majority of upper-management positions.

TYPES OF FRAUD

Frauds can be classified as those committed against the corporation or those committed on behalf of the organization. Typically, frauds committed on behalf of the organization are committed by those in top management and take the form of fraudulent financial reporting. Both the *1996* and *2002 ACFE Reports* identify the three major categories of occupational fraud as asset

misappropriations, corruption and fraudulent statements. The first two would be classified as frauds committed against the organization. While 85.7 percent of the cases were attributed to asset misappropriations, corruption and fraudulent statement cases accounted for 12.8 and 5.1 percent respectively. In dollars, however, the median loss reported from fraudulent statements ($4,250,000) was eight times more than the median loss from corruption ($530,000) and 53 times more than the median loss from asset misappropriations. The study also revealed that employees were more likely (64.1%) to perpetrate fraud than managers or executives (41.9%), but the $250,000 median loss for the manager and executive group was more than 3.5 times greater than the median loss of $70,000 for the employee group (The Association of Certified Fraud Examiners, 2002).

Asset misappropriations can be divided into cash and non-cash misappropriations with cash misappropriations accounting for 90.1 percent of the cases reported. Cash misappro-priations can be further broken down into three types: fraudulent disbursements, skimming (where cash is stolen before it is recorded on the books) and cash larceny (where cash is stolen after it is recorded on the books.) Fraudulent disbursements account for the majority of cases reported (71.1%) with a median cost to the organization of $100,000. Within this category, billing schemes, check tampering and expense reimbursements represent the frauds most frequently perpetrated with median losses of $160,000, $140,000 and $60,000 respectively. The reported incidences of asset misappropriations have increased from 81.1 percent in 1996 to 85.7 percent in 2002 with a $15,000 increase in the median loss (The Association of Certified Fraud Examiners, 2002).

DURATION OF SCHEMES

There are reports of fraud schemes that have run undetected for years. The July 11, 1996, edition of the *Tyler Morning Telegraph* reported that a former treasurer of the Episcopal Church was sentenced to five years in prison for embezzling $2.2 million over a nine-year period while working at the church's headquarters in New York. The perpetrator, Ellen Cooke, was fired from the church because of manipulative and autocratic behavior, not embezzlement. Church officers became suspicious and notified the FBI when Ms. Cooke became greedy and asked for $86,000 in back vacation pay. In addition to stealing cash, she charged the church $40,000 for jewelry, $30,000 in restaurant bills and thousands more in gifts from exclusive shops in the New York area. One must wonder how fraud schemes such as this go for extended periods of time without being detected. Perhaps it is due to the lack of internal controls or that neither internal nor external auditors traditionally have pro-actively audited for fraud. In this case, a simple separation of duties and a review of documentation before approving an invoice for payment would have caught the expenditures to such establishments as Tiffany's Glass and Stubbens.

Table 1 indicates that the largest percentage of fraud cases reported were not discovered for 12 to 23 months. The median time from inception to detection was 18 months. Two thirds of the schemes continued for more than a year before being detected, and 13.5 percent of the frauds ran

for more than five years. Compared to the 3 percent of frauds that were caught during the first month, these statistics are discouraging, at best. Fraudulent financial statements, expense reimbursements, check tampering, billing and corruption schemes all ran for a duration of approximately two years before being detected (The Association of Certified Fraud Examiners, 2002).

Table 1: Length of Scheme

Number of Months	Percent of Cases
Less than 1 month	3.4
1 - 5 months	18.9
6 - 11 months	14.6
12 - 23 months	21.1
14 - 35 months	14.2
36 - 59 months	14.2
60 - 120 months	10.8
More than 10 years	2.7

KPMG FRAUD SURVEY

In 1998 KPMG released the results of its third U. S. Fraud Survey (K98). They greatly expanded their survey pool from their 1994 survey to include five thousand leading U. S. companies and organizations, including municipalities, federal agencies and universities. This survey again revealed that fraud continues to be ever-present in our society and an ongoing problem for businesses. Many of the survey responses supported the results of the *1994 Fraud Survey* (K94); however, there were several very noticeable differences. First, there was a 7 percent (52% to 59%) increase in the number of respondents who believe that fraud will become more of a problem in the future. Second, 94 percent of the entities reported fraud investigation as the leading response to the discovery of fraud, an increase of 11 percent over the K94 survey.

METHODOLOGY

In an effort to determine the magnitude of fraud in governmental agencies in the state of Texas and whether or not the fraud statistics from governmental entities echoed those of the KPMG national surveys, the authors developed a fraud survey which was sent via electronic mail to individuals in the survey pool. This survey will be referred to as the T1 survey.

The target population of the research data was derived from the Government Finance Officers Association of Texas (GFOAT) Membership Directory II dated July 7, 2003, which listed 787 contacts of which 11 had no email addresses. From the 776 remaining contacts, an analysis of the members listed in the directory was completed in order to eliminate multiple officers within the same governmental entity. The elimination process removed any bias in the survey results as only one survey was allowed per entity. For example, if three contacts were listed for the City of Houston, the highest-ranking governmental employee most qualified to answer the survey was selected for the entity. After completing the elimination process, the survey pool consisted of 305 contacts. Of this number, 30 contact email addresses were invalid, and three contacts refused to respond to the survey. Ultimately, 54 responses were received yielding approximately a 18 percent response rate.

SURVEY RESULTS

Eighty-seven percent of the respondents were employed by city governments, 2 percent by the state of Texas and 11 percent by other governmental units. None of the respondents were employed at the county level. Seventy-four percent of the respondents employed more than one hundred and less than a thousand employees.

A number of individuals at all organizational levels responded to the surveys. Table 2 compares the respondents to both the K98 and T1 surveys. Finance officers and internal auditors comprised a total of 67 percent of respondents to the T1 survey compared to 43 percent in the K98 survey.

Table 2: Reporting Officers

Respondent Title	TI Percent	K98 Percent
Internal Auditor	27	11
Security Officer/Director	20	0
Finance Officer/Director	16	56
CEO	15	0
Accounting Director	6	0
Operating Officer	6	0
General Counsel	6	0
Executive Director	5	0
Other	5	28
Member of Legislative Body	1	0

Ninety-five percent of the respondents to the T1 survey worked for entities with less than $250 million in revenues compared to only 36 percent in the K98 survey. Thirty-one percent of the K98 respondents reported working for entities with one to five billion dollars in revenues. This difference is primarily due to the fact that the K98 survey pool included major corporations.

When asked if the respondent believes that fraud is a major problem in his/her organization, the K98 and T1 respondents answered negatively, 65 and 78 percent respectively. However, almost twice as many (59%) of the K98 respondents believe that fraud will increase in the future, in comparison to T1 respondents, and twice as many (13%) of the T1 respondents believe that the incidence of fraud will decrease in the future, in comparison to the K98 respondents. As reflected in Table 3, a number of factors will influence the increase or decrease of fraud in the future including, but not limited to, the economy, the awareness of fraud indicators by management and auditors and their willingness to prosecute offenders. Between the requirements of the United States' Public Company Reform and Investor Act of 2002, commonly referred to as the Sarbanes-Oxley Act of 2002 and the implementation of SAS 99, management and auditors of publicly held companies will become much more adept at recognizing fraud risk factors. Hopefully, some of this awareness will spill over into the governmental sector. However, according to both the K98 and T1 surveys, the reporting organizations feel they are (80% and 84% respectively) knowledgeable or extremely knowledgeable about the way fraud can occur in their organizations.

Table 3: Reasons for Projected Increase in Fraud

Reasons	K98	T1
Economic pressures	63%	63%
Inadequate punishment of convicted criminals	62%	13%
Weakening of society's values	60%	44%
Insufficient emphasis on prevention and detection	60%	44%
More sophisticated criminals	56%	31%
Lack of adequate organizational controls	41%	25%
Inadequate training of those responsible for fraud prevention and detection	40%	25%
Organizational downsizing	31%	38%
Lack of adequate organization ethics policy and code of conduct	21%	25%
Lack of governmental intervention	9%	0%
Increased technological capabilities/Internet/electronic commerce	6%	63%
Motive/opportunity	1%	31%
Other	5%	0%

The following three factors cited for the predicted rise in fraud increased significantly from the K94 survey to the K98 survey: (1) insufficient emphasis on prevention and detected, (2) inadequate training of individuals responsible for fraud prevention and detection, and (3) more sophisticated criminals. With the results of the K94 and 1996 ACFE surveys being made public, one would think that organizations would have increased their emphasis on fraud prevention and detection, adequately trained managers and employees to recognize symptoms of fraud and to increase internal controls by the year 1998.

Economic pressures are ranked number one in both the K98 and T1 surveys. The responses differed dramatically between the two surveys in the following areas: (1) increased technological capabilities/Internet/electronic commerce, (2) inadequate punishment of convicted criminals (3) motive/opportunity, and (4) more sophisticated criminals. Numbers one and three were ranked higher in the T1 survey, while numbers two and four were ranked higher in the K98 survey. It would be difficult to argue that criminals are not more sophisticated now than several years ago, but it is surprising that so few respondents to the K98 survey thought motive and opportunity were not a compelling reason for the increase of fraud. The historic Fraud Triangle describes three conditions typically present when fraud is committed: incentives/pressures, opportunities, and attitudes/rationalizations. The results indicate that perhaps respondents from governmental units believe that convicted criminals are already adequately punished or that measures have been taken to ensure they will be in the future.

The types of fraud compared between the two surveys are detailed in Table 4. The K98 and T1 surveys include 413 and 61 organizations respectively reporting one or more instances of fraud. For the T1 survey, the table indicates the number of reporting entities and the cases as a percentage of the total cases reported.

The areas of fraud reported in the K98 survey that accounted for 10 percent or more of the total include: check fraud, false invoices and phantom vendors, credit card fraud, expense account abuse, inventory theft and unnecessary purchases or purchases for personal use. In the T1 survey, diversion of revenues accounted for 18 percent of losses while check fraud, false invoices, or inventory theft accounted for only 8, 5 and 9 percent respectfully. Both conflict of interest and payroll fraud accounted for 7 percent of reported frauds in the T1 survey.

What concerns the authors most is the frequency of occurrence in the T1 survey for diversion of revenues (32 times), expense account abuse (30 times), unnecessary purchases or purchases for personal use (27 times), credit card fraud (20 times), and inventory theft (16 times). Compared to the number of responding entities, these numbers are high and indicate multiple cases of the same type of fraud within a single reporting entity. In addition, these abuses are particularly troubling because the Governmental Accounting Standards Board in Concepts Statement No. 1 established accountability as the "cornerstone" of financial accounting and reporting. This statement indicates governmental entities must be accountable for public monies. The authors argue that with the reported frequencies of frauds in Table 4, perhaps internal controls are not well established and

followed in some governmental entities. Since the number of occurrences for each type of fraud was not reported in the K98 survey, a comparison cannot be made. Sarbanes-Oxley requires organizations to identify risks by subsystem and the controls that organizations have in place to prevent various activities from happening. Perhaps governmental entities need to follow a similar model.

Table 4: Types and Frequency of Fraud Reported

Types	K98 Entities Reporting	K98 %	T1 Entities Reporting	T1 %	T1 Cases Reported
Check Fraud (Forgery & Counterfeiting)	96	23	5	8	12
False Invoices and Phantom Vendors	49	12	3	5	3
Credit Card Fraud	48	12	8	13	20
Expense Account Abuse	44	11	6	10	30
Inventory Theft	43	10	6	9	16
Unnecessary Purchases or Purchases for Personal Use	40	10	10	16	27
Medical/Insurance Claims Fraud	29	7	1	2	2
Kickbacks	19	5	2	3	4
False Financial Statements	12	3	0	0	0
Conflict of Interest	10	2	4	7	12
Payroll Fraud	9	2	4	7	8
Bid Rigging and/or Price Fixing	8	2	1	2	1
Diversion of Revenues	6	1	11	18	32
Totals	413	100	61	100	170

CONCLUSION

From the results of the *2002 Report to the Nation on Occupational Fraud and Abuse*, the KPMG 1998 and the T1 surveys, occupational fraud and abuse are considered to be a serious and ever increasing problem. Large, publicly traded corporations which are now subject to Sarbanes-Oxley are currently identifying risks and internal controls by subsystems. Gap analysis will allow these companies to identify areas in which they are vulnerable in order to establish a new and more extensive system of internal controls in the future. Perhaps a similar model should be enacted for governmental entities. This may be a tough sell, however, since the majority of T1 respondents (1) do not think fraud is a problem in their agency, (2) believe that fraud will not increase in the future, and (3) are not aware that fraud has occurred in their organization in the last three years.

REFERENCES

Albrecht, W. S. (2003). *Fraud Examination*. Ohio: Thomson/South-Western.

Association of Certified Fraud Examiners. (2002). *The Report to the Nation on Occupational Fraud and Abuse*. Austin, TX: ACEF.

Association of Certified Fraud Examiners. (1996). *The Report to the Nation on Occupational Fraud and Abuse.* Austin, TX: ACEF.

Davia, H. R. (2000). *Fraud 101.* New York: John Wiley and Sons.

Fraud questions and answers. (2003, June). *The Fraud Examiner,* 3, 2.

Wells, J. T. (1997). *Occupational Fraud and Abuse*. Austin, TX: Obsidian Publishing Co.

AN EXAMINATION OF INDUSTRIAL RELATEDNESS, POTENTIAL INDUSTRIAL SYNERGIES, AND MERGER PREMIUMS IN LARGE CORPORATE MERGER TRANSACTIONS

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ABSTRACT

Many business combinations are justified by management on the basis of expected synergistic benefits from the post-combination operations. This study analyzes the top four product lines of the 442 largest business combinations between U.S. publicly owned companies during 1995-2000. The study shows a high association between the industrial product lines of the acquiring and acquired companies. This suggests that expected operating synergistic benefits may be obtainable by the post-combination entity. However, a study of the correlations between the amount of the premiums paid by the acquiring companies to the acquired companies, and the degree of industrial association between the companies, showed that the premiums are not related to the degree of industrial associations between the companies.

INTRODUCTION

Corporate mergers and acquisitions are a major aspect of business activity and involve billions of dollars. The extant finance and accounting literature suggest a variety of strategic policies for the selection of combination candidates. One of these strategic policies is to acquire another company in order to obtain synergistic gains from the operation of the combined entity by utilizing scale and scope economies. Specifically, it has been posited that operating synergies are more likely in a business combination involving similar industrial lines because the factors of production and the market factors have the highest degree of association and can most easily be integrated.

The fair market value of the company as a stand-alone entity is measured by its total stock market capitalization. The merger premium is the difference between the target company's market value prior to the announcement of the combination and the offering price for the target company and it should reflect the expected synergies that will be generated from the post-combination entity.

Although the business press often states that seeking synergy is one of the basic reasons for business combination activity, the empirical search for the synergistic return has been inconclusive. Early studies by Bradley, Desai, and Kim (1983), and Ravenscraft and Scherer (1987), suggest that

the post-combination stock prices do not provide evidence for synergistic premiums due to poor post-takeover performance of the combined firm. Porter (1987) found that many acquired firms are subsequently divested, and some very shortly after the acquisition. Roll (1986) proposes the "hubris hypothesis" to explain that bidding firms infected by hubris simply pay too much for their targets, and that the acquisition premiums are not related to synergy. Varaiya and Ferris (1987) use the explanation of the "winner's curse" for explaining the acquisition premium paid to the target in cases in which there is competition for a takeover candidate. For 96 acquisitions between 1974 and 1983, they find that the winning bid premium, on average, overstates the market's estimate of the takeover gain, and that, following the acquisition, a majority of the acquiring firms have a significant, negative cumulative average return in their stock prices.

In contrast to the above studies, Henning, Lewis, and Shaw (2000) find that the synergy created from business combinations is valued by the market. Henning et al. (2001) measure the synergy component of accounting goodwill by combining the cumulative abnormal returns of the acquiring firm and the target firm. Using a sample of 1,576 purchase combinations from the period 1990 - 1994 in a levels model, Henning et al. (2000), find that the market values the synergistic component of goodwill.

We find that although companies tend to buy other firms in similar industrial lines implying synergy, there is no relation between the premium paid and the proximity of the industrial association.

OBJECTIVES OF THIS STUDY AND RESEARCH QUESTIONS

It is expected that industrial synergies would be more possible in combinations between companies in the same or similar industries. Synergy often is defined as: 2 + 2 = 5. This implies that the combined, post-combination entity is greater than the simple sum of the two independent, pre-combination entities. Sudarsanam, Holl, and Salami (1996) argue that the opportunities for operating synergies increase with combinations of the same industrial line of business. Functional relations, such as research and development, industrial and consumer advertising, and production processes, are often specific to an industry structure. Transactional relations, such as supplier and customer relations, are also often based on an industrial structure. When two business units of a firm sell complementary products to a common customer, the firm can bundle its products, present a shared brand image, utilize a common distribution process, and coordinate its product development. When two business units of a firm are dealing with common suppliers, the firm can utilize its grater scale in negotiating lower prices or establish quality standards on inputs received from these suppliers.

In a comprehensive study, Brush (1996) develops several models of relatedness for 356 four-digit manufacturing industry classifications and finds evidence that there are operational synergy effects available for combinations of firms within the same industry.

From the above discussions, the first research question (RQ) is:

RQ1: How often do firms make acquisitions in related industrial lines?

Study of the industrial associations will indicate if operating synergies are a motive for the major business combination activity during the past several years. If we find that companies are not seeking combinations with other companies in the same, or proximate, industrial lines, then the possibility of operating, industrial synergy would seem to be a lower strategic intent of the combination process. If we find that companies tend to acquire target firms in the same, or proximate, industrial lines of business, then the possibilities for post-combination operating synergies are enhanced and the normative question regarding whether or not an association between the premium paid for those synergies and industrial relatedness is an open question for investigation.

Several studies attempt to analyze the nature of takeover bids in conditions of asymmetric information in which the acquiring firm has information that is not known to the target firm. Examples of the types of information include: (1) possible synergistic combinations of the target firm's assets with the acquiring firm's assets, or (2) some possible actions the target firm's managers are not taking that can result in an increase in worth of the target firm. This second type of information leads to what is termed "new information" acquisitions. Bhagat, Brickley, and Loewenstein (1987) find, in a study of 295 cash tender offers made between July 1962 through December 1980, that the bidding firm and target have unique potential synergies, but the target firm's stock price also increases in volatility because of additional factors such as other bids, legal actions, or other important announcements concerning the target firm. Thus, some portion of the change in the target firm's stock value is attributed to the stock being "put into play" as a result of the tender offer.

Several studies find that operating synergies are not guaranteed just because of close industrial proximity of the target and the acquiring firm at the time of the merger. Gaughan (1996, p. 104) points out that the net acquisition value of a target firm must include consideration of the expenses associated with the combination, and that the possible synergistic effects must be greater than the premium plus the expenses incurred to effect the combination. Slusky and Caves (1991) argue that operating synergies are not generated until after the administrative coordination has provided the cost savings, market gains, or innovations that result in improved profitability. St. John and Harrison (1999) state that possible operating synergies in industrially related mergers may not be realized because of the lack of managements to fully and systematically pursue the corporate-level strategic efforts required to achieve the possible balance.

The second major research question focuses on the possible relation between the percent premium over the pre-acquisition stock price paid by the acquiring firm for the stock of the acquired firm, and the degree of industrial relatedness between the acquiring and acquired companies.

RQ2: Is the purchase premium percent offered by the acquiring entity related to the degree of industrial association among the top four industrial lines of the buying and selling companies?

This part of the study will provide additional evidence on one of the determinants of the premium paid for the target company. The amount of the premium paid is a direct outcome of the process of valuing the target company and its expected contribution to the post-combination entity.

METHODOLOGY

This study evaluates 442 large corporate mergers from 1995 through 2000 as listed in Mergerstat Review. The 442 combinations are all those that have a merger purchase price greater than or equal to $500 million, are publicly traded in the US, are not a financial intermediary industry such as insurance, banking or finance, and in which both the buyer and seller are US companies. The $500 million threshold is used to assure that acquisitions having significant societal effects are studied. The 1995-2000 time period is used because of its contemporary features and because of the relative uniformity of economic expansion during this time period. The study does not include combinations involving financial intermediaries such as banks, insurance companies, and brokerages; foreign buyers or sellers; acquisitions by private groups; and leveraged buyouts because of three primary reasons: (a) the financial intermediaries are typically regulated as to the limited types of combinations they can make, (b) operating synergistic considerations are not always a driving force of the combination decision in the cases of foreign buyers or sellers, and (c) the lack of public ownership reduces the monitoring effects of outside stockholders.

The four-digit Standard Industrial Classification (SIC) index is used to determine the first four major lines of business for both the acquiring (buying) and acquired (target) firms in the 442 combinations. A variety of sources including 10-K filings with the SEC, and information presented on computerized databases such as Compact Disclosure or Compustat are used to locate the SIC data. The SIC data for the firms involved in each combination are obtained for the fiscal period immediately preceding the business combination transaction. For example, if the acquisition transaction occurred in 1999, the SIC data for the acquiring and the target firms are obtained for their 1998 fiscal periods. Not all firms have four separate lines of business; some have concentrated operations in one, two, or three lines of business. SIC data are collected for as many of the first four lines as presented and available.

The degree of association between the industrial lines is evaluated on a 6-point scale suggested by Hosmer (1982). Hosmer argues that the improvement of operating efficiencies is most probable for a target company that has marketing, production, and financing structures that are close to the acquiring company's. The Standard Industrial Classification (SIC) system is based on the type of production process used to produce the product or service.

Hosmer's 6-point scale is adapted to measure the degree of industrial association between each of the first four lines of business, of each of the two firms, in each of the 442 combinations. The following scale is used to measure the degree of industrial association between the buying and selling companies:

5	Same four digits industrial code (represents specific industry)
4	Same three digits industrial code (represents industry group)
3	Same two digits industrial code (represents same major class)
2	Same division of industrial code (using alphabetic codes in the Standard Industrial Classification system)
1	Same major categories (natural resources and construction, 01-09 and 10-14; manufacturing and capital-intensive service providers, 15-17, 20-39, and 40-49; trade, 50-51 and 52-59; and services, 60-67, 70-89, and 91-97)
0	No apparent relation between industrial lines

A score of five indicates extremely close industrial association between the specific line of the buyer and seller. A score of zero represents no apparent industrial relation between the specific line of the buyer and seller.

The second part of this study determines if the amount of the combination premium is related to the degree of industrial association. It correlates (Spearman's correlations) the industrial association scores from the first part of the study for each of the 442 combinations with the amount of the premium paid by the buyer to the seller above the seller's market. This premium is defined as the amount above the seller's closing stock price five business days before the announcement date of the combination and is obtained from the appropriate issue of *Mergerstat Review*.

RESULTS

Table 1 presents the acquiring firms' primary (first line of business) two-digit industrial profiles for the 442 transactions included in this study. Although Communications (SIC 48) and Business Services (SIC 73) had the greatest number of announcements in the six-year period, the question arises as to the number of companies in those industries. It is anticipated that there may be an industrial factor in the merger and acquisition activity. Industry groups with the largest number of companies are expected to have the largest number of merger and acquisition transactions, but the question is with regard to the possibility of a few, larger industries dominating the merger and acquisition activity in this six-year period. To determine the number of companies in each two-digit industry group, the 1997 Compustat survey, which is in the middle of the time

period examined in this study, is analyzed for industrial groups. The column toward the right of Table 1 presents the number of the 4,109 Compustat companies that are in each two-digit industry group. Then, a mergers and acquisitions (M&A) ratio is computed by dividing the number of transactions in each industry by the number of Compustat companies in that industry. This ratio provides some indication of the industries that are very active in their merger and acquisition transactions based on the total number of companies in that industry. The most active acquiring industries, having five or more transactions in the six-year period are: Paper and allied products (SIC 26); Chemicals and allied products (SIC 28); Electronic and other (SIC 36); Communications (SIC 48); Wholesale trade - nondurable (SIC 51); Hotels (SIC 70); Business services (SIC 73), and Health services (SIC 80). It appears that merger and acquisition studies should consider a potential industrial effect from concentrations.

As to the time pattern of merger activity, Yagil (1996) suggests that regardless of the motivation of operating or financial synergy, the timing of merger or acquisition transactions is related to macroeconomic factors such as the interest rate or the stock market values. These factors may impact the form of payment for the target company. Therefore, as described in the appendix, additional analysis examining method of payment is examined. Some industries have more merger or acquisition transactions during the last two years of the time period under study suggesting that there may be differing effects of various macroeconomic factors on specific industries during the latter part of the time period.

Some companies are multiple transactors with as many as six transactions. During the period of 1995-2000, 48 companies announced two transactions, 16 companies had three transactions, six companies had four transactions, two companies had five transactions, one company had six transactions, and one company had seven transactions. These 74 firms accounted for a total of 191 of the 442 (43.2%) mergers in the six-year period. Fourteen firms in the Communications industry (SIC 48) accounted for a total of 41 transactions. Ten firms in the Business services industry (SIC 73) accounted for 26 transactions. Seven firms in the Electronics industry (SIC 36) accounted for 22 transactions. An additional analysis, as described in the appendix, examines the effects of multiple transactors on the relation between industrial relatedness and the merger premium.

Table 2 presents the frequency distributions and summary statistics of the associations between each of the four major industrial lines of the buying firm and the selling firm for the business combinations. The first observation is the high number of transactions (168 of 442 = 38.0%) of very close industrial relation (a score of 5) between the first business line of the buyer and the first business line of the seller (Buyer 1, Seller 1). Many transactions are horizontal combinations.

Moving across the first line of the table (Buyer 1 and Seller 1), the data show that many of the business combinations have strong potential for industry-based synergies. Although there is some skewness in the distribution, the mean of the association between the first line of the buyer and the first line of the seller is 3.12 on the scale of zero to five.

Table 1. $500 Million+ Merger and Acquisition Transactions by Acquirer's Industry Classification and Year (Non-financial Industries Only)

Group Number	SIC Major Group	1995	1996	1997	1998	1999	2000	Six-Year Cumulative		Compustat		M&A Ratio
	Mergerstat Review Industry Classifications	1995	1996	1997	1998	1999		No.	%	Number	Percent	
12	Coal mining	-	-	-	1	-	-	1	0.23%	3	0.14%	0
13	Oil and gas extraction	-	-	3	5	1	6	15	3.39%	116	5.56%	0
14	Mining and quarrying of nonmetallic minerals, except fuels	-	-	1	1	-	-	2	0.45%	5	0.24%	0
16	Heavy construction other than building construction contractor	-	1	-	2	1	-	4	0.90%	16	0.77%	0
20	Food and kindred products	-	-	3	-	-	5	8	1.81%	85	4.07%	0
21	Tobacco products	1	-	-	-	-	1	2	0.45%	11	0.53%	0
23	Apparel and other finished products made from fabrics	-	-	-	-	1	-	1	0.23%	33	1.58%	0
24	Lumber and wood products, except furniture	-	-	-	-	1	1	2	0.45%	19	0.91%	0
25	Furniture and fixtures	-	-	-	1	-	-	1	0.23%	25	1.20%	0
26	Paper and allied products	2	-	1	4	3	4	14	3.17%	54	2.59%	0
27	Printing, publishing and allied industries	2	-	-	-	1	3	6	1.36%	53	2.54%	0
28	Chemicals and allied products	2	1	2	5	7	7	24	5.43%	74	3.54%	0
29	Petroleum refining and related industries	-	1	-	1	-	-	2	0.45%	40	1.92%	0
30	Rubber and miscellaneous plastics products	-	-	-	-	1	-	1	0.23%	36	1.72%	0
32	Stone, clay, glass, and concrete products	-	-	1	2	-	-	3	0.68%	27	1.29%	0
33	Primary metal industries	-	-	2	2	5	2	11	2.49%	74	3.54%	0
34	Fabricated metal products, except machinery and transportatio	-	1	-	2	-	-	3	0.68%	50	2.39%	0
35	Industrial and commercial machines and computer equipment	6	4	7	4	6	5	32	7.24%	159	7.61%	0
36	Electronic & other electrical equipment and components, excep	1	-	5	5	20	12	43	9.73%	157	7.52%	0
37	Transportation equipment	1	2	3	3	4	2	15	3.39%	82	3.93%	0
38	Measuring, analyzing, and controlling instruments	4	-	6	5	4	3	22	4.98%	99	4.74%	0
39	Miscellaneous manufacturing industries	-	-	-	2	-	1	3	0.68%	26	1.25%	0
40	Railroad transportation	1	-	-	-	-	-	1	0.23%	11	0.53%	0
42	Motor freight transportation and warehousing	-	-	-	-	1	-	1	0.23%	9	0.43%	0
45	Transportation by air	-	-	1	-	2	2	5	1.13%	24	1.15%	0
47	Transportation services	-	-	-	-	-	1	1	0.23%	4	0.19%	0
48	Communications	1	3	8	10	19	18	59	13.35%	95	4.55%	0
49	Electric, gas, and sanitary services	1	2	6	7	18	6	40	9.05%	224	10.73%	0
50	Wholesale trade - durable goods	-	-	2	-	1	-	3	0.68%	64	3.07%	0
51	Wholesale trade - non-durable goods	-	1	4	3	2	1	11	2.49%	42	2.01%	0
52	Building materials, hardware, garden supply, and mobile home	-	-	-	1	-	-	1	0.23%	6	0.29%	0
53	General merchandise stores	-	-	4	1	1	-	6	1.36%	29	1.39%	0
54	Food stores	-	-	-	3	-	-	3	0.68%	28	1.34%	0
59	Miscellaneous retail	1	1	-	2	-	-	4	0.90%	49	2.35%	0
70	Hotels, rooming houses, camps, and other lodging places	-	2	2	-	1	-	5	1.13%	19	0.91%	0
72	Personal services	-	2	-	1	-	1	4	0.90%	11	0.53%	0
73	Business services	3	4	3	7	20	23	60	13.57%	127	6.08%	0
78	Motion pictures	-	-	-	-	1	2	3	0.68%	16	0.77%	0
79	Amusement and recreation services	1	-	-	-	1	1	3	0.68%	37	1.77%	0
80	Health services	2	-	6	3	-	1	12	2.71%	47	2.25%	0
84	Museums, art galleries, and botanical and zoological gardens	-	-	1	-	-	-	1	0.23%	-	0.00%	N
87	Engineering, accounting, research, management, and related se	-	-	-	1	2	1	4	0.90%	2	0.10%	2
	Total	29	25	71	84	124	109	442	100.00%	2,088	100.00%	
	Percent of six-year total	6.6%	5.7%	16.1%	19.0%	28.1%	24.7%	100.0%				

St. John and Harrison (1999) state that the commonly used SIC code approaches apply the assumption that two business units within the same 2-digit code are related, and two businesses with different 2-digit codes are unrelated (p. 134). Using the 2-digit code or higher level of relatedness, which is a score of 3 or more in our study, and looking at the buyer's second line of business (Buyer 2, Seller 1), a number of the combinations provide strength to the buyer's secondary line by adding the seller's first line of business. For example, a total of 148 (39 + 47 + 62) of the transactions at the same two SIC-digits or higher (5, 4, or 3) complemented the buyer's second line with the seller's first line of business.

Table 2 shows that a large number of firms have some industrial associations, even going down to the fourth lines of business. For example, the association between the buyer's fourth line and seller's first line show that 56 (12.7%) of the 442 combinations are in the same two-digit or higher industrial relatedness categories (a score of 5, 4, or 3).

Table 2. Multiple Transacting Acquirers

Group Number	SIC Major Group	Firms with Multiple Transactions 2	3	4	5	6	7	Firms
	Mergerstat Review Industry Classifications	1995	1996	1997	1998	1999		
13	Oil and gas extraction	1	-	-	-	-	-	1
16	Heavy construction other than building construction contractor	1	-	-	-	-	-	1
20	Food and kindred products	1	-	-	-	-	-	1
24	Lumber and wood products, except furniture	1	-	-	-	-	-	1
26	Paper and allied products	-	1	1	-	-	-	2
27	Printing, publishing and allied industries	1	-	-	-	-	-	1
28	Chemicals and allied products	3	1	-	-	-	-	4
33	Primary metal industries	-	1	-	-	-	-	1
35	Industrial and commercial machines and computer equipment	5	2	-	-	-	-	7
36	Electronic & other electrical equipment and components, excep	3	2	1	-	1	-	7
37	Transportation equipment	1	1	-	-	-	-	2
38	Measuring, analyzing, and controlling instruments	2	3	-	-	-	-	5
45	Transportation by air	1	-	-	-	-	-	1
48	Communications	8	3	1	1		1	14
49	Electric, gas, and sanitary services	3	2	-	-	-	-	5
51	Wholesale trade - non-durable goods	1	-	-	1	-	-	2
53	General merchandise stores	1	-	-	-	-	-	1
59	Miscellaneous retail	2	-	-	-	-	-	2
70	Hotels, rooming houses, camps, and other lodging places	1	-	-	-	-	-	1
72	Personal services	1	-	-	-	-	-	1
73	Business services	7		3	-	-	-	10
78	Motion pictures	1	-	-	-	-	-	1
80	Health services	3	-	-	-	-	-	3
Total		48	16	6	2	1	1	74

Another interesting observation is the willingness of some buyers to seek out targets that are outside their major categories (a score of 0). For example, in 66 of the cases, there is no apparent relation between the buyer's first line of business and the seller's first line of business (Buyer 1, Seller 1). In these cases, the possibility of industrial synergy may still exist but, if it exists, it is more likely involves financial synergies rather than production or distribution synergies.

A one-sample t-test is applied to the mean of each of the sixteen categories of industrial relations. Each mean is significantly different from zero at the 0.000 level of significance.

Overall, Table 2 shows that buying companies tend to stay within the same industrial divisions, to varying degrees of proximity (scores of 5, 4, or 3), when seeking large business combinations. Many of the combinations show strong associations between the first two lines of the buyer and the first two lines of the seller. Therefore, it is expected that there are opportunities for industrial synergies.

A second objective of this study is to analyze the association between the industrial relatedness and the stock price premium paid to the acquired company. The average percent premium paid for the 442 acquisitions is 34.411 percent with a range of -59.6% to 227.01%. The median premium paid for the 442 acquisitions is 30.3%.

Table 3 presents the Spearman two-tailed correlation coefficients between the percentage premium paid and the industrial associations for each of the 16 pairs of industrial lines. The two-tailed test is used to allow for the more general test that the premium could be positively or negatively related to the degree of industrial association. For our set of merger transactions, the only Spearman correlation significant at the 0.10 level is the 4-3 combination. The alpha is 0.061 for this correlation, but no a priori reason exists for this particular association. It may be just a statistical

artifact of computing so many correlations. These results indicate that although industrial associations exist, they are not reflected in the premium paid by the purchasing firms.

Table 3 Relationship Between Premium Paid and Industry Association

Industrial Lines		Number of	Spearman Rank Correlation		Kruskal-Wallis	
Buyer	Seller	Associations	Correlation	Significance	Chi-Square	Significance
1	1	442	-0.015	0.761	6.675	0.246
1	2	271	-0.021	0.739	5.703	0.366
1	3	175	-0.052	0.498	5.495	0.359
1	4	98	0.120	0.242	1.941	0.857
2	1	341	0.070	0.198	3.925	0.560
2	2	221	-0.044	0.520	2.881	0.718
2	3	142	-0.075	0.380	2.137	0.830
2	4	83	-0.102	0.363	6.202	0.287
3	1	247	-0.022	0.726	0.796	0.978
3	2	167	-0.003	0.973	2.989	0.702
3	3	108	-0.005	0.958	2.887	0.717
3	4	68	-0.020	0.871	2.554	0.768
4	1	183	-0.040	0.593	6.320	0.276
4	2	130	-0.101	0.253	4.500	0.480
4	3	90	-0.199	0.061	6.295	0.279
4	4	60	0.084	0.525	4.200	0.521

To confirm these results, a Kruskal-Wallis one-way analysis of variance test is computed for each of the sixteen categories. The Kruskal-Wallis tests the null hypothesis that the percentage premium for each industrial proximity classification (5 to 0) comes from the same population. Thus, this test provides more specific information than the Spearman test with regard to the premium in each industrial proximity classification. The Chi-squared statistics, and their significance levels, are provided at the right side of Table 3. None of the sixteen analyses of variance tests is significant, even at an alpha of 0.10. This confirms that the amount of the percentage premium paid is not related to the proximity of industrial association and that there are no differences in the premium across the industrial proximity classifications.

These results present evidence that acquiring companies do not pay higher acquisition premiums for acquisitions in which the operating synergistic benefits are expected to be greater because of the proximate industrial lines of the buying and selling companies. The results also indicate that the premium paid is not directly related to the degree of industrial association between

the acquiring and acquired firms. These results are consistent with Healy, Palepu, and Ruback (1997) who find, for fifty large takeovers from 1979 to mid 1984, that a lower takeover premium is paid for target firms having a higher degree of business overlap with the acquiring firm.

It may be that the acquiring firm has asymmetric information about the potential industrial synergies possible in the post-combination entity that it does not share with the acquired firm's shareholders, or that the potential for these industrial synergies is not sufficiently probable to warrant a combination premium. It is also possible that buying firm managers are pursuing personal gain resulting in a premium payment for the target. One such personal gain is to provide promotion opportunities for junior managers without threatening current management positions (Donaldson, 1984). Other personal gains include diversification of holdings and choosing lines of business that the manager is better at running.

IMPLICATIONS AND CONCLUSIONS

Several past studies have investigated the strategic policies of business combinations and these studies have generally concluded that buying firms do not typically experience a synergistic return from combinations. This study provides evidence that for large merger transactions between 1995 and 2000, that:

(1)	the industrial relatedness of the combinations between the major industrial lines of the buying and selling firms, down to the fourth level, are highly related, indicating that many firms prefer to acquire targets in proximate industrial lines. Thus, industrial homogeneity may be a significant strategic factor in the acquisition process.
(2)	in general, no association is found between the percentage merger premium and the industrial proximity of the buyer and seller. Buyers are not paying a higher premium for mergers of companies in similar industries.

What do these conclusions mean for accountants, financial managers, and others involved in the business combination process? They mean that companies often seek out targets that have proximate industrial lines of business. The realization of these synergies, however, may be so uncertain that they are not a significant part of the offering process. Alternatively, it may mean that the buyer has asymmetric information about the possibilities of potential synergies, but that: (a) the actions of merging the operations of the two companies may require significant expenditures and effort overcoming, in the short term, the potential for operating synergies, (b) the risk level of realizing these synergies from the post-combination operations of the combined entity is high, or (c) the amount of the premium is dependent on other aspects of the expected advantages of the combination. This study examines the business decision process only at the time of the price offer for the proposed target firm. But this pricing decision obviously has impacts subsequent,

post-combination rates of return and other measures of management performance. Furthermore, this study examines only the relation between the industrial association of the buyer and seller firms and the amounts of premiums offered. We acknowledge that there may be a number of other economic or business factors that affect the amount of the premium offered in a business combination transaction.

The high concentration of acquisitions in a relatively small number of industrial classifications suggests that during the period of 1995-2000 specific industries may have initiated larger numbers of business combination activities over that relatively short time period because of transitory economic or regulatory factors. This suggests that any studies of business acquisition or combination activities should include consideration of strategic management or economic issues that may be unique to specific industries in the time period covered by this study.

Finally, the efforts by financial managers to value a target firm should not assume unrealistic potential post-combination operating synergistic benefits due to the proximate industrial relatedness of the acquiring and target entities. The evidence is quite clear that the value of potential operating synergistic benefits may be an interesting theoretical concept, but these potential benefits are not apparent in pricing actual business combination transactions between industrially related entities.

NOTE

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APPENDIX

We performed additional analyses to examine the effects of multiple transactors and methods of payment for the target on the relation between the industrial relatedness and the merger premium. The potential impact of the multiple transactors is addressed by eliminating the multiple transacting firms from the database. The mean of the premium for this reduced dataset is 35.20 percent, which is very close to the 34.411 percent for the dataset that included multiple transactors. The Spearman correlations between industrial relatedness and the percentage premium are not significant. Thus, including multiple transactors is more inclusive of the large merger transactions during the six-year period, and including these multiple transactors has no effect on the conclusions of no relation between the industrial relatedness and the percentage premium paid for these large merger transactions.

Additionally, the focus of this study is on the possible relation between the merger premium percentage and the degree of industrial relatedness. We did not include an evaluation of all the possible reasons for a purchase premium. However, we performed a minor analysis of the amount

of the premium percentage for the alternative methods of payment for the 433 mergers for which the transaction medium could be determined. For the 94 mergers in which cash is the medium, the mean percentage premium is 22.706% (median of 29.15%). For the 271 mergers using only stock to acquire the target, the mean percentage premium is 36.160% (median of 33.9%). For the 68 mergers in which a combination of cash, stock, and/or debentures is used, the mean percentage premium is 43.855% (median of 44.6%). This is in contrast to Davidson and Cheng (1997) who find that cash acquisitions are associated with larger premiums. This analysis suggests that the premium may be related to the method of payment for the merger.

REFERENCES

Bhagat, S., J. A. Brickley & U. Loewenstein. (1987). The pricing effects of interfirm cash tender offers. *Journal of Finance, 42*(4), September), 965-986.

Bradley, M., A. Desai & E. H. Kim. (1983). The rationale behind interfirm tender offers: information or synergy? *Journal of Financial Economics, 11*, April,183-206.

Brush, T. H. (1996). Predicted change in operational synergy and post-acquisition performance of acquired businesses. *Strategic Management Journal, 17*, January, 1-24.

Davidson, W. N. & L. T. W. Cheng. (1997). Target firm returns: Does the form of payment affect abnormal returns? *Journal of Business Finance & Accounting , 24*(3 & 4), April, 465 - 479.

Donaldson, G. (1984). *Managing Corporate Wealth* New York: Praeger.

Gaughan, P. (1996). *Mergers, Acquisitions, and Corporation Restructurings.* New York: John Wiley & Sons.

Healy, P. M., K. G. Palepu & R. S. Ruback. (1997). Which takeovers are profitable? Strategic or financial? *Sloan Management Review, 38*(4), Summer, 45-57.

Hosmer, L. T. (1982). Which takeovers are profitable? Strategic or financial? *Strategic Management: Cases and Business Policy*. Englewood Cliffs: Prentice Hall.

Henning, S. L., B. L. Lewis & W. H. Shaw. (2000). Valuation of the components of purchased goodwill. *Journal of Accounting Research, 38*(2), Autumn, 375-386.

Mergerstat (1996-2001). *Mergerstat Review.* Los Angeles, California: Mergerstat, Global Mergers & Acquisitions Information.

Porter, M. E. (1987). From competitive advantage to corporate strategy. *Harvard Business Review, 5*(3), 43-59.

Ravenscraft, D. & F. M. Scherer. (1987). *Mergers, Selloffs and Economic Efficiency:* Washington, D.C.: Brookings.

Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business, 59*(2), April, 197-216.

St. John, C.H. & J.S. Harrison. (1999). Manufacturing-based relatedness, synergy, and coordination. *Strategic Management Journal, 20*, 129-145.

Slusky, A.R. & R.E. Caves. (1991). Synergy, agency and the determinants of premia paid in mergers. *Journal of Industrial Economics, 39*(3), March, 277-296.

Varaiya, N. P. & K. R. Ferris. (1987). Overpaying in corporate takeovers: the winner's curse. *Financial Analysts' Journal* (May-June), 64-70.

Yagil, J. (1996). Mergers and macro-economic factors. *Review of Financial Economics, 5*(2), 181-190.