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LETTER FROM THE EDITORS

Welcome to the *Academy of Accounting and Financial Studies Journal*. The Academy of Accounting and Financial Studies is an affiliate 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 discipline.

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 established objective of the Allied Academies is to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. Janet and Denise 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.

Information about the Allied Academies, parent organization of the *AAFS*, the *AAFSJ*, and the other journals published by the Academy, as well as calls for conferences, are published on our web site. In addition, we keep the web site updated with the latest activities of the organization. Please visit our site and know that we welcome hearing from you at any time.

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MANUSCRIPTS

THE EVOLUTION OF THE UNITED STATES AUDIT REPORT

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Carl J. Case, St. Bonaventure University

ABSTRACT

This paper relates to the development of the audit opinion in the United States as a response to both professional and stakeholder concerns. The approach taken in this document is to relate changes in the audit report size, content, and terminology to the needs and wants of stockholders, creditors, and other interested parties. Given the fact that most American businesses consider the "marketing concept" to be important, the authors review changes in the audit opinion to determine if stakeholder needs and wants are being considered in the evolution of the report.

The first portion of this document presents a historical background of the auditing process. The historical review continues with British manor accounting and auditing techniques used in medieval times. Next, the paper moves to United Kingdom auditing with a brief analysis of several of the British Companies Acts. The Price Waterhouse opinion of U.S. Steel in 1903 is included as an early example of a U.S. audit report. The first major piece of audit opinion legislation, found in the Federal Reserve Bulletin (FRB) of 1917, is reviewed for its importance. The final portion of the paper reviews the changes in the audit report through the 1988 revision.

INTRODUCTION

The study of accounting history has grown in popularity in recent years. In order for today's practicing accountants and stakeholders of audited businesses to better understand the rationale for the current audit report format, a review of their development is appropriate. This paper takes the perspective of reviewing the information and level of detail that interested parties desire in the audit opinion.

In particular, the amount of description of the type of attest work performed, the length of the opinion, number of paragraphs in the report, and terminology used reflect a response from the profession to provide interested parties with the amount and type of information desired. The intent of this paper is to provide a concise review of the changes in the audit report as a result of changing stakeholder needs and wants. American businesses, in general, attempt to follow the marketing concept of being "customer oriented". Based on this premise, the objective of this document is to determine if the changing audit opinion appears to be meeting this "user satisfaction" goal.

This document provides a brief history of changes to the independent auditor's report in the United States. A concise review of auditing's historical background represents the first segment of this paper. The next portion presents the Price Waterhouse audit opinion of U.S. Steel in 1903,

which was one of the first published sets of financial statements to be accompanied by an independent auditor's opinion in the United States. The paper continues with a review of the Federal Reserve Bulletin pronouncements of 1917 and 1929. These early versions of the audit report reflect, to a large extent, previous British examples. Next, this document continues with a review of the 1934, 1939, 1948, 1977 and 1988 revisions of the audit report. The final section of this paper concludes with a recent opinion modification by a major accounting firm. In particular, this relates to the single paragraph Price Waterhouse version of the audit report first used by the firm in 1998.

HISTORICAL BACKGROUND

The precise history of auditing is fairly difficult to trace. Basic record keeping began about 4000 B.C., with the oldest commercial documents being traced to approximately 3500 B.C. (Brown, 1905). The desire for some type of audit function soon appeared due to a recognized need to locate errors and fraud within the financial statements. The attest function was considered to be important by stakeholders very early in our history.

The Babylonians appeared to be the first detailed record keepers. The Code of Hammurabi, the king of the first dynasty of Babylonia (2285-2242 B.C.), required many types of records to be maintained including price quotes between suppliers and merchants. Most business transactions were written, complete with related signed contracts and witness signatures. It is amazing that source documents and related accounting controls were developed and utilized at this early date.

Common in early Egyptian and Babylonian history was the practice of two or more government officials keeping separate records and later comparing the versions in an effort to locate errors and omissions (Chatfield, 1974). Also, a fairly complete budget and auditing system existed in China during the Zhao dynasty (1122-256 B.C.). During this period, a government accounting system existed that was designed to manage tax collections (O' Reilly, et.al. 1998). It appears that the need to maintain a financial "checks and balances" system was identified early in history by various stakeholders as a necessity for the development of effective and efficient financial reporting. Some years later, the Romans compared expenditure authorizations with the actual payments in order to evaluate the appropriateness of the payments. The problem of overspending the budget was a major concern in early accounting systems. Overall, however, very little systematic auditing done prior to the year 1800. The majority of early audit work related to insuring that government funds were being properly administered.

The origin of the word audit comes from the Latin for "hearing" or "one who hears or listens". The "hearing by proper authorities of accounts rendered by word of mouth" was an initial definition of the word. In particular, it was common practice in the 1700's and early 1800's to approve government accounting records after being read aloud at a public meeting. Prior to the Industrial Revolution, audits were utilized to ensure that officials in government and commerce were "reporting in an honest manner" (Whittington & Pany, 1995).

Auditing was present during the medieval period in Britain in the form of manor accounting. The accounts of the larger manors were normally reviewed annually by the lord and his council (Chatfield, 1974). An estate would often include a number of manors, which were audited either as

a group or on an individual basis. The auditors would travel between the manors (farms) in order to accumulate information on products produced and related expenses. These auditors would also, in the middle of the year, make a preliminary evaluation or "view" of the manor's operations. The major purpose was to review, measure, and assess management efficiency. The concept of medieval auditing has carried forward and influenced modern practice today, since a major goal of modern auditing remains the improvement of operational efficiency within the firm.

The concept of internal controls was also significantly improved during this period. It was common for one person to collect tax revenues from tenants of the manor. Then a second person, the record keeper, would record the collection. Finally, a third person, the auditor, would "listen" to the "reading of the accounts" in order to locate errors and omissions (Taylor & Glezen, 1997). This process exists today as firms make a serious attempt to separate custody, record keeping, and authorization activities as a basic goal of their internal control systems.

The advent of the corporate form of ownership was a driving force in the process of requiring audited financial statements and an annual review of business transactions. Stockholders who were removed from the company required some assurance that the firm's operations were efficient and its transactions were being accurately recorded. As a response, the United Kingdom passed a number of British Company Acts that directly affected the amount and type of audit work performed.

THE BRITISH COMPANY ACTS

One of the first major pieces of auditing legislation was the British Stock Companies Act of 1844. This law allowed stockholders, not auditors, to review and examine balance sheets prepared by the company directors. The stockholders would be allowed to examine all the records of the firm and question officers and employees related to their findings. This stockholder (audit) report would then be filed with the firm's balance sheet at the Registrar of Joint Stock Companies. Following the filing, copies of these documents were sent to all stockholders. As of this date, the concept of using an "independent" auditor had not developed.

The Companies Act of 1855-56 changed the rules to allow for auditors who need not be stockholders (Ricchiute, 1992). This was probably the first situation where someone who was independent of the firm provided the attest function. Under the old law, the auditing shareholders may not have been totally objective given their desire to maximize returns to owners from the firm. For example, they may have objected to investing funds in new assets for expansion purposes. The desire to withdraw as much as possible in the form of dividends may have clouded their evaluation of the business.

The Companies Act of 1855-56 allowed the firm to appoint an outside auditor, but it was at the option of the firm (Chatfield, 1974). The company could be required to appoint the auditor if 20% or more of the stockholders signed a petition seeking such action. This fairly low percentage of stockholders could require the firm to employ an external auditor, which shows the growing awareness by interested parties of the importance for evaluations by an independent expert.

The Companies Act of 1900 made annual audits mandatory for all registered companies (Chatfield, 1974). The law forced firms to prepare annual balance sheets in order for them to be

audited. This emphasized the importance of periodic reporting in order to provide information to stockholders on a regular basis related to their investments. This accounting principle (periodicity) of providing annual financial information exists in our current system. It has grown to a point where stakeholders attempt to find the most current quarterly financial information on the firm's Internet pages.

As business grew, more and more investors who were not familiar with the firm desired an audited report concerning the firm's yearly balance sheet. It is interesting to note that the public had not yet demanded additional financial information from a completed income or profit and loss statement. The results of operations were presented on a single line on the balance sheet and reported as surplus or accumulated surplus.

The Companies Act of 1907 was more specific in that it required all publicly held corporations to file audited balance sheets (Chatfield, 1974). The auditors certificate and report were combined into a single document by this act. The report included new language that made it clear to stockholders that the examination by the auditors was now required by law. It also stated that the auditors had to do more detailed analysis than simply comparing ledger balances and the figures reported on the balance sheet.

The Companies Act of 1928-29 was the first time in Britain that an annual income statement was required to be given to stockholders (Chatfield, 1974). However, it was not specifically covered by the audit report. Another important change required by this law was the obligation to segregate current and fixed assets on the balance sheet. Also, the firm had to report how they valued fixed assets. These changes all complicated the audit process due to the number of additional estimates and evaluations necessary. This shows that the stockholders and other interested parties were demanding more information of better quality from the firm related to a more sophisticated list of needs and wants.

The Companies Act of 1947-48 formally required an opinion on the set of financial statements to determine if they gave a "full and fair view of financial position and results of operations" (Chatfield, 1974). This act also required consolidated financial statements for the first time. This is another example of the demands of stockholders and other interested parties to gain more information in a period when many firms were adding subsidiaries, which increased the complexity of their organizational structure.

The Companies Acts in Britain were designed to meet the public's need for more uniform accounting and reporting standards. Specialized audit literature began to appear in the 1880's. For example, the textbook by F.W. Pixley entitled "Auditors, Their Duties and Responsibilities" was published in London in 1881 (Chatfield, 1974). The Companies Acts codified and standardized much of the audit process making it a statutory activity. The use of a broad set of auditing standards was later to be an American development in response to stakeholder wants.

DEVELOPMENT OF THE UNITED STATES AUDIT REPORT

In the United States during the Industrial Revolution, the size of the average business began to grow beyond what could be easily managed by its owner. Therefore, many entrepreneurs began to hire outside managers. In an effort to maintain controls over the firm's operations, the absentee

owners relied on auditors to protect their interests from unintentional errors and omissions as well as fraud (Whittington & Pany, 1995).

Prior to 1900, in an effort to locate material errors and fraud, an audit would often involve the review of the vast majority of all recorded transactions. This "bookkeeping" approach audit was common at this time. As the size of the firms grew, this practice became much more difficult to accomplish. A major group of stakeholders, at this time, were the bankers who normally reviewed only the balance sheet of the firm. During this era, an income or profit and loss statement was not considered a critical financial statement.

The increase in the amount and size of businesses caused stockholders and other interested parties to require more from the firm than simply the presentation of its financial statements. The importance of having an independent opinion of accounting records and reports grew along with the growth of business in the United States. The remainder of this paper will review the development of the audit opinion in the U.S. The changing number of paragraphs, the length of the opinion, and the terminology used in the report will be reviewed as to the varying needs and wants of related stakeholders.

AN EARLY U.S. AUDIT OPINION

One of the first companies in the U.S. to publish its financial statements for stockholders and other interested parties was United States Steel in 1903 (U.S. Steel, 1903). This very complete annual report was also one of the first sets of statements that were accompanied by an independent auditor's opinion. Price Waterhouse issued the following statement in 1903:

This lengthy audit opinion preceded the first official auditing pronouncement in the United States by about 14 years. This lengthy opinion was Price Waterhouse's attempt to be very clear and precise concerning the work that was completed. For example, the terms " We have verified cash and securities by actual inspection" and " Full provision has been made for bad and doubtful accounts receivable" describe the types of substantive testing done in order to issue an opinion in recent years. Later versions of the audit report are very concise related to the specific types of testing completed. A general statement related to testing is used today compared to the specific details found in this report. This early audit report on a U.S. business is surprisingly detailed, which may be the result of Price Waterhouse attempting to provide as much information as possible to stockholders and other interested parties. This statement was much more extensive and comprehensive than the report being issued in Britain at this time.

We have examined the books of the U.S. Steel Corporation and its subsidiary Companies for the year ending December 31, 1902, and certify that the Balance Sheet at that date and the Relative Income Account are correctly prepared therefrom.

We have satisfied ourselves that during the year only actual additions and extensions have been charged to Property Account; that ample provision has been made for Depreciation and Extinguishment, and that the item of "Deferred Charges" represents expenditure reasonably and properly carried forward to operations of subsequent years.

We are satisfied that the valuation of the inventories of stocks on hand as certified by the responsible individuals have been carefully and accurately made at approximate cost; also that the cost of material and labor on contracts in progress has been carefully ascertained, and that the profit taken on these contracts is fair and reasonable.

Full provision has been made for bad and doubtful accounts receivable and for all ascertainable liabilities.

We have verified cash and securities by actual inspection or by certificates from the Depositories, and are of opinion that the Stocks and Bonds are fully worth the value at which they are stated in the Balance Sheet.

And we certify that in our opinion the Balance Sheet is properly drawn up so as to show the true financial position of the Corporation and its Subsidiary Companies, and that the Relative Income Account is a fair and correct statement of the net earnings for the fiscal year ending at that date.

Price Waterhouse was also known to have used a short audit report prior to 1917, which was based heavily on British types of audit reports (Wallace, 1991). The text of that report related to their review of St. Louis Breweries Ltd. is as follows:

We have examined the above accounts with the books and vouchers of the company, and find the same to be correct. We approve and certify that the above balance sheet correctly sets forth the position of the company.

This is an exceptionally short opinion compared to the U.S. Steel example. The words "approve and certify" were commonly used in Britain during this period. The term "certify" would soon become part of the audit report used in the United States after 1917. The practice of certifying or giving a certificate was typical in Britain. It appears that auditors were unsure of the exact form of audit opinion that should be used prior to the direction provided by the Federal Reserve Bulletin in 1917.

In the opinion above, only the balance sheet is mentioned rather than a set of financial statements as would later become the norm. This was also the typical practice in Britain at this time. The emphasis was on the balance sheet, which had a single line for operational information typically called "surplus". The complexity of business operations had not yet grown sufficiently to encourage stockholders to require a more detailed explanation of operations.

The words "books and vouchers", used in this opinion, would disappear in the 1917 version of the report. This was also a "holdover" from British practice, which involved the review of all business transactions. Historically, it was feasible to review the majority of transactions because the volume of events was not that great. It would soon be impossible to accomplish this act due to the increasing quantity of transactions.

Auditing services were much in demand during the period from 1898-1904. This was due to the number of initial public offerings of such giants as United States Steel. The practice of

certifying statements became very important to distant investors who were not familiar with the firm (Chatfield & Vangermeersch, 1996). Outside parties were beginning to find more value in the statements "certified" by the auditors who were considered to be external experts.

This situation caused the American Institute of Accountants (AIA) to provide guidance to auditors in the form of a standard audit opinion that should be used. The number of public corporations was growing at a rapid rate and stockholders wanted some independent opinion on the firm's financial statements. The needs and wants of various stakeholders were beginning to be understood and addressed as 1917 approached.

1917 FEDERAL RESERVE BULLETIN – UNIFORM ACCOUNTING

In the April 1917 issue of the Federal Reserve Bulletin, an article entitled "Uniform Accounting: A Tentative Proposal Submitted by the Federal Reserve Board" appeared (Federal Reserve Bulletin, 1917). The Federal Trade Commission (FTC) had requested that this "memorandum on balance sheet audits" be prepared in order to promote "a more uniform system of accounting". The suggested wording in the report was expanded to include the statement of profit and loss, but the emphasis continued to be on the balance sheet. The Federal Reserve Bulletin statement suggested the following wording for the auditor's opinion:

I have audited the accounts of Blank and Co. for the period from ... to ... and I certify that the above balance sheet and statement of profit and loss have been made in accordance with the plan suggested and advised by the Federal Reserve Board and in my opinion set forth the financial condition of the firm ...and the results of its operations for the period.

This extremely short opinion statement was prepared by the American Institute of Accountants (AIA - later renamed AICPA) at the request of the FTC and was given tentative approval by the Federal Reserve Board. This publication was sent to "banks, bankers, banking associations, merchants, manufacturers, and associations of manufacturers; auditors, accountants, and associations of accountants" (AICPA Professional Standards-Appendix A, 1992). Many comments were received from accountants, bankers, and business owners during the next few months. Given the feedback received by these various stakeholders, the next revision appeared only one year later.

In 1918, after comment from both industry and the profession, the previous year's statement was issued with the new title of "Approved Methods for the Preparation of Balance-Sheet Statements". The reason for this was to limit the scope of the document from "a uniform system of accounting" to "the preparation of Balance-Sheet Statements" (Ibid.). The audit report was typically referred to as a certificate since it resembled the English certificate employed during that period (Chatfield & Vangermeersch, 1996).

The creditors and stockholders in the United States requested this report because many felt the need to have improved assurance as to the quality of the balance sheet figures. As more individuals invested in stock of firms that they were not familiar with, they required more

independent evaluations of the company. Bankers, at this time of rapidly expanding business operations, also needed more assurance that the firm's statements were accurate and the bank's loans would be repaid on a timely basis.

1929 FEDERAL RESERVE BULLETIN – VERIFICATION OF FINANCIAL STATEMENTS

The next major update to the auditor's opinion is found in the Federal Reserve Bulletin of 1929 in an article titled "Verification of Financial Statements". This was the result of a decade of experience utilizing the old 1917/18 formats. Some accountants had criticized the prior publication because "the procedure would not bring out all the desired information" (AICPA Professional Standards - Appendix A, 1992). Also, the title shows the growing emphasis on evaluation of periodic earnings by providing equal emphasis on the income statement and the use of the term "Financial Statements". In prior years, the stress was primarily on the balance sheet that contained only a single line item for "surplus or accumulated surplus" of income from operations. The 1929 revision of the opinion suggested the following wording:

I have examined the accounts of company for the period from to I certify that the accompanying balance sheet and statement of profit and loss, in my opinion, set forth the financial condition of the company at and the results of operations for the period.

This form of the opinion still utilized the word "certify" which was commonly found in prior reports especially those used in Britain. Also, this version included the word "I" rather than "we" suggesting that the work is the responsibility of a single individual rather than a team or group of auditors. As the size of the average firm continued to grow, it was soon impossible, in most cases, for one auditor to examine the firm.

An additional comment about the 1929 article relates to the opening paragraph of the "General Instructions". This was really the first recognition that various amounts of effort were needed in preparing an audit opinion given the specific firm being considered. The instructions pertaining to this topic included the following:

The extent of the verification will be determined by the conditions in each concern. In some cases, the auditor may find it necessary to verify a substantial portion or all of the transactions upon the books. In others, where the system of internal check is good, tests only may suffice. The responsibility for the extent of the work required must be assumed by the auditor.

It is interesting to note, given the wording of the above opinion, that as late as 1929 some of the audits involved nearly a 100% examination of recorded accounting transactions. As the size of the firms grew and transactions multiplied, it must have been extremely time consuming and

expensive to review each entry. This model reflected the older British "bookkeeping audits" which examined virtually every transaction in an effort to verify financial information. Both business stakeholders and accounting professionals would soon advocate a change in that wording.

The term "verification" was used in the title of the 1929 statement. Later revisions of the report prepared by the AIA would use the term "examination". This represented an important shift in the attitude of the profession and business stakeholders towards auditing. The term "verify" has the implication of reviewing virtually all records and transactions, while the word "examine" better implies the review of selected accounting events and transactions. In other words, audit sampling was being introduced with this change in terminology.

This modification resulted after the AIA gathered numerous opinions from outside the profession. The AIA was well recognized by this date, and stockholders and creditors made frequent suggestions for improvement to them in all areas of accounting and auditing. Therefore, the needs and wants of the creditors and investors were being incorporated into the revisions of the opinion. Stockholders and creditors sought wording in the report that accurately explained the audit process. This change provided information to all stakeholders that auditors in the U.S. were no longer performing the detailed type of "bookkeeping" audit that was used for many years in Britain.

1934 AICPA – AUDITS OF CORPORATE ACCOUNTS

During the period from 1932-1934, the American Institute's (AIA) committee on cooperation with stock exchanges met with the committee on stock lists of the New York Stock Exchange. The communications between the two parties were published in 1934 under the title of "Audits of Corporate Accounts" (AICPA Professional Standards - Appendix A, 1992). One of the major concerns was that the Securities Act of 1933 related to financial statements that were "certified" by accountants. This disturbed many members of the profession since the term may be misleading "to the extent that they convey to ordinary readers an impression of greater certainty or accuracy than the statements could possess, or that they represented that the auditor was expressing more than his opinion about the statements" (AICPA, Research Study No. 7, 1965).

The AIA's special committee on cooperation with stock exchanges felt that this opinion should be in the form of a report rather than a certificate. The committee wrote on December 21, 1933 that "To this end, we think it desirable that the document signed by the accountants, should be in the form of a report, as in England, rather than a certificate, and the words 'in our (my) opinion' should always be embodied therein" (AICPA, Research Study No. 7, 1965). Therefore, the word "certify" is not found in the suggested wording of the 1934 report. The format of the new report was as follows:

We have made an examination of the balance sheet of the XYZ Company as of December 31, 1933, and of the statement of income and surplus for the year 1933. In connection therewith, we examined or tested accounting records of the company and other supporting evidence and obtained information and explanations from officers and employees of the company; we also made a general review of the accounting methods and of the operating and income accounts for the year, but we did not make a detailed audit of the transactions.

In our opinion, based upon such examination, the accompanying balance sheet and related statements of income and surplus fairly present, in accordance with accepted principles of accounting consistently maintained by the company during the year under review, its position at December 31, 1933, and the results of its operations for the year.

The term "fairly present" was used at this date for the first time in the opinion paragraph. This was the result of the profession's movement away from certifying the statements as being completely correct. The phrase "fairly present" implies that the firm's statements provide a reasonable or fair evaluation of operations. It represented a major change in the tone of the opinion in order to better communicate what the auditors were doing in the process of auditing a firm's set of financial statements.

This also was the first time that a two-paragraph report contained scope and opinion segments. This style would become common in numerous future revisions of the report. One of the reasons for the more detailed approach was the desire of stockholders to get more information on what was actually done in the audit process. For example, the discussion of gathering evidence enough to make a decision was a major change. Also, details such as who was interviewed (officers and employees) in order to gain the needed evidence were added to the report. All of these changes were a result of more complicated business operations and the need for stockholders and creditors to be informed on what type of examination was being completed.

1939 AIA - STATEMENT ON AUDITING PROCEDURE – NO. 1

The AIA's Committee on Auditing Procedure issued the next revision of the report in October 1939 in Statement on Auditing Procedure (SAP) No.1. Titled "Extension of Auditing Procedure", this SAP recommended a revised form of the audit opinion (SAP No. 1, AIA, 1939). This version of the report contained some significant changes and was approved by AIA members at their 1939 annual meeting. Changes included, for example, that the scope paragraph no longer mentioned "obtaining information from officers and employees". Also, this version included for the first time, in the scope paragraph, that the auditors have "reviewed the system of internal control". Finally, the opinion paragraph included the term "in conformity with generally accepted accounting principles" for the first time. These changes were, indeed, significant additions to the audit report, as many of them continue to be with us today. The revised version of the opinion was worded as follows:

We have examined the balance sheet of the ABC Company as of December 31, 1939, and the statements of income and surplus for the fiscal year then ended; have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have examined or tested accounting records of the company and other supporting evidence by methods and to the extent we deemed appropriate.

In our opinion, the accompanying balance sheet and related statements of income and surplus present fairly the position of the ABC Company at December 31, 1939, and the results of its operations for the fiscal year, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

As a final note, the concept of "consistency" was considered important enough at this date to be included in the opinion paragraph. In prior reports, the phrase "applied on a basis consistent with that of the preceding year" did not appear. The profession and interested stakeholders apparently considered consistency to be important enough to be communicated to readers of the audit opinions. With growing numbers of corporations and their stockholders, the consistency principle was a significant addition to the report.

1948 AIA - STATEMENT ON AUDITING PROCEDURE – NO. 24

The Committee on Auditing Procedure of the AIA in October 1948 issued Statement on Auditing Procedure No. 24. This document was titled "Revision in Short-Form Accountant's Report or Certificate". The major change in the scope paragraph was the elimination of the words "system of internal control" and "without making a detailed audit of the transactions". The AIA felt that newly adopted auditing standards that required an internal control study made the reference unnecessary. The idea of a detailed audit of every transaction was also not possible given the size and levels of business activity at the time.

The new wording also included phrases such as "generally accepted auditing standards" and "tests of the accounting records and such other auditing procedures" for the first time. These were very important additions to the report in an effort to emphasize the body of accounting standards that had developed since the last version of 1939. The development of GAAS was in response to the public's desire for a standardized type of audit. GAAS gave the stakeholders of the firm confidence that the same conceptual framework would surround each audit. The 1948 opinion format contained the following terminology:

We have examined the balance sheet of ABC Company as of December 31, 1949, and the related statements of income and surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and statements of income and surplus present fairly the financial position of ABC Company at December 31, 1949, and the results of operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The opinion paragraph used the same terminology as the 1939 version, which continued to use the terms "present fairly" and "generally accepted accounting principles". The income statement continued to be referred to as the "statement of income and surplus". The term surplus was a concept held over from years in which only the balance sheet was presented to shareholders and creditors. At that time, the Balance Sheet included results of operations in a single line termed "surplus or accumulated surplus".

1976 AICPA - STATEMENT ON AUDITING STANDARD NO. 15

Over the next nearly thirty years, many significant events affected the accounting profession. For example, in 1959, the AIA changed its name to the American Institute of Certified Public Accountants (AICPA). The new AICPA emphasized five broad areas including financial accounting, auditing and attestation services, ethics, education, and practice governance. In the audit arena, the Auditing Standards Executive Committee was formed in 1972 and existed until 1978. The AudSEC issued broad standards that emphasized and defined minimal performance expected of auditors. In the past, the earlier Statements on Auditing Procedure (SAP's) were more practice procedure oriented (Chatfield & Vangermeersch, 1996). The 1976 revision was worded as follows:

We have examined the balance sheets of ABC Company as of December 31, 19X2 and 19X1, and the related statements of income, retained earnings, and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, include such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the financial position of the ABC Company as of December 31, 19X2 and 19X1, and the results of its operations and the changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis (AICPA, 1976).

The major additions in the scope paragraph include the listing of the retained earnings statement and the statement of changes in financial position. Also, the term "surplus" was eliminated from the income statement description. The emphasis on comparative evaluation is also included in this report with two Balance Sheet dates presented. In the past, audit reports mentioned only a

single yearend. These were all changes requested by stakeholders as the form and complexity of business operations continued to change. Investors, for example, often compared two or more years of operations in order to identify income trends that may assist them in making financial decisions.

The major changes to the opinion paragraph include the use of the term "financial statements" rather than listing the specific reports. This provided for much more concise wording since four statements were now being considered. A second revision of this paragraph included the addition of the words "changes in financial position" which were required due to the inclusion of this statement to the scope paragraph. These revisions updated interested parties related to current terminology as well as providing for easier reading and assimilation of the various concepts included in the report.

1988 AICPA - STATEMENT ON AUDITING STANDARDS NO. 58

The final revision of the audit opinion in April 1988 included major changes. The addition of a third paragraph was a substantial change. The new first paragraph stressed the responsibility of the parties involved. This new introductory paragraph included the following sentence; "These financial statements are the responsibility of the Company's management." This was a major change that emphasized the fact that the public should not consider the financial statements to be the product of the auditors. The problem of the "expectation gap" was evident with the addition of these words. Also, the phrase "We have examined" was changed to "We have audited". The audit function was now better defined with the addition of a scope paragraph that contained significant content.

The scope paragraph contained specific information concerning the responsibilities of the auditor and the limitations of the audit function. The description of the auditor's work now includes reviewing accounting principles used and significant estimates made by management. In addition, the assurance statement of "We believe that our audits provide a reasonable basis for our opinion" emphasizes the fact that enough evidence is gathered to reasonably issue and support an opinion. These changes show the desire of the profession to clearly define the audit process as well as provide these stakeholders with information that allows them to make knowledgeable investing and financing decisions. The three-paragraph design issued in 1988 utilized the following language:

The format for an unqualified opinion has been standardized since the 1988 pronouncement. This more detailed report evolved because the profession desired to minimize the "expectations gap" that had existed in the past. By clearly defining what is involved in the performance of an audit and also explaining the division of responsibility between management and the auditor, this report format has aided the public in better understanding the audit process.

Some refinements to SAS No. 58 took place in late 1995 with SAS No. 79. This amendment to SAS No. 58 clarifies the use of emphasis paragraphs, uncertainties, and disclaimers of opinions. It also discusses the use of emphasis of matter in situations involving "the entity being a component of a larger business enterprise, related party transactions, and accounting matters affecting comparability of current and preceding period financial statements". Each of these reflects upon the current trend of more mergers and acquisitions. Investor's needs are hopefully being met through the use of details in an explanatory paragraph related to this important business trend.

The vast majority of accounting professionals have used this three-paragraph format of the audit opinion since its introduction in 1988. However, one major accounting firm has recently used an opinion design that appears to provide for a reduction in the length of the report. The final portion of this paper includes a discussion of this revised one paragraph version of the opinion.

We have audited the accompanying balance sheets of X Company as of December 31, 19X2 and 19X1, and the related statements of income, retained earnings, and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material aspects, the financial position of X Company as of [at] December 31, 19X2 and 19X1, and the results of its operations and its cash flows for the years then ended in conformity with generally accepted accounting principles (AICPA, 1988).

1998 PRICE WATERHOUSE - AUDIT OPINION

The following one-paragraph opinion has been used by Price Waterhouse (now PWC) in a number of recent audit opinions. This particular example pertains to the Compaq Computer Corporation and relates to its 1997 annual report. The one paragraph arrangement utilized the following format:

In our opinion, the accompanying consolidate balance sheets and the related consolidated statements of income, of cash flows and of stockholder's equity present fairly, in all material respects, the financial condition of Compaq Computer Corporation and its subsidiaries at December 31, 1997 and 1996, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1997, in conformity with generally accepted accounting principles. These financial statements are the responsibility of the Company's management; our responsibility is to express an opinion on these statements based on our audits. We conducted audits of these statements in accordance with generally accepted auditing standards which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above (Compaq Annual Report, 1997).

Price Waterhouse used the same one paragraph approach on a number of other reports reviewed by the authors for that period. In particular, OfficeMax, Inc., Union Texas Petroleum Holdings, Inc., and Cypress Semiconductor Corporation, all audited by Price Waterhouse, include this style of audited opinion on the 1997 annual reports. It is interesting to note that this single lengthy paragraph includes all of the vital information found in the old report but begins with what would generally be the third or opinion paragraph for the "normal or standard" approach. At a time when stakeholders crave information as concisely and quickly as possible, this format may prove to be welcomed as it immediately presents the audit opinion in the first sentence.

FINAL THOUGHTS

This paper presented a brief review of the changing appearance of the United States audit opinion. Since the first structured opinion found in the Federal Reserve Bulletin of 1917, there have been numerous, significant changes in its format. It has gone from a one (1917 and 1929) to a two (1939, 1948, 1977) and finally to a three (1988) paragraph opinion. The amount of detail that both the profession and the public felt should be in the standard opinion has continued to grow. This to a large extent has been the result of the increased complexity of business operations and organization.

The need for an audit opinion that includes an introduction, followed by a scope discussion, which finally leads to the opinion, has been the standard approach since 1988.

The primary reason for this growth in the size of the report, in the opinion of the authors, has been the professions response to the needs and wants voiced by all stakeholders. In particular, the responsibilities of both auditor and management are now clearly stated. Further, a better explanation of what the audit process involves and the evidence that must be collected to form an opinion is more fully defined. These changes were made to respond to the "expectation gap" problem and react to the needs and wants of stakeholders.

The authors have little doubt that the profession and its stakeholders will continue to modify the audit report in the future especially given the number of accounting irregularities and frauds discovered during the past year. CPA's must consider the information needs of stockholders, creditors, and other interested parties in a period when the overall business environment is rapidly changing and becoming more complicated.

The attest function will continue to be a very valuable service provided by the accounting profession. The current audit report format, however, may change significantly. Extensive revisions will likely be imposed upon the auditing process given recent developments involving firms such as Enron and Adelphia. Audits may soon involve many more procedures and require additional disclosures. The audit report of the future may be significantly more detailed than any of the previous versions. The accounting profession must strive to regain public confidence that recently has been lost.

REFERENCES

- American Institute of Accountants (1934). *Audits of Corporate Accounts*, 30-31.
- American Institute of Accountants (1939). *Statements on Auditing Procedure No. 1, Extensions of Auditing Procedure*, 4.
- American Institute of Accountants (1948). *Statements on Auditing Procedure No. 24, Revision in Short-Form Accountants Report or Certificate*, 164.
- AICPA (1965). *Accounting Research Study No. 7*, 413-415.
- AICPA (1976). *Statement on Auditing Standards No. 15, Reports on Comparative Financial Statements*, 3.
- AICPA (1988). *Statement on Auditing Standards No. 58, Reports on Audited Financial Statements*.
- AICPA (1992). *AICPA Professional Standards – Appendix A. Historical Background*.
- Brown, R. (1905). *A History of Accounting and Accountants*. Edinburgh.
- Chatfield, M. (1974). *A History of Accounting Thought*. Dryden Press.
- Chatfield, M. & Vangermeersch R. (1996). *The History of Accounting*, Garland Publishing, Inc.
- Federal Reserve Bulletin (1917). *Uniform Accounting*, 17.
- Federal Reserve Bulletin (1929). *Verification of Financial Statement*, 24.
- O' Reilly, V.M. (1998). *Montgomery's Auditing*, John Wiley & Sons, Inc.
- Ricchiute, D.N. (1992). *Auditing*, SouthWestern Publishing Co.
- United States Steel (1903). *Audit Opinion*, Price Waterhouse.
- Wallace, W.A. (1991). *Auditing*. PWS-Kent Publishing Company.
- Whittington, O.R. & Pany, K. (1995). *Principles of Auditing*, Irwin.
- Taylor, D.H. & Glezen, G.W. (1997) *Auditing*, Wiley & Sons.

THE AUDIT FIRM'S EFFECT ON THE INFORMATIONAL TRADING EXPERIENCED BY THEIR CLIENTS IN THE STOCK MARKET: A STUDY OF AUDIT QUALITY

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ABSTRACT

This paper examines the association between the bid-ask spreads for a company and the auditor that audits that company. Prior research has shown that a portion of the bid-ask spread arises from differences in the information asymmetry among stock market participants. The results of the regression analysis presented in this paper provide evidence that there is a difference in a company's level of information asymmetry based on the Big 6 firm they engage, that most Big 6 firms reduce a company's information asymmetry more than do National and other audit firms, and that National audit firms reduce information asymmetry more than do non-Big 6, non-National firms. Since the purpose of an audit is to reduce information risk, the reduction in information asymmetry associated with the various classes of audit firms is attributed to a higher level of audit quality in that group of audit engagements. These results support the contentions that audit quality within the Big 6 is not homogenous, and that, in general, there are differences in audit quality between the Big 6, National, and other audit firms.

INTRODUCTION

A large prior literature has argued that auditor size is positively associated with audit quality. These studies have used a number of different measures to proxy for audit quality including audit fees (Anderson & Zeghal, 1994; Francis & Simon, 1987), the propensity for litigation (Palmrose, 1988), the earnings response coefficient (Teoh & Wong, 1993), errors in accounting estimates (Petroni & Beasley, 1996), discretionary accruals (Becker et al. , 1998), management forecasts (Davidson & Neu, 1993), and enforcement actions against audit firms (Campbell & Parker, 1992) to provide evidence the Big 6 provide a higher level of audit quality than other audit firms. The underpricing of securities (Clarkson & Simunic, 1994), the percentage of retained ownership (Balvers, McDonald & Miller, 1988), and investment banker fees (Menon & Williams, 1991) in an initial public offering have also been used as proxies for audit quality.

This paper extends previous research in three significant ways. First it re-examines the Big 6 non-Big 6 dichotomy using a more direct measure of audit quality than used in previous research, the client's bid-ask spread. The bid-ask spread, defined as the difference between the ask price and the bid price for a company's stock has been shown to be positively associated with the level of information asymmetry. Since the role of the audit is to reduce information risk (Boynton & Kell, 1996, 36), and higher quality auditors mitigate information risk (Firth & Liao-Tan, 1998),

differences in information asymmetry between companies may result from differences in audit quality.

Second, this paper examines differences in the audit quality of the firms within the Big 6. Prior research has found differences in audit quality within the Big 6 but the results are inconsistent and generally not statistically significant (Davidson & Neu, 1993; Palmrose, 1988; Balvers, McDonald & Miller, 1988).

Third, this paper segments the audit population into three tiers, Big 6, National, and third tier firms. Prior research (Francis, Maydew & Sparks, 1999) has found a difference in the level of audit quality among these three tiers, but the consolidation of the audit firms and an audit firm bankruptcy that has occurred since the time period used in their study provides an incentive to reexamine this association between audit quality and audit firm size.

The remainder of this paper is organized as follows: The next section presents the motivation for the study. The following two sections describe the research method and provide the empirical results. The final section contains the conclusions.

MOTIVATION OF THE STUDY

When the audit market is characterized by significant audit start-up costs, an incumbent auditor has the ability to set future audit fees above the cost of producing audits. DeAngelo (1981) defines this phenomenon as client specific quasi-rents. DeAngelo argues audit quality is dependent on firm size because large audit firms have more to lose, specifically their quasi rents, if they do not report a discovered breach in their clients accounting system. Lennox (1999) provides evidence that large auditors do not provide a higher quality audit to maintain their reputation as DeAngelo hypothesizes, but do so because they are more prone to litigation because of their deep pockets. Regardless of their motivation, it is generally believed large audit firms provide a higher quality audit than smaller audit firms.

Prior research in this area has generally used proxies for audit quality that were indirect in nature or do not address the average audit. Proxies such as audit fees (Francis & Simon, 1987), initial public offerings (Balvers, McDonald & Miller, 1988), and earnings response coefficients (Teoh & Wong, 1993) all measure the perception of audit quality. The evaluator of audit quality in each case indicates the level of audit quality for classes of auditors, but they may have little actual knowledge to support their conclusion. The propensity for litigation (Palmrose, 1988), errors in accounting estimates (Petroni & Beasley, 1996), the examination of audit working papers for audits in a specific industry (Deis & Giroux, 1992), and enforcement actions against audit firms (Campbell & Parker, 1992) relate to only a small portion of audits of a firm and may not be representative of the average audit.

Bid-ask spreads provide a more direct measure of audit quality or a measure that encompasses a broader spectrum of audits than these proxies. In securities markets, market makers protect themselves from investors who possess private information they do not possess by increasing their bid-ask spreads. This information asymmetry is reduced when private information is made public. (Boone, 1998; Greenstein & Sami, 1994; Raman & Tripathy, 1993) A higher quality audit increases the probability that the financial statements accurately reflect the financial position and

results of operations of the entity being audited. The information made public by a higher quality audit that would not be provided by a lower quality audit reduces the amount of private information available about the entity. Since the amount of information about a company at any given point in time is finite, information made public by a higher quality audit reduces the amount of private information available about that company thus reducing information asymmetry among market participants. A reduction in information asymmetry between investors and the market maker will result in lower bid-ask spreads. The bid-ask spread therefore provides a direct measure of the reduction in information asymmetry associated with a higher quality audit. Since the function of an audit is the reduction of information risk, bid-ask spreads provide a more direct measure of audit quality.

Although it is generally believed that larger firms provide a higher quality audit, the level of audit quality within the Big 6 may not be homogeneous. Audit structure (Morris & Nichols, 1988), leadership style (Otley & Pierce, 1995), availability of total firm resources (Sutton, 1993), and industry expertise (Carcello, Hermanson & McGrath, 1992) have been shown to affect the level of audit quality among audit firms. Petroni & Beasley (1996) argue differences in organizational control systems, staff expertise, training programs, and physical facilities may also contribute to the level of audit quality. The firms' client acceptance policies, the level of internal guidance on complex accounting issues, engagement partner rotation policies, and professional staff personnel policies may also affect audit quality. Although each of the factors described above may affect the level of audit quality of a firm, DeAngelo (1981) argues audit firms specialize in different levels of audit quality in response to the heterogeneous demand for quality in the audit market. Differences in audit quality among firms exist because the market demands it. This paper examines the differences in audit quality within the Big 6.

Francis, Maydew, & Sparks (1999) segmented the audit firm population into three tiers, the Big 6, National audit firms, and third tier audit firms. They provide evidence the Big 6 provide a higher level of audit quality than National audit firms and National audit firms provide a higher level of audit quality than do third tier firms. They defined National audit firms as Grant Thornton, Kenneth Levant, Laventhol Horwath, Main Hurdman, McGladrey Pullen, Pannell Kerr Forster, BDO Seidman, and Spicer and Oppenheim. Significant consolidation and a bankruptcy within the National audit firms have redefined this group of firms since the 1988 to 1994 time period used in their study to Grant Thornton, McGladrey Pullen, BDO Seidman, and Richard A. Eisner. This paper will therefore reexamine the differences in the level of audit quality among the Big 6, National audit firms, and third tier audit firms.

RESEARCH METHOD

My analysis regresses bid-ask spreads on dummy variables identifying the audit firms and on variables that proxy for other factors that have been shown in prior research to affect bid-ask spreads. Cross sectional analysis of various audit firm classifications is used to capture differences in bid-ask spreads for these groups.

Bid-ask spread data was obtained from the 1997 Center for Research in Security Prices (CRSP). Other data was obtained from the 1997 Compustat annual and quarterly databases, the

Disclosure database, and the Securities and Exchange Commission EDGAR database. Merging the CRSP, Compustat, and Disclosure databases yielded 8,010 observations. Edits that identified companies without trading in 1997 or that lacked basic information eliminated 1,785 observations. An additional 516 observations were eliminated that did not have the date their 10k was received at the SEC leaving 5,709 observations.

The fifth trading day after the release of the company's fourth quarter earnings announcement or five days after the company's 10k was received at the Securities and Exchange Commission was selected as the observation date. Note that my analysis is designed to measure the level of information asymmetry after the release of earnings or the 10k rather than the change in information resulting from the release of this information. Prior research has shown an increase in the variation of the bid-ask spreads the four days prior to, the day of, and the day after the earnings announcement date (Yohn, 1998). To minimize the impact of this variation in bid-ask spreads on my analysis (to allow all market participants to assimilate the information release) while maximizing the usefulness of the information, the fifth trading day after the release of earnings or the 10k was used in my analysis.

Trading information from CRSP was selected for that day, or if not available, the day the next trade occurred. Two hundred and fifty six observations did not have trading data, 83 observations did not have corresponding financial data from Compustat and Disclosure, and 16 observations were eliminated as outliers for extremely large values (more than three standard deviations from the mean) of variance, volume, and price leaving 5,354 observations. This data and the model presented below were used in another paper by this author which examined the effect of auditor specialization on audit quality.

The dependent variable used in this paper is the percentage bid-ask spread computed as the difference between the high ask price for the day and the low bid for the day divided by the quotient of the sum of the high ask and the low bid divided by two.

The motivation for this paper is to determine if there is a cross sectional difference in the level of information asymmetry between companies audited by different classes of audit firms. The model is specified in various forms using dummy variables to designate Big 6 firms as a group and individually and National audit firms as auditor classifications.

Since this paper focuses on the information asymmetry component of the bid-ask spread, I must control the other two components of the bid-ask spread, the inventory holding cost and the transaction cost. The inventory holding cost results from the market maker maintaining an inventory of stock in order to stand ready to trade at any time. The transaction costs are the costs associated with making a trade.

The larger the variance in returns for a stock, the lower the probability that the market makers can maintain an ask price consistent with the price they paid for their inventory or a bid price to purchase inventory that they believe they can earn a return. The market makers respond to return variances with higher bid-ask spreads in order to earn a profit from their trades. A large volume of trade may offset these effects for it allows the market maker to quickly reverse their market position, reduce their margins on individual transactions, and provide them the opportunity to recover their losses. Consistent with prior research a positive relationship is expected between variance of returns (VARIANCE) and bid-ask spreads (Yohn, 1998; Chung et al, 1995) and a negative relationship is

expected between bid-ask spreads and volume of trade (VOLUME) (Coller & Yohn, 1997; Hamilton, 1991). Finally, the price of the stock (PRICE), a proxy for transaction cost, is expected to be negative consistent with Howe & Lin (1992) and Stoll (1978).

Market makers can manage asymmetric information risk by identifying informational trading. In the absence of informational trading, investors will hold well-diversified portfolios and will tend to trade in proportion to the number of shares outstanding. If investors hold information they believe others do not possess, they will trade in the stocks for which information is held (Stoll, 1978). Turnover, defined as the number of shares traded divided by the number of shares outstanding, is included in the model to identify the impact of informational trading on the bid-ask spread. The inclusion of this variable recognizes that informational trading will continue to exist regardless of whether a company is audited by a specific audit firm or not for there are many factors that cause information asymmetry that are beyond the scope of an audit. To control for other factors affecting information asymmetry found significant in prior research, two additional variables are added to the model. A negative relationship is expected between the number of analysts (NOANAL) and bid-ask spreads (Yohn, 1998; Shores, 1990) and a positive relationship is expected between insider ownership (INSIDER) and bid-ask spreads (Benston & Hagerman, 1974).

Larger entities generally release more information than smaller entities. Economies of scale allow larger companies to have public relations departments, more consumer and business advertising, and investor relations departments that would be cost prohibitive for smaller firms. The release of information would decrease information asymmetry and the bid-ask spread. However, larger companies generally have a more complex capital, organizational, and business structures. These complexities make it harder for the market maker to assimilate the effect of information about a company. Market makers respond to these complexities by increasing their bid-ask spreads. A size variable, the market value of equity (MARVALUE) was used to control for these phenomenon. The relationship between market value of equity and bid-ask spread is uncertain so there is no basis for prediction of a sign.

The final two variables measure the difference in the stock exchanges since the characteristics of firms who trade on the New York Stock Exchange, the American Stock Exchange, and the National Association of Securities Dealers and the characteristics of the exchanges themselves are different (Affleck-Graves, Hegde & Miller, 1994). Dummy variables indicating that a stock is traded on the New York Stock exchange and the American Stock Exchange were added to the model. The differences in the exchanges may be caused by a variety of factors so no there is no basis for the prediction of the sign of the exchange variables, so none is provided.

EMPIRICAL RESULTS

Table 1 provides descriptive statistics for bid-ask spreads and the control variables for Big 6, National, and third tier audit firms. These statistics show that it is necessary to control for items other than audit firm groupings. The variables VOLUME, PRICE, and NOANAL are largest for Big 6 audit firms and larger for National audit firms and VARIANCE and TURNOVER are smallest

for Big 6 audit firms and smaller for National audit firms consistent with the expected signs for the regression model.

Table 1: Sample Statistics						
Variable	Mean: Big 6	National	Third Tier	Median: Big 6	National	Third Tier
SPREAD	1.1995	1.7485	2.3505	0.8671	1.3158	1.9117
VARIANCE	0.0025	0.0056	0.0110	0.0011	0.0026	0.0042
VOLUME*	5.9885	2.1488	1.1004	1.4480	0.6294	0.4475
PRICE	19.5225	8.9921	5.6262	14.0000	5.3750	2.8750
TURNOVER	0.0055	0.0062	0.0075	0.0026	0.0027	0.0029
INSIDER	16.6362	21.0472	19.5918	6.2900	14.8500	9.5050
NOANAL	4.7579	1.7153	0.3604	3.0000	0.0000	0.0000
MARVALUE**	1.5755	0.1715	0.0422	0.1658	0.0270	0.0140
NYSE	0.3355	0.0814	0.0162	0.0000	0.0000	0.0000
AMER	0.0794	0.1458	0.1169	0.0000	0.0000	0.0000
Table 1 (Continued)						
Sample Statistics						
SPREAD	0.0300	0.1401	0.1728	9.3023	9.2417	9.0843
VARIANCE	0.0000	0.0000	0.0000	0.1864	0.1116	0.3351
VOLUME*	0.0009	0.0029	0.0013	417.8803	63.6191	13.8758
PRICE	0.1880	0.1560	0.1250	337.6250	78.1250	57.0000
TURNOVER	0.0001	0.0001	0.0001	0.1719	0.1622	0.2882
INSIDER	0.0000	0.0000	0.0000	99.9900	87.7700	99.9900
NOANAL	0.0000	0.0000	0.0000	45.0000	30.0000	7.0000
MARVALUE**	0.0011	0.0019	0.0003	171.4336	6.5181	1.0930
NYSE	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
AMER	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
N	4,751	295	308			
* In millions ** In Billions						

Table 2 provides the Pearson correlation coefficients for bid-ask spreads and the control variables. Of significance are the correlations between number of analysts and volume (.5792), price (.5555), and market value (.5007) and the correlations between market value and volume (.6437) and price (.4585). Each of these may be an indication of multicollinearity in the estimation of the regression models presented below so tests for multicollinearity were performed. The largest variance inflation factor was 2.17 and the condition index was 9.59. Both are in the acceptable range. These results in conjunction with the significant t-statistics for the regression models presented in Tables 3 to 7 indicate that multicollinearity is not a significant problem in the estimation of the regression models.

CORRELATION COEFFICIENT P-VALUE	SPREAD	BIGSIX	NATIONAL	VARIANCE	VOLUME
BIGSIX	-0.2256 0.0001				
NATIONAL	0.0911 0.0001	-0.6778 0.0001			
VARIANCE	0.4608 0.0001	-0.2041 0.0001	0.0651 0.0001		
VOLUME	-0.0573 0.0001	0.0828 0.0001	-0.0484 0.0004	-0.0499 0.0003	
PRICE	-0.3529 0.0001	0.1999 0.0001	-0.1141 0.0001	-0.2089 0.0001	0.3387 0.0001
TURNOVER	0.2556 0.0001	-0.0369 0.0069	0.0105 0.4428	0.0315 0.0212	0.1676 0.0001
INSIDER	0.1524 0.0001	-0.0527 0.0001	0.0439 0.0013	0.0789 0.0001	-0.0986 0.0001
NOANAL	-0.2292 0.0001	0.1907 0.0001	-0.1023 0.0001	-0.1577 0.0001	0.5792 0.0001
MARVALUE	-0.0975 0.0001	0.0630 0.0001	-0.0405 0.0030	-0.0550 0.0001	0.6437 0.0001
NYSE	-0.3659 0.0001	0.1977 0.0001	-0.1165 0.0001	-0.1677 0.0001	0.0974 0.0001
AMER	-0.0468 0.0006	-0.0585 0.0001	0.0524 0.0001	-0.0085 0.5360	-0.0777 0.0001
CORRELATION COEFFICIENT P-VALUE	PRICE	TURNOVER	INSIDER	NOANAL	MARVALUE
TURNOVER	0.0108 0.4281				
INSIDER	-0.1696 0.0001	-0.0287 0.0356			
NOANAL	0.5555 0.0001	0.0697 0.0001	-0.1566 0.0001		
MARVALUE	0.4585 0.0001	-0.0074 0.5910	-0.0778 0.0001	0.5007 0.0001	
NYSE	0.4235 0.0001	-0.1237 0.0001	-0.2112 0.0001	0.3659 0.0001	0.1886 0.0001
AMER	-0.0968 0.0001	-0.0731 0.0001	0.0172 0.2084	-0.1406 0.0001	-0.0496 0.0003
CORRELATION COEFFICIENT P-VALUE	NYSE				
AMER	-0.2012 0.0001				

I test for differences in bid-ask spreads for companies audited by different auditors or auditor groupings using the following model:

Table 2: Pearson Correlation Coefficients

$$\text{SPREAD} = \beta_0 + \beta_1 \text{AUDITOR} + \beta_2 (\text{VARIANCE}) + \beta_3 (\text{VOLUME}) + \beta_4 (\text{PRICE}) + \beta_5 (\text{TURNOVER}) + \beta_6 (\text{NOANAL}) + \beta_7 (\text{INSIDER}) + \beta_8 (\text{MARVALUE}) + \beta_9 (\text{NYSE}) + \beta_{10} (\text{AMER}) + \epsilon$$

Where

SPREAD is the percentage bid-ask spread defined $(\text{Ask} - \text{Bid}) / ((\text{Ask} + \text{Bid}) / 2)$;
 AUDITOR is a dummy variable indicating a specific audit firm or classification (-);
 VARIANCE is the variance of returns for the current day and the 29 previous trading days (+);
 VOLUME is the number of shares traded for the current day and 29 previous trading days (-);
 PRICE is the price of the stock for the current day (-);
 TURNOVER is quotient obtained by dividing the number of shares traded for the current day by the number of shares outstanding (+);
 ANALYSTS is the number of year-end earnings estimates provided (?);
 INSIDER is the percentage of shares held by insiders (+);
 MARVALUE is the market value of equity (?);
 NYSE is a dummy variable indicating shares are traded on the New York Stock Exchange (?);
 AMER is a dummy variable indicating shares are traded on the American Stock Exchange (?);

Table 3 presents the results of the regression analysis for the Big 6 auditor variable. The coefficients of all of the control variables in the model are significant at a .01 level (most at a .0001 level) except for NOANAL which is significant at a .0197 level. BIGSIX is negative and significant at a .0001 level. These results are consistent with the assumption that Big 6 auditors reduce the level of information asymmetry of their clients more than other audit firms. Thus, based on the relationship described earlier between information asymmetry and audit quality, these results reaffirm the results of previous research that Big 6 auditors provide a higher quality audit than other audit firms.

Table 3: Regression Analysis with Big 6 Auditor Variable

Variable	Expected Sign	Parameter Estimate	White's t-Statistic*	P-Value
INTERCEPT		1.6071	18.7430	0.0001
BIGSIX	-	-0.2531	-4.0669	0.0001
VARIANCE	+	47.6040	4.9032	0.0001
VOLUME	-	-0.0019	-2.4412	0.0073
PRICE	-	-0.0125	-8.0745	0.0001
TURNOVER	+	0.0024	8.7207	0.0001
INSIDER	+	0.0029	4.0917	0.0001
NOANAL	-	-0.0049	-2.0596	0.0197
MARVALUE	?	0.0140	5.6023	0.0001
NYSE	?	-0.4979	-17.4345	0.0001
AMER	?	-0.3939	-8.5554	0.0001
Adjusted R ²	.3893			
N	5,354			

* Model specification tests rejected the hypothesis of homoskedasticity so all t-statistics presented are calculated using White's consistent estimate of the variance covariance matrix.

Table 4, Panel A presents the results of the regression analysis for the individual Big 6 audit firms. The coefficients of all of the control variables in the model are significant at a .01 level except for COOPERS (.0198) and NOANAL (.0214). All of the audit firm variables are negative and significant at a .0001 level except for COOPERS which is negative and significant at a .0198 level. The coefficients of the audit firm variables range in value from -0.3006 for KPMG to a low of -0.1468 for COOPERS. There also appears to be a distinct break between the second lowest coefficient of -0.2371 for DELOITTE and the -0.1468 for COOPERS. The hypothesis tests presented in Table 4, Panel B provide evidence that the reduction in information asymmetry of their clients associated with each of the Big 6 presented in Table 4, Panel B is statistically different with a p-value of .0240. A second test provides no evidence of a difference in the reduction in information asymmetry of their clients between ANDERSEN, DELOITTE, ERNST, KPMG, and PW. A test of the equality of these coefficients presented in Table 4, Panel B has a P-value of .5405. Further hypothesis tests provide evidence of a difference in the reduction in information asymmetry of their clients for COOPERS and ANDERSEN (.0276), DEOLITTE (.0660), ERNST (.0024), KPMG (.0011), and PW (.0085). Based on the association between information asymmetry and audit quality presented earlier, these results provide evidence that there is a difference in the level of audit quality between the Big 6.

Regression Analysis with Big 6 Firm Auditor Variables				
Variable	Expected Sign	Parameter Estimate	White's t-Statistic*	P-Value
INTERCEPT		1.6090	18.7845	0.0001
ANDERSEN	-	-0.2514	-3.7453	0.0001
DELOITTE	-	-0.2371	-3.8465	0.0001
ERNST	-	-0.2879	-4.2959	0.0001
KPMG	-	-0.3006	-4.4764	0.0001
PW	-	-0.2737	-4.1077	0.0001
COOPERS	-	-0.1468	-2.0582	0.0198
VARIANCE	+	47.5539	4.9053	0.0001
VOLUME	-	-0.0019	-2.3950	0.0083
PRICE	-	-0.0125	-8.0321	0.0001
TURNOVER	+	0.0024	8.7435	0.0001
INSIDER	+	0.0029	3.9904	0.0001
NOANAL	-	-0.0048	-2.0269	0.0214
MARVALUE	?	0.0139	5.6045	0.0001
NYSE	?	-0.5022	-17.5000	0.0001
AMER	?	-0.3971	-8.5783	0.0001
Adjusted R ²	.3902			
N	5,354			

Panel B Results of Hypothesis Tests		
Hypothesis Test	Chisq Value*	P-Value
ANDERSEN = COOPERS = DELOITTE = ERNST =KPMG = PW	12.9333	0.0240
ANDERSEN = DELOITTE = ERNST = KPMG = PW	3.1044	0.5405
ANDERSEN = COOPERS	4.8522	0.0276
DELOITTE = COOPERS	3.3790	0.0660
ERNST = COOPERS	9.2381	0.0024
KPMG = COOPERS	10.6494	0.0011
PW = COOPERS	6.9217	0.0085

* Model specification tests rejected the hypothesis of homoskedasticity so all t-statistics and tests of the equality of coefficients presented are calculated using White's consistent estimate of the variance covariance matrix.

Prior research has not found a significant difference in the level of audit quality within the Big 6 (Davidson & Neu, 1993; Palmrose, 1988; Balvers, McDonald & Miller, 1988). Although the lack of significance may be a result of the power of the tests, it is generally believed that the Big 6, on average, provide a homogenous service. Referring to Big 6 audit services, the European Commission in their decision to allow the merger of Coopers & Lybrand and Price Waterhouse specifically state, "the service is homogenous" (Anonymous, 1998).

The difference in the audit quality within the Big 6 presented in this paper is especially interesting because of the time period of the data used in this paper. The audits used in this study were performed in 1997. They predate the merger of Coopers & Lybrand and Price Waterhouse that occurred on July 1, 1998 by only a few months and many of the audits are concurrent with the initial announcement of the merger in September of 1997 and the discussions that preceded it. News stories quote reasons for the merger such as to be competitive in a world market (Miller, 1997), to obtain the specialist skills and resources needed to address and respond to the complexities of our clients, and to meet the assurance demands of regulators (Anonymous, 1997). One potential factor prompting the merger may be that senior people at Coopers & Lybrand recognized an unacceptable level of audit quality being provided by their firm (unacceptable to them) and acted to maintain their long-standing tradition of providing high quality assurance services to their clients. This comment is not meant to portray impending doom or significant litigation in the future. The results of the regression analysis provide evidence Coopers & Lybrand was providing a level of audit quality at or above the National audit firms who have provided quality service to their clients for many years. It merely states that the level of audit quality provided by the firm, at that time, may not have been consistent with their reputation or the level at which the partners of the firm wished to supply.

Table 5, Panel A presents the results of the regression analysis where the audit firm population is segmented into three tiers. All control variables are significant at a .01 level except for NATIONAL and NOANAL that are significant at a .0181 and .0243 level, respectively. BIGSIX is negative and significant at a .0001 level and NATIONAL is negative and significant at a .0181 level. These results are consistent with the assumption that Big 6 and National audit firms reduce the level of information asymmetry of their clients more than third tier audit firms. A comparison

of the coefficients of BIGSIX (-0.3681) and NATIONAL (-0.2283) also provide evidence that the Big 6 reduce information asymmetry of their clients more than do National audit firms. A Chi Squared test of the equality of these coefficients presented in Table 5, Panel B rejects the hypothesis of their equality at a .0549 level of significance. Based on the relationship between information asymmetry and audit quality described earlier, these results provide evidence of three levels of audit quality between the Big 6, National audit firms, and third tier audit firms with the Big 6 having the highest level of audit quality and third tier audit firms having the lowest.

Even though the above analysis does include market value of each company to control for size, one cannot be sure that the coefficient of BIGSIX does not address some effect of size. To evaluate this possibility three additional tests were performed. The first test deleted a sufficient number of observations of firms audited by the Big 6 in order that the average size of the companies in the sample for Big 6 and National audit firms were approximately equal (See Table 6). The coefficient of BIGSIX is negative and significant at a .0015 level. The second test is quite similar except a sufficient number of observations for both Big 6 and National audit firms were deleted until the average size of the companies in the sample for Big 6, National, and third tier audit firms were equal. The coefficient of Big 6 is negative and significant at a .0128 level.

Table 5				
Regression Analysis with Big 6 and National Auditor Variables (N= 5,354; Adjusted R ² = .3904)				
Variable	Expected Sign	Parameter Estimate	White's t-Statistic*	P-Value
INTERCEPT		1.7212	4.9811	0.0001
BIGSIX	-	-0.3681	-4.0330	0.0001
NATIONAL	-	-0.2283	-2.0947	0.0181
VARIANCE	+	47.1863	4.8607	0.0001
VOLUME	-	-0.0019	-2.4151	0.0079
PRICE	-	-0.0125	-8.0801	0.0001
TURNOVER	+	0.0024	8.6204	0.0001
INSIDER	+	0.0030	4.1489	0.0001
NOANAL	-	-0.0047	-1.9719	0.0243
MARVALUE	?	0.0139	5.5809	0.0001
NYSE	?	-0.4973	-17.4073	0.0001
AMER	?	-0.3912	-8.4803	0.0001
Results of Hypothesis Test				
Hypothesis Test			Chisq Value*	P-Value
BIGSIX = NATIONAL			3.6855	0.0549
* Model specification tests rejected the hypothesis of homoskedasticity so all t-statistics and tests of the equality of coefficients presented are calculated using White's consistent estimate of the variance covariance matrix.				

The objective of these tests was to determine if the results of my tests were sustained if the effect of size was minimized. Evidence that this objective was met is provided by the fact that the coefficients of two variables associated with size, MARVALUE and VOLUME are not significant in these regressions and it does not appear that the insignificance of these variables resulted from multicollinearity (The regressions had condition indices of 8.98 and 7.30, respectively). In the estimation of the model that included both BIGSIX and NATIONAL audit variables for these two limited samples, both audit variables were negative and significant, the coefficient of BIGSIX was larger than the coefficient of NATIONAL (more negative), and all other variables except VOLUME and MARVALUE were significant. A comparison of the coefficients of BIGSIX for the full sample and these two limited samples (-0.2531, -0.1940, -0.1419 for the full sample, the mean market value of Big 6 and National audit firm's clients are equal, and the mean market value of Big 6, National, and third tier audit firms clients are equal, respectively) may indicate that the BIGSIX variable is associated with some residual size effects but that its effect is not limited to size.

	Sample Where Big 6 Audit Firm's Observations Were Deleted Until the Mean Market Value or Big 6 and National Audit Firm's Clients were Equal			Sample Where Big 6 and National Audit Firm's Observations Were Deleted Until the Mean Market Value for Big 6, National and Third Tier Audit Firm's Clients were Equal		
Variable / Expected Sign	Parameter Estimate	White's t-Statistic	P-Value	Parameter Estimate	White's t-Statistic*	P-Value
INTERCEPT	1.7031	19.0896	0.0001	1.9732	18.9016	0.0001
BIGSIX (-)	-0.1940	-3.1764	0.0015	-0.1419	-2.2343	0.0128
VARIANCE (+)	44.8170	4.8823	0.0001	39.4034	4.8076	0.0001
VOLUME (-)	-0.0038	-0.6389	0.2615	-0.0127	-0.7828	0.2169
PRICE (-)	-0.0205	-5.4537	0.0001	-0.0486	-8.2483	0.0001
TURNOVER (+)	0.0024	7.4639	0.0001	0.0021	5.6738	0.0001
INSIDER (+)	0.0031	3.9061	0.0001	0.0039	3.4066	0.0007
NOANAL (-)	-0.0287	-5.2712	0.0001	-0.0572	-3.9001	0.0001
MARVALUE (?)	0.0306	0.2909	0.7711	-0.5313	-0.6713	0.5021
NYSE (?)	-0.5200	-15.9079	0.0001	-0.5570	-9.4283	0.0001
AMER (?)	-0.4291	-8.8550	0.0001	-0.4545	-7.5286	0.0001
Adjusted R ²	0.3638	0.3281				
N	4,305	2,746				

* Model specification tests rejected the hypothesis of homoskedasticity so all t-statistics presented are calculated using White's consistent estimate of the variance covariance matrix.

The third test reestimated the model deleting the BIGSIX variable. The coefficients of all variables (not shown) were significant at a .01 level except for NOANAL that was significant at a .0124 level. A comparison of the adjusted R-squared for the full model presented in Table 3 (.3893) and the same model with the BIGSIX variable deleted (.3853) (not shown) provides some evidence that the BIGSIX variable has incremental explanatory power other than size.

The results presented in Table 5 provide evidence that the hypothesis of the equality of the BIGSIX and NATIONAL variables are equal can be rejected at a .0549 level of significance. The results presented in Table 4 provide evidence that there is a difference in the level of audit quality provided by Coopers & Lybrand and the remaining five Big 6 firms. To determine if the difference in the level of audit quality between the remaining five Big 6 and the National audit firms, Table 7, Panel A presents the regression results for the model using a four tier classification of audit firms: Coopers & Lybrand, the other 5 Big 6 audit firms (BIGFIVE), the National audit firms, and the firms referred to as the third tier firms throughout this paper. Tests of the equality of the coefficients (Table 7, Panel B) of BIGFIVE and NATIONAL were rejected at a .0303 level of significance (Chi-squared of 4.6925). Tests of the equality of the coefficients of COOPERS and NATIONAL cannot be rejected at any level (Chi-squared of 0.1740 with a P-value of .6766).

Regression Analysis with Coopers, Other Big 6 Firms, and National Auditor Variables (N=5,354; Adjusted R ² = .3912)				
Variable	Expected Sign	Parameter Estimate	White's t-Statistic*	P-Value
INTERCEPT		1.722785	15.7778	0.0001
BIGFIVE	-	-0.386504	-4.2312	0.0001
COOPERS	-	-0.262215	-2.6860	0.0036
NATIONAL	-	-0.228488	-2.0968	0.0180
VARIANCE	+	47.141408	4.8638	0.0001
VOLUME	-	-0.001924	-2.4437	0.0073
PRICE	-	-0.012497	-8.0631	0.0001
TURNOVER	+	0.002392	8.6325	0.0001
INSIDER	+	0.002929	4.0791	0.0001
NOANAL	-	-0.004547	-1.9176	0.0276
MARVALUE	?	0.013828	5.6150	0.0001
NYSE	?	-0.498713	-17.4577	0.0001
AMER	?	-0.392603	-8.4852	0.0001
Results of Hypothesis Tests				
Hypothesis Test			Chisq Value*	P-Value
BIG5 = COOPERS			9.6610	.0019
BIG5 = NATIONAL			4.6925	.0303
COOPERS = NATIONAL			.1740	.6766
* Model specification tests rejected the hypothesis of homoskedasticity so all t-statistics and tests of the equality of coefficients presented are calculated using White's consistent estimate of the variance covariance matrix.				

CONCLUSION

Prior research has generally characterized the attest services of the Big 6 as a homogenous product. This paper finds a difference in the level of audit quality between the Big 6; specifically it finds a statistically significant difference in the level of audit quality between Coopers & Lybrand and the remaining Big 6 firms. Although the impact of these results may be short lived due to the merger of Price Waterhouse and Coopers & Lybrand, as researchers we must recognize that factors such as the mergers of audit firms, the effects of the audit firm's and the client's changing technology, other factors affecting each firm's audit approach, and general economic factors may change long held beliefs about such things as the association between audit quality and audit firm size. As researchers we must therefore reaffirm or update the results of prior research as time passes with new and better research methods.

Using a more direct measure of audit quality than previous research, the client's bid-ask spread, this paper reaffirms that the Big 6 provide a higher quality audit than other audit firms, provides evidence that the audit quality within the Big 6 is not homogenous, that the Big 6 provide a higher quality audit than National audit firms, and that National audit firms provide a higher quality audit than other audit firms. This paper also develops the bid-ask spread as a viable proxy for audit quality. Bid-ask spreads are a more direct measure of audit quality, are easily obtained from public sources, and are available for a large population. These qualities may allow researchers to examine facets of audit quality not previously possible with the proxies used in prior audit quality research.

To the extent the model captures the information risk associated with an audit, the results of this study provide evidence of differences in the level of audit quality among audit firms. However, as with all studies, omitted factors that explain variations in the information risk associated with a company, factors that affect the audit risk faced by the auditor, and other factors that affect the likelihood of hiring a specific type of auditor can provide alternative explanations for the results. For example, the Big 6 audits all the largest clients representing 20 percent of the sample. This indicates size and client complexity may be associated with the auditor selected. While variables such as market value were added to the model and sensitivity analysis designed to reduce the impact of size was performed to control for such factors, it is not clear they are adequate controls. Interpretation of the results must be also tempered by the recognition these results relate to an average audit. The response of an audit firm to such events as potential bankruptcy, which would have a low occurrence in this sample, may be significantly different among audit firms and may produce significantly different results.

REFERENCES

- Affleck-Graves, J., S. Hegde & P. Miller. (1994). Trading mechanisms and components of the bid-ask spread. *Journal of Finance*, 49 (September): 1471-1488.
- Anderson, T. & D. Zeghal. (1994). The pricing of audit services: Further evidence from the Canadian market. *Accounting and Business Research*, 24 (Summer): 195-207.
- Anonymous. (1997). Coopers and PW to join forces in pounds 8bn merger. *Financial Times* (London) (November 27): 30.
- Anonymous. (1998). Price Waterhouse/Coopers & Lybrand: Merger decisions. *Business Law Europe* (June 10): 5.
- Baber, W. R., K. R. Kumar & T. Verghese. (1995). Client security price reactions to the Laventhol and Horwath bankruptcy. *Journal of Accounting Research*, 33 (Autumn): 385-395.
- Balvers, R. J., B. McDonald & R. E. Miller. (1988). Underpricing of new issues and the choice of auditor as a signal of investment banker reputation. *The Accounting Review*, 63 (October): 605-622.
- Becker, C. L., M. L. DeFond, J. Jiambalvo & K. R. Subramanyam. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15 (Spring): 1-24.
- Benston, G. J. & R. L. Hagerman. (1974). Determinants of bid-asked spreads in the over-the-counter market. *Journal of Financial Economics*, 1 (January/February): 353-364.
- Boone, J. P. (1998). Oil and gas reserve value disclosures and bid-ask spreads. *Journal of Accounting and Public Policy*, 17 (Spring): 55-84
- Boynton, W. C. & W. G. Kell. (1996). *Modern Auditing*. (6th Ed.) New York: John Wiley & Sons, Inc.
- Campbell, D. R. & L. M. Parker. (1992). SEC communications to the independent auditors: An analysis of enforcement actions. *Journal of Accounting and Public Policy*, 11 (Winter): 297-330.
- Carcello, J. V., D. R. Hermanson & N. T. McGrath. (1992). Audit Quality Attributes: The Perceptions of Audit Partners, Preparers and Financial Statement Users. *Auditing: A Journal of Practice and Theory*, 11 (Spring): 1-15.
- Clarkson, P. M. & D. A. Simunic. (1994). The association between audit quality, retained ownership, and firm-specific risk in the U. S. vs. Canadian IPO markets. *Journal of Accounting and Economics*, 17 (January): 207-228.
- Chung, K. H., T. H. McNish, R. A. Wood & D. J. Wyhowski. (1995). Production of information, information asymmetry, and the bid-ask spread: Empirical evidence from analysts' forecasts. *Journal of Banking & Finance*, 19 (September): 1025-1046.
- Coller, M. & T. L. Yohn. (1997). Management forecasts and information asymmetry: An examination of bid-ask spreads. *Journal of Accounting Research*, 17 (Autumn): 181-191.
- Davidson, R. A. & D. Neu. (1993). A note on the association between audit firm size and audit quality. *Contemporary Accounting Research*, 9 (Spring): 479-488.
- DeAngelo, L. E. (1981). Auditor size and audit quality. *Journal of Accounting and Economics*, 3 (December): 183-199.

- Deis, D. R. Jr. & G. A. Giroux. (1992). Determinants of Audit Quality in the Public Sector. *The Accounting Review*, 67 (July): 462-479.
- Firth, M. & C. K. Liao-Tan. (1998). Auditor quality, signaling, and the valuation of initial public offerings. *Journal of Business Finance and Accounting*, 25 (January-March): 145-165.
- Francis, J. R., E. L. Maydew & H. C. Sparks. (1999). The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice & Theory*, 18 (Fall) 17-34.
- Francis, J. R. & D. T. Simon. (1987). A test of audit pricing in the small client segment of the U. S. audit market. *The Accounting Review*, 62 (January): 145-157.
- Greenstein, M. M. & H. Sami. (1994). The impact of the SEC's segment disclosure requirement on bid-ask spreads. *The Accounting Review*, 69 (January): 179-199.
- Hamilton, J. L. (1991). The dealer and market concepts of bid-ask spread: A comparison for NASDAQ stocks. *Journal of Financial Research*, 14 (Summer): 129-139.
- Howe, J. S. & J. Lin. (1992). Dividend policy and the bid-ask spread: An empirical analysis. *Journal of Financial Research*, 15 (Spring): 1-10.
- Lennox, C. S. (1999). Audit quality and auditor size: An evaluation of reputation and deep pockets hypotheses. *Journal of Business Finance & Accounting*, 26 (September/October): 779-805
- Menon, K. & D. D. Williams. (1991). Auditor credibility and initial public offerings. *The Accounting Review*, 66 (April): 313-332.
- Menon, K. & D. D. Williams. (1994). The insurance hypothesis and market prices. *The Accounting Review*, 69 (April): 327-342.
- Miller, T. L. (1997). Coopers, Price merger scheme rocks industry. *Accounting Today* (October 6): 16.
- Morris, M. H. & W. D. Nichols. (1988). Consistency exceptions: Materiality judgments and audit firm structure. *The Accounting Review*, 63 (April): 237-254.
- Otley, D. T. & B. J. Pierce. (1995). The control problem in public accounting firms: An empirical study of the impact of leadership style. *Accounting, Organization and Society*, 20 (July): 405-420.
- Palmrose, Z. V. (1988). An analysis of auditor litigation and audit service quality. *The Accounting Review*, 63 (January): 55-73.
- Petroni, K. & M. Beasley. (1996). Errors in accounting estimates and their relation to audit firm type. *Journal of Accounting Research*, 34 (Spring): 151-171.
- Raman, K. & N. S. Tripathy. (1993). The effect of supplemental reserve-based accounting data on the market microstructure. *Journal of Accounting and Public Policy*, 12 (September): 113-133.
- Shores, D. (1990). The association between interim information and security returns surrounding earnings announcements. *Journal of Accounting Research*, 28 (Spring): 164-181.

- Stoll, H. (1978). The pricing of security dealer services: An empirical study of NASDAQ stocks. *Journal of Finance*, 33 (September): 1153-1172.
- Stoll, H. (1989). Inferring the components of the bid-ask spread: Theory and empirical tests. *Journal of Finance*, 44 (March): 115-134.
- Sutton, S. G. (1993). Toward an understanding of the factors affecting the quality of the audit process. *Decision Sciences*, 23 (Spring): 88-105.
- Teoh, S. H. & T. J. Wong. (1993). Perceived auditor quality and the earnings response coefficient. *The Accounting Review*, 68 (April): 346-366.
- Yohn, T. (1998). Information asymmetry around earnings announcements. *Review of Quantitative Finance and Accounting*, 11 (September): 165-182.

TAX-EXEMPTION AND THE GROWING THREAT TO THE COMMUNITY-NOT-FOR-PROFIT HOSPITAL

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ABSTRACT

Most Americans receive their care at the local community not-for-profit hospital. Historically, the community not-for-profit hospital has been able to avoid federal and state taxes by meeting the ambiguous and subjective charitable purpose standard with relative ease. Continuing revenue shortfalls have prompted local and state authorities to challenge and redefine charitable purpose in both the legislature and the judiciary. A related and recently released Internal Revenue Service Field Service Advice Memorandum concurs, stating that health care organizations must quantify and document the community benefit provided. This more costly definition of community benefit is critical because it comes at a time when hospitals are facing dwindling revenues. This paper examines the development of federal tax-exempt status for not-for-profit hospitals, with specific emphasis on the evolving community benefit standard. The paper also explores state efforts to require hospitals to quantify and demonstrate community benefit. The potential impact on the tax-exempt not for profit community hospital is discussed.

INTRODUCTION

Most Americans receive their medical care at the local community hospital¹. More than eighty percent of community hospitals are organized as not-for-profit organizations (American Hospital Association, 2002). Historically, community not-for-profit hospitals have been funded by charitable contributions and operated for charitable purposes. Charitable purpose and its more recent manifestation, "community benefit," provide the basis for exemption from federal and state taxes. Under section 501(c)(3) of the Internal Revenue Code and similarly modeled state tax codes, an organization may be exempt from taxation by meeting certain requirements. For example, a church will be tax-exempt because it furthers a religious purpose. Similarly, a college will be tax-exempt because it furthers an educational purpose. Surprisingly, however, a hospital will qualify for tax-exempt status only if it meets the requirement to "further certain charitable purposes." While the promotion of health is within the scope of activities for which tax-exemption has been granted, a hospital does not automatically qualify for the exemption merely because its stated purpose is to promote health.

With the development of private insurance in the 1950s and government programs such as Medicare and Medicaid in the 1960s, the importance of philanthropy as a revenue source has declined significantly. Moreover, with the shift to managed care, the development of integrated delivery systems, and a growth in the number of uninsured, the sophisticated community hospital of today bears little resemblance to the community hospital of the 1970s (Uninsured in America,

2000). These changes have precipitated a similar evolution in the definition of the community benefit standard with the identification of "community" and the nature and extent of "benefit" left to the interpretations of Internal Revenue Service, the courts, and state taxing authorities. This evolving definition has generated considerable uncertainty and apprehension in the not-for-profit sector as hospitals contemplate potential challenges to their tax-exempt status.

This paper examines the development of federal tax exemption and the evolution of the community benefit standard. Included is a brief overview of tax-exemption benefits, a review of pertinent IRS regulations, rulings, and memoranda related to the development of the community benefit standard, and an examination of state actions relevant to tax-exemption of community not-for-profit hospitals. The paper concludes with a discussion of the evolving community benefit standard and its implications for the community not-for-profit hospital.

BENEFITS OF TAX EXEMPTION

The benefits of tax-exempt status can be significant (Copeland & Rudney, 1990). In addition to exemption from federal income tax, a variety of state and local benefits are available to tax exempt hospitals, including exemption from state income tax, exemption from state property tax, exemption from state sales tax. In addition to the tax benefits, other advantages of tax-exempt status include eligibility to receive tax-deductible contributions, ability to issue tax-exempt bonds, exemption from federal unemployment taxes, preferred postal rates, special pension benefits, and special treatment under antitrust, securities, labor, bankruptcy and other regulatory laws (Furrow, Greaney, Johnson, Jost & Schwartz, 2000). While these exemptions provide significant financial benefits for tax-exempt hospitals, they represent a significant source of potential revenues for federal, state and local governments.

OVERVIEW OF FEDERAL TAX EXEMPTION AND THE EVOLUTION OF THE COMMUNITY BENEFIT STANDARD

Tax-exemption for hospitals can be traced to English common law and the Elizabethan Statute of Charitable Uses of 1601 (Colombo & Hall, 1992). This statute granted exemptions to hospitals and other "charitable" organizations that promoted the common general welfare (Simon, Jr., 1993). Adoption of the English common law by the American colonies and later the United States incorporated the charitable use doctrine and ensured its place in future in the U.S. legal landscape (Castro, 1995). The foundations for the present tax code were initiated in 1959, when Congress consolidated the various statutes that had previously provided tax exemption to organizations that performed exclusively charitable functions into Internal Revenue Code § 501(c)(3). Code § Section 501(c)(3) exempts entities that are "organized and operated exclusively for religious, charitable, scientific, ... educational purposes, ... or for the prevention of cruelty to children or animals ..." from federal income tax. Though the Code does not expressly define the meaning of "charitable purpose," not-for-profit community hospitals have generally relied upon this ambiguous term as the basis for their tax-exempt status.

In order to qualify for federal tax-exempt status, the entity must meet two threshold qualifications, an "organizational test" and an "operational test." The organizational test requires that a hospital's organizational documents, such as the corporate articles of incorporation and by-laws, limit its activities to tax-exempt purposes. Specifically:

(1)	no part of its net earnings may inure to the benefit of any private shareholder or individual;
(2)	no substantial part of its activities may consist of certain activities aimed at influencing legislation; and
(3)	it may not participate or intervene in any political campaign on behalf of any candidate for public office (Internal Revenue Code, 1986).

The operational test mandates that the organization's resources be devoted to purposes that qualify as exclusively charitable within the meaning of Code § 501(c)(3). An organization will not pass this test if a substantial part of its activities do not further its exempt purposes (Treasury Regulation, 2000a). Though the wording of Code § 501(c)(3) has remained unchanged since its inception, a variety of Internal Revenue Service regulations, administrative rulings and guidelines have defined the concept of community benefit in various ways over the years. In order to understand the current uncertainty and apprehension in the not-for-profit sector, it is useful to examine the pertinent pronouncements in chronological order.

Initial Criteria for Hospital Tax-Exemption: Revenue Ruling 56-185

The first Revenue Ruling stating explicit criteria for hospital tax-exemption was Revenue Ruling 56-185 (1956), which required the hospital:

(1)	to provide care of the sick;
(2)	to an extent commensurate with its financial ability, to provide free or below-cost care to those both sick and poor;
(3)	to permit all qualified physicians to use its facilities; and
(4)	not to benefit monetarily any private shareholder or individual.

Placing the burden for the care of the sick-poor on nonprofit hospitals in return for receipt of tax-exempt status was viewed as an appropriate quid pro quo to compensate for the financial benefits of tax-exempt status. The Internal Revenue Service's decision to grant tax-exemption to hospitals in this fashion was consistent with the philosophical development of the private nonprofit sector in the United States. According to Hall and Colombo (1991), the general belief in the United States was that social justice goals, such as providing uncompensated medical care to the indigent, should be assisted, but not directed, by the government. Revenue Ruling 56-185 was strictly interpreted; hospitals seeking tax-exemption were required to provide and document uncompensated care at a rate in excess of 4% (Bloch, 1995).

Introduction of the Community Benefit Standard: Revenue Ruling 69-545

In 1969 the Internal Revenue Service issued Revenue Ruling 69-545, creating what has since become known as the "community benefit standard" (Hyatt & Hopkins, 2001). In contrast to the narrower emphasis on relief for the poor demanded by Revenue Ruling 56-185, this new ruling mandated that nonprofit hospitals need only serve the general needs of the common welfare, often referred to as "the promotion of health." The new criteria introduced a different analysis for determining whether tax-exempt status should be granted, which included:

(1)	whether the hospital has a governing board composed of civic leaders;
(2)	whether the organization is part of a multi-entity hospital system;
(3)	whether admission to the hospital staff is open to all qualified physicians in the area;
(4)	whether the hospital operates a full-time emergency room open to everyone; and
(5)	whether the hospital provides non-emergency care to everyone in the community able to pay privately or through third parties (Revenue Ruling 69-545, 1969).

The new "promotion of health" standard was welcomed by the not-for-profit hospital sector and, as some commentators suggest, more philosophically compatible with the original intent of the charitable purpose doctrine (Hall & Colombo, 1991). Ironically, despite subsequent changes to the standard, the current Internal Revenue Service manual still relies on the five criteria noted in this 1969 Revenue Ruling.

Lowering the Tax-Exemption Bar: Revenue Ruling 83-157

Revenue Ruling 83-157 (1983) continued the trend away from the provision of uncompensated care, removing the requirement that a not-for-profit hospital operate a full-time emergency room if that service would be "unnecessary and duplicative" of those provided at nearby facilities. Consequently, Revenue Ruling 83-157 made it possible for some nonprofit hospitals to operate within the regulations without rendering services to patients unable to pay the full cost of medical service.

Since the introduction of Revenue Ruling 83-157 in 1983, the health care landscape has changed considerably. Managed care, increased competition, scarcity of capital, problems accessing financial markets, corporate restructuring, for-profit partnerships and complicated joint ventures have changed the way not-for-profits look and act. The resulting sophisticated not-for-profit entities have been criticized for not being sufficiently different from for-profit hospitals to justify their tax advantages.

The Quid Pro Quo Community Benefit Standard: Field Service Advice Memorandum

On March 9, 2001, the Internal Revenue Service disseminated a field service advice memorandum addressing exempt hospitals' compliance with Treasury Regulation 1.501(c)(3)-1(c).

Though field service advice is not authoritative, it does provide a sense of direction for Internal Revenue Service activities. The memorandum states "...a hospital's policies to provide health care services to the indigent are not sufficient to satisfy the charity care requirement of the community benefit standard under the operational test, unless the hospital demonstrates that such policies actually result in the delivery of significant health care services to the indigent." A policy to provide health care services to the indigent is not sufficient to establish that the hospital meets the charity care requirement of the community benefit standard; rather, the hospital must show that it actually provides significant health care services to the indigent. Although there is no dollar amount or percentage specified, the quid pro quo is clearly the documented provision of charity care in return for the granting of tax-exempt status.

The memorandum includes a series of issues to address when documenting the community benefit policies and activities of the hospital. These issues focus on the provision and documentation of charity care as well as the promotion of the program to the community. The memorandum is somewhat of a retrenchment from Revenue Ruling 83-157 and a return to the standards of Revenue Ruling 69-545. Uncompensated care has been substituted for promotion of health as the measure of community benefit, and the emergency room criterion of Revenue Ruling 69-545 that a full-time emergency room open to all, regardless of a person's ability to pay, is reintroduced as strong evidence that a hospital is operating to benefit the community (Bellandi, 2001; Bell, 2001).

STATE ACTIONS

Traditionally, once federal tax exemption had been granted, a hospital automatically received relief from state and local property tax levies (Wood, 2001). Shrinking municipal tax bases and cuts in federal funding have increased pressures on state economies to seek additional sources of revenue. As a result, many states have begun to scrutinize their grants of property tax exemptions to tax-exempt organizations, including hospitals (Hubbard, 1993). With many hospitals located in prime real estate markets, the lucrative tax revenues to be received by abolishing tax exempt status have motivated several states to take aggressive action to refine or even redefine their basis for granting these exemptions in hopes of generating additional revenues. State actions have been fueled by reports indicating that charity care may be lacking (Benko, 2000).

LEGISLATIVE INITIATIVES

Several states have initiated activities aimed at raising revenue from nonprofit hospitals (Hubbard, 1993). In 1993, Texas became the first state to mandate a minimum level of charity care for nonprofit hospitals that want to retain their tax-exempt status (Carson, 1993). The law requires hospitals to develop a community benefits plan, which must include a "community-wide assessment of local health care needs, and a method to evaluate achievement of the goals" (Texas Health & Safety Code, 2001). While Texas providers may choose from several alternative standards, most have opted for the standard that requires the hospital to provide charity care and community benefits in a combined amount equal to at least five percent of the hospital's net patient revenue. By

specifying a percentage of charity care that must be provided, Texas has provided clarity to the community benefit standard.

In New York, a detailed study was commissioned in 1993 by the Governor's Panel on Real Property Tax Exemption and Classifications Issues to explore real property tax exemptions, their impact on local governments and their effectiveness in achieving statewide policy objectives" (Governor's Panel, 1993). The Panel Report noted that the primary motivation for re-examining the state's property tax exemption was the critical fiscal situation then facing many of the State's local governments due to increased demands and decreased resources available.

The City of Boston estimated that imposing property taxes on its exempt institutions would generate \$10 million annually from hospitals alone (Moccia, 1993). Accordingly, in 1993, the Massachusetts legislature debated a bill that would allow many of its municipalities to levy a variable rate property tax against nonprofit hospitals ranging from \$5 to \$40 per \$1000 of assessed value (Moccia, 1993).

Although Tennessee consented to early expiration of a law that placed a service tax on hospitals, hospitals, however, had to agree to support a proposal to replace Medicaid with a state medical insurance program. Since the program brought 1.5 million additional citizens into the states' health care systems, the hospitals, in effect, voluntarily assumed a higher charitable burden in return for continued exemption from taxation (Blumstein, 1993).

The major flaw with the aggressive stance taken by states is that some of the legislative and judicial decisions ignore tax law precedent, state judicial precedent, and legislative history. The reactionary redefinition of a "charitable objective" in order to increase revenues to state and local governments is viewed by hospitals as inequitable because it arbitrarily places a burden on community not-for-profit hospitals that is inconsistent with the historical foundations for tax-exempt status.

THE COURTS

In addition to legislative initiatives, several state courts, led by Utah and Pennsylvania, have created more stringent standards by which to measure whether a hospital is engaging in activity that justifies favorable tax treatment. *Utah County v. Intermountain Health Care Inc.*, 709 P.2d 265 (Utah 1985); *Hospital Utilization Project v. Commonwealth*, 487 A.2d 1306 (Pa. 1985).

The seminal hospital tax-exemption case is *Utah County v. Intermountain Health Care, Inc.* (1985). This case challenged the Utah Supreme Court to define community benefit. The court held that a nonprofit hospital organization that owned for-profit subsidiaries had to pay property taxes. Intermountain Health Care (IHC) was a nonprofit corporation that owned or operated twenty-one hospitals throughout Utah. Utah County challenged IHC tax exemption from ad valorem property taxes. Following the Utah Supreme Court's decision in Intermountain, Utah voters in 1986 rejected a constitutional amendment to bar state taxation of hospitals. However, the Utah Tax Commission subsequently issued guidelines governing the standards of tax exemption of hospitals (Furrow, et al., 2000).

In *Hospital Utilization Project v. Commonwealth* (1985), the Pennsylvania Supreme Court addressed the property tax exemption issue by creating a standard to determine whether a hospital

system is a "purely public charity" and, accordingly, deserving of state property tax relief. Under the Pennsylvania decision, the five element test that a hospital must meet includes:

(1)	advance a charitable purpose;
(2)	donate or render gratuitously a substantial portion of its services;
(3)	benefit a substantial and indefinite class of persons who are legitimate subjects of charity;
(4)	relieve government of some of its [health care] burden; and
(5)	operate entirely free from private motive."

The court then applied the criteria to the Hospital Utilization Project, and held that it did not meet the prescribed standard. Thus, the standard developed by the court puts a heavy emphasis on relief for the poor as a prerequisite for the receipt or continuation of exempt status.

Other states have followed the Utah and Pennsylvania examples. In *Geisinger Health Plan v. Commissioner of Internal Revenue* (1993). *Geisinger Health Plan*, formed as a non-profit corporation, cited health promotion as their charitable purpose. (Though *Geisinger* is a health plan and not a not-for-profit hospital, the analysis proposed by the Pennsylvania court is the same test that a not-for-profit hospital would face.) The Third Circuit Court of Appeals ruled that "more than promoting health is required." The court said that "a flexible community benefit test" must be met and that "indicia of charity in the form of serving the public and providing some services free of charge" are required.

States feeling the pressures of revenue shortfalls have been inclined to carefully scrutinize the tax-exempt status of hospitals. By tying the exemption to the provision of uncompensated care, the state benefits by (1) having the hospital provide more uncompensated care, thus relieving the state from the burden, or (2) revoking the tax-exemption and receiving additional tax dollars.

CONCLUSION

With no operational definition of community benefit, not-for-profit hospitals have historically been subject to the vagaries of interpretations of the Internal Revenue Code and state laws. From an "uncompensated care" requirement in the 1950s, to a minimalist "promotion of health" standard in the 1980s, to the reprise of the "uncompensated care" requirement in the 2000s, the community benefit standard has experienced considerable volatility. With some states explicitly identifying the dollar amount of the "community benefit," it may not be long before the Internal Revenue Service adopts a similar policy. With the most recent field service advice memorandum, a threshold uncompensated care requirement may soon be a reality. Though an identifiable level of uncompensated care may remove the uncertainty in determining what constitutes community benefit, troubling questions remain. Do the mandated uncompensated care requirements benefit the community or under-funded federal and state health programs? Should the provision of uncompensated care be the only means to satisfy the community benefit standard? Other tax-exempt

entities are organized for religious and educational purposes under the Internal Revenue Code. Should there be corresponding religious and educational benefit standards? Should other community organizations organized as not-for-profits currently enjoying the benefits of tax-exemption be required to provide a "measurable" community benefit?

The not-for-profit hospital is an essential component of the U.S. health care system. Like federal and state governments, hospitals face growing financial pressures. In the short-run, federal and state governments may be able to require not-for-profit community hospitals to provide additional charity care. However, with the large number of hospital closures and decreased hospital margins, the effectiveness of this strategy is limited and a longer-run solution is necessary. In developing such a solution, it will be necessary for the federal government, state government, and the community not-for-profit hospital sector to identify and evaluate the costs and benefits of the tax-exemption-community benefit quid pro quo.

ENDNOTES

- ¹ The American Hospital Association defines community hospital as all nonfederal, short-term general, and other special hospitals. Other special hospitals include obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; and other individually described specialty services. Community hospitals include academic medical centers or other teaching hospitals if they are nonfederal short-term hospitals. Excluded are hospitals not accessible by the general public, such as prison hospitals or college infirmaries.

REFERENCES

- American Hospital Association Chart Book* (2002 Edition). Chicago, IL: American Hospital Association.
- Bell, C.W. (2001). Give them a firm embrace: Hospitals should take up new tax-exempt guidelines. *Modern Healthcare*, 31(13), 32.
- Bellandi, D. (2001). Walking the walk; The IRS seeks proof of charity care at not-for-profits. *Modern Healthcare*, 31(12), 4-5.
- Benko, L.N. (2000). Flunking on charity care, *Modern Healthcare*, 30(2), 20.
- Bloch, M.G. (1995). Health policy below the waterline: Medical care and charitable exemption. *Minnesota Law Review*, 80, 299-405.
- Blumstein, A. (1993). Tennessee: Lawmakers reach hospital services tax compromise. *Exempt Organization Tax Review*, 8, 458.
- Carson, M.L. (1993). Texas statute mandates minimum level of charitable care for tax-exempt hospitals. *Exempt Organization Tax Review*, 8, 498.
- Castro, A.I. (1995). Overview of the tax treatment of nonprofit hospitals and their for-profit subsidiaries: A short-sighted view could be very bad medicine. *Pace Law Review*, 15, 501-538.
- Colombo, J.D. & M.A. Hall (1992). The future of tax exemption for nonprofit hospitals and other health care providers. *Health Matrix: Journal of Law-Medicine*, 2, 1-34.
- Copeland, J. & G. Rudney (1990). Federal tax subsidies for not-for-profit hospitals. *Tax Notes*, 46(March 26), 1559-1575.
- Furrow, B.R., T.L. Greaney, S.H. Johnson, T.S. Jost & R.L. Schwartz (2000). *Health law* (Second Edition). Belmont, CA: West Wadsworth.
- Geisinger Health Plan v. Commissioner 985 F.2d 1210 (3rd Cir. 1993).
- Governor's Panel on Real Property Tax Exemption and Classification Issues, Interim Report 1, Albany, N.Y. (Dec. 1993).
- Hall, M.A. & J.D. Colombo (1991). The charitable status of nonprofit hospitals: Toward a donative theory of tax exemption. *Washington Law Review*, 66, 307-411.
- Hospital Utilization Project v. Commonwealth, 487 A.2d 1306 (Pa. 1985)
- Hubbard, C. (1993). State, local governments eliminating exemptions for, increasing audits of nonprofits. *Exempt Organization Tax Review*, 7, 695.
- Hyatt, T.K. & B.R. Hopkins (2001). *The law of tax-exempt healthcare organizations* (Second Edition). New York: John Wiley & Sons.
- Internal Revenue Code of 1986, § 501(c)(3), 26 U.S.C. § 501(c)(3) (1986).

- Internal Revenue Service, Field Service Advice Memorandum, exempt hospitals compliance with Treas. Reg. 1.501(c)(3)-1 (c), March 9, 2001.
- Moccia, T. (1993). Massachusetts: Legislature considers tax on nonprofit hospitals. *Exempt Organization Tax Review*, 8, 455-456.
- Rev. Rul. 56-185, 1956-1 C.B. 202 (1956).
- Rev. Rul. 69-545, 1969-2 C.B. 117 (1969).
- Rev. Rul. 83-157, 1983-2 C.B. 94 (1983).
- Simon, G.J., Jr. (1993). Non-profit hospital tax exemptions: Where did they come from and where are they going?. *Duquesne Law Review*, 31, 343-360.
- Texas Health & Safety Code Annotated, § 311.043-046 (2001).
- Treas. Reg. §1.501(c)(3)-1(b)(1)(i) (2000).
- Uninsured in America: A chart book* (2000). Chicago, IL: American Hospital Association.
- Utah County v. Intermountain Health Care Inc., 709 P.2d 265 (Utah 1985).
- Wood, K. (2001). Legislatively-mandated charity care for nonprofit hospitals: Does government intervention make any difference. *Review of Litigation*, 20, 709-742.

THE REAL STORY ON CONTROL SELF-ASSESSMENT

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ABSTRACT

Control Self Assessment (CSA) has been evolving in the United State since the early 1990s, and today, more and more internal auditors are becoming CSA certified. The five components of internal control published by the Committee of Sponsoring Organizations (COSO) and the primary internal control objectives set forth in the IIA's Standards for the Professional Practice of Internal Auditing essentially encompass the same broad internal control objectives and recommend that each organization design its own system of internal control to meet the needs of the organization. CSA is a powerful tool that can be used to assess control effectiveness as well as business processes within organizations. Therefore, CSA techniques are being implemented by many companies world wide.

This article reports the results of a survey developed by the authors and sent to internal audit professionals world wide via www.gain2.org, a website maintained by the IIA for gathering information from companies that is of interest to internal auditors. Responses were received from 145 companies. The results of the survey will be of interest to management and internal auditors who are already using CSA and those who are planning to implement it sometime in the future.

CSA BACKGROUND

The CSA concept was developed in Canada in the late 1980s but did not really come of age in the United States until the mid 1990s when companies started considering it as one of the major audit strategies adding significant value to the audit function. The IIA began sponsoring an annual CSA Users' Conference in 1993 and established the CSA Center to offer guidance and training in CSA in 1997. A CSA Qualification was initiated in 1997 and by 1999, the Certification in CSA was made available.

According to the Institute of Internal Auditors, Control Self Assessment (CSA) is a process through which internal control effectiveness is examined and assessed. The objective is to provide reasonable assurance that all business objectives will be met. Since it is management's responsibility to implement a satisfactory system of internal control, a properly implemented CSA program is a powerful management tool. The board of directors and officers of a corporation have the responsibility of providing assurance to the company's stakeholders by monitoring the organization's activities. CSA allows management and/or the internal auditors, along with the operating staff, to

join forces to produce an assessment of an operation, process or control thus supporting external reporting of the effectiveness of internal controls.

With CSA, the evaluation of risks and controls in place to meet objectives is actually done by personnel responsible for doing the work; thus, causing a shift in some responsibilities related to internal controls. Table 1 compares the assignment of responsibilities under the traditional audit approach to the CSA approach. With CSA, those responsible for controls (management) and those who know the most about how the business functions (the work teams) evaluate risks and controls. Often the report is compiled during the workshop and issued directly by the work team. This reflects a big shift in responsibilities from the traditional approach where internal audit shoulders the responsibility for evaluating and assessing the adequacy of controls and reporting to management.

	Traditional	CSA
Responsibilities	Approach	Approach
Setting business objectives	Management	Management
Assessing risks	Management	Management
Adequacy of internal controls	Management	Management
Evaluating risks and controls	Auditors	Work teams
Reporting	Auditors	Work teams
Validate evaluation of risks and controls	Auditors	Auditors
Objectives used	Audit's	Management's

Source: Hubbard 2000, p.5

SURVEY

Since CSA has been used in the United States for approximately seven years, the authors surveyed internal auditors to determine the extent of its use, primary methods employed, outcomes and use of results. A survey questionnaire was developed after an extensive review of related literature. With the cooperation of the Institute of Internal Auditors, the survey was posted on the Global Auditing Information Network at www.gain2.org. The website was established by the IIA and is used by chief audit executives to gather information important to the audit function. After a draft of the survey was posted as "under construction," Dell Computer contacted the authors via the IIA and asked to underwrite the survey in return for obtaining the responses for their internal use. There were 145 responses primarily from the United States but included a number of companies from foreign countries. Demographic statistics of the responding companies are presented in Table 2.

DEMOGRAPHIC STATISTICS

Almost 67% of the respondents were from the United States, a little over 6% were from Canada, over 4% were from Great Britain, almost 3% were from Australia and a little over 15% were from companies from around the globe. Less than five percent of the respondents did not indicate their country of origin. The manufacturing industry comprised the largest group of respondents, 24%; while the insurance, utility and banking/finance industries checked in at about ten percent each. Over seven percent each came from the governmental sector and transportation industry while five percent each represented communication, healthcare and service entities. The remaining 13.6% represented agriculture, chemical, high tech computer, education, petroleum and retail establishments.

Table 2: Demographic Statistics

Characteristic	Frequency	Percent
Country		
USA	97	66.9
Canada	9	6.2
Great Britain	6	4.1
Australia	4	2.8
Other	22	5.4
Not Given	7	4.6
Industry		
Manufacturing	34	24.3
Insurance	15	10.7
Utility	15	10.7
Banking & Finance	14	10.0
Government	11	7.9
Transportation	10	7.1
Communications	8	5.7
Healthcare	7	5.0
Service	7	5.0
Other	19	13.6
Company Size (By Number of Employees)		
Under 500	10	7.0
501 - 5K	42	29.6
5K - 50K	67	47.2
50K +	23	16.2
Annual Revenues		
Under \$100 Million	5	3.5
\$100 Million - \$1 Billion	32	22.7
\$1 Billion - \$10 Billion	67	47.5
\$30 Billion +	12	8.5
Multi-National		
Yes	86	59.3
No	59	40.7
Publicly Traded		
Yes	84	57.9
No	61	42.1

Company size varied, with 7% of the firms having less than five hundred full-time employees and 16% having more than fifty thousand. The revenues of the firms are approximately normally distributed, with 3% having less than \$100 million, 47% having between \$1 and \$10 billion, and 8% having more than \$30 billion in annual revenues. The majority of the respondents, 59%, were from multi-national companies. Fifty-eight percent of the firms surveyed are SEC companies.

CSA TECHNIQUES

In the Professional Practices Pamphlet 98-2, A Perspective on Control Self-Assessment, three major approaches to CSA are identified: questionnaires/surveys, management produced analysis and facilitated team meetings or workshops. Businesses often approach internal auditing differently; therefore, they implement CSA in various ways. The most important factors in determining whether CSA implementation will be successful are making sure that the approach is appropriate for the organization, understood by employees and supported by management.

The survey/questionnaire approach was used by 30.9% of the firms responding while 45.7% of the firms used the workshop approach to implementing CSA. Questionnaires are often considered the "safer" of the two approaches in companies where employees do not feel safe participating in a team workshop or where the corporate environment is not conducive to the types of responses that may be brought up in a workshop setting. Questionnaires, however, do not promote creative thinking and may hamper the development of ideas to improve the control environment. When questionnaires are used, there is no opportunity to clarify answers and probe more deeply into critical areas. If the questionnaire is not constructed properly or misunderstood, it may lead employees to give biased responses or ones anticipated by the survey developer. Twenty three percent of the respondents indicated using other approaches or a combination of questionnaires and workshops. Surveys are used to evaluate financial controls while workshops are used for risk identification, assessment and action planning. It should be noted that questionnaires offer the advantages of obtaining more coverage, requiring less time from the participants, providing anonymous responses and not requiring facilitation skills and meeting coordination. These results support the data compiled by the IIA in an earlier study.

As indicated above, the workshop approach is used more frequently than questionnaires. It works well in a corporate culture where management supports open and candid responses from the participants. Workshops are led by a facilitator and normally last for several hours. The facilitator is often an internal auditor who understands the control and risk objectives of the organization and is trained in facilitation techniques. Among those surveyed, the majority, 76%, responded as not having anyone on staff currently certified in CSA. An even number of professionals, 12% each, claim either to be certified or working toward certification. Respondents were asked whether or not any staff member had attended a Facilitator Workshop. The majority, 55.2%, reported that one or more staff members attended a workshop. Control Self Assessment survey results are in Table 3.

Table 3: Control Self-Assessment Survey Results		
Characteristic	Frequency	Percent
CSA Techniques		
Survey	29	30.9
Workshop	43	45.7
Other	22	23.4
Certified CSA Staff Person		
Yes	14	11.9
No	90	76.3
Working on Certification	14	11.9
Attended Facilitator Workshop		
Yes	64	55.2
No	52	44.8
Usage		
Use CSA	55	38.5
Currently Implemented	22	22.4
Decided Against	35	24.5
Quit Using	7	4.9
Never Considered	14	9.8
Requirements		
Yes	27	21.1
No	101	78.9
Years Used		
Less than 1 Year	29	31.5
1 to 2 Years	19	20.7
3 to 5 Years	35	38.0
6 or more Years	9	9.8
Team Selection		
Volunteering	39	42.9
Appointments	41	45.1
Election	1	1.1
Other	24	26.4
CSA Training		
Outside Seminars	14	14.9
In House Seminars	65	69.1
Other	36	38.3
Follow Up		
Yes	73	84.9
No	13	15.1
Shared Results		
Audit & Senior Mgmt.	63	82.9
Audit Only	3	3.9
Senior Mgmt. Only	1	1.3
Not Shared	9	11.8
Levels where CSA results used		
Department	62	74.7
Branch	26	31.3
Region	31	37.3
Office Headquarters	47	56.6
Change Implementation		
Less than 6 Months	41	51.3
6 Months to 1 Year	33	41.3
Greater than 1 Year	6	7.5

A Perspective on Control Self-Assessment covers four major types of CSA workshops:

◆	Objective-based
◆	Risk-based
◆	Control-based
◆	Process-based

Table 4 identifies the workshop type and the percent of respondents reporting the use of each type.

Workshop Type	Percentage
Control-based	93.5
Risk-based	86.0
Processed-based	79.6
Objective-based	57.0

Companies use the workshop approach most frequently to assess controls, risks and processes, and only slightly more than half use it to assess objectives.

In addition to the use of questionnaires, workshops or combination of the two techniques, a wide range of other methods was identified by survey participants including the use of hands-on implementation approaches, anonymous balloting software and other equipment allowing employees to identify areas where risks may be higher or controls might be weak - without having their identities exposed. The most detailed approach listed was the use of a matrix developed for each process that identifies risks inherent in the processes, mitigating controls established to manage the risks, exposures in those risks, and established controls.

CSA USAGE

According to survey participants, 60.9% of the companies are currently using CSA or planning to implement it during the next twelve months. Less than five percent of the companies abandoned the use of CSA and another 25% decided against its use. The lack of management support and a corporate culture that is not conducive to the use of CSA were the two primary reasons given for deciding against its use. Only 21% of the companies require the use of CSA. When asked how long the company had been using CSA, 38%, the largest percentage, responded they had been using it for three to five years, which indicates they feel the benefits derived outweigh the costs and the method is working well within their company's culture.

TEAM SELECTION

Selecting an appropriate team to implement and conduct control self-assessment is vital to its success. Employees must understand the CSA process, be knowledgeable about the areas being studied and be committed to working for overall improvement. Participants must be capable of looking at objectives, controls, etc. objectively and of thinking critically. In addition to understanding the training that takes place for the CSA leadership, it is important to understand the methods by which employees participating in control self-assessment are chosen and trained.

More than half of the professionals responded that their teams either are appointed or not needed due to the fact that the entire organization is involved in the CSA process. In the majority of cases where a CSA team is not established, the internal auditing department steps in to administer the program. For cases involving the selection of a team, appointments are often made based on the individuals' knowledge base of controls and risks, their enthusiasm for the program, and consultations with management and the internal auditing department. A large percentage, 42.9%, form CSA teams by soliciting volunteers, which may be the best option for firms with a small labor force. In 68% of the firms, teams consist of only two to five members. Teams consisting of six to eight members make up 19% of the respondents, while only 14% have teams consisting of more than nine members. None of the firms surveyed employ a CSA team of greater than twenty individuals. Once a team has been formed, it must be trained to properly carry out its function.

TEAM TRAINING

The methods employed to train management and employees on how to use CSA vary greatly. In-house seminars are used by 69.1% of the firms, while 14.9% of the firms send their team members to seminars outside the organization. In addition to these methods, and sometimes replacing them, 38.3% of the firms indicate they implement other methods to educate their team members. Of these educational approaches, the majority involves informal training, either one-on-one or as a group, performed by the internal auditing department. Other common methods are the use of workshops, Internet, and company Intranets.

RESULT USES

The success or failure of a control self-assessment implementation can center on how a firm uses the results from the process. Therefore, the firm must place a heavy emphasis on who is responsible for the CSA results and how those results are used within the firm.

Since almost 85% of the firms responded that they have some type of follow-up on the results of CSA, choosing the appropriate person/team/department to be responsible for the findings is imperative. In almost all cases, the internal audit department is chosen to serve this function. Management is also heavily involved, as is evidenced by the cooperation between management and the internal auditing department in sharing CSA results in 82.9% of the firms surveyed. If a company does not plan to follow-up on the results, the cost-benefit relationship will surely reverse.

Results of control self-assessment are used within the organization at various levels. The

majority of firms use the results either at the department level or in company headquarters, or both. Only about one-third of the firms responding claim to use the results on a branch level, with an approximately equal number using them at a regional level. The results are used to perform a number of different functions which include: developing action plans, developing a set of corrective actions, developing or revising management objectives and improving communication channels within the organization. Additional functions include: increasing staff efficiency, developing or revising written standards to measure the achievement of desired outcomes, and improving the communication of desired outcomes and their related policies and procedures. The internal auditing department often uses the results in performing their risk and control functions. Once the results are used, management and the auditors expect changes to occur.

Changes took less than six months to occur in just over half of the firms surveyed. Time frames spanning from six months to a year were experienced by 41.3% of the firms, and only 7.5% of the firms had to wait for more than one year to implement changes. Some of the changes experienced as a result of CSA are: improved internal controls, improved processes, revised organizational strategies, elimination of duplicate work, increased awareness of controls, increased involvement of upper management, a greater focus on goal setting, and a more uniform application of company policies.

CONCLUSION

This paper examined the results of control self-assessment implementation. The results indicate companies are similar in their uses of CSA, although differences exist. Of major importance in implementing CSA, is cooperation from the internal auditing department and management, as well as all other employees who will be involved in the process. Several approaches, or combinations of approaches, may be used in the implementation of CSA; however, most companies use either a survey or workshop-based approach. Despite the method used or the time involved in implementing the program, CSA is still a developing process used to redirect the responsibility of risks and controls in a company. These responsibilities are no longer under complete ownership of the internal auditing department, but rather they are more actively shared with line management and firm employees. CSA forces all employees involved in the process to take an active role in determining risks and controls and in developing action plans to help the company meet their goals based on the self-assessment results. The number of companies currently using, or recently implementing, CSA creates a demand for certified CSA personnel. This demand is only partially being met by the small number who are certified or working toward certification.

REFERENCES

- Baker, L. L. & R. D. Graham (1996). Control self-assessment. *The Internal Auditor*, 53(2), 52-57.
- Chapman, C. (1996). The CIA program moves toward 'greater globalism.' *The Internal Auditor*, 53(6), 8-11.
- Figg, J. (1999). The power of CSA. *The Internal Auditor*, 56(4), 28-31, 33-35.
- Fritsch, K. P. (1996). A revolution in our midst? *The Internal Auditor*, 53(3), 85-86.
- Graves, S., T. Marsh & B. Ahmed (2001). Control Self-Assessment Questionnaire.
- Hubbard, L. (2000). *Control self-assessment: a practical guide*. Altamonte Springs, FL: The Institute of Internal Auditors.
- Institute of Internal Auditors (1996). Control self-assessment – 'here to stay.' *The Internal Auditor*, 53(6), 9.
- Institute of Internal Auditors (2001). *Management gains from control self-assessment: The IIA's chapter presentation series: progress through sharing*. Altamonte Springs, FL: The Institute of Internal Auditors.

THE USEFULNESS OF RESERVE RECOGNITION ACCOUNTING (RRA) INFORMATION IN FINANCIAL ANALYSTS' EARNINGS FORECASTS

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ABSTRACT

This study examined the usefulness of RRA information in financial analysts' earnings forecasts using two primary qualities of accounting information recommended in SFAC 2; i.e., relevance and reliability. The relevance was measured by the accuracy, revision, and timeliness of financial analysts' earnings forecasts, while the reliability by dispersion of analysts' earnings forecasts. Using the I/B/E/S monthly earnings forecast data, we examined the behavior of these forecast variables for the experimental firms vis-à-vis the control firms matched by the number of financial analysts.

The results showed that forecast accuracy was improved with RRA information release, and both forecast revision and dispersion among analysts increased during disclosure period. We found that the analysts began responding to RRA information during the month of disclosure, which may suggest that financial analysts utilized the RRA information on a timely fashion.

In short, the RRA information passed the relevance criterion, but failed to pass the reliability criterion of usefulness. This implies that RRA information is useful but noisy in analysts' earnings forecasts. This is consistent with the statement in SFAC 2 that some trade-off may exist between the degree of relevance and reliability of accounting information.

INTRODUCTION

Due to the requirements initially by Accounting Series Release No. 253 (ASR 253) and later by Statement of Financial Accounting Standard number 69 (SFAS 69), oil and gas firms have been disclosing reserve data based on present value of estimated future cash flows from proven reserves using so-called Reserve Recognition Accounting (RRA). From the beginning, there have been considerable controversies about the usefulness of RRA information, because of substantial uncertainty involved in the measurement of RRA information. So far, many studies have been conducted on the usefulness of RRA information in different contexts with different findings. Such studies as Bell (1983), Ghicas et. al. (1989) and Deakin et. al. (1982, p.69) reported supporting evidence for the usefulness of RRA information. Bell (1983) examined this issue by testing market reactions to the release of RRA information. He found a positive stock price reaction to the initial disclosure of this information. Ghicas et. al. (1989) examined whether publicly available information sources including book value data, RRA data, and analysts' appraisals are useful in determining the

selling price of those oil and gas firms that have been acquired by other firms. Their results indicate that RRA data provide incremental information over analysts' appraisals in determining acquisition values if RRA data are the more recent information, while RRA does not do so if the appraisals are the more recent information. Based on the responses from 190 financial analysts surveyed, Deakin et. al. (1982, p.69) concluded that "It appears that some of the reported variables required by the SEC's methodology are perceived to be useful by financial analysts with expertise in the oil and gas industry". In his investigation into potential explanations for the puzzlingly weak value relevance of RRA information, Boone (2002) found that (1) measurement error in the RRA information is on average less than the measurement error in the historical cost information; (2) RRA information explains significantly more across-firm and across-time variation in stock prices than do the historical cost information; and (3) model misspecification, rather than measurement error or time-period idiosyncrasy, most likely explains the weak value relevance of RRA information in prior studies.

On the contrary, other studies like Dharan (1984) and Avarad (1982) provided opposing evidence against this information usefulness issue. Dharan (1984) examined whether the disclosed reserve values can be obtainable from a transformation of other concurrently available non-RRA information. The association between the estimates from the expectation models based on non-RRA data and reserve values from RRA disclosure is used to draw inferences on the information content of RRA signals. He found a strong association, which implies potentially low incremental usefulness of RRA information. Based on the interview of 25 financial analysts, Avarad (1982, p.74) concluded, "There is almost complete agreement that the measure of value currently required by the SEC under RRA is neither realistic nor meaningful".

On the other hand, studies like Magliolo (1986), Harris ET. al. (1987), and Doran et. al. (1988), and Clinch et. al. (1992) have demonstrated rather weak evidence for the usefulness of RRA information. Magliolo (1986) investigated the association of RRA data with the market values of the firm's oil and gas operations derived from a theoretical valuation model. While his results generally indicate a strong association, the relationship was not as predicted by the valuation model. He suggested model mis-specification and measurement errors in RRA data as potential reasons for the results. In their examination on whether various RRA-based measures have incremental information relative to historical cost earnings measures in explaining cross-sectional differences in firm security returns, Doran et. al. (1988) reported that historical cost earnings as well as RRA measures contain information relevant to valuing oil and gas firms' securities for the sample period 1979-1981, while these results deteriorate for the sample period 1982-1984 where RRA measures are constructed using SFAS No. 69 data. Harris et. al. (1987) investigated the explanatory power of various measures (i.e. historical cost and RRA measures) that explain the value of a firm's oil and gas properties. Their results suggest that the historical cost measure (the book value) dominate the supplementary RRA measure in explaining the value of oil and gas properties, even though the RRA measure achieves some statistical significance. In their study on the value-relevance of RRA information, given a benchmark estimate of reserves based on firms' current oil production level, Clinch et. al. (1992) reported that RRA disclosures are not incrementally informative for many firms in determining security prices, given production information. Their results indicate that market participants rely on the more objective production information than rather subjective RRA

information. Hall and Stammerjohan (1997) found that annual revision of reserve estimates varies across firms and across time in a pattern suggesting that oil and gas firms use reserve estimates to manage earnings.

The inconsistent conclusions of these prior studies are indicative of the need for further research regarding the usefulness of RRA information. Furthermore, none of these studies assessed the usefulness of RRA disclosure by examining its effects on financial analyst earnings forecasts. Thus, the purpose of this study is to examine the usefulness of RRA information in financial analysts' earnings forecasts. To do this operationally, we investigate the effects of initial disclosure of RRA information required by ASR 253 on financial analysts' earnings forecasts, because it is the first RRA information available to financial analysts and may be less contaminated by possible confounding effects. The effects are analyzed by two primary qualities of accounting information suggested by FASB in its Statement of Financial Accounting Concepts No. 2 (SFAC 2): i.e., relevance and reliability.¹ The relevance of RRA information is measured by timeliness, revision and accuracy of analysts' earnings forecasts while the reliability by dispersion of earnings forecasts among analysts. Following research designs of Brown (1983) and Baldwin (1984), this study examines those information usefulness measures before and after the first RRA information release.²

We found that analysts incorporated the RRA information into the revision of their earnings forecasts, which led to an improvement in forecast accuracy. However, contrary to our expectation, we found that dispersion of forecasts among analysts increased during the disclosure period, which may be due to lack of reliability inherent in the RRA data. We also found that financial analysts utilized the RRA information in a timely fashion because their significant reactions began during the month of disclosure. These results were consistent across different tests and measures of variables used.

The remainder of this paper is organized as follows. The next section discusses hypotheses developments. The sample selection, measurement of variables, and research methodology are described in section 3, followed by a discussion of findings. The final section presents concluding remarks.

HYPOTHESES DEVELOPMENT

In its Statement of Financial Accounting Concepts No. 2 (SFAC 2), the Financial Accounting Standard Board (FASB) identified relevance and reliability as two primary qualities that accounting information should possess in order for it to be useful for decision making. As Adkerson (1979, p.80) summarized, these two qualities have been the focus of arguments about the usefulness of RRA information.

In SFAC 2, relevance is defined as the capacity of information to make a difference in a decision. Relevant information helps users to form predictions about the outcomes of past, present, and future events (i.e., predictability). It also helps users to confirm or correct prior expectations (i.e., feedback value). And relevant information should be presented to users before it loses its capacity to influence their decisions (i.e., timeliness) In sum, for information to be relevant, it should have predictive and/or feedback value, and should be presented on a timely manner. If RRA

information were relevant to financial analysts' earnings forecasts, which are their decisions, it should have the above-mentioned three information qualities.

As defined in SFAC 2, predictive value is the quality of information that helps users to increase the likelihood of correctly forecasting the outcome of past or present events. Regarding the usefulness of this concept, Beaver, Kennelly and Voss (1968, p.678) noted that the predictive ability approach provides a method for drawing operational implications from the a priori arguments so that the measurement controversies become empirically testable. According to this criterion, RRA information would be useful if its release enhanced the ability of analysts to make reasonably accurate forecasts of future earnings. In other words, if useful, the analysts' earnings forecast errors should decrease with RRA information available. Therefore, earnings forecast errors can be used as an operational surrogate for the predictability of RRA information as Brown (1983) and Baldwin (1984) did. A testable hypothesis on predictability quality of RRA information herefrom would be

Hypothesis 1: There be more improvement in earnings forecast Accuracy of RRA information announcing firms (experimental firms) relative to that of silent firms (control firms) during the testing period.

The testing period is the time period during which analysts are expected to response to the RRA information release.

With respect to the feedback value, relevant RRA information should help financial analysts to confirm or revise their earnings forecasts. Since a revision in forecasts indicates that new information has been received and used by analysts, we measure the feedback value by the magnitude of revisions in analysts' earnings forecasts following the disclosure of RRA information. An increase in revisions after the disclosure of RRA information may indicate its relevance to and hence usefulness in analysts' earnings forecasts. The larger the revision with the information release, the higher the feedback value of the information. On the other hand, absence of forecast revisions may not necessarily imply the irrelevancy of the information. If RRA information confirms their prior forecasts, analysts may not revise their forecasts but the information may still be relevant to their decisions. A testable hypothesis herefrom would be

Hypothesis 2: There be more revision in earnings forecasts of experimental firms relative to that of control firms during the testing period.

With regard to the timeliness, if RRA information be relevant to and hence useful for analysts' earnings forecasts, it should be presented to the analysts in a timely manner. If that happens, the analysts may use and respond to it more promptly than otherwise. Thus, significant instantaneous responses of financial analysts to RRA information release may indicate that the information contains timeliness quality. A testable hypothesis herefrom would be

Hypothesis 3: There be instantaneous responses of analysts to RRA information release of experimental firms.

FASB, in its SFAC 2, defined reliability as the quality of information that assures that information is verifiable, reasonably free from error and bias and faithfully represents what it purports to represent. Thus, if RRA information were reliable to financial analysts, it should reduce uncertainties about future earnings and hence there should be more agreements and/or fewer disagreements amongst financial analysts in their earnings forecasts. Thus, the dispersion of earnings forecasts among financial analysts was used as a measure of reliability in this study. The dispersion is defined as the deviation of each analyst's forecast conditional on a set of information available from the mean (consensus) conditional forecast across all analysts, and thus it measures the degree of disagreement among analysts about the level of future earnings for a given firm. If RRA information is reasonably free from error in representing what it purports to represent (e.g., reserve value) and financial analysts have been using reserve data not hitherto fully available in their earnings forecasting process, disclosure of RRA data will reduce the dispersion among analysts.³ A testable hypothesis herefrom would be

Hypothesis 4: There be more decrease in dispersion of earnings forecasts of experimental firms relative to those of control firms among analysts during the testing period.

DATA SELECTION AND METHODOLOGY

Sample Selection and Forecast Data

The initial sample consists of the 51 calendar fiscal year ending firms used in Bell (1983) and Bell ET. al. (1986) studies which meet the two criteria of being listed on both the NYSE and the AMEX, and having filed RRA data for 1978 in a Form 8 after the initial filing of the 10-K.⁴ The second criterion ensures that no information other than RRA was included in the filing, thereby reducing the possibility of sample firms being subject to confounding effects such as earnings announcements and incremental 10-K effects. From this overall group of 51 firms, 21 firms were deleted mainly due to data availability. Twenty firms did not have complete data necessary for this study over the period from January 1978 to April 1981. One firm (Occidental Petroleum) was deleted because it reported a loss for the year 1979, which would make the interpretation of variables (defined later) difficult. The final sample consists of 30 firms and we will call hereafter these firms experimental firms. The financial analysts' earnings forecasts (FAF) and other related basic data used in this study were obtained from the Investment Brokers Estimate System (I/B/E/S) earnings forecast tape. The I/B/E/S tape contains actual earnings per share (EPS) and monthly summary data, including the mean forecast, the standard deviation, and the number of financial analysts for each firm.

A matched-Paired design was used to select control firms with the number of financial analysts (NFA) chosen as the matching variable. The selection of control firms was subject to the following criteria. First, each firm must have a December fiscal year end in order to maintain comparability with the experimental firms. Second, earnings forecasts and other data were available in the I/B/E/S tape during the period from January 1978 to April 1981. Third, each control firm was similar in numbers of financial analysts (NFA) to the experimental firms. The rationale for choosing

NFA as the matching variable was the assumption that it would measure the differences in the concentration by financial analysts on searching and evaluating the most current information about a firm's prospects, thereby reflecting the differences in information availability. Since there is no theory available yet on the process of analysts' earnings forecasts formation or the factors affecting this process, NFA was used in this study as a proxy for the information environment in which analysts form their forecasts. Another important factor affecting analysts' earnings forecasts is industry. For example, empirical studies by Smith et. al. (1976) and Elton et. al. (1984) reported significant industry differences in forecast accuracy and dispersion among analysts, respectively. However, industry matching was not possible in this study. Thus, we tried to select the control firms from a variety of industries so that the control sample could represent as many industries as possible.⁵

Appendix A shows the industry membership and the list of the experimental and matched control firms. The control firms are distributed fairly well among the four digit SIC industry classifications except the industry involving pharmaceutical preparations (SIC = 2834), which has 5 firms. The reason for the inclusion of many firms from this industry was that only these firms could be matched into the experimental firms with large NFA. Table 1 reports the comparison of NFA between the experimental firms and control firms. Both groups of firms are adequately matched, and the NFA is fairly stable over time. Over the whole period from January 1978 to April 1981, average NFA of experimental and control firms are respectively 13.30 and 13.14, and the difference is statistically insignificant (p-value = .7338) by a Mann-Whitney U test.

TABLE 1: Comparison of the Number of Financial Analysts: Experimental (E) vs. Control Firms (C) Firms

Years	Group	Min	Max	Mean	Standard Deviation
1978	E	1.00	26.75	12.47	9.10
1978	C	2.00	24.25	12.18	8.16
1979	E	1.42	26.17	13.36	8.69
1979	C	2.50	24.08	13.40	8.26
1980	E	1.31	25.00	13.88	7.63
1980	C	2.06	25.31	13.67	7.83
78-80	E	1.25	25.88	13.30	8.35
78-80	C	2.25	23.82	13.14	8.04

* All figures are averages based on monthly data.

Measurement of Variables and Test Statistics

As suggested in section 2, three characteristics of usefulness of accounting information identified in SFAC 2 (i.e., predictive value, relevance and reliability) can be transformed into

corresponding the financial analysts' earnings forecasts (FAF)-related variables; accuracy, revision and dispersion. These three variables are measured as follows:

Accuracy was defined as forecast error, the difference between actual earnings and forecasted earnings. The I/B/E/S tape has monthly forecasts for a particular year's earnings per share (EPS). The earliest monthly forecast available after the knowledge of the previous year's actual EPS was used to calculate forecast errors. We used two different measures of accuracy. The first measure was the absolute forecast error scaled by actual earnings:

$$FE_{i,t} = \frac{ABS(A_{i,t} - F_{i,t})}{A_{i,t}} \quad (1a)$$

Where, $FE_{i,t}$ = the absolute percentage forecast error for firm i during period (year) t ,
 $ABS()$ = the absolute value of ($$),
 $A_{i,t}$ = the actual earnings per share (EPS) for firm i during period (year) t .
 $F_{i,t}$ = the mean forecasted EPS for firm i during period (year) t .

The second measure of accuracy was the squared forecast error (SFE) standardized by squared actual earnings:

$$SFE_{i,t} = \frac{(A_{i,t} - F_{i,t})^2}{A_{i,t}} \quad (1b)$$

To test Hypothesis 1, forecast accuracy was first compared in the year before the initial disclosure of RRA data with that in the year after the disclosure. Designating t as the year of initial disclosure (1979), each firm's relative change in accuracy, using FE as a measure of accuracy, was defined as:

$$FE^e = (FE_{t+1}^e - FE_{t-1}^e) / FE_{t-1}^e$$

$$FE^c = (FE_{t+1}^c - FE_{t-1}^c) / FE_{t-1}^c$$

Similarly, using SFE:

$$SFE^e = (SFE_{t+1}^e - SFE_{t-1}^e) / SFE_{t-1}^e$$

$$SFE^c = (SFE_{t+1}^c - SFE_{t-1}^c) / SFE_{t-1}^c,$$

Where superscripts e and c represent the experimental and control firms respectively.

Next, we computed the differences in these changes in earnings forecasts between the experimental and control firms:

$$FE^d = FE^e - FE^c \quad (2a)$$

$$SFE^d = SFE^e - SFE^c \quad (2b)$$

Where superscript **d** stands for the difference. These metrics have such a property that relative accuracy can be interpreted as improved, unchanged or deteriorated, depending on whether they are negative, zero or positive.⁶ Therefore, we could draw an inference regarding the usefulness of RRA information by testing the sign and magnitude of these metrics. For example, significantly negative FE^d or SFE^d implies the usefulness of RRA information in a sense that it enhanced the analysts' ability to forecast earnings.

Revisions are defined as the absolute change in analysts' mean earnings forecasts from one period (month) to the next. Since this definition of forecast revision is not comparable across firms, the absolute change in the forecasted earnings was deflated in two different ways to yield standardized measures of revisions, which are comparable across firms and over time. The first measure of revision was the absolute change in the forecasted earnings deflated by the level of the forecast:

$$REV_{i,t} = \frac{ABS(F_{i,t} - F_{i,t-1})}{F_{i,t-1}} \quad (3a)$$

Where $REV_{i,t}$ = the absolute percentage revision for firm *i* during month *t*,
 $ABS()$ = the absolute value of (),
 $F_{i,t}$ = the mean forecasted EPS for firm *i* during month *t*,
 $F_{i,t-1}$ = the mean forecasted EPS for firm *i* during month *t-1*.

The second measure of revision was the absolute change in the forecasted earnings scaled by the standard deviation of forecasted earnings:

$$SREV_{i,t} = \frac{ABS(F_{i,t} - F_{i,t-1})}{SD_{i,t-1}} \quad (3b)$$

Where $SREV_{i,t}$ = the standardized revision for firm *i* during month *t*,
 $ABS()$ = the absolute value of (),
 $SD_{i,t-1}$ = the standard deviation of forecasted EPS across financial analysts for firm *i* during month *t-1*.

However, the earnings streams of some firms may be more volatile and therefore more difficult to forecast than those of other firms. This could result in larger forecast revisions for those firms. Therefore, the second one is considered to be the better revision metric because it incorporates a measure of the underlying uncertainty as a deflator (Imhoff and Lobo (1984)).

In testing hypothesis 2, we first calculated the relative change in average forecast revision from the year before the initial disclosure of RRA information to the year of and after the disclosure. The average forecast revision for a given year was the simple arithmetic average of monthly revisions over that year. We, then, calculated the differences in relative changes in average forecast revisions between the experimental and control firms. Using two different measures of forecast revision, we have:

$$REV^d = REV^e - REV^c \quad (4a)$$

$$SREV^d = SREV^e - SREV^c \quad (4b)$$

Timely responses of analysts to the information can be detected in the form of revisions or changes in dispersions surrounding the information release. This test will be conducted using an event study type of research design to the analysts' earnings forecasts. To do this, average forecast revision (REV and SREV) and dispersion metrics (CV and VAR) were calculated for each month over the period from January 1978 to December 1980. Since most of the sample firms filed the RRA data between June 25 and July 10 of 1979, July 1979 was chosen as an event month and designated as month 0.

Dispersion of earnings forecasts among analysts was measured by the standard deviation of the mean forecasted earnings across analysts. We used two different measures of dispersion.⁷ The first measure was a coefficient of variation (CV), standard deviation divided by the mean forecast:

$$CV_{i,t} = \frac{SD_{i,t}}{F_{i,t}} \quad (5a)$$

The second measure of dispersion was the variance of forecasted earnings multiplied by the number of financial analysts:

$$VAR_{i,t} = N_{i,t} * SD_{i,t}^2 \quad (5b)$$

Where $VAR_{i,t}$ = the transformed variance of forecasted EPS,
 $N_{i,t}$ = the number of analysts for a firm i during month t.

Essentially, $VAR_{i,t}$ approximates the transformation of $SD_{i,t}$ into sum of squared errors. Castanias and Griffin (1985) argued that this measure is conceptually more correct than the coefficient of variation when combining dispersion metrics cross-sectionally.

Following the same procedures as those for the first two hypotheses, we calculated similar metrics for dispersion among analysts:

$$CV^d = CV^e - CV^c \quad (6a)$$

$$VAR^d = VAR^e - VAR^c \quad (6b)$$

Significantly positive CV^d or VAR^d is consistent with the argument that RRA information lacks reliability because its release increased the degree of disagreement among financial analysts about future earnings of the affected firms.

STATISTICAL METHODOLOGY

We employed both parametric and nonparametric tests. Since our experimental and control firms were matched pairwise based on the number of financial analysts, they were not independent. Hence, we used the paired t-test.

A basic assumption of the paired t-test is that both groups come from normally distributed population. If the normality assumption is not valid, which is likely to be the case in our sample, nonparametric test might be more appropriate. Therefore, we used both sign test and Wilcoxon signed-ranks test, which are nonparametric tests, designed specially for the matched-pair sample. The sign test analyzes the signs of the difference between the paired observations. If the null hypothesis of no difference between the two matched groups is true, we would expect half of the non-zero differences to show a positive sign and half a negative sign. The Wilcoxon signed-ranks test takes into account both the sign and magnitude of the difference and thus use more of the available information than does the sign test. Under the null hypothesis, the Wilcoxon Z statistic is approximately normally distributed with mean 0 and variance 1 for large sample size.

RESULTS

Table 2 shows the results of the tests for the overall effects of RRA information on analysts' forecast accuracy. To avoid the problem of outlier, accuracy measures (FE and SFE) greater than 300 were not used in the paired t-test.⁸

TABLE 2: Tests on the Differences in Year-to-Year Average Accuracy of Analysts' Earnings Forecasts

Panel A: Absolute Accuracy								
1. FE as a measure of accuracy								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.3161	.1194	1.97	.030	66.67%	.0502	1.3164	.0940
1980	.2064	.1830	.41	.343	60.00	.1807	.6171	.2686
2. SFE as a measure of accuracy								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.0783	.0377	1.04	.155	70.00	.0445	1.2980	.0972
1980	.0765	.0849	-.17	.432	60.00	.1807	.4936	.3108
Panel B: Relative Accuracy								
Variable	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
FE	3.1843	2.0587	.63	.267	46.67	.4276	.7302	.2327
SFE	4.2899	12.9080	-1.24	.116	40.91	.2618	1.2824	.0999
Where Paired T = the paired T-test, Sign = the sign test, Wilcoxon = the Wilcoxon rank test, Z = the Z-value, C = the mean of control group								

Panel A reports the difference in accuracy between the experimental and control firms. In the year before disclosure of RRA data (1978), average forecast error of the experimental firms was greater than that of the control firms, and the difference was significant at less than 10 % significance level. In contrast, no significant difference was observed in the post-disclosure year (1980). Furthermore, these results were consistent across different measures of accuracy and tests used. Thus, it appears that RRA information improved forecast accuracy.

Panel B presents the differences in the relative change in forecast accuracy between two groups. While tests on FE^d were not significant, tests on SFE^d (equation 4b) indicate favorable effect of RRA information on forecast accuracy. SFE^d was negative 59.09 percent of the time, and the Wilcoxon test statistic ($Z = 1.2824$) was significant at 10 % level.

Thus, the results in Table 2 suggest that RRA information was useful to improve financial analysts' ability to correctly predict future earnings, which is an acceptance of Hypothesis 1. Test results of the overall effects of RRA information on forecast revision are presented in Table 3. If

analysts fully utilize all the information available in forecasting earnings, and if RRA data provide new information not hitherto available, then we would expect a change in earnings forecasts at or after the disclosure of RRA information.

TABLE 3: Tests on the Differences in Year-to-Year Average Revision of Analysts' Earnings Forecasts

TABLE 3: Tests on the Differences in Year-to-Year Average Revision of Analysts' Earnings Forecasts								
Panel A: Absolute Revision								
1. REV as a measure of revision								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.0208	.0157	1.02	.158	63.33	.1006	1.9129	.0279
1979	.0352	.0188	2.91	.004	63.33	.1006	2.8281	.0024
1980	.0254	.0319	-.81	.214	56.67	.3552	.4541	.3249
2. SREV as a measure of revision								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.3673	.3240	.79	.217	56.67	.2920	.5857	.2929
1979	.4805	.3742	2.06	.024	70.00	.0223	2.3139	.0104
1980	.3470	.4253	-1.55	.066	36.67	.1006	1.1621	.1226
Panel B: Relative Revision								
Variable	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
	1.6497	1.3164	.32	.377	60.00	.1807	1.3261	.0923
REV ^b	1.0687	3.2207	-1.16	.129	43.33	.2920	1.6969	.0449
SREV ^a	.7327	.5047	.64	.265	60.71	.1724	.9564	.1695
SREV ^b	.4140	.8302	-1.01	.161	50.00	.5000	.9109	.1812
Where Paired T	=	the paired T-test,						
Sign	=	the sign test,						
Wilcoxon	=	the Wilcoxon rank test,						
Z	=	the Z-value,						
C	=	the mean of control group.						
REV ^a	=	the change in REV from 1978 to 1979.						
REV ^b	=	the change in REV from 1979 to 1980.						
SREV ^a	=	the change in SREV from 1978 to 1979.						
SREV ^b	=	the change in SREV from 1979 to 1980.						

Panel A in Table 3 shows the differences in average forecast revision between the experimental and control firms each year. The most obvious result is that average forecast revision of the experimental firms was significantly larger than that of the control firms only in the year of RRA information disclosure (1979). For example, when SREV measure was used, the difference ($SREV^e - SREV^c$) was positive 70 percent of the time (binomial p-value = .0223), and both the t-test ($t = 2.06$) and the Wilcoxon test ($Z = 2.3139$) were significant at less than 5 % level of significance. However, no significant differences were observed in both pre-disclosure (1978) and post-disclosure year (1980). These results seem to indicate that financial analysts used RRA information in revising their earnings forecasts.

Panel B presents the differences in the relative change in average forecast revision between two firms. When the relative change was calculated from pre-disclosure to disclosure period, REV^d (equation 5a) was positive 60 percent of the time and the Wilcoxon test statistic ($Z = 1.3261$) was significant at 10 % significance level. $SREV^d$ (equation 5b) was also positive 60.71 percent of the time, but significant only at 17 % level. However, there was no significant difference in the relative change from pre-disclosure to post-disclosure period.

In sum, the results in Table 3 indicate the utilization of RRA data by financial analysts in their expectation formation process, implying that RRA information was useful in terms of the feedback value. This is an acceptance of Hypothesis 2. Table 4 presents the results of the Wilcoxon test on the differences in average monthly revisions between the experimental and control firms over 33 months period (months -16 to 16).⁹ While the behavior of the differences in average monthly revisions was almost random during pre- and post-disclosure period, significant differences were observed surrounding the event month. For example, average differences in REV during months 0 and 1 were .0194 ($Z = 2.2583$) and .0506 ($Z = 3.5557$), respectively, and significant at any conventional significance level. These results indicate that financial analysts incorporated RRA data timely into their earnings forecasts during the month of disclosure.

Table 4 also shows that the pattern of significant differences in monthly revisions between two groups continued for several months after the event month. This pattern might be due to: (1) the lack of reliability in RRA information so that analysts kept revising their forecasts upon receiving additional private information supplemental to the RRA data, (2) serial correlation in the monthly revisions,¹⁰ and (3) lags between an analyst making a forecast revision and when it is reported in the I/B/E/S tape.¹¹ Differences between average monthly dispersions (CV and VAR) of the experimental firms and those of control firms are presented in Tale 5. These results were similar to those with the monthly revisions. Both monthly CV and VAR series of the experimental firms had the largest spikes on the months 0 and 1, while those of the control firms remained the same. The differences were significant at less than 10 % level.

**TABLE 4: Wilcoxon Test on the Differences in the Average
Monthly Revisions Surrounding the Month of Initial Disclosure of RRA Information**

Year	Month	Relative	REV: Mean	z-value	p-value	SREV: Mean	Z-value	p-value
1978	Mar	-16	.0069	.2272	.4102	-.0478	.0000	.5000
	Apr	-15	.0128	1.5202	.0643	.0751	.9148	.1802
	May	-14	.0077	.7928	.2140	-.0486	.9082	.1819
	Jun	-13	.0161	2.6301	.0043	.2481	1.8331	.0334
	Jul	-12	.0209	3.3246	.0005	.2753	2.6287	.0043
	Aug	-11	.0011	.5247	.2999	.0110	.1905	.4245
	Sep	-10	-.0068	.0360	.4857	-.0731	.4953	.3102
	Oct	-9	-.0039	.7803	.2176	.0059	.2960	.3836
	Nov	-8	.0001	.0911	.4637	-.1792	.5010	.3082
	Dec	-7	-.0015	.0143	.4943	.0497	.2794	.3900
1979	Jan	-6	.0037	.2166	.1119	.0788	1.1857	.1179
	Feb	-5	.0454	.8090	.2093	.9627	.9339	.1726
	Mar	-4	-.0143	.4543	.3248	.0316	.2446	.4034
	Apr	-3	-.0060	.5045	.3070	.0503	1.1810	.1188
	May	-2	.0211	1.7178	.0429	.1520	2.5158	.0060
	Jun	-1	.0012	.0973	.4613	-.0301	.5406	.2944
	Jul	0	.0194	2.2583	.0120	-.1267	1.6577	.0487
	Aug	1	.0506	3.5557	.0002	.4771	3.1246	.0009
	Sep	2	.0209	3.3019	.0005	.1507	1.5461	.0611
	Oct	3	.0183	3.2601	.0006	.0814	1.8203	.0344
	Nov	4	.0384	3.2674	.0006	.4704	2.5947	.0048
	Dec	5	.0280	1.8163	.0347	.2088	1.7407	.0409
1980	Jan	6	-.0068	.7143	.2376	-.2597	2.8286	.0024
	Feb	7	-.0230	.4472	.3274	-.0695	.4472	.3274
	Mar	8	.0237	2.0592	.0198	.4676	2.7219	.0033
	Apr	9	.0040	.5622	.2870	-.0341	1.1827	.1185
	May	10	-.0006	1.2133	.1125	.0030	.4327	.3327
	Jun	11	.0154	1.1785	.1193	-.2579	.6695	.2548
	Jul	12	-.0050	.0432	.4828	-.1077	1.3061	.0958
	Aug	13	-.0063	.5622	.2870	-.1080	.4217	.3367
	Sep	14	-.0305	2.1142	.0173	-.3455	2.6187	.0044
	Oct	15	-.0176	1.5598	.0594	-.2166	1.9785	.0240
	Nov	16	.0304	1.4118	.0790	-.1286	1.4574	.0725

Where Relative = the month relative to event month,
Mean = the mean difference.

TABLE 5: Wilcoxon Test on the Differences in the Average Monthly Dispersions Surrounding the Month of the Initial Disclosure of RRA Information

Year	Month	Relative	REV: Mean	z-value	p-value	SREV: Mean	Z-value	p-value
1978	Feb	-17	-.0186	.8047	.2105	-.5620	.7574	.2244
	Mar	-16	.0041	1.6817	.0463	-.2177	.3363	.3683
	Apr	-15	.0115	.9906	.1620	.0198	.2402	.4501
	May	-14	-.0005	.5010	.3082	.0073	.3964	.3459
	Jun	-13	.0022	.4108	.3406	.0073	.2277	.4100
	Jul	-12	.0031	.9109	.1812	-.0751	.9839	.1626
	Aug	-11	.0052	1.5244	.0637	.0241	.1366	.4457
	Sep	-10	.0001	1.9461	.0258	-.0184	.3871	.3494
	Oct	-9	-.0081	1.5677	.0585	-.0613	.5622	.2870
	Nov	-8	-.0231	.0911	.4637	-.1049	1.5028	.0665
	Dec	-7	-.0212	.6148	.2694	-.0741	1.0163	.1548
1979	Jan	-6	-.0228	.6730	.2505	-.0209	.6054	.2725
	Feb	-5	-.0153	.8736	.1912	-1.1233	.6639	.2534
	Mar	-4	.0014	1.2524	.1052	-.4752	.9678	.1666
	Apr	-3	.0257	2.2488	.0123	.0022	.0324	.4871
	May	-2	.0305	2.2831	.0122	.0935	.0720	.4713
	Jun	-1	.0421	3.0133	.0013	.2774	.8541	.1965
	Jul	0	.0487	2.9001	.0019	.4320	1.2752	.1011
	Aug	1	.0445	3.1264	.0009	.9019	2.2164	.0134
	Sep	2	.0425	3.5583	.0002	.8183	2.4975	.0063
	Oct	3	.0197	2.1191	.0171	.3260	1.1051	.1346
	Nov	4	.0289	3.0164	.0013	1.0521	2.2088	.0136
	Dec	5	.0200	2.1407	.0162	.7786	2.5407	.0056
1980	Jan	6	.0115	1.8619	.0312	.6084	1.6337	.0512
	Feb	7	.0085	1.1105	.1334	-1.9318	.8057	.2102
	Mar	8	.0159	1.3514	.0883	-.3861	1.1568	.1237
	Apr	9	.0060	1.5785	.0573	.6388	1.3731	.0849
	May	10	.0157	2.2380	.0126	.9630	2.0218	.0216
	Jun	11	.0130	1.5893	.0560	1.3646	1.7407	.0409
	Jul	12	.0082	1.0487	.1472	1.4076	1.6737	.0471
	Aug	13	.0029	1.0816	.1397	1.0313	1.5244	.0637
	Sep	14	-.0519	.6487	.2583	.3983	1.1568	.1237
	Oct	15	-.0578	.3568	.3607	-.2915	1.0271	.1522
	Nov	16	-.0132	.5622	.3870	-.1076	.8757	.1906
	Dec	17	-.0414	.6475	.2585	.0556	.4628	.3218

Where Relative = the month relative to event month,
Mean = the mean difference.

To summarize, all the above results in Tables 4 and 5 indicate that analysts' reactions to the RRA information were timely because they seemed to revise their earnings forecasts during the month of disclosure. This is an acceptance of Hypothesis 3. The results on changes in dispersions of earnings forecasts are presented in Table 6.

TABLE 6: Tests on the Differences in Year-to-Year Average Dispersion of Analysts' Earnings Forecasts								
Panel A: Absolute Dispersion								
1. CV as a measure of dispersion								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.0506	.0557	-.28	.392	62.07	.1326	1.2866	.0991
1979	.0744	.0437	2.46	.010	66.67	.0502	2.6019	.0047
1980	.0686	.0819	-.66	.257	63.33	.1006	.9873	.1618
2. VAR as a measure of dispersion								
Year	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
1978	.3116	.3848	-.64	.264	37.93	.1326	1.2541	.1049
1979	.9671	.6162	1.44	.081	53.33	.4276	1.2650	.1030
1980	2.1813	1.8629	.33	.374	53.33	.4276	1.2827	.1185
Panel B: Relative Dispersion								
Variable	Mean: E	C	Paired T: t-value	p-value	Sign: P(E>C)	p-value	Wilcoxon: Z	p-value
CV ^a	.4652	.1544	1.49	.075	75.00	.0070	2.2316	.0128
CV ^b	.5496	1.2561	-.96	.173	57.14	.2854	.0683	.4728
VAR ^a	3.3804	1.5839	1.66	.055	78.57	.0023	2.6415	.0042
VAR ^b	11.1435	11.4529	-.04	.486	82.14	.0007	3.0058	.0013
Where Paired T	=	the paired T-test,						
Sign	=	the sign test,						
Wilcoxon	=	the Wilcoxon rank test,						
Z	=	the Z-value,						
C	=	the mean of control group.						
CV ^a	=	the change in CV from 1978 to 1979.						
CV ^b	=	the change in CV from 1979 to 1980.						
VAR ^a	=	the change in VAR from 1978 to 1979.						
VAR ^b	=	the change in VAR from 1979 to 1980.						

Panel A in Table 6 shows the differences in average dispersion between the experimental and control firms. Only during the disclosure year (1979), average dispersion of the experimental firms was significantly greater than that of the control firms. When CV was used as a measure of dispersion, the difference ($CV^e - CV^c$) was positive 66.67 percent of the time, and both the t-test and the Wilcoxon test statistics were significant with p-value (one tailed) of .010 and .0047, respectively.

In panel B, the relative changes in average dispersion between two groups were compared. The results show that there was significant difference in the change from pre-disclosure to disclosure

period. CV^d (equation 6a) was positive 75 percent of the time, and both the t-test ($t = 1.49$) and the Wilcoxon test statistic ($Z = 2.2316$) were significant at 10 % and 5 % level, respectively. Almost same results were obtained using VAR as a measure of dispersion.

In sum, the above results presented in Table 6 indicate that the dispersion (disagreement) among financial analysts increase with the release of RRA information. For a given level of reliability of information, the more information leads to the less uncertainties, which, in turn, leads to the less disagreements among analysts.¹² This observed increase in the dispersion may be due to the lack of reliability in RRA information, which add another element of uncertainty into analysts' forecast process. This is a rejection of Hypothesis 4.

SUMMARY AND CONCLUSIONS

This study examined the usefulness of RRA information in financial analysts' earnings forecasts using two primary qualities of accounting information recommended in SFAC 2; i.e., relevance and reliability. The relevance was measured by the accuracy, revision, and timeliness of financial analysts' earnings forecasts, while the reliability by dispersion of analysts' earnings forecasts. Using the I/B/E/S monthly earnings forecast data, we examined the behavior of these forecast variables for the experimental firms vis-à-vis the control firms matched by the number of financial analysts.

The results showed that forecast accuracy was improved with RRA information release, and both forecast revision and dispersion among analysts increased during disclosure period. They also showed that financial analysts utilized the RRA information on a timely fashion because their significant reactions began during the month of disclosure. These results were consistent across different tests and measures of variables used. These results indicate that analysts incorporated the RRA information into the revision of their earnings forecasts, and this revision process led to an improvement in forecast accuracy. However, the lack of reliability inherent in the RRA data might cause the increase in dispersion of forecasts among analysts.

In short, the RRA information passed the relevance criterion, but failed to pass the reliability criterion of usefulness. This implies that RRA information is useful but noisy in analysts' earnings forecasts. This is consistent with the statement in SFAC 2 that some trade-off may exist between the degree of relevance and reliability of accounting information.

The authors are grateful to the firm of Lynch, Jones & Ryan for providing access to their Institutional Brokers Estimate System (IBES) database.

END NOTES

¹ For more details, see Statement of Financial Accounting Concepts No. 2.

² Brown (1983) and Baldwin (1984) evaluated the analysts' ability to forecast earnings before and after a variety of accounting changes or the disclosure of line-of-business information.

- ³ This monotonic inverse relationship between the reliability of information and the dispersion of earnings forecasts among analysts is not necessarily true in certain cases. For example, when RRA information has too much noise to be reliable, there could be no change or even an increase in the dispersion.
- ⁴ The usual filing deadline for the annual report form 10-K with the SEC for firms filing for fiscal years ending December 31 is March 31. However a 90-days extension was granted for firms to file the initial RRA data for 1978. Bell (1983)'s sample consisted of those firms that filed RRA data for 1978 in a Form 8 after the initial filing of the 10-K.
- ⁵ In doing this, we presume that the oil and gas industry represents the average industry. There is some evidence suggesting that this assumption is approximately valid. For example, Smith and Murphy (1976) documented that average prediction error of the Oil and Gas industry is .050, while that of overall industry is .058. Elton, Gruber and Gultekin (1984) reported that average dispersion of the Oil and Gas industry is ranked the 7th out of 17 industries.
- ⁶ See Brown(1983) about the properties of this metric.
- ⁷ If the number of financial analysts was equal to one for a given month, we omitted and treated dispersion metrics as missing for that month.
- ⁸ We obtained similar results by either using 100 cutoff rule or including all the observations.
- ⁹ Paired t-test and sign test were also conducted. Since the results were almost identical to those of Wilcoxon test, we did not report them here for simplicity.
- ¹⁰ Brown, Foster and Noreen (1985) and Givoly and Lakonishok (1979) reported the evidence of positive dependence in successive revisions over time.
- ¹¹ According to O'Brien (1988), the time lag between the analyst's date for a forecast and the date of its first appearance on I/B/E/S averages 34 trading days, and has a standard deviation of 44.5 trading days.
- ¹² Brown et al. (1992) reported that the information contained in current year's earnings announcements decreases the dispersion of analysts' earnings forecasts of the following year.

REFERENCES

- Adkerson, R. C. (1979). Can reserve recognition accounting work? *Journal of Accountancy*, 148 (3): 72-81.
- Avard, S. L. (1982). Disclosures of reserve quantities, reserve values, and performance measures: Views of financial analysts. *Journal of Extractive Industries Accounting*: 71-75.
- Baldwin, B. A. (1984). Segment earnings disclosure and the ability of security analysts to forecast earnings per share. *The Accounting Review*, 59(3): 376-389.
- Beaver, W. H., J. W. Kennelly & W. M. Voss (1968). Predictive ability as a criterion for the evaluation of accounting data. *The Accounting Review*, 43(4): 675-683.
- Bell, T. B. (1983). Market reaction to reserve recognition accounting. *Journal of Accounting Research* 21(1): 1-17.

-
- Boone, J.(2002). Revisiting the reportedly weak value relevance of oil and gas asset present values: The roles of measurement error, model misspecification, and time-period idiosyncrasy. *The Accounting Review*, 77(1), 73-106.
- Brown, L. D. (1983). Accounting changes and the accuracy of analysts' earnings forecasts. *Journal of Accounting Research*, 21(2): 432-443.
- Brown, P., G. Foster & E. Noreen (1984). *Security Analysts' Multi-year Earnings Forecasts and the Capital Market*. American Accounting Association.
- Castanias, P. & P. A. Griffin (1985). The effects of foreign currency translation accounting on security analysts' forecasts. Working Paper.
- Clinch, G. & J. Magliolo (1992). Market perceptions of reserve disclosures under SFAS No. 69. *The Accounting Review*, 67(4): 843-861.
- Deakin, E. B. & J. W. Deitrick (1982). An evaluation of RRA and other supplemental oil and gas disclosures by Financial Analysts. *Journal of Extractive Industries Accounting*, 1: 63-70.
- Dharan, B. (1984). Expectation models and potential information content of oil and gas reserve value disclosures, *The Accounting Review*, 59(2):199-217.
- Doran, B., D. Collins & D. Dhaliwal (1988). The information of historical cost earnings relative to supplemental reserve-based accounting data in the extractive petroleum industry. *The Accounting Review*, 63(3): 389-413.
- Elton, E., M. Gruber & M. Gultekin (1984). Professional expectations: Accuracy and diagnosis of errors. *Journal of Financial and Quantitative Analysis*, 19(4): 351-363.
- Financial Accounting Standard Board (1980). *Statement of Financial Accounting Concepts No. 2: Qualitative Characteristics of Accounting Information*. Norwalk, CT: FASB.
- Financial Accounting Standard Board (1982). *Statement on Financial Accounting Standards No. 69: Disclosures about Oil and Gas Producing Activities*. Norwalk, CT: FASB.
- Givoly, D. & J. Lakonishok (1979). The information content of financial analysts' forecasts of earnings. *Journal of Accounting and Economics*, 1(3): 165-185.
- Ghicas, D. & V. Pastena (1989). The acquisition value of oil and gas firms: The role of historical costs, reserve recognition accounting, and analysts' appraisals. *Contemporary Accounting Research*, 6(1): 125-142.
- Harris, T. & J. Ohlson (1987). Accounting disclosures and the market's valuation of oil and gas properties. *The Accounting Review*, 62(4): 651-670.
- Hall, S. & W. Stammerjohan (1997). Damage awards and earnings management in the oil industry. *The Accounting Review*, 72(1): 47-65.
- Imhoff, E. A. & G. J. Lobo (1984). Information content of analysts' composite forecast revisions. *Journal of Accounting Research*, 22(2): 541-554.
- Magliolo, J. (1986). Capital market analysis of reserve recognition accounting. *Journal of Accounting Research*, 24(Supplement): 69-108.

O'Brien, P. (1988). Analysts' forecasts as earnings expectations. *Journal of Accounting and Economics*, 10(1): 53-83.

Smith, L. D. & G. J. Murphy (1976). Earnings forecasting: Investment analysts versus exponential smoothing models. *Journal of Business Administration*: 11-21.

Appendix A: List of Sample Firms					
E: CUSIP	SIC	Name	C: CUSIP	SIC	Name
752805	1311	Ranger Oil Ltd.	337477	6025	First VA Bans Inc.
007239	1311	Adobe Oil Gas	754721	1629	Raymond Int'l
077419	1311	Belco Pet Co.	736202	3532	Portec Inc.
453038	2999	Imperial Oil Ltd.	024762	2642	Amer Bus Prod.
624029	1311	Mountain Fuel	450694	6711	IU Int'l Corp
747419	2911	Quaker State Oil	339423	8299	Flight Safety
257093	1311	Dome Pet Ltd	191162	2086	Coca Cola Bottling
041237	1321	ARKLA Inc	247109	4931	Delmarva Pwr
456623	1382	INEXCO Oil	631226	2641	Nashua Corp
723645	4922	Pioneer Corp	186000	1011	Clevel-Cliffs
626717	2911	Murphy Oil Corp	257867	2751	Donnelley
638760	1382	Natomas Co.	019645	3511	Allis-Chalmers
868273	1311	Superior Oil	709051	4911	Penna Pwr & Ltg
882435	4922	Texas Gas Res Co.	552845	6711	Mgc Invt Corp
023551	2911	Amerada Hess	755111	3671	Raytheon Co
880370	4922	TENNECO	963320	3633	Whirlpool Corp
546268	1311	LA LD & Expl Co	913025	6711	Unit Telecom
590655	1311	Mesa Pet Co.	362320	3661	GTE Corp
866762	2911	Sun Co	489314	3331	Kennecott Co
374280	2911	Getty Oil Co.	013716	3361	Alcan Aluminum
173036	2912	Cities Svc Co.	260543	2812	Dow Chem Co
822635	2911	Shell Oil Co.	263534	2892	Dupont
718507	2911	Phillips Pet Co.	122781	3574	Burroughs Corp
565845	2911	Marathon Oil	459200	3573	IBM
402237	2911	Gulf Corp	934488	2834	Warner-Lambert
853734	2911	Std Oil of Ohio	026609	2834	Amer Home Prod
607059	2911	Mobil Corp	717081	2834	Pfizer Inc
208251	2911	CONOCO Inc	882508	3674	Texas Instruments
881694	2992	TEXACO	806605	2834	Schering Plo
302290	2911	Exxon	915302	2834	Upjohn Co

THE EFFECTS OF CHAPTER 11 BANKRUPTCY ON EARNINGS FORECASTS

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ABSTRACT

Prior studies in the area of management forecasts contain one common characteristic, they assess voluntary earnings disclosures during normal operating periods, when the incentive structure is generally routine and ongoing. This research tests whether voluntary earnings disclosures released during non-normal operating periods (specifically chapter 11 bankruptcy filing) differ from disclosures released during normal operating periods in terms of credibility. In terms of bias and information content, findings suggest that forecasts tend to significantly differ during normal versus non-normal operating periods. With increasing bankruptcy filings taking place today, these findings have practical implications on users of forecast information.

INTRODUCTION

Prior research in the study of voluntary earnings disclosures finds that managers release information that is unbiased relative to subsequently revealed earnings and that tends to contain more bad news than good news (Baginski et al., 1994; Frankel, 1995). Such releases are also found to contain information content (Patell, 1976; Waymire, 1984; Pownell & Waymire, 1989). Although forecast release is costly, credible disclosure will occur if sufficient incentives exist. These incentives include bringing investor/manager expectations in line (Ajinkya & Gift, 1984), removing the need for expensive sources of additional information (Diamond, 1985), reducing the cost of capital to the firm (Diamond & Verrechia, 1987), and reducing potential lawsuits (Lees, 1981).

All of the aforementioned empirical studies have one common characteristic, they assess voluntary earnings disclosures during normal operating periods, when the incentive structure is generally routine and ongoing. The research question addressed in this study is: Do voluntary earnings disclosures released during non-normal operating periods (specifically management changes) differ from disclosures released during normal operating periods in terms of credibility? This question links earnings management to voluntary disclosures of earnings. For several years researchers have found that some degree of earnings management may exist in mandatory disclosures. I argue that incentives leading to earnings management may manifest in voluntary disclosures. If the potential exists for voluntary disclosures to be managed, then to what extent do investors rely upon the forecast information?

In addressing this research question, I rely upon literature that indicates different incentive structures during non-normal operating periods that may lead to earnings management. DeAngelo (1986) shows that managers have incentives during management buyouts to manage earnings downward in attempts to reduce buyout compensation. Collins and DeAngelo (1990) show that

earnings management occurs during proxy contests, and market reaction to earnings during these contests is different than during normal operating periods. DeAngelo (1990) finds that managers have incentives during merger activities to manage earnings upward so as to convey to current stockholders that the potential merger will not adversely affect their investment. Perry and Williams (1994) find that management of accounting earnings occurs in the year preceding "going private" buyouts. Stunda (1996) finds that managers exert greater upward earnings management during mergers and acquisitions.

This study assesses the effect that chapter 11 bankruptcy filings have on management forecast credibility. In accomplishing this, the presence of earnings forecast management is tested by using bias measures along with the market reaction to the forecast during the bankruptcy period. The study focus is on firms involved in chapter 11 bankruptcy (non-normal operating periods) during the period 1983-2001. Results are compared to forecasts released in periods of non-bankruptcy (normal operating periods). Based upon statistical analysis, conclusions are drawn that identify whether bankruptcy becomes a factor that influenced management earnings forecasts more during non-normal operating periods than during normal operating periods. This would have implications for voluntary disclosures in general (since current literature finds voluntary disclosures to be unbiased). There would be potential implications for managers of firms that undergo filing for bankruptcy, along with investors in these firms.

HYPOTHESIS DEVELOPMENT

Hypotheses About Bias of Management Forecast

As previously noted, recent studies of management earnings forecasts do not find evidence of bias in voluntary management disclosures. These studies of management forecasts must be considered along with the earnings management literature. For instance, voluntary disclosures facilitate additional information to the investor at a lower acquisition cost. However, if only partial communication flows from management to investors and acquiring full information is costly, there exists asymmetric information and the potential for earnings management in the earnings forecast.

If the same degree of earnings management (whether positive or negative) exists in both the forecast of earnings and actual earnings, the expectation is that there would be no difference in forecast error. If, however, the ability to perform earnings management is anticipated but not realized, some difference of forecast error would be present. If greater upward earnings management of the forecast occurs (or less actual earnings management), a negative forecast error should exist. If greater downward earnings management of the forecast occurs (or less actual earnings management), a positive forecast error should exist. Thus, the first hypothesis tests for the existence of forecast error. The null hypothesis tested is:

H1: Average management forecast error (actual EPS - management forecast of EPS) equals zero for firms engaged in chapter 11 activities.

Introducing a firm-specific control (i.e., a forecast for the same firm in a normal operating period) allows a test of the relative forecast error in the normal versus non-normal operating periods. If firms display the same degree of earnings management in normal versus non-normal periods, the expectation is that there will be no difference in forecast error. If, however, there exists different incentives to manage earnings (either upward or downward) during non-normal periods, as suggested by current literature, then a positive or negative forecast error would result. Stated in the null form:

H2: The average forecast error for the firm involved in chapter 11 equals the average forecast error for the same firms during normal operating periods.

Hypothesis About Information Content of Accounting Earnings and Management Forecasts

If mandatory disclosures of earnings contain some degree of earnings management, then voluntary disclosures may possess the potential for such earnings management as well. Investors may react to managed earnings in one of two ways; they may discount the information as additional noise, or they may view this information as enhancing the properties of the signal (i.e., in terms of amount or variance). Research during the past two decades has shown that accounting earnings possess information content, however, current literature finds that the information content of earnings announcements is different during non-normal operating periods. For instance, Collins and DeAngelo (1990) find a greater market reaction to earnings during proxy contests, and Stunda (1996) finds a greater reaction during mergers and acquisitions.

If investors interpret managed earnings forecasts as just additional noise, the market would discount this information. If, however, investors view the managed earnings forecast as a positive (or negative) signal from management, the market would not discount the information. The expectation for information content of management forecasts in non-normal operating periods would revolve around these two notions. These alternative notions suggest the following null hypothesis:
H3: The information content of management forecasts during chapter 11 is equal to the information content of management forecasts during normal operating periods.

RESEARCH DESIGN

The sample consists of management forecast point estimates made during the period 1983-2001 meeting the following criteria: 1) The management earnings forecast was recorded by the Dow Jones News Retrieval Service (DJNRS). 2) Chapter 11 information was obtained from the Wall Street Journal (WSJ). 3) Security price data was obtained from the Center for Research on Security Prices (CRSP). 4) Earnings data was obtained from Compustat. The overall sample consists of firms which made at least one management earnings forecast during the period 1983-2001. This large sample is divided into sub-samples; one sub-sample consists of firms during "normal" operating periods, while the other sub-sample consists of firms during "non-normal" (i.e., involved in chapter 11 activities) operating periods. For sensitivity analysis, the non-normal firms

are further classified into two groups; one group consists of firms with forecasts made within ninety days either side of a chapter 11 announcement, the other group consists of firms with forecasts made within ninety days after a chapter 11 announcement. The reason for the existence of these latter two groups is because it is unclear at what point during chapter 11 firms may begin to manage earnings (i.e., before the announcement or after the announcement). Analysis of this issue is facilitated by the group separation. Table 1 provides the summary of the sample used in the study.

TEST OF HYPOTHESIS 1

The management forecasts of earnings must be related to actual earnings in order to determine if bias exists. McNichols (1989) analyzes bias through the determination of forecast error. Stated in statistical form the hypothesis is represented as follows:

$$\sum_{n=0} \underline{fe}_i$$

Where: fe_i = forecast error of firm i (forecast error = actual eps - management forecast of eps), deflated by the firm's stock price 180 days prior to the forecast.

In order to test hypothesis 1, firms engaged in non-normal operations are analyzed. Statistical analysis is performed on the sample in order to determine if the average forecast error is zero. McNichols (1989) and DeAngelo (1988) conduct a t-test on their respective samples in addition to a Wilcoxon signed rank test. Lehmann (1975) reports that the Wilcoxon test has an efficiency of about 95% relative to a t-test for data that are normally distributed, and that the Wilcoxon test can be more efficient than the t-test for non-normal distributions. Therefore, this analysis consists of performing a t-test and a Wilcoxon signed rank test on the average cross-sectional differences between actual earnings per share and the management forecast of earnings per share.

TEST OF HYPOTHESIS 2

Introducing a firm-specific control for firms that forecast in both normal and non-normal operating periods allows a test of the relative forecast error in these two respective periods. Stated in statistical form the hypothesis is represented as follows:

$$\sum \frac{\underline{fe}_i}{\eta_{\text{non-normal}}} = \sum \frac{\underline{fe}_i}{\eta_{\text{normal}}}$$

In order to test hypothesis 2, the same firms are studied in both non-normal and normal operating periods. Forecast error during non-normal operations is compared to forecast error for these same firms during normal operations. Required criteria for this test is that these firms have more than one forecast during the study period, and that at least one forecast be contained in a normal operating period and at least one forecast be contained in a non-normal operating period. Similar statistical tests to those conducted in hypothesis 1 are employed for hypothesis 2.

TEST OF HYPOTHESIS 3

The purpose of this test is to assess the relative information content of management earnings forecasts during normal and non-normal operating periods. The following model is used to evaluate information content:

$$CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} + b_4 B_{it} + b_5 MV_{it} + b_6 H_{it} UE_{it} + e_{it}$$

Where:	CAR_{it}	= Cumulative abnormal return forecast i, time t
	a	= Intercept term
	UE_{it}	= Unexpected earnings for forecast i, time t
	$D1_{it}$	= Dummy variable, 0 for normal, 1 for non-normal operating period
	MB_{it}	= Market to book value of equity as proxy for growth and persistence
	B_{it}	= Market model slope coefficient as proxy for systematic risk
	MV_{it}	= Market value of equity as proxy for firm size
	H_{it}	= Horizon of forecast, measured as days into year before forecast
	e_{it}	= error term for forecast i, time t

Normal firms represented by the dummy variable will consist of management forecasts made during normal operating periods. Non-normal firms represented by this variable will consist of firms engaged in chapter 11 activities (either 90 days before and after the chapter 11 announcement or 90 days after the chapter 11 announcement).

The coefficient "a" measures the intercept. The coefficient b_1 is the earnings response coefficient (ERC) for all firms in the sample (during both normal and non-normal operating periods). The coefficient b_2 represents the incremental ERC for non-normal periods. Therefore, b_2 captures the difference in the information content for firms during normal and non-normal operating periods. The coefficients b_3 , b_4 , b_5 , and b_6 are contributions to the ERC for all firms in the sample. To investigate the effects of the information content of management forecasts on ERC, there must be some control for variables shown by prior studies to be determinants of ERC. For this reason, the variables represented by coefficients b_3 through b_6 are included in the study.

Unexpected earnings (UE_i) is measured as the difference between the management earnings forecast (MF_i) and security market participants' expectations for earnings proxied by consensus

analyst following as per Investment Brokers Estimate Service (IBES) (EX_i). The unexpected earnings are scaled by the firm's stock price (P_i) 180 days prior to the forecast:

$$UE_i = \frac{(ME_i - EX_i)}{P_i}$$

For each disclosure sample, an abnormal return (AR_{it}) is generated for event days -1, 0, and +1, where day 0 is defined as the date of the forecast disclosure identified by the DJNRS. The market model is utilized along with the CRSP equally-weighted market index and regression parameters are estimated between -290 and -91. Abnormal returns are then summed to calculate a cumulative abnormal return (CAR_{it}). Hypothesis 3 is tested by examining the coefficient associated with the unexpected earnings of forecasts, b_2 , during non-normal operating periods. There are two possible conclusions; the forecast may be noisy, which in this event, $b_2 < 0$, or it will possess an information-enhancing signal to the investor, which will result in $b_2 > 0$.

RESULTS

Tests of hypothesis 1 are conducted on two samples; one sample consists of a total of 211 firms in which the management forecast was made within a window extending to 90 days after a chapter 11 announcement. The second sample consists of 349 firms in which the management forecast was made within a window 90 days before to 90 days after the management change announcement.

Table 2 contains the results of this test. Panel A of Table 2 indicates results for the first sample of 211 firm forecasts. Mean forecast error for these firms is -.08 with a p-value of .05. Using the distribution-free rank test, significance is observed at the .01 level. Panel B of Table 2 indicates results for the second sample of 349 firms. Mean forecast error for these firms is -.19 with a p-value of .01. Using the distribution-free rank test, significance is observed at the .01 level. The results associated with these statistics are consistent with the notion of greater upward earnings management of the forecast. Results, therefore, lead to a rejection of hypothesis 1 that average management forecast error equals zero.

Hypothesis 2 examines whether the introduction of firm-specific control has a bearing on the average forecast error. This test is developed by comparing forecasts of the same firms in both a normal and non-normal operating period. This allows for a test of the relative forecast error in the two different operating periods. Panel A of Table 3 indicates results for the sample of 118 common firms that forecast in both operating periods with forecasts occurring within 90 days after the chapter 11 announcement. Results show that the mean forecast error derived from the average differences between normal/non-normal operating periods is .06 with a p-value of .02. Using the distribution-free sign rank test, significance is observed at the .01 level. Panel B of Table 3 indicates

results for the sample of 146 common firms that forecast in both operating periods with forecasts occurring with 90 days before and after the chapter 11 announcement. Results show that a mean forecast error is .11 with a p-value at .01. The sign rank test indicates significance at the .01 level. The results suggest rejection of the hypothesis that the average forecast errors during these two periods are the same. In addition, the forecast error during non-normal operating periods exceeds the forecast error during normal operating periods, on average. This again is consistent with the notion of greater upward earnings management of the forecast during non-normal operating periods, and that investors do not discount forecasts released during non-normal operating periods.

Table 2: Test of Hypothesis One						
Table Entry is Average Management Forecast Error Deflated by Firm's Stock Price 180 Days Prior to Forecast						
Model: $\sum_{n=0} \frac{fe_i}{n}$						
Panel A-management forecast error 90 days after chapter 11 announcement						
n	Mean	Median	Minimum	Maximum	Standard Deviation	(t-statistic)
358	-.08	-.01b	-.005	.287	.0014	(-2.23) ^a
^a Significant at the .05 level (two-sided test).						
^b Significant at the .01 level using the non-parametric sign rank test.						
fe _i = forecast error of firm i (actual eps - management forecast of eps).						
n = sample of 211 firm forecasts for the period 1983-2001.						
Panel B-management forecast error 90 days before/after chapter 11 announcement						
n	Mean	Median	Minimum	Maximum	Standard Deviation	(t-statistic)
419	-.19	-.01b	-.002	.348	.0011	(-2.35) ^a
^a Significant at the .01 level (two-sided test).						
^b Significant at the .01 level using the non-parametric sign rank test.						
fe _i = forecast error of firm i (actual eps - management forecast of eps).						
n = sample of 349 firm forecasts for the period 1983-2001.						

Table 3: Test of Hypothesis Two						
Model: $\sum \eta_{\text{non-normal}} \frac{fe_i}{n_{\text{non-normal}}} = \sum \eta_{\text{normal}} \frac{fe_i}{n_{\text{normal}}}$						
Panel A-Table entry is average management forecast error difference between normal and non-normal forecasts 90 days after the chapter 11 announcement						
n	Mean	Median	Minimum	Maximum	Standard Deviation	(t-statistic)
135	.06	.01b	-.003	.429	.0020	(2.29) ^a
^a Significant at the .02 level (two-sided test).						
^b Significant at the .01 level using the non-parametric sign rank test.						
fe_i = forecast error of firm i (actual eps - management forecast of eps).						
n = sample of 118 firm forecasts for the period 1983-2001.						
Panel B-Table entry is average management forecast error difference between normal and non-normal forecasts 90 days before/after the chapter 11 announcement						
n	Mean	Median	Minimum	Maximum	Standard Deviation	(t-statistic)
197	.11	.01b	-.003	.448	.0010	(2.41) ^a
^a Significant at the .01 level (two-sided test).						
^b Significant at the .01 level using the non-parametric sign rank test.						
fe_i = forecast error of firm i (actual eps - management forecast of eps).						
n = sample of 146 firm forecasts for the period 1983-2001.						

Hypothesis 3 tests information content of management forecasts during non-normal operating periods relative to the information content of management forecasts during normal operations. Panel A of Table 4 reports results of using the sample of 211 firms making a management forecast within 90 days following a chapter 11 announcement. As indicated in Panel A, the coefficient representing the variable which is the incremental ERC for non-normal operating periods (b_2), has a value of .10 with a p-value of .05. The coefficient representing the overall ERC for all firms (b_1), has a value of .14 with a p-value of .04. All other control variables are not significant at conventional levels. Panel B of Table 4 reports results of using the sample of 349 firms making a management forecast 90 days before or after the chapter 11 announcement. Panel B indicates a value of .18 for the b_2 coefficient with a p-value of .02. Coefficient b_1 has a value of .12 with a p-value of .01, while other control variable coefficients, are again, not significant at conventional levels. These findings indicate that not only do forecasts contain information content, there is a difference in the information content of management forecasts during normal and non-normal operating periods. Results, therefore, suggest rejection of the hypothesis that information content of management

forecasts during normal operating periods is equal to information content of management forecasts during non-normal operating periods.

Table 4: Test of Hypothesis Three								
Model: $CAR_{it} = a + b_1UE_{it} + b_2D1_{it}UE_{it} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + b_6H_{it}UE_{it} + e_{it}$								
Panel A-Table represents data for 211 firms 90 days after the chapter 11 announcement								
Coefficients (t-statistic)								
n	a	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	Adj. R ²
358	.23	.14	.10	.12	-.06	.02	.18	.082
	(.88)	(2.10) ^a	(1.96) ^b	(.11)	(-.32)	(.28)	(.50)	
^a Significant at the .04 level (one-sided test).								
^b Significant at the .05 level (one-sided test).								
Panel B-Table represents data for 349 firms 90 days before/after the chapter 11 announcement								
Coefficients (t-statistic)								
n	a	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	Adj. R ²
419	.40	.12	.18	.08	-.02	.09	.21	.069
	(.76)	(2.42) ^a	(2.08) ^b	(.18)	(-.27)	(.52)	(.33)	
^a Significant at the .01 level (one-sided test).								
^b Significant at the .02 level (one-sided test).								
<p>CAR_{it} = Cumulative abnormal return forecast i, time t a = Intercept term UE_{it} = Unexpected earnings for forecast i, time t D1_{it} = Dummy variable, 0 for normal, 1 for non-normal operating period MB_{it} = Market to book value of equity as proxy for growth and persistence B_{it} = Market model slope coefficient as proxy for systematic risk MV_{it} = Market value of equity as proxy for firm size H_{it} = Horizon of forecast, measured as days into year before forecast e_{it} = error term for forecast i, time t</p>								

CONCLUSIONS

This study provides empirical evidence regarding the credibility of management forecasts during chapter 11 activities. Bias results indicate that managers exert greater upward earnings management on the forecast during non-normal operating periods. Information content results

indicate the presence of incremental information content in management forecasts during chapter 11 relative to normal operating periods.

REFERENCES

- Ajinkya, B. & M. Gift. (1984). Corporate managers earnings forecasts and symmetrical adjustments of market expectations. *Journal of Accounting Research*, (Autumn), 425-444.
- Baginski, S., J. Hassell & G. Waymire. (1994). Some evidence on the news content of preliminary earnings estimates. *The Accounting Review*, (January), 265-271.
- Collins, D. & L. DeAngelo. (1990). Accounting information and corporate governance: Market reaction to earnings of firms engaged in proxy contests. *Journal of Accounting and Economics*, 13, 213-247.
- DeAngelo, L. (1988). Managerial competition, information costs, and corporate governance. *Journal of Accounting and Economics*, (January), 3-36.
- DeAngelo, L. (1990). Equity valuation and corporate control. *The Accounting Review*, (January), 93-112.
- Diamond, D. (1985). Optimal release of information by firms. *The Journal of Finance*, (September), 1071-1093.
- Diamond, D. & R. Verrecchia (1987). Constraints on short-selling and asset price adjustments to private information. *Journal of Financial Economics*, 18, 277-311.
- Frankel, R., M. McNichols & P. Wilson (1995). Discretionary disclosures and external financing. *The Accounting Review*, (January), 135-150.
- Lees, F. (1991). *Public disclosure of corporate earnings forecasts*. New York: The New York Conference Board.
- Lehman, E. (1975). *Nonparametrics: statistical methods based on ranks*. San Francisco: Holden-Day Press, 171-175.
- Patell, J. (1976). Corporate forecasts of earnings per share and stock price behavior. *Journal of Accounting Research*, (Autumn), 246-276.
- Stunda, R. (1996). The credibility of management forecasts during mergers and acquisitions. *American Academy of Accounting and Finance*, (December), 352-358.

FINDING THE RIGHT PREDICTIONS FOR EARNINGS CASE: JAPANESE RETAIL INDUSTRY

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ABSTRACT

In this paper, we provide an empirical analysis of the relationships between net earnings and some key financial information for Japanese retail companies. We have also applied the Altman's Z-Score technique to the financial data of these companies. We found that cash flow from operations, EBIT, and net sales can strongly predict profitability. Market-to-book and gross margin ratios were found to have somewhat weaker explanatory power to predict future earnings. In this study, we also confirmed the usefulness of the original Altman's z-score technique in Japanese retail industry. This study may provide some useful information to investors as how to select successful companies for their investment as well as how to avoid investing in companies that may go bankrupt in the near future.

INTRODUCTION

The recent Enron and Author Andersen Case has raised the issue of the reliability of companies' financial statements in accordance with the U.S. generally accepted accounting principles. Financial statements, however, still remain useful information to investors, as previous studies such as Lev and Thiagarajan (1993) had concluded. In the meantime, Japanese retail industry is facing serious difficulty in operating in the Japanese market. According to Teikoku Databank, Ltd. (2001), in the fiscal year 2000, Japan experienced the worst aggregate amount of approximately 25 trillion yen in liability due to bankruptcies since World War II. Among those which went bankrupt in 2000, Sogo (under the Civil Rehabilitation Law) and Nagasakiya (under the Corporate Reorganization Law) were two major retailers listed on the first section of Tokyo Stock Exchange in the Japanese retail industry. In 2001, Mycal Corp., and Kotobukiya Co., Ltd., other major retailers, were also under the Civil Rehabilitation Law.

In this paper, we examine public accounting information on financial statements (balance sheet, income statement, and cash flow statement) for companies in the Japanese retail industry. Although the accounting report system between the U.S. and Japan is different, the fundamentals of the accounting report are similar. For example, according to Chariton, Clubb, and Andreou (2000) Japanese empirical evidence concerning earnings and cash flows and their relationship with security returns was consistent with prior U.S. evidence. In this study we use U.S. approaches and empirically analyze the relationships between some key financial ratios and future earnings in 40 retail companies listed on Japanese market. We will also investigate the existence of financial signals predicting possible bankruptcy. This study may provide some useful information to

investors as how to select successful companies for their investment as well as how to avoid investing in companies that may go bankrupt in the near future.

REVIEW OF LITERATURE

Rubenstein (1995) investigated benchmarking of financial statements by conducting vertical and horizontal financial analysis, benchmarking, segmentation, and comparative and competitive analysis. Rubenstein found that a company's annual sales per employee, gross profit, and operating profit differentiated companies. Abarbanell and Bushee (1997) studied the relationship between the current changes in financial statement data (fundamental signals) and future earnings changes. They found that inventory, gross margin, effective tax rate, earnings quality, and labor force signals had a strong explanatory power to predict one-year-ahead earnings, whereas selling and administrative expenses and audit qualification did not.

Charitou, Clubb, and Andreou (2000) found a strong relationship between earnings and cash flows with security returns in Japanese market. Their findings support the U.S. empirical views, even though the U.S. and the Japanese systems had several differences. Herrmann, Inoue, and Thomas (2000) reported their study on earnings component to measure a firm's valuation. They examined return on equity, earnings before tax, income tax expense, minority interest, nonrecurring items, ordinary income, special items, operating income, non-operating income, sales, cost of goods sold, selling general and administrative expenses, other revenues and expenses, interest expense, discontinued operations, and extraordinary items. They found that greater disaggregation of earnings components would provide better information concerning earnings predictions.

Piotroski (2000) applied an accounting-based fundamental analysis to investigate the use of historical financial statement information for an investment strategy. He used nine fundamental signals, which represented three major fields, to examine firms' financial condition. The three major fields were profitability, financial leverage/liquidity, and operating efficiency. Piotroski developed a model which combined the total number of the nine variables to measure firms' performance. The results showed that ROA (return on assets) and CFO (cash flow from operation) were the strongest indicators. However, the aggregate portfolio model performed a better prediction, in contrast to the works of Herrmann et al.

Zhang (2000) established a theoretical model to reconsider the function of earnings and book value for a company's equity valuation. He concluded that accounting data included helpful information for financial decisions. Zhang also reported that earnings and book value variables performed key accounting roles. Charitou (2000) studied the relationship between current cash flow from operations and future earnings. He reported that cash flow from operations could predict future earnings, which was consistent with previous U.S. studies. Trecartin (2000) examined the influence of the book-to-market ratio on stock returns. He concluded that cash flow, sales growth, and size had more influence on stock returns than the book-to-market ratio did. Aydogan and Gursoy (2000) examined the capability of average P/E and book-to-market ratio to predict future stock returns. They found that these ratios were encouraging but not promising for the future stock returns.

Farsio and Doty (2000) using logical analysis reported that book-to-market ratio should not be used as a predictor for stock returns. Their findings were in contradiction with Fama and French's

(1992) study which had concluded that book-to-market ratio would be an important predictor for stock returns.

This study extends the prior works and empirically examines firms' short-term future performance by using a mixture of financial information. We use the next period's net earnings as a dependent variable and ten independent variables in order to cover profitability, financial leverage/liquidity, and operating efficiency.

METHODOLOGY

The empirical analyses of this paper consist of regression analysis and the Altman's z-score technique. First, we used cross sectional regression analysis with one dependent variable; next year's earnings, and ten independent variables (current year) as follows:

Independent Variables		
Balance Sheet Section	Income Statement Section	Cash Flow Statement Section
<ul style="list-style-type: none"> ● Current Ratio ● Market-to-Book Ratio 	<ul style="list-style-type: none"> ● Net Sales ● EBIT ● EPS ● ROE ● ROA ● ROIC ● GM Ratio 	<ul style="list-style-type: none"> ● Cash Flow from Operation Activity

We regressed natural logarithm of next year's earnings (year 2000) on natural logarithms of our ten independent variables during the current year (year 1999). The data for our variables were collected from three different web sites: 1) *MSN Money* (<http://jp.moneycentral.msn.com>), 2) *PAXNet Impress Corporation* (<http://www.paxnet.co.jp>), and 3) *Yahoo! Japan Finance* (<http://quote.yahoo.co.jp>). The population represents the Japanese retail industry, including *hyakkaten* (department stores), general merchandise stores (GMS), and *senmonten* (specialty stores). The total number of the retail companies in the sample is 40. Among forty observations, twenty-one companies are department stores; fifteen are GMS; and four are specialty stores. These companies were selected because their tick mark number falls into a block between 8231 and 8289, which mainly represents retailers, especially department stores, GMS, and specialty stores.

Next, we applied the Altman's z-score technique to our data. Altman (1968) developed a model that predicted corporate bankruptcy with a high degree of accuracy. Altman and McGough (1974) examined going-concern problem as auditors' concerns. They found that their model, which was originally developed by Altman, could be useful for auditors as indicators of going-concern problems. Extensive research by other scholars indicate that Altman's original z-score technique remains an effective tool for prediction of corporate bankruptcy.

EMPIRICAL RESULTS

Regression

We used the t-statistics for the slope coefficients and R^2 to analyze the results. The t-statistics for the slope coefficient explains whether the related independent variable predicts future earnings. When the absolute value of a t-statistic exceeds the critical value of t, the independent variable is considered significant to explain the dependent variable. All tests are done at the 5% significance level.

The regression test results are displayed in table 1. The results show net sales, gross margin ratio, EBIT, market-to-book ratio, and cash flow from operations have significant explanatory power to predict next year's net earnings. The most significant signals for profitability are cash flow from operations (t-statistic=8.38), EBIT (t-statistic=6.92), and net sales (t-statistic=6.36), respectively. In contrast, ROA and ROIC have the lowest explanatory power. Same results are also obtained by analyzing R^2 .

TABLE 1		
Independent Variable	t-statistic	Adjusted R^2
Ln 99 Net Sales	6.356754	0.584621
Ln 99 Gross Margin Ratio	2.770118	0.270474
Ln 99 EBIT	6.925660	0.722927
Ln 99 EPS	0.633113	-0.030884
Ln 99 Market-to-Book Ratio	2.977013	0.239257
Ln 99 ROA	0.115020	-0.049306
Ln 99 ROE	-1.340073	0.040200
Ln 99 ROIC	0.162817	-0.048610
Ln 99 Cash Flow from Operations	8.379128	0.802807
Ln 99 Current Ratio	0.288291	-0.035153

The Altman's Z-Score Technique

We used the Altman's z-score technique (Shim 2001) as shown below:

$$Y = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5 \quad \text{Formula (1)}$$

Where:

$$\begin{aligned}
 Y &= Z\text{-scores} \\
 X_1 &= \frac{\text{Working Capital}}{\text{Total Assets}} \\
 X_2 &= \frac{\text{Retained Earnings}}{\text{Total Assets}} \\
 X_3 &= \frac{\text{Operating Income}}{\text{Total Assets}} \\
 X_4 &= \frac{\text{Market Value of Common and Preferred}}{\text{Total Assets}} \\
 X_5 &= \frac{\text{Sales}}{\text{Total Assets}}
 \end{aligned}$$

The Value of the Z-scores	Probability of Illiquidity or Failure
$Z \leq 1.8$	Very High
$1.81 < Z < 2.99$	Not Sure
$Z \geq 3.0$	Unlikely

We applied the model to 32 out of the 40 Japanese corporations since the required data for 8 companies were not available. Table 2 summarizes the results. The three companies appearing on the right column of Table 2 went bankrupt (rehabilitation or reorganization) within two years (in 2000 or 2001). All of the bankrupt companies were correctly categorized in the very high probability of illiquidity or failure section.

Probability of Illiquidity or Failure	Number of Companies Applied to This Category	Number of Companies Actually Defaulted
Very High	12	3
Not Sure	13	0
Unlikely	7	0

CONCLUSION

In this paper, we conducted an empirical analysis of the relationships between net earnings and some key financial information for Japanese retail companies. We also applied the Altman's Z-Score technique to the financial data of these companies. We found that cash flow from operations, EBIT, and net sales can strongly predict profitability. Market-to-book and gross margin ratios were found to have somewhat weaker explanatory power to predict future earnings. While these findings are in line with some of the previous studies, they are in contradiction with others. Due to unavailability of data, our sample was limited to 40 Japanese retail companies and covered only a limited length of the operation time. Unlike U.S., access to corporate financial information in Japan is limited. However, there is optimism that in the near future more corporate financial data will be available in Japan. This will make it easier to conduct deeper and further empirical research in this area.

In this study, we also confirmed the usefulness of the original Altman's z-score technique in Japanese retail industry. Some scholars have derived other z-score models from the original Altman's technique. For example, Shirata (1998) studied the bankruptcy in Japan with a CART model and developed another z-score equation, which did not include profitability and liquidity ratios. According to Shirata, profitability and liquidity ratios could not expose the financial difficulty of Japanese companies. We could not use Shirata's model due to unavailability of the necessary data. Once the data becomes available, it would be interesting to compare the results of our study with those of Shirata's model. Moreover, we believe a more sophisticated z-score model, which also considers cash flows from operations and EBIT could produce reliable results.

REFERENCES

- Abarbanell, J. & B. Bushee (1997). Fundamental Analysis, Future Earnings, and Stock Prices. *Journal of Accounting Research*. 35(1), 1-24.
- Altman (1968). Financial Ratio, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*. XXIII.4. Retrieved April 26, 2002 from *Business Source Premier*.
- Altman & McGough (1974). Evaluation of A Company as A Going Concern. *Journal of Accountancy*. 138(6), Retrieved March 20, 2002 from *Business Source Premier*.
- Aydogan, K. & G. GURSOY (2000). P/E and PBV Ratios as Predictors of Stock Returns in Emerging Equity Markets. *Emerging Markets Quarterly*. 4(4), Retrieved March 20, 2002 from *Business Source Premier*.
- Charitou, A (2000). The Impact of Losses and Cash Flows on Dividends: Evidence for Japan. *Abacus*. 36(2), 198-225.
- Charitou, A. & A. Andreau (2000). The Value Relevance of Earnings and Cash Flows: Empirical Evidence for Japan. *Journal of International Financial Management and Accounting*. 11(1), 1-22.
- Fama, E. & K. French (1992). The Cross-Section of Expected Stock Returns. *Journal of Finance*. 47, 427-465.
- Farsio, F. & M. Doty (2000). Book to Market Ratio, Firm Size, and Stock Returns: A Critique on Recent Empirical Studies. *Journal of Business and Economic Perspectives*. XXVI.I., 46-50.

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- Guochang Zhang (2000). Accounting Information, Capital Investment Decisions, and Equity Valuation: Theory and Empirical Implications. *Journal of Accounting Research*. 38(2), 271-296.
- Herrmann, D., T. Inoue & W. Thomas (2000). The Persistence and Forecast Accuracy of Earnings Components in the USA and Japan. *Journal of International Financial Management and Accounting*, 11(1), 48-70.
- Lev, B. & S. Thiagarajan (1993). Fundamental Information Analysis. *Journal of Accounting Research*, 31, 190-215.
- Piotroski, J.D. (2000). Value Investing: The Use of Historical Financial Statements Information to Separate Winners from Losers. *Journal of Accounting Research*. 38-41.
- Schaeffer, M. (2000). FCIB and the Department of Commerce Push Credit Scoring into the International Arena. *Business Credit*. 102(4), Retrieved April 4, 2002 from *Business Source Premier*.
- Shim, J. (2001). *Handbook of Financial Analysis, Forecasting and Modeling*. 2nd ed. New Jersey: Prentice Hall Press.
- Shirata, C. (1998). Financial Ratios as Predictors of Bankruptcy in Japan: An Empirical Research. *The Second Asian*. 437-445, Retrieved April 7, 2002 from the World Wide Web: <http://www.shirata.net/eng/APIRA98.htm>
- Teikoku Databank Ltd. (2001). Tokubetsu Kikaku: Kourigyouno Tousan Jittai Chousa. Retrieved April 1, 2002 from the World Wide Web: <http://www.tdb.co.jp/watching/press/p010103.html>.
- Trecartin, R. (2000). The Reliability of the Book-to-Market Ratio as a Risk Proxy. *Financial Services Review*, 9(4), Retrieved March 20, 2002 from *Business Source Premier*.
- Wilson, R. & R. Sharda (1994). Bankruptcy Prediction Using Neural Networks. *Decision Support Systems*, 11, 545-557. Retrieved March 20, 2002 from *Business Source Premier*.

BENEFITS OF SAP REVEALED THROUGH ACCOUNTING RATIOS

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ABSTRACT

Several articles have discussed the potential benefits of Enterprise Resource Planning (ERP) software. This paper attempts to verify if the espoused improvements to key financial statement ratios are realized. This study examines a sample of 56 firms that adopted SAP, the most popular ERP package, to identify if it differed from a matched sample of firms that had not adopted the software. The current ratio, inventory turnover, and operating cycles are contrasted. Using several different statistical techniques, the sample of SAP adopters is never significantly different from the control group. Therefore, when developing the business case for ERP adoption, there should be compelling qualitative benefits identified because enhancements in the more traditional short-term measures may not be attained.

INTRODUCTION

Enterprise Resource Planning software (ERP) integrates the business processes within an organization but is expensive and time-consuming to implement. A large company can spend over \$100 million on the project while mid-sized companies will spend over \$10 million (Brady, et. al., 2001). Proponents of ERP contend that this integration of functions increases the efficiency and effectiveness of the organization. These efficiencies should result in both qualitative and quantitative benefits to the firm. Qualitative benefits include improvements in business processes, information technology, and strategic planning. While these may be enough to warrant the implementation of such a costly product, it would be more cost-effective if there were quantitative benefits as well. Advocates of ERP indicate that it should reduce cycle times and inventory levels (Mabert, et. al., 2001a). It has also been suggested that ERP may enhance revenue and cash flow from operations (Brady, et. al., 2001). For example, in CDI Corporation's 1999 annual report, the company stated:

Our SAP solution will provide for management of financial and human resources functions and for detailed project management, and will provide important benefits including reduced receivables, increased cash flow, new financial analysis and forecasting capabilities, and stronger financial controls. Similar statements are found in other annual reports.

The purpose of this study is to examine if the financial benefits of ERP are apparent in reported financial statement information. This study examines key ratios before and after implementation to identify systematic changes in the financial statements. While many of the benefits of ERP such as improved decision making through better analysis techniques will not be reflected in financial statement results, it is expected that some financial benefits will accrue to offset the cost of these systems.

PRIOR LITERATURE

Several recent studies have examined ERP adopters. The first to be discussed is a series of articles by Mabert, Soni, and Venkataramanan (MSV). In 2000, they published a survey of 479 firms (MSV, 2000). In articles published in 2001, they present a synthesis of interviews with several corporations (MSV, 2001a) and an additional study reporting the results of a survey of 75 respondents (MSV, 2001b). These studies reveal that while specific targets are often set when building the business case for ERP, measurement subsequent to implementation is often sketchy. Also, they note that due to the extensive training necessary for these complex systems, the benefits of ERP may not fully be attained until a year after implementation. As for benefits realized, they find that implementation tends not to reduce the work force or operating costs, but does result in inventory reductions and shorter cycle times.

A study by Hayes, Hunton, and Reck (2001) examined the market's reaction to ERP announcements. The authors state that potential quantifiable benefits include lower labor and inventory costs. They find that the market responds positively to ERP implementation announcements, which signifies that the market believes there are benefits to these systems that exceed the costs.

Additionally, Hunton, McEwen, and Wier (2002) use a behavioral approach to investigate financial analysts' reactions to ERP implementation announcements. Overall, the analysts increased their earnings forecasts subsequent to ERP announcements. This effect was particularly strong for small, healthy firms and large, unhealthy firms. Again, the implication is that financial analysts believe the benefits of ERP outweigh the costs.

CURRENT STUDY

This study examines companies that have implemented SAP Enterprise Resource Planning software. SAP was chosen because it is the market leader in this area. The ratios focusing on current assets and liabilities are examined because those should adjust more quickly to business process changes.

Independent Variables

A purported benefit of SAP is the efficiency in which inventory is shipped and the reduced cycle time between ordering, production, and shipping. Accordingly, the operating cycle should decrease and inventory turnover should increase when SAP is implemented. Also, the improved coordination and automated dunning process should increase liquidity as defined by the quick ratio.

The operating cycle, inventory turnover, and the quick ratios are extracted from Standard and Poor's (S&P) Research Insight Compustat database for 1990 through 2001.¹ The Operating Cycle is defined by S&P as the days to sell inventory plus the average collection period where days to sell inventory equals the average of the most current two years of inventory divided by cost of goods sold divided by 360. Inventory Turnover is cost of goods sold divided by the average of the most

current two years of inventory. The Quick Ratio equals cash plus receivables divided by current liabilities.

SAMPLE

Using Lexis-Nexis, annual reports for 1999 were reviewed and seventy-eight companies were identified that specifically mentioned SAP in the report and had completed implementation SAP by the end of the year.² The requisite ratios were extracted resulting in 59 firms with sufficient data. A sample of non-adopters was matched to the SAP adopters based on primary SIC and asset size. For a few firms, an appropriate match was not available, so this reduced the sample to 56 matched-pairs. Matched-pairs were omitted from analyses where the required ratio was not available. Therefore, fewer than 56 matched-pairs are used in some of the analyses discussed below.

METHOD

Matched-pairs t-tests and regression are used to test for differences attributable to SAP systems. First, matched-pairs t-tests establishes if the key ratios differ between the two groups before SAP implementation. Next, the samples are contrasted in 2000 and 2001 to determine if the ratios for the two groups diverge. Additionally, annual changes in the ratios are computed and compared. Finally, a regression method discussed by Dechow, et. al. (1995) is used to identify if there is a systematic change in the level of each ratio subsequent to ERP implementation.

RESULTS

The results of the paired t-tests are shown in Table 1. The matching process seems to be effective since the matched firms are not significantly different prior to SAP implementation. However, the firms are also not significantly different subsequent to employing SAP.

It is possible that the rate of change, not the level of the ratio, is impacted by SAP. Therefore, the annual changes are tested and the results presented in Table 2. Again, no significant differences are found before or after SAP implementation.

Finally, a regression model is estimated for each firm using a dummy variable for pre- and post-implementation. The model is:

$$\text{Ratio}_{it} = \alpha_i + \beta_i \text{PART}_{it} + \varepsilon_{it}$$

Where:

i = the firm

t = year

$\text{PART} = 0$ if year = 1990 to 1999 or 1 if year = 2000 to 2001

The significance of the slope coefficient (β) for the two samples is then tested and reported in Table 3. While the average slope coefficient is significantly different from zero for inventory turnover, the SAP and control groups were not significantly different for any variable. It is hypothesized that the change in the slope for inventory turnover is related to Y2K behaviors. In response to possible Y2K problems, it has been speculated that companies built up inventories, which would have resulted in quicker inventory turnover after 1999. Again, the matched sample makes it unlikely that this effect is related to SAP since both groups experienced similar changes in these key ratios.

CONCLUSION

Much has been written about the potential benefits of SAP, but no studies have specifically tested to see if changes are reflected in the financial statements. In this study, there were no significant differences between this sample of SAP adopters and the control group. It is possible that two years is not a sufficient period of time to see quantifiable changes in these ratios. Also, these companies were relatively early adopters of SAP, and perhaps experienced more difficulties than more recent adopters. Accordingly, more recent SAP installations may experience financial benefits more quickly. Alternatively, it may be essential to build the business case for SAP based on qualitative factors because traditional cost savings may not be realized. Recent articles have discussed the difficulty of using traditional ROI, for example, to validate ERP usage (Stedman, 1999). The competitive advantages of ERP may be required to justify this additional cost.

ENDNOTES

- ¹ Additional variables such as the current ratio, receivables and payables turnover, net trade cycle, employees to sales, working capital turnover, and free cash flow were also tested and the results are the same as for those ratios reported in this paper.
- ² The search used was SAP w/10 (project or system or software).

REFERENCES

- Brady, J.A., E.F. Monk & B.J. Wagner. (2001). *Concepts in Enterprise Resource Planning*. Boston: Course Technology, A Division of Thomson Learning.
- Hayes, D.C., H. E. Hunton & J.L. Reck. (2001). Market reaction to ERP implementation announcements. *Journal of Information Systems*. 15(1), 3-18.
- Hunton, J. E., R. A. McEwen & B. Wier. (2002). The reaction of financial analysts to enterprise resource planning (ERP) implementation plans. *Journal of Information Systems*. 16(1), 31-40.
- Mabert, V.A., A. Soni & M.A. Venkataramanan. (2000). Enterprise resource planning survey of U.S. manufacturing firms. *Production and Inventory Management Journal*, 41(2), 52-58.

Mabert, V.A., A. Soni & M.A. Venkataramanan. (2001a). Enterprise resource planning: Common myths versus evolving reality. *Business Horizons*, 44(3), 69-76.

Mabert, V.A., A. Soni & M.A. Venkataramanan. (2001b). Enterprise resource planning: Measuring value. *Production and Inventory Management Journal*, 42(3), 46-51.

Stedman, C. (April 5, 1999). Survey: ERP costs more than measurable ROI. *Computerworld*, 33(14), 6.

	OPERATING CYCLE N=52			INV TURN N=41			QUICK RATIO N=56		
YEAR	MEAN	T	P	MEAN	T	P	MEAN	T	P
2001	-8.597	-1.150	0.256	0.651	0.460	0.649	-0.159	-1.200	0.234
2000	-3.663	-0.490	0.626	1.605	1.240	0.224	-0.120	-1.170	0.247
1999	-0.726	-0.090	0.929	-1.104	1.230	0.225	-0.112	-0.940	0.352
1998	-6.291	-0.870	0.386	-0.728	1.300	0.201	0.017	0.170	0.867
1997	-12.210	-1.640	0.107	-0.030	1.990	0.053	0.062	0.350	0.728
1996	-3.599	-0.490	0.628	-0.075	1.960	0.057	0.204	0.990	0.325
1995	-7.339	-1.020	0.311	-0.517	1.620	0.114	-0.206	-1.530	0.131
1994	-7.169	-1.040	0.303	-0.562	1.550	0.128	-0.243	-1.610	0.113
1993	-8.839	-1.210	0.231	-0.315	1.680	0.101	-0.351	-2.000	0.050
1992	-11.610	-1.240	0.222	-0.808	1.270	0.212	-0.280	-1.320	0.192
1991	-4.983	-0.550	0.583	-0.564	1.430	0.161	-0.253	-1.410	0.164
1990	-3.555	-0.410	0.681	-0.900	0.900	0.373	-0.157	-0.990	0.328

Table 2: Matched Pairs T-test on Annual Changes (SAP _{y1} -SAP _{y0}) - (CNTL _{y1} -CNTL _{y0})									
YEAR	OPERATING CYCLEN=52			INV TURNN=41			QUICK RATION=56		
	MEAN	T	P	MEAN	T	P	MEAN	T	P
2001-2000	-4.934	-1.420	0.161	-0.954	-1.350	0.184	-0.040	-0.500	0.619
2000-1999	-2.937	-0.600	0.549	-0.116	-0.140	0.887	-0.007	-0.080	0.939
1999-1998	5.564	1.010	0.317	0.411	0.470	0.641	-0.130	-1.900	0.063
1998-1997	5.918	1.500	0.139	-0.814	-1.580	0.121	-0.045	-0.300	0.763
1997-1996	-8.609	-1.950	0.057	-0.228	-0.430	0.672	-0.141	-1.290	0.201
1996-1995	3.380	1.020	0.311	0.290	0.780	0.442	0.409	1.950	0.057
1995-1994	-0.170	-0.050	0.962	0.198	0.500	0.617	0.037	0.450	0.651
1994-1993	1.669	0.320	0.748	0.319	0.650	0.520	0.108	0.870	0.386
1993-1992	4.840	1.220	0.228	0.078	0.200	0.842	-0.105	-1.140	0.261
1992-1991	-5.531	-0.810	0.422	-0.259	-1.080	0.285	-0.049	-0.300	0.765
1991-1990	-1.577	-0.350	0.731	0.629	0.900	0.372	0.018	0.170	0.865

Table 3: Analysis of Regression Results				
$\text{Ratio}_{it} = \alpha_i + \beta_i \text{PART}_{it} + \varepsilon_{it}$ PART = 0 if year = 1990-1999 or 1 if year = 2000-2001				
	MEAN BETA	MEAN TSTAT	t-value	p-value
OPERATING CYCLE				
CNTL	-6.769	-0.453	0.123	0.903
SAP	-5.665	-0.518		
INVENTORY TURNOVER				
CNTL	1.815	1.096	0.298	0.768
SAP	1.197	0.956		
QUICK RATIO				
CNTL	-0.175	-0.149	0.056	0.956
SAP	-0.169	-0.173		

EVIDENCE THAT THE SECURITIES MARKETS PERCEIVE CHANGES IN EFFECTIVE TAX RATES AS PLACING A HIGHER BURDEN ON HIGH-GROWTH FIRMS THAN LOW-GROWTH FIRMS

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ABSTRACT

In this study, we test whether the securities markets perceive changes in effective tax rates as being fair across high- and low-growth firms. In those years surrounding major tax legislation (1981-1982, 1986-1987, and 1990-1992), we find that the market perceived increases in effective tax rates as taxing high-growth firms to the extent that their expected rate of growth will suffer. We find no such evidence for low-growth firms, however, suggesting that the government properly calibrates tax increases for low-growth firms, but may overestimate the degree to which high-growth firms will alter their contracting environment to avoid higher taxation. With reductions in effective tax rates, we find that the 1981 and 1986 Acts were perceived as stimulating growth for all firms, but the acts of the early 1990s were perceived as stimulating growth only for low-growth firms. The R&D tax credits granted by the acts of the early 1990s may be an example of tax relief that was likely targeted to a specific class of taxpayer (high growth, in this case) that is exploited by other non-targeted classes.

INTRODUCTION

Researchers typically assume that a firm is a nexus of contracts designed to efficiently arrange transactions (Coase, 1988; Milgrom & Roberts, 1992). When tax laws change, however, the contracting environment is altered, compelling firms to negotiate new "contracts" or renegotiate existing "contracts." These changes in contracting arrangements arise from attempts to exploit new tax incentives that lower a firm's effective tax rate or from attempts to mitigate the effects of new tax increases that raise a firm's effective tax rate. The extent to which a firm can successfully negotiate or renegotiate these contracts depends on a firm's tax-planning flexibility.

Prior empirical research on tax-planning flexibility has been limited to examining whether taxpayers respond to tax law changes by shifting reported earnings into the more favorable taxing period (pre- or post-enactment). Guenther (1994), for instance, shows that firms managed accruals

in response to the tax law changes of 1986. These one-time shifts in reported earnings were designed either to exploit tax loopholes that would be closed by the end of 1986 or to exploit tax incentives that became effective in 1987. While the timing of earnings recognition may be easily managed by a broad cross-section of firms, the flexibility to favorably negotiate new contracts or to renegotiate existing contracts in light of new tax legislation is likely to vary significantly across firms.

The ability to favorably negotiate new contracts (and possibly renegotiate existing contracts) should be most easily accomplished by firms experiencing high growth. Such firms are engaging in new business where the terms of trade are yet to be determined. These firms would thus have the greatest flexibility in structuring their future contracts. This flexibility in structuring future contracts affords *high-growth* firms greater opportunities to pursue those tax planning strategies that would exploit the provisions of the new tax laws. In the short-run (the phase-in period provided by many statutory changes) tax planning strategies are likely to be limited to modifying the firm's investment and financing positions in order to exploit any loopholes or incentives in the new statute. In the long-run, tax planning strategies are likely to be more flexible, allowing a firm to increase the level of debt, exercise options to purchase leased assets, exploit any 'grandfather' provisions or exercise provisions in existing contracts that allow for renegotiation, among others.

The Federal Government typically amends the Federal tax code in an attempt to achieve some policy objective. It targets specific classes of taxpayers and either lowers taxes by providing tax incentives and rate reductions, or raises taxes by eliminating incentives, raising rates or identifying sources of additional revenue. The difficulty facing the government is how to target specific classes of taxpayers for tax increases, when those taxpayers would be likely to pursue tax-planning strategies that would mitigate the new tax. This difficulty is just as pronounced when the government grants tax incentives or tax relief to specific classes of taxpayers, because taxpayers other than those in targeted classes are also likely to pursue those tax-planning strategies that exploit the new tax law.

In amending the Federal tax code, the Federal Government must not only anticipate the tax-planning flexibility of the targeted class of taxpayers, but also that of non-targeted classes. Miscalibrating the extent (or lack thereof) of tax-planning flexibility could lead to placing too high or too low of a tax burden on certain classes of firms, thus contra-veining the government's policy (or revenue) objective. In other words, miscalibrating could provide the wrong incentives to some firms while not providing the desired incentives to others (i.e., an adverse selection problem).

In this study, we test whether the securities markets value changes in effective tax rates differently for *high-growth* and *low-growth* firms. Typically, increases in a firm's effective tax rate would be negatively associated with market prices while decreases would be positively associated. If the securities markets anticipate a tax increase would be mitigated more effectively by one class of taxpayer than another, then the negative association typically found between market prices and tax rate increases would be less negative for those firms the market expects to best mitigate the tax increase. If the government anticipates the targeted class would have greater tax-planning flexibility than is actually exhibited, then tax law changes that increase the effective tax rate would overburden those taxpayers and would ultimately reduce their firm productivity.

When effective tax rates are reduced, the association between market prices and tax rate decreases would be stronger for those firms that are expected to best exploit the new tax law to their benefit. If the government reduces the effective tax rate of a targeted class of taxpayer as a strategy to stimulate economic growth, the effectiveness of such a government strategy would depend on whether the government was able to anticipate the extent to which the targeted class can exploit the new law. If the government underestimates the tax-planning flexibility of the targeted class, the economic stimulus would fall short of expectations.

Over the 15-year (1980 to 1994) sample period of our study, Congress passed new tax legislation in virtually every year, legislation that potentially altered the effective tax rates of many (but not all) firms. For each of these acts, effective tax rates increased for certain classes of taxpayers and decreased for others. We find, however, that only during those time periods surrounding major tax legislation do the securities markets value tax changes associated with increases in effective tax rates as being excessive, relative to the value the markets place on earnings. Specifically, these results are for those years associated with the tax acts passed in 1981 (The Economic Recovery Tax Act of 1981) and 1986 (Tax Reform Act of 1986), as well as the series of acts passed in the early 1990s (primarily relating to NOL carrybacks, transactions with stockholders and research and development credits). This finding, however, is limited to *high-growth* firms, suggesting that the Federal Government's expectation of tax-planning flexibility for *high-growth* taxpayers is greater than that of the securities markets' expectations.

When effective tax rates decrease, the securities markets would value the decreases in a similarly to their valuation of earnings, if the securities markets anticipate that the tax rate change would sustain long-term growth for these firms. Otherwise, the market would value these decreases less than they would value earnings. Our findings indicate that for *high-growth* firms, the securities markets value tax rate decreases similarly to earnings only in those tax years surrounding The Economic Recovery Tax Act of 1981 and the Tax Reform Act of 1986. In all other years, decreases in the effective tax rates of *high-growth* firms are valued significantly less than the value the securities markets place on earnings.

In contrast, securities markets value effective tax rate changes (increases and decreases) for *low-growth* firms no differently than they value earnings in any of our sample years. This suggests that while the Federal Government may have substantial difficulty in anticipating the tax-planning flexibility of *high-growth* firms, the tax-planning flexibility of *low-growth* firms is easily anticipated.

The following section provides a brief summary of the major changes in U.S. corporate tax law over the period analyzed, and discusses the related literature. Section three presents our test model and discusses the tests conducted. Section four describes the empirical measures used in the research, and the sample selection criteria. Section five presents the empirical results, and section six discusses the implications of the study.

CHANGES IN U.S. CORPORATE TAX LAW

Changes in the U.S. tax code over the 1980 to 1994 period provided both increased and decreased marginal corporate tax rates, instituted and eliminated the investment tax credit, lengthened and shortened depreciable asset lives, instituted the amortization of goodwill, imposed a "minimum" tax, limited the deferral of installment sale income, and reduced the deductions for entertainment expenses, indirect manufacturing costs and dividends received from other corporations. These changes were largely the result of policy initiatives designed to encourage or discourage economic actions.

The changes in U.S. corporate tax law in the early 1980's were largely aimed at stimulating economic activity. The Installment Sales Revision Act of 1980 reduced the corporate alternative tax rate on installment sales to 28% from 30%, and the maximum corporate rate from 48% to 46%. The Economic Recovery Tax Act of 1981, in addition to introducing an accelerated depreciation schedule, created a credit for research and experimental expenses and lengthened the carryover period for net operating losses, in an attempt to motivate growth.

This program of economic stimulation stalled with The Tax Equity and Fiscal Responsibility Act of 1982, which reduced certain tax preferences benefit, and The Tax Reform Act of 1984, which increased top corporate rates. The most dramatic of all these changes were associated however, with the Tax Reform Act of 1986. The changes in tax law following the 1986 Act (The Omnibus Budget Reconciliation Act of 1987, The Technical and Miscellaneous Revenue Act of 1988, The Revenue Reconciliation Act of 1989, The Omnibus Budget Reconciliation Act of 1990, and The Revenue Reconciliation Act of 1993) generally provided for increases in taxation and few targeted tax breaks. The only notable tax incentive is with regards to the tax credit granted during the early 1990s for investments in research and development.

Prior research examining firms' responses to changing tax rates have largely dealt with income shifting and the manipulation of accruals. Scholes, Wilson and Wolfson (1992) found evidence of income shifting in response to changes in marginal tax rates, as did Guenther (1994). Boynton, Dobbins and Plesko (1992), Manzon (1992), and Wang (1995) found that firms managed accruals to minimize their exposure to the Alternative Minimum Tax. Klassen, Lang and Wolfson (1993) found income shifting across international borders, and Harris (1993) found that higher levels of "flexible expenses" were associated with such income shifting.

The income shifting examined by the above studies can, however, be considered one-time responses since income shifting typically affects only those years immediately prior and subsequent to a new tax law's implementation.¹ Unlike prior studies, we do not focus on a particular tax response strategy. Rather, our study focuses on whether a firm's overall growth potential allows it to effectively respond to changing effective tax rates and how this might affect the association of market prices with earnings or earnings components.

MODEL DEVELOPMENT

In order to test how the securities markets value tax changes relative to accounting earnings, we decompose that component of tax expense that resulted from a change in the effective tax rate ($\Delta\tau_{j,t}$) from aggregate earnings within the valuation framework presented in Ohlson (1995). The decomposition of aggregate earnings is illustrated in equation (1), below.²

$$P_{j,t} = \alpha_0 + \alpha_1 BV_{j,t} + \alpha_2 DIV_{j,t} + \alpha_3 (NI_{j,t} - \Delta\tau_{j,t}) + \alpha_4 \Delta\tau_{j,t} \quad (1)$$

Where: $P_{j,t}$ is price per share, $BV_{j,t}$ is net book value of equity per share, $DIV_{j,t}$ is dividends net of capital contributions per share, $NI_{j,t}$ is current after-tax earnings per share, $\Delta\tau_{j,t}$ is the tax change component of earnings per share, $\alpha_{0,\dots,4}$ are coefficients, $\varepsilon_{j,t}$ is the error term, j is the firm designation and t is the time dependency subscript. Note that the term $(NI_{j,t} - \Delta\tau_{j,t})$ is equal to what net income would have been had a firm been taxed at the prior year's effective tax rate.

In equation (1), if market values ($P_{j,t}$) are associated with current income ($NI_{j,t}$) in substantially the same way as market values are associated with changes in effective tax rates ($\Delta\tau_{j,t}$), then the securities markets anticipate that the change in the effective tax rate is simply proportional to a firm's current earnings and growth potential. In this case, α_4 will not differ from α_3 .

In the case where a firm's effective tax rate increases ($\Delta\tau_{j,t} > 0$), a firm would prefer to take actions that would reduce α_4 . If the securities markets perceive that the effects of an increase in effective tax rates will adversely affect a firm's growth or ability to maintain its current level of earnings, α_4 will be greater than α_3 . If, however, the securities markets perceive that the firm can mitigate the increase such that there would be no adverse effects on growth, the coefficient $\Delta\tau_{j,t}$ will be less than or equal to the coefficient on accounting earnings ($\alpha_3 \leq \alpha_4$).

In the case where a firm's effective tax rate decreases ($\Delta\tau_{j,t} < 0$), the firm would prefer to exploit the tax reduction by taking actions that would increase α_4 . If the securities markets perceive the effects of a reduction in a firm's effective tax rate as stimulating long-term growth through enhanced earnings, the coefficient $\Delta\tau_{j,t}$ will be greater than or equal to the coefficient on accounting earnings ($\alpha_3 \geq \alpha_4$). If, however, the perception is that the reduction will not stimulate growth, then α_4 will be less than α_3 .

The desire of firms to mitigate an increase in effective tax rates and to sustain a decrease in effective tax rates leads to different predictions regarding α_4 for tax increases and for tax decreases. We therefore partition the tax change component in our valuation model into tax *increases* ($\Delta\tau_{j,t}^+$) and tax *decreases* ($\Delta\tau_{j,t}^-$). This partition allows us to test whether the value relevance of tax increases differs from the valuation relevance of tax decreases, since it is unlikely that these effects are symmetric.

Finally, to address whether the securities markets perceive the effects of changing effective tax rates as being different for *high-growth* and *low-growth* firms, we interact all of the regressors in equation (1) above, with the indicator variables denoting whether firms are classified as *high-growth* (H) or *low-growth* (L).³ These (H and L) indicator variables are also included independently

in the model to control for systematic differences across firm types, providing assurance that our classifications themselves do not induce the relationships of our tax measures to firm value. Equation (2), below, presents our test model.⁴

$$P_{j,t} = \beta_1 H + \beta_2 L + \beta_3 BV_{j,t} H + \beta_4 BV_{j,t} L + \beta_5 DIV_{j,t} H + \beta_6 DIV_{j,t} L + \beta_7 NI_{j,t}^* H + \beta_8 NI_{j,t}^* L + \beta_9 \Delta \tau_{j,t}^+ H + \beta_{10} \Delta \tau_{j,t}^+ L + \beta_{11} \Delta \tau_{j,t}^- H + \beta_{12} \Delta \tau_{j,t}^- L + \varepsilon_{j,t} \quad (2)$$

Where: $NI_{j,t}^*$ is current after-tax earnings per share excluding the tax change component ($NI_{j,t} - \Delta \tau_{j,t}$), $\beta_{1,\dots,12}$ are coefficients and all other variables are as previously defined.⁵

By regressing equation (2), we can address our research question of whether the associations of $\Delta \tau_{j,t}^+$ and $\Delta \tau_{j,t}^-$ with market price differ between *high-growth* and *low-growth* firms. Perhaps more importantly, however, we can identify those years (and those years associated with specific tax legislation) in which the coefficients on $\Delta \tau_{j,t}^+$ are significantly greater than the coefficients on $NI_{j,t}^*$, (i.e., where increases in effective tax rates are perceived as adversely affecting growth) and whether this difference holds for both *high-growth* and *low-growth* firms.⁶ Likewise, we can identify those years (and those years associated with specific tax legislation) in which the coefficients on $\Delta \tau_{j,t}^-$ are significantly less than the coefficients on $NI_{j,t}^*$, (i.e., where decreases in effective tax rates are perceived as not stimulating long-term growth) and whether this difference holds for both *high-growth* and *low-growth* firms.

If the securities markets perceive governments as calibrating tax changes to changes in a firm's earnings, β_7 will not differ from β_9 or β_{11} and, β_8 will not differ from β_{10} or β_{12} . If, however, tax changes are seen as favoring *high* or *low-growth* firms, then the coefficients will not be equal. The next section discusses the empirical considerations in performing our tests.

EMPIRICAL ISSUES

This section is divided into two subsections. The first explains how we proxy for earnings growth. The second details our sample selection procedure.

Variable Definitions

The earnings-price (E/P) ratio is often characterized as forward-looking, an indicator of growth in future earnings. When E/P is low (a high P/E), the ratio is an indicator of high-expected earnings growth, while a high E/P is an indicator of low future growth.

The E/P ratio itself may not sufficiently encompass the many aspects of expected future contracting opportunities. Penman (1996) argues that the E/P ratio must be combined with the book-to-market (B/M) ratio, because B/M is an indicator of many factors including growth, leverage, risk, and distress. Thus, firms that have both a low E/P and a low B/M, are classified as *high-growth*, while those with both a high E/P and high B/M, are classified as *low-growth*.⁷

The E/P and B/M ratios are measured as of the beginning of each fiscal year ($t-1$). $H(L)$ are dummy-indicator variables that are set to one when a firm is classified as *high-growth (low-growth)*, and zero otherwise. We assign H to those observations ranked in the lower 25-percent of the distribution for both the B/M and the E/P ratios. We assign L to those observations ranked in the upper 25-percent of the distribution for both ratios. Firms not ranked consistently in the lower or upper 25-percent of the distribution for both ratios are deleted from the sample since we cannot clearly classify the growth as being either high or low.

The dependent variable, price ($P_{j,t}$), is set at the closing security price on the last trading day of the firm's fiscal year. $BV_{j,t}$ is net book value. $DIV_{j,t}$ is set equal to annual common dividends less capital contributions. $NI_{j,t}^*$ is after-tax net income exclusive of the tax change component, before extraordinary items, less preferred dividends. $\Delta\tau_{j,t}$ is the product of pretax earnings and the change in effective tax rate. The '+' and '-' designations on $\Delta\tau_{j,t}$ (equation 2) indicate whether the effective tax rate increased (+) or decreased (-) from the prior year. All variables are in per-share increments, standardized by end-of-year net book value. This approach follows from Sougiannis (1994) to control for heteroscedasticity and size.

The tax change component is equal to the change in the average effective tax rate from $t-1$ to t . As suggested by Gupta and Newberry (1997), we use average rather than marginal effective rates, because the objective of this research is to evaluate perceptions of the distribution of tax burden across firms rather than to analyze the relation between specific tax incentives and specific firm actions.

We computed the effective tax rates in two ways to gauge the sensitivity of our results. Following Gupta and Newberry (1997), the first method sets the effective tax rate equal to: tax expense (exclusive of deferred taxes), divided by pre-tax earnings. This metric is used to evaluate the effect of changing tax rates on high and low growth firms in regards to book income. The second method sets the effective tax rate equal to: tax expense (exclusive of deferred taxes), divided by operating cash flows (Zimmerman, 1983). Our test metric is the change in this construct, multiplied by current net income. This method is used to control for size and systematic differences in accounting choice (Zimmerman 1983, Shevlin and Porter 1992).⁸

Sample Selection

Our sample consists of those firms listed on the *Compustat Primary, Secondary and Tertiary (PST) File* and *Research File* for the period 1980 to 1994. *Compustat* data is required for the following items: common dividends, common equity total, common shares outstanding, current assets, current liabilities, deferred tax expense, depreciation and amortization expense, factor to adjust for stock splits and stock dividends, income before extraordinary items, long-term debt, operating income, preferred dividends, price at year-end, total tax expense, and total assets.

Observations with negative book values or earnings are excluded from the sample. We exclude these observations because the book-to-market and earnings-price ratios are uninterpretable for negative values. Additionally, net book value serves as our regression deflator and defining a deflator as a negative value could create spurious results. Further, firms with negative book values

or negative earnings are likely to have larger bases of *net operating losses* (NOLs). These firms are unlikely to pay taxes and thus could skew our results.

Over our sample period, these selection criteria result in 58,588 firm-year observations of which 6,959 are classified as *high-growth* and 7,032 as *low-growth*. Additional data screens applied to those observations are depicted in Table 1. We exclude from the sample, those firms engaged in regulated businesses (utilities and financial institutions). This data screen reduced the *high-growth* and *low-growth* samples by 1,751 and 1,693 firm-year observations, respectively. Additional 1,011 and 820 firm-year observations were deleted from the *high-growth* and *low-growth* samples, respectively, due to missing *Compustat* data. Finally, we deleted 143 *high-growth* and 271 *low-growth* observations whose E/P or B/M ratio is ranked in the upper or lower one-percent of our sample distribution, to insure that our classification is not the result of transitory earnings. This yields a final sample of 3,954 *high-growth* and 4,248 *low-growth* observations.

TABLE 1: SAMPLE SELECTION					
	Full-Sample	High-Growth Sub-sample		Low-Growth Sub-sample	
	observations	observations	% of full sample	observations	% of full sample
Firm-years with required <i>Compustat</i> data to classify as either <i>High-</i> or <i>Low-Growth</i>	58,388	6,959	12%	7,032	12%
Less: Firm-years from regulated industries: SIC codes 4300-4399, 4900-4999 and 6000-6999	12,867	1,751		1,693	
Subtotal	45,521	5,208	11%	5,339	12%
Less: Firm-years with missing <i>Compustat</i> data required to perform tests:	6,186	1,011		820	
Subtotal	39,335	4,197	11%	4,519	11%
Less: Firm-years in which the E/P or B/M ratio is ranked in the upper or lower one-percentile	1,417	143		271	
Final sample of firm-year observations	37,918	3,954	10%	4,248	11%
Notes: An observation is classified as <i>high-</i> (<i>low-</i>) <i>growth</i> if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.					

Table 2 presents the distribution of sample firms by industry and *H-L* classification. The largest industry group is from the *Steel and Machinery* sector (with 33.67 percent of the total) followed by the *Other Services* sector (13.38 percent) and the *Retail* sector (9.52 percent).⁹ The smallest sectors represented are *Agriculture* (0.38 percent) and *Miscellaneous* (0.41 percent).

TABLE 2: INDUSTRY DISTRIBUTION OF SAMPLE FIRM-YEARS

Group	SIC Codes	Full-Sample		High-Growth Sub-sample		Low-Growth Sub-sample	
		observations	% of sample	observations	% of sub-sample	observations	% of sub-sample
Agriculture	100-999	144	0.38	17	0.43	15	0.35
Mining	1000-1499	2,027	5.35	363	9.18	158	3.72
Construction	1500-1999	708	1.87	49	1.24	125	2.94
Food	2000-2199	1,426	3.76	68	1.72	178	4.19
Textile	2200-2399	1,088	2.87	26	0.66	254	5.98
Wood	2400-2599	898	2.37	32	0.81	140	3.30
Paper and Printing	2600-2799	1,779	4.69	75	1.90	170	4.00
Chemicals	2800-2999	2,482	6.55	267	6.75	162	3.81
Plastics, Glass & Cement	3000-3299	1,519	4.01	61	1.54	341	8.03
Steel & Machinery	3300-3999	12,768	33.67	1,427	36.09	1,280	30.13
Transportation	4000-4899	2,008	5.30	175	4.43	236	5.56
Wholesale	5000-5199	2,234	5.89	129	3.26	348	8.19
Retail	5200-5999	3,608	9.52	420	10.62	408	9.60
Other Services	7000-8999	5,074	13.38	828	20.94	418	9.84
Miscellaneous	9000-9999	155	0.41	17	0.43	15	0.35
Totals		37,918		3,954		4,248	

Notes: An observation is classified as *high- (low-) growth* if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

EMPIRICAL RESULTS

Descriptive Statistics

Table 3 presents the descriptive statistics for our data. Panel A presents the pooled statistics across the full sample period as well as statistics on our tax variables for those years not associated with major tax legislation. Panel B presents the same statistics on our tax variables for those years associated with major tax legislation, specifically 1981-1982, 1986-1987 and 1990-1992. We include as a basis of comparison those firms classified as neither *high-growth* nor *low-growth* (firms not ranked consistently in the lower or upper 25-percent of the distribution for both the E/P and B/M ratios).

The descriptive statistics reveal that firms classified as *high-growth* are smaller in size (measured as the log of total assets) and have lower prices, earnings and book values per share than firms classified as *low-growth* (all significantly different at the one-percent level). Dividends per share, however, are larger for *high-growth* firms than *low-growth* firms (significantly different at the one-percent level). By definition, *high-growth* firms have smaller E/P and B/M ratios than *low-growth* firms.

For our tax variables, we find that effective tax rates rose on average 1.8 percent across our full sample of firms for the 1980 to 1994 time period. *low-growth* firms averaged a 3.0 percent increase and *high-growth* firms averaged a 5.1 percent increase (significantly different from the *low-growth* firms at the ten-percent level). In years without major tax legislation, the effective tax rates rose for all firms on average, but the average rate of growth is significantly larger (at the five-percent level) for *high-growth* firms (6.7 percent) than *low-growth* firms (3.6 percent). Even though effective tax rates rose faster over the period for *high-growth* firms than for *low-growth* firms, we find that effective tax rates for the two groups are not significantly different for either our full sample period or for those years without major tax legislation.

While the changes to *low-growth* firm's effective tax rates are significantly less than those of *high-growth* firms (the standard deviation of the changes is also smaller, although not statistically so), the effects of these changes are more dramatic for *low-growth* firms. The tax cost from tax increases (*Tax Effect*⁺) and the tax savings from tax decreases (*Tax Effect*⁻), for both the full sample period and for those years not associated with major tax legislation, are significantly greater (at the one-percent level) for *low-growth* firms than *high-growth* firms. This statistic may be indicative of *high-growth* firms attempting to minimize the overall effect of any tax change on their financial performance.

TABLE 3: DESCRIPTIVE STATISTICS

Panel A: Statistics Pooled Across All Sample Years and Non-Major Tax Legislation Years

	Full Sample				High-Growth Sub-sample				Low-Growth Sub-sample				Difference in Means (H - L)			
	Mean	Sd Dev	25%	75%	Mean	Sd Dev	25%	75%	Mean	Sd Dev	25%	75%				
<i>Ln(TAssets)</i>	4.883	1.994	3.462	4.701	6.105	4.229	1.835	2.940	4.092	5.319	4.544	2.059	3.129	4.205	5.598	-0.315 ***
<i>Price</i>	13.834	19.243	4.250	8.750	16.313	15.151	23.253	4.250	8.882	16.500	12.168	19.962	3.000	6.750	13.618	2.983 ***
<i>Earnings*</i>	0.941	1.659	0.137	0.487	1.090	0.660	1.508	0.070	0.284	0.683	1.149	1.968	0.150	0.553	1.311	-0.489 ***
<i>Book Value</i>	9.876	14.536	2.896	5.672	10.940	6.618	13.879	1.764	3.479	6.048	13.913	18.046	3.863	8.034	16.378	-7.295 ***
<i>Dividends</i>	-0.616	2.485	-0.317	0.011	0.346	-1.134	2.267	-1.195	-0.075	0.006	-0.451	2.651	-0.127	0.055	0.465	-0.682 ***
<i>EP Ratio</i>	0.085	0.057	0.047	0.073	0.110	0.034	0.018	0.021	0.033	0.044	0.167	0.066	0.115	0.154	0.206	-0.133 ***
<i>BM Ratio</i>	0.787	0.515	0.418	0.652	1.005	0.287	0.094	0.215	0.278	0.348	1.497	0.539	1.070	1.381	1.764	-1.210 ***
Tax Variables - Pooled: All Years (n=37,918 - 3,954 High-Growth and 4,248 Low-Growth Observations)																
<i>Rate_{i,t}</i>	0.272	0.213	0.000	0.346	0.423	0.385	0.143	0.327	0.386	0.449	0.394	0.137	0.338	0.397	0.455	-0.009
Δ <i>Rate_{i,t}</i>	0.018	0.237	-0.035	0.000	0.053	0.051	0.285	-0.064	0.012	0.247	0.030	0.272	-0.078	0.005	0.150	0.021 *
<i>Tax Effect⁺</i>	-0.077	0.152	-0.067	-0.017	-0.004	-0.081	0.301	-0.052	-0.014	-0.004	-0.128	0.401	-0.093	-0.021	-0.004	0.047 ***
<i>Tax Effect⁻</i>	0.165	0.288	0.011	0.045	0.176	0.189	0.598	0.010	0.040	0.161	0.278	0.744	0.016	0.067	0.240	-0.089 ***
Tax Variables - Pooled: Non-Major Tax Legislation Years (n=20,800 - 2,172 High-Growth and 2,279 Low-Growth Observations)																
<i>Rate_{i,t}</i>	0.267	0.214	0.000	0.343	0.420	0.387	0.147	0.327	0.387	0.452	0.391	0.141	0.337	0.394	0.455	-0.004
Δ <i>Rate_{i,t}</i>	0.023	0.236	-0.030	0.000	0.055	0.067	0.294	-0.060	0.017	0.306	0.036	0.267	-0.069	0.006	0.152	0.031 **
<i>Tax Effect⁺</i>	-0.082	0.159	-0.073	-0.019	-0.005	-0.075	0.216	-0.055	-0.016	-0.004	-0.140	0.411	-0.094	-0.022	-0.004	0.065 ***
<i>Tax Effect⁻</i>	0.171	0.290	0.012	0.049	0.189	0.197	0.625	0.011	0.045	0.172	0.306	0.875	0.018	0.075	0.245	-0.109 ***

TABLE 3: CONTINUED

Panel B: Statistics Partitioned by Major Tax Legislation

	Full Sample				High-Growth Sub-sample				Low-Growth Sub-sample				Difference in Means in Means (H - L)			
	Mean	Sd Dev	25%	75%	Mean	Sd Dev	25%	75%	Mean	Sd Dev	25%	75%				
Tax Variables - Pooled: 1981-1982 (n=5,415 - 772 High-Growth and 702 Low-Growth Observations)																
$Rate_{i,t}$	0.302	0.217	0.000	0.383	0.453	0.380	0.138	0.319	0.400	0.455	0.418	0.134	0.361	0.426	0.463	-0.038 **
$\Delta Rate_{i,t}$	0.036	0.261	-0.038	0.000	0.103	0.041	0.292	-0.081	0.011	0.244	0.070	0.281	-0.057	0.011	0.275	-0.030 **
$Tax Effect^+$	-0.093	0.173	-0.083	-0.022	-0.005	-0.133	0.510	-0.068	-0.022	-0.005	-0.128	0.359	-0.111	-0.028	-0.005	-0.004
$Tax Effect^-$	0.244	0.371	0.016	0.075	0.292	0.263	0.753	0.012	0.046	0.204	0.354	0.669	0.026	0.123	0.407	-0.091 **
Tax Variables - Pooled: 1986-1987 (n=4,822 - 427 High-Growth and 526 Low-Growth Observations)																
$Rate_{i,t}$	0.284	0.222	0.000	0.369	0.446	0.414	0.144	0.356	0.418	0.468	0.415	0.126	0.364	0.418	0.466	-0.001
$\Delta Rate_{i,t}$	-0.002	0.239	-0.057	0.000	0.044	0.014	0.287	-0.102	-0.001	0.167	0.005	0.285	-0.090	0.003	0.113	0.009
$Tax Effect^+$	-0.074	0.140	-0.070	-0.021	-0.005	-0.051	0.197	-0.039	-0.011	-0.004	-0.154	0.546	-0.116	-0.029	-0.005	0.103 **
$Tax Effect^-$	0.136	0.246	0.011	0.041	0.138	0.120	0.285	0.010	0.027	0.126	0.243	0.558	0.016	0.058	0.213	-0.123 ***
Tax Variables - Pooled: 1990-1992 (n=6,881 - 613 High-Growth and 741 Low-Growth Observations)																
$Rate_{i,t}$	0.253	0.199	0.000	0.329	0.383	0.366	0.134	0.326	0.363	0.399	0.361	0.127	0.310	0.369	0.410	0.005
$\Delta Rate_{i,t}$	-0.001	0.236	-0.032	0.000	0.032	0.037	0.241	-0.032	0.006	0.113	-0.010	0.261	-0.100	-0.004	0.087	0.047 *
$Tax Effect^+$	-0.051	0.116	-0.038	-0.010	-0.004	-0.055	0.192	-0.028	-0.007	-0.004	-0.075	0.260	-0.049	-0.011	-0.004	0.020
$Tax Effect^-$	0.097	0.197	0.008	0.026	0.097	0.110	0.351	0.007	0.019	0.097	0.124	0.358	0.008	0.037	0.105	-0.014

TABLE 3: CONTINUED (NOTES)

An observation is classified as *high- (low-) growth* if both the earnings-price ratio and the book-to-market ratio, both as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

The variables are defined follows:

- $\ln(TAssets)$ = Log of total assets;
 $Price$ = Security price per share at year end;
 $Earnings^*$ = Net income (exclusive of tax expense) before extraordinary items less preferred dividends, expressed per share;
 $Book\ Value$ = Total common equity, expressed per share;
 $Dividends$ = Annual common dividends less capital contributions, expressed per share;
 $EP\ Ratio$ = Earnings per share before extraordinary items less preferred dividends divided by beginning-of-year security price per share.
 $BM\ Ratio$ = Book value per share divided by beginning-of-year security price per share.
 $Rate$ = The effective tax rate calculated as total tax expense less deferred tax expense, divided by either pretax income;
 $\Delta Rate$ = Change in $Rate_{j,t}$
 $Tax\ Effect^+$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), expressed per share, when the change in the effective tax rate increases;
 $Tax\ Effect^-$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), expressed per share, when the change in the effective tax rate decreases.

In those sample years that surround major tax legislation, we find for the full sample of firms that effective tax rates rose only in those years surrounding the 1981 Tax Act. In those years surrounding the 1986 Tax Act and the tax acts of the early 1990s, no change in effective tax rates was found (on average) for the full sample of firms. While the 1981 Tax Act increased the effective tax rates of both high- and *low-growth* firms, effective tax rates rose significantly more (at the five-percent level) for *low-growth* firms than for *high-growth* firms. In contrast, the average change in effective rates was close to zero for both high- and *low-growth* firms surrounding the 1986 Tax Act. The trend reversed in the period surrounding the acts of the early 1990s, in that effective tax rates rose significantly more for *high-growth* firms (at the ten-percent level) than for *low-growth* firms.

In contrast to those years without major tax legislation, where increases in effective tax rates adversely affected *low-growth* firms significantly more than *high-growth* firms, increases in effective tax rates ($Tax\ Effect^+$) in years surrounding major tax legislation were more dramatic for *low-growth* firms only in the years surrounding the 1986 Tax Act. In those years, tax rate increases resulted in earnings-per-share decreasing 15.4 cents for *low-growth* firms and 5.1 cents for *high-growth* firms (significantly different at the five-percent level). The lack of results for those years surrounding the 1981 Tax Act and the tax acts of the early 1990s suggest that that these acts may have been perceived as shifting a greater portion of the tax burden to *high-growth* firms through higher effective tax rates.

For reductions in effective tax rates (*Tax Effect*⁻), we find that both the 1981 and 1986 Tax Acts favored *low-growth* firms, but the acts of the early 1990s appear not to favor either group. For 1981-1982, we find that the tax savings resulted in earnings-per-share decreasing 35.4 cents for *low-growth* firms and 26.3 cents for *high-growth* firms (significantly different at a five-percent level). For 1986-1987, the tax savings resulted in earnings-per-share decreasing 24.3 cents for *low-growth* firms and 12.0 cents for *high-growth* firms (significantly different at a one-percent level). Note, however, that earnings-per-share for *low-growth* firms is almost double that of *high-growth* firms, indicating that when the greater nominal tax savings afforded low growth firms is considered proportional to earnings, no difference exists in the tax reductions between *low-growth* and *high-growth* firms resulting from the 1981 and 1986 Tax Acts.

Regression Results

Panel A of table 4 presents the results from regressing equation (2). Consistent with the predictions from Ohlson (1995), the coefficients on $BV_{j,t}$ and $NI_{j,t}^*$ are positive and the coefficients on $DIV_{j,t}$ are negative (all significant at a one-percent level for the pooled regression). Not surprisingly (based on how we define high and low growth), the coefficients on $BV_{j,t}$ and $NI_{j,t}^*$ are significantly larger for the *high-growth* firms than for *low-growth* firms. The coefficients on $DIV_{j,t}$ are not significantly different across *high-* and *low-growth* firms in any of the regressions.

For the primary variables of interest, the coefficients on $\Delta\tau_{j,t}^+H$, $\Delta\tau_{j,t}^+L$, $\Delta\tau_{j,t}^-H$, and $\Delta\tau_{j,t}^-L$, are all positive and significant (at the one-percent level) when we pool over the entire sample period and when we regress those years not surrounding major tax legislation. In the pooled regression, the coefficients on $\Delta\tau_{j,t}^+$ and $\Delta\tau_{j,t}^-$ are significantly greater (at the one-percent and ten-percent level, for differences in the coefficients on $\Delta\tau_{j,t}^+$ and $\Delta\tau_{j,t}^-$ respectively) for *high-growth* firms than for *low-growth* firms. The coefficients on $\Delta\tau_{j,t}^+$ and $\Delta\tau_{j,t}^-$ are not significantly different for *high-* and *low-growth* firms in the regression that includes only those years without major tax litigation. This suggests that the difference noted in the pooled regression is driven by differences that exist in those years surrounding major tax legislation.

For the years surrounding major tax legislation (1981-1982, 1986-1987 and 1990-1992), we find that the coefficients on $\Delta\tau_{j,t}^+$ are positive and significant (at the one-percent level) only for *high-growth* firms. The coefficients on $\Delta\tau_{j,t}^+$ for *low-growth* firms are not significant in any of those years surrounding major tax legislation and are significantly smaller than the coefficients for *high-growth* firms for 1986-1987 and 1990-1992 (at the ten-percent and one-percent levels, respectively). These findings provide evidence that the market perceived all three legislative acts (or series of acts) as placing a greater tax burden on *high-growth* firms, and that the burden was shifted from *low-growth* firms to *high-growth* firms by the 1986 Tax Act and the acts of the early 1990s.

TABLE 4: REGRESSION RESULTS WITH TAX CHANGES MEASURED AS A PERCENTAGE OF PRETAX EARNINGS

$$P_{j,t} = \beta_1 H + \beta_2 L + \beta_3 BV_{j,t} H + \beta_4 BV_{j,t} L + \beta_5 DIV_{j,t} H + \beta_6 DIV_{j,t} L + \beta_7 NI_{j,t}^* H + \beta_8 NI_{j,t}^* L + \beta_9 \Delta\tau_{j,t}^+ H + \beta_{10} \Delta\tau_{j,t}^+ L + \beta_{11} \Delta\tau_{j,t}^- H + \beta_{12} \Delta\tau_{j,t}^- L + \varepsilon_{j,t}$$

Panel A: Regression Coefficients and Differences between Coefficients on Variables Interacted with Growth Indicators (H or L)

Obs.	Adj. R ²	H	L	BV _{j,t} H	BV _{j,t} L	DIV _{j,t} H	DIV _{j,t} L	NI _{j,t} ⁺ H	NI _{j,t} ⁺ L	NI _{j,t} ⁻ H	NI _{j,t} ⁻ L	Δτ _{j,t} ⁺ H	Δτ _{j,t} ⁺ L	Δτ _{j,t} ⁻ H	Δτ _{j,t} ⁻ L
		?	?	+	+	-	-	+	+	+	+	+	+	+	+
Regressions - Pooled: All Years															
8,202	0.6189	0.052	0.128	2.164	0.628	-0.078	-0.065	4.756	2.742	7.773	3.789	2.893	1.574	2.893	1.574
		3.09	4.63	81.26	27.52	-4.81	-3.04	26.79	12.72	9.27	3.18	6.54	2.59	6.54	2.59
		(0.0020)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0024)	(0.0001)	(0.0001)	(0.0001)	(0.0015)	(0.0001)	(0.0096)	(0.0001)	(0.0096)
Differences in β_i															
		-0.077	1.536	43.78	-0.013	-0.49	2.014	3.984	1.319	2.73	1.76	0.0793			
		(0.0177)	(0.0001)	(0.6271)	(0.0001)	(0.0001)	(0.0001)	(0.0063)							
Regressions - Pooled: Non-Major Tax Legislation Years															
4,421	0.6266	0.044	0.142	2.222	0.671	-0.089	-0.045	4.687	2.639	3.653	3.600	3.200	1.832	3.200	1.832
		1.96	3.72	60.55	20.90	-3.84	-1.52	19.58	8.86	2.81	2.26	5.93	2.27	5.93	2.27
		(0.0502)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.1283)	(0.0001)	(0.0001)	(0.0050)	(0.0238)	(0.0001)	(0.0235)	(0.0001)	(0.0235)
Differences in β_i															
		-0.098	1.551	31.81	-0.044	-1.17	2.048	0.053	1.368	0.03	1.41	0.1593			
		(0.0270)	(0.0001)	(0.2408)	(0.0001)	(0.0001)	(0.0001)	(0.9795)							

TABLE 4: CONTINUED

Panel A: Continued

Obs.	Adj. R ²	H	L	BV _{it} H	BV _{it} L	DIV _{it} H	DIV _{it} L	NI _{it} H	NI _{it} L	$\Delta\tau_{it}^+H$	$\Delta\tau_{it}^+L$	$\Delta\tau_{it}^-H$	$\Delta\tau_{it}^-L$
		?	?	+	+	-	-	+	+	+	+	+	+
Regressions - Pooled: 1981-1982													
1,474	0.6220	0.113	0.105	1.746	0.444	-0.195	-0.210	4.635	2.535	7.512	3.931	4.658	2.008
		3.42	1.47	30.85	7.83	-5.09	-3.16	13.23	4.52	4.79	1.38	4.80	1.70
		(0.0006)	(0.1408)	(0.0001)	(0.0001)	(0.0001)	(0.0016)	(0.0001)	(0.0001)	(0.0001)	(0.1689)	(0.0001)	(0.0887)
Differences in β_i													
		0.008		1.302		0.014		2.100		3.581		2.650	
		0.11		16.26		0.19		3.18		1.10		1.74	
		(0.9160)		(0.0001)		(0.8501)		(0.0015)		(0.2720)		(0.0830)	
Regressions - Pooled: 1986-1987													
953	0.5979	0.165	0.117	2.273	0.730	0.037	-0.022	4.397	2.509	10.296	2.572	1.222	2.712
		2.95	1.46	29.50	12.01	0.96	-0.34	7.78	4.91	3.73	0.70	0.62	1.52
		(0.0032)	(0.1442)	(0.0001)	(0.0001)	(0.3360)	(0.7319)	(0.0001)	(0.0001)	(0.0002)	(0.4859)	(0.5362)	(0.1294)
Differences in β_i													
		0.048		1.543		0.059		1.889		7.724		-1.490	
		0.50		15.71		0.79		2.48		1.68		-0.56	
		(0.6206)		(0.0001)		(0.4306)		(0.0134)		(0.0942)		(0.5759)	
Regressions - Pooled: 1990-1992													
1,354	0.6768	-0.029	0.095	2.176	0.606	-0.077	-0.058	6.861	3.338	14.855	4.785	1.902	1.850
		-0.68	1.66	32.39	12.27	-1.95	-1.45	13.86	6.43	8.53	1.72	1.28	0.83
		(0.4978)	(0.0965)	(0.0001)	(0.0001)	(0.0509)	(0.1469)	(0.0001)	(0.0001)	(0.0001)	(0.0863)	(0.2019)	(0.4079)
Differences in β_i													
		-0.125		1.570		-0.019		3.523		10.069		0.052	
		-1.74		18.82		-0.33		4.91		3.06		0.02	
		(0.0830)		(0.0001)		(0.7404)		(0.0001)		(0.0022)		(0.9847)	

TABLE 4: CONTINUED

**Panel B: Differences between the Coefficients on Net Income and
on the Tax Change Components**

$\Delta\tau_{j,t}^+H - NI_{j,t}^*H$	$\Delta\tau_{j,t}^+L - NI_{j,t}^*L$	$\Delta\tau_{j,t}^-H - NI_{j,t}^*H$	$\Delta\tau_{j,t}^-L - NI_{j,t}^*L$
+ or -	+ or -	+ or -	+ or -
Regressions - Pooled: All Years			
3.017	1.047	-1.863	-1.168
3.88	0.93	-3.94	-1.83
(0.0001)	(0.3515)	(0.0001)	(0.0672)

Regressions - Pooled: Non-Major Tax Legislation Years			
-1.034	0.962	-1.487	-0.807
-0.84	0.64	-2.56	-0.95
(0.4014)	(0.5195)	(0.0105)	(0.3403)

Regressions - Pooled: 1981-1982			
2.877	1.396	0.024	-0.526
1.98	0.52	0.02	-0.41
(0.0480)	(0.6067)	(0.9818)	(0.6810)

Regressions - Pooled: 1986-1987			
5.899	0.064	-3.176	0.204
2.34	0.02	-1.56	0.11
(0.0193)	(0.9860)	(0.1197)	(0.9121)

Regressions - Pooled: 1990-1992			
7.994	1.447	-4.959	-1.488
5.30	0.56	-3.20	-0.65
(0.0001)	(0.5737)	(0.0014)	(0.5170)

TABLE 4: CONTINUED (NOTES)

Each cell presents the regression coefficient, the White's (1980) adjusted t -statistic and p -value.

An observation is classified as *high- (low-) growth* if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

The variables are defined follows:

$P_{j,t}$ = Security price at year end, deflated by end-of-year net book value;

$BV_{j,t}$ = End-of-year net book value of equity, deflated by end-of-year net book value

(This variable is regressed with a value of one. The intercept, therefore, is regressed as one over $BV_{j,t}$ since all other variables are deflated by end-of-year net book value.);

$NI_{j,t}^*$ = Net income (inclusive of tax expense) before extraordinary items less preferred dividends, deflated by end-of-year net book value;

$DIV_{j,t}$ = Annual common dividends less capital contributions, deflated by end-of-year net book value;

$\Delta\tau_{j,t}^+$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), deflated by end-of-year net book value, when the change in the effective tax rate increases, otherwise zero;

$\Delta\tau_{j,t}^-$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), deflated by end-of-year net book value, when the change in the effective tax rate decreases, otherwise zero;

H = Dummy indicator variable set to one, if a firm is classified as *high-growth*, otherwise zero;

L = Dummy indicator variable set to one, if a firm is classified as *low-growth*, otherwise zero;

β_i = Regression coefficients, $i \in [1,2,3,4,5,6,7,8,9,10,11,12]$

$\varepsilon_{j,t}$ = Error term.

For tax decreases associated with those years surrounding major tax legislation, we find $\Delta\tau_{j,t}^-$ to be significant only for the years surrounding the *1981 Tax Act*. We find that the coefficients on $\Delta\tau_{j,t}^+H$ and $\Delta\tau_{j,t}^+L$ are both significantly different from zero (at the one-percent and ten-percent levels, respectively) for the 1981-1982 regression. The significant results for *The Economic Recovery Act of 1981* are consistent with the legislative intent of bolstering the economy. The boost we document, however, is significantly greater for *high-growth* firms than for *low-growth* firms (at the ten-percent level). The coefficients on $\Delta\tau_{j,t}^-$ are not, however, significantly different from zero for either 1986-1987 or 1990-1992, suggesting that the acts passed in those years were perceived as providing an overall economic stimulus.

Panel B of table 4 presents the results of testing for differences between the coefficients on adjusted net income and on the tax change component(s). The pooled results over the full sample period suggest that changes in effective tax rates are perceived as increasing at a rate greater than the rate of growth for *high-growth* firms. The coefficient on $\Delta\tau_{j,t}^+$ is significantly greater than the coefficient on $NI_{j,t}^*$ for the pooled regression (significant at the one-percent level). When we regress only those years without major tax legislation, however, we find no difference in the coefficients on $\Delta\tau_{j,t}^+H$ and $NI_{j,t}^*$, indicating that the pooled regression results are driven by those years with major tax legislation. Indeed, we find that for *high-growth* firms, the coefficients on $\Delta\tau_{j,t}^+H$ are

significantly greater than the coefficients on $NI_{j,t}^*$ for 1981-1982, 1986-1987 and 1990-1992 (significant at the ten-percent, five-percent and one-percent levels, respectively). These findings suggest that the major tax acts were *all* perceived as having increased the tax burden of *high-growth* firms sufficiently high as to hinder earnings growth.

When effective tax rates decrease, the coefficient on $\Delta\tau_{j,t}^-$ will be less than that on $NI_{j,t}^*$, if the tax reduction is not perceived as stimulating earnings growth beyond the level at which the firm is already growing (or the level at which the firm is sustaining its current level of earnings). For *high-growth* firms, the coefficients on $\Delta\tau_{j,t}^-$ are significantly less than the coefficients on $NI_{j,t}^*$ for the pooled regression, the non-major tax year regression and the 1990-1992 regression (significant at the one-, five- and one-percent levels, respectively). Since it was the legislative intent of the early 1990s acts to generate additional revenues, rather than provide economic incentives (generally), it is not surprising that those factors that reduced effective tax rates (such as extending research and development credits) did not stimulate sustainable earnings growth.

For the 1981-1982 and 1986-1987 regressions, we find that the coefficients on $\Delta\tau_{j,t}^-H$ are not significantly different than the coefficients on $NI_{j,t}^*$. This provides evidence that the economic incentives in *The Economic Recovery Tax Act of 1981* that were designed to stimulate the economy (such as the introduction of the *accelerated cost recovery system* for depreciation) were perceived to have stimulated sustainable earnings growth. Likewise, the lower statutory tax rates created by the *Tax Reform Act of 1986* were also seen as stimulating sustainable growth.

For *low-growth* firms, we find that the coefficients on both $\Delta\tau_{j,t}^+$ and $\Delta\tau_{j,t}^-$ are not significantly different from the coefficients on earnings in either those years with or those years without major tax legislation.¹⁰ This suggests that tax rate changes for *low-growth* firms are consistently proportional to earnings.

While several reasons exist for why changes in effective tax rates are proportional to earnings for *low-growth* firms but not for *high-growth* firms, one plausible explanation could be that governments can more easily anticipate the reactions of *low-growth* firms to changes in effective tax rates. As noted above, these *low-growth* firms are not afforded the flexibility to alter their contracting environment, as are *high-growth* firms. Governments, therefore, are more likely to miscalibrate tax changes for *high-growth* firms than for *low-growth* firms.

CONCLUSIONS

In this study, we test whether the market perceives the relevance of changes in effective tax rates differently across high- and *low-growth* firms. Our results provide evidence that in years surrounding major tax legislation, increases in effective tax rates are perceived as taxing *high-growth* firms to the extent that their expected rate of growth will suffer. We find no evidence, however, that increases in effective tax rates for *low-growth* firms are perceived as hindering growth (or curtailing these firms' abilities to sustain their current level of profitability). These findings suggest that the government properly calibrates tax increases for *low-growth* firms, but may overestimate the degree to which *high-growth* firms will alter their contracting environment to avoid higher taxation.

We also find evidence that the tax reductions associated with The Economic Recovery Tax Act of 1981 and Tax Reform Act of 1986 were perceived as stimulating earnings growth for both high- and *low-growth* firms. The tax reductions associated with the tax acts of the early 1990s (such as the granting of tax credits for research and development expenditures), however, do not seem to be perceived as providing sustainable earnings growth to *high-growth* firms, but do seem to be perceived as providing earnings growth for *low-growth* firms. The acts of the early 1990s may be an example of tax relief that while targeted for a specific class of taxpayer (high growth, in this case, since it is this class of taxpayer that would most likely stimulate growth), is exploited by other non-targeted classes.

From an investment perspective, our study provides evidence on how changes in a firm's effective tax rate affect firm value, and evidence that this effect differs across *high-growth* and *low-growth* firms when the changes are associated with major tax law revisions. From a policy perspective, our study provides evidence of how some of the targets of corporate income taxation are perceived as being able to elude or offset the negative consequences of tax increases, while some of the targets of tax incentives are perceived as being unable to benefit from those inducements. The outgrowth of this phenomenon is a game of cat-and-mouse, where legislatures must continually revise and refine the corporate tax statutes in order to uncover alternative sources of revenues/stimulus - all the while cognizant of the political liabilities associated with actions that would impede earnings growth or place an inequitable burden on weaker or marginal firms. In light of our findings, Congress would do well to identify those elements of prior tax law revisions that did, and did not, generate expectations contrary to the revision's intent, and to investigate the distribution of corporate tax burden - conditional on contracting opportunities.

One possible limitation of our research design should be noted. Our proxy for that component of earnings that is a result of changing effective tax rates is subject to measurement error, due to transitory earnings. We limit the possible measurement error by truncating the upper and lower one-percent of our sample from our tests, as well as by designating firms as high- (low-) growth only when a firm ranks in the lower (upper) quartile of both the earnings-price and book-to-market ratios (the most common proxies for growth). If our tests were influenced by the existence of transitory earnings, we would have documented results randomly across our sample period. Our findings, however, are limited to those years surrounding major tax legislation, providing assurance that our tests are not unduly influenced by transitory earnings.

ENDNOTES

¹ One exception is Collins and Shackelford's (1992) finding that firms that shifted from debt to preferred stock in response to the statutory changes in the 1986 Tax Reform Act generated tax savings beyond the initial phase in period.

² The form of the model presented in equation (1) is equivalent to the model presented in Sougiannis (1994) in his study of research and development costs. This form of the model allows us to test the tax change component in relation to reported earnings rather than in relation to abnormal earnings, as was the case in Sougiannis' study. Many other studies adopt similar approaches to valuing an earnings component, such as Barth, Beaver and Landsman (1998).

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- ³ We employ two (H and L) dummy indicator variables rather than a single dummy indicator variable so that we can test $a_4 - a_3$ separately for H and L firms. Effectively, we are running two separate regressions for H and L firms simultaneously. Interacting all variables with H and L controls for possible systematic differences between H and L firms other than the tax term: $D_{jt,t}$.
- ⁴ Feltham and Ohlson (1995, 1996) extend Ohlson (1995) to consider how accounting conservatism effects valuation. We do not directly address this issue, but the partitioning of all the variables in the regression allows us to control for systematic differences in how accounting conservatism may alter how accounting earnings and other components map into firm value.
- ⁵ We deflate all variables in equation (2) by net book value, to control for heteroskedasticity and size.
- ⁶ By regressing equation (2) with two dummy-indicator variables (H and L), we are able to directly test whether significant differences exist between the coefficients on earnings and the tax change components. These differences are not directly revealed when only one dummy-indicator variable is regressed (H or L). These two approaches are, however, econometrically identical. Both types of regressions are presented in Table 4 so as to present both differences across variables (the two dummy-indicator variable approach) and differences across firm type (the one dummy-indicator variable approach).
- ⁷ The requirement of our sample firms being ranked as high (low) for both the E/P and B/M ratios minimizes the possibility of misclassification due to transitory earnings. This requirement also minimizes the possibility that firms would be ranked as low (high) in one year and high (low) in another, without a steady change in that firm's growth opportunities over an extended period of time. To further assure that transitory earnings are not inducing a misclassification of a firm's growth rate, we delete from our sample those firms whose E/P or B/M ratio is ranked in the upper or lower one-percent of our sample distribution.
- ⁸ Since the results are substantially identical for both measures, we present only those results in which the Gupta and Newberry (1997) method was employed. We also follow Gupta and Newberry (1997) in addressing those firms with negative effective tax rates (tax refunds), or those firms that pay taxes but have no book income. We set the effective tax rate equal to zero if tax expense is less than zero, or equal to one if the tax rate is more than one (i.e., more than 100 percent of income).
- ⁹ Because over 50-percent of our sample is from the Steel and Machinery, Retail and Other Services industries, we reran our tests by including control variables for these industries. The results (not reported) are substantially unchanged from those reported in the tables.
- ¹⁰ The pooled regression across all years shows a difference between $\Delta \tau_{j,t}^- H$ and $NI_{j,t}^*$ (at the ten-percent level of significance). The contradictory results of the separate regressions for those years with and without major tax legislation suggest the pooled regression result may be misleading.

REFERENCES

- Barth, M., W. Beaver & W. Landsman. (1998). The valuation roles of equity book value and net income as a function of financial health. *Journal of Accounting and Economics*, 25(1), 1-34.
- Boynnton, C., P. Dobbins & G. Plesko. (1992). Earnings management and the corporate alternative minimum tax. *Journal of Accounting Research*, 30 (Supplement), 131-153.
- Coase, R. (1988). *The Firm, the Market and the Law*, Chicago, IL: University of Chicago Press.
- Collins, J. & D. Shackelford. (1992). Foreign tax credit limitations and preferred stock issuances. *Journal of Accounting Research*, 30 (Supplement), 103-124.
- Feltham, G. & J. Ohlson. (1995). Valuation and Clean Surplus Accounting for Operating and Financial Activities. *Contemporary Accounting Research*, 11(2), 689-732.
- Feltham, G. & J. Ohlson. (1996). Uncertainty Resolution and the Theory of Depreciation Measurement. *Journal of Accounting Research*, 34 (2), 209-234.
- Guenther, D., E. Maydew & S. Nutter. (1997). Financial Reporting, Tax Costs, and Book-to-Tax Conformity. *Journal of Accounting and Economics*, 23(3), 225-248.
- Guenther, D. (1994). Earnings management in response to corporate tax rate changes: evidence from the 1986 tax reform act. *The Accounting Review*, 69 (January), 230-243.
- Gupta, S. & K. Newberry. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, 16, 1-34.
- Harris, D. (1993). The impact of U.S. tax law revision on multinational corporations' capital location and income-shifting decisions. *Journal of Accounting Research*, 31 (Supplement), 111-140.
- Klassen, K., M. Lang & M. Wolfson. (1993). Geographic income shifting by multinational corporations in response to tax rate changes. *Journal of Accounting Research*, 31 (Supplement), 141-173.
- Manzon, G. (1992). Earnings management of firms subject to the alternative minimum tax. *The Journal of the American Taxation Association*, 14(2), 88-111.
- Milgrom, P. & J. Roberts. (1992). *Economics, Organization & Management*. Englewood Cliffs, N J: Prentice-Hall,.
- Ohlson, J. (1995). Earnings, book values, and dividends in security valuation. *Contemporary Accounting Research*, 11 (Spring), 661-688.
- Penman, S. (1996). The articulation of price-earnings ratios and market-to-book ratios and the evaluation of growth. *Journal of Accounting Research*, 34 (Autumn), 235-259.
- Scholes, M., G. P. Wilson & M. Wolfson. (1992). Firms' responses to anticipated reductions in tax rates: The tax reform act of 1986. *Journal of Accounting Research*, 30 (Supplement), 161-185.
- Scholes, M. & M. Wolfson . (1992). *Taxes and Business Strategy: A Planning Approach*. Englewood Cliffs, NJ: Prentice-Hall.

- Shevlin, T. & S. Porter. (1992). The corporate tax comeback in 1987: Some further evidence. *The Journal of the American Taxation Association*, 14(1), 58-79.
- Sougiannis, T. (1994). The accounting based valuation of corporate R&D. *The Accounting Review*, 69 (January), 44-68.
- Wang, S. (1994). The relationship between financial reporting practices and the 1986 alternative minimum tax. *The Accounting Review*, 69 (July), 495-506.
- White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817-838.
- Zimmerman, J. (1983). Taxes and firm size. *Journal of Accounting and Economics*, 5(2), 119-149.

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