differences between the taxation of corporate and noncorporate capital lead to efficiency losses. However, the analogy is strained in this case since we are only considering the individual income tax and ignoring the effects of the corporate tax as well as the effect on capital allocation of nontaxable investors such as foreigners and institutions.

[2]Technically, it can be shown that if a taxpayer holds an asset under a *pro rata* allocation rule, the after tax cost of debt is $r_0 [1 - (k\bar{\tau} + (1 - k)\tau_i)]$, where r_0 is the interest rate on debt, k is the equity as a fraction of asset shares, $\bar{\tau}$ is the average marginal tax rate on capital income weighted by asset amounts, and τ_i is the effective marginal tax rate on income from asset i. If all asset purchases were financed by debt, $k = 0$, and *pro rata* allocation would be perfect. But the more assets are financed by equity (i.e., as k approaches 1), the less effective *pro rata* allocation would be perfect. But the more assets are financed by equity (i.e., as k approaches 1), the less effective *pro rata* allocation is. In the extreme, when $k = 1$, the cost of debt would be the same for each asset, $r_0(1 - \bar{\tau})$.

EARNINGS MANAGEMENT AND THE CORPORATE AMT[1]

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1. INTRODUCTION

The joint tax policy and financial accounting question examined by this paper is whether financial accounting earnings might have been manipulated by management to lessen the impact of the imposition of a tax on financial accounting earnings. The question may be viewed as a specific example of the more general area in financial accounting research known as "earnings management" or "income smoothing."[2]

The first accounting research into this joint tax policy and financial accounting issue was a Ph.D. dissertation by Gramlich (1988) who reported financial accounting evidence from COMPUSTAT data that suggested that such manipulations were occurring in connection with the imposition of the U.S. corporate alternative minimum tax (AMT) that became effective for years after 1986.

Under certain circumstances, the AMT law for 1987 to 1989 included a portion of book income in the AMT tax base. At the time of the introduction and passage of the AMT in 1986, many commentators expressed concern that including book income in the AMT base might lead to the distortion of book income reported by corporations.[3]

The purpose of this research is three-fold. First, to reexamine the results of Gramlich (1988) using an industry-based pooled time-series cross-sectional model to predict expected accruals given non-AMT consideration. Second, to confirm or disprove, insofar as possible, any proposed findings by reference to tax return data contained in the Internal Revenue Service (IRS) Statistics of Income (SOI) Corporate Source Book data file for 1987.[4] Third, to contribute to the statement of research questions and methodology used in earnings management research.

2. AMT BOOK AND THE TIME-FRAME FOR MANIPULATION

The 1986 Tax Reform Act imposed a corporate alternative minimum tax (AMT) that included an adjusted book income (AMT book) preference item equal to 50 percent of the positive amount, if any, by which AMT book exceeded AMT taxable income (AMTI) after taking into account all other AMT adjustments and preferences but before taking into account the AMT book preference item.[5]

Many accounting decisions turn on issues of when to recognize revenues and expenses. By accelerating the recognition of revenues into the year preceding the AMT and deferring the recognition of expenses into the year in which the AMT began, it would be possible to mitigate the cost of the AMT book preference item. Many of the critical accounting adjustments affecting such acceleration or deferral are made at year-end in the period beginning approximately a month before year-end and lasting until the release of the financial statements approximately two to three months after year-end. Corporate tax returns are filed later, often eight and one-half months after year-end (eg., September 15, 1988, for a year-end of December 31, 1987).

The corporate AMT applies to tax years beginning on or after January 1, 1987. The first full-year returns subject to the AMT ended in December 1987, more than 14 months after the passage of the law. If management had wished to respond to the imposition of the corporate AMT book preference item by manipulating reported book income, it would have had the time in which to do so both for the first year directly affected as well as for the preceding year. The management of a corporation with a December year-end could begin in October 1986 to plan manipulations for both the December 1986 year-end (the year-end before the corporate AMT took effect) and the December 1987 year-end (the year-end with which the corporate AMT took effect).

The AMT book preference item does not result in a tax as long as AMTI (including the AMT book preference item) reduced by allowed AMT net operating loss (NOL) carryovers, any allowed AMT exemption, and any allowed AMT foreign tax credit, does not result in a tentative minimum tax (tentative AMT) that exceeds the regular tax reduced by the regular tax foreign tax credit (AMT regular tax). Only the excess of the tentative minimum tax (tentative AMT) over the AMT regular tax results in any additional tax. Such excess, if any, is commonly referred to as the AMT payable that year by the corporation. A better term might be the net or excess AMT for that year.

If a corporation was aware that it did not owe a net AMT given a trial AMT book income, it would be skillful tax planning to increase its AMT book to the point that its tentative AMT exactly equalled its AMT regular tax by accelerating recognition of income into the current year or by deferring recognition of expenses into a later year. By lowering AMT book in the later year, the corporation would gain some insurance that no net AMT would result in that year as well.

Payment of a net AMT does not necessarily mean the tax liability of the corporation has been permanently increased. In many cases[6] the payment of a net AMT (tentative AMT exceeds AMT regular tax) generates an AMT credit that may be used in future years against the regular tax to the extent, if any, that the AMT regular tax in the future year exceeds the tentative AMT that year. If the corporation receives an AMT credit equal to the net AMT paid and is able to use that AMT credit in a future year against the regular tax, then the net AMT paid only represents a change in the timing of regular tax payments. The cost of the net AMT paid then is equal to the present value of the interest lost on the prepayment of the regular tax.

3. Research Limitations and Conflicting Causation Theories

Financial accounting research has been concerned with the effects of earnings-based management compensation plans and earnings-based debt covenants. If management can maximize its compensation or minimize the possibility of default, it is argued that management will be motivated to engage in income-increasing, not income-decreasing, accruals. In such cases, management may prefer to pay the AMT rather than to compromise its other goals.

Financial accounting research has also been concerned with issues of political visibility. It is argued that large firms may prefer to consistently downplay evidence of profitability in order to lower the potential costs of attracting notice in terms of taxes, regulations, labor disputes, and public ill-will.

Tax policy research and accounting research (financial and cost) have both been interested in the implications of transfer pricing between entities under common control. If the management of a financial entity controlling two or more tax entities found that some of its controlled tax entities were subject to a net AMT and some were not, it might engage in transfer pricing changes to shift some of the consolidated financial pre-tax book income from one tax entity to another. If the controlling interests approached 100 percent, the effect of the tax-induced transfer pricing changes would essentially cancel out through financial consolidation eliminations at the consolidated financial entity level. Detection of the transfer pricing changes by an accounting researcher would be difficult at best.

The presence of earnings-based management compensation plans and earnings-based debt covenants, the possibility that firms try to avoid political visibility, and the possibility of tax-induced transfer-pricing changes all complicate research identification of the response, if any, of management to the AMT.

4. Research Questions

This paper focuses on two research questions concerning the statistical association between

(1) the imposition in October 1986 of the corporate AMT adjusted book income preference item for years 1987–89, and
(2) systematic deviations (with a theory-based predicted sign) in the accrual component (noncash accounting adjustments) of reported book income for 1986–89.

The first question compares the accrual component of the current year to the accrual component of the prior year. This is the question studied by Gramlich (1988). The second question compares the accrual component of the current year to the accrual component predicted for the current year based on the pattern for such accruals for 1981–85 after controlling for external economic effects.

5. Current Earnings-Management Literature

In accounting research, questions of "earnings management" or "income smoothing" have received considerable attention.[7]

Reported book income for a period "t" may be decomposed into operating cash flows and operating accruals (noncash accounting adjustments), that is,

$$\begin{matrix}\text{Reported Book} \\ \text{Income(t)}\end{matrix} = \begin{matrix}\text{Operating Cash} \\ \text{Flows(t)}\end{matrix} + \text{Operating Accruals(t)}. \quad (1)$$

The term "operating" is used to distinguish the cash flows and accruals directly related to "operating" activities (the business of the firm and its income) from cash flows relating to "financing" activities (stock and debt) and "investing" activities (acquiring and disposing of assets used by the firm in its business.) Unless otherwise stated, all cash flows and accruals in this paper are operating and not financing or investing.

Total operating accruals for a given time period may be negative or positive. Cumulative operating, financing and investing accruals over the life of a firm will equal zero (cash to cash from birth to death of the firm). The recognition of increases in receivables or inventory are accruals that increase income. The recognition of increases in payables and deferred taxes and the recognition of depreciation are accruals that reduce income. In a steady state, noncash working capital will not change due to operations and operating accruals will be limited to depreciation.

Some accruals involve relatively little discretion or judgment, for example, the recognition of customer sales on credit or the recognition of the purchase of supplies and small tools. Other accruals involve substantial discretion or judgment, for example, the valuation of customer receivables, the recognition of future warranty expense, or the capitalization and related depreciation and depletion of fixed assets. All accounting discretion and judgment is exercised within limits and is subject to outside audit to some degree. The quality of the discretion or judgment and the quality of the outside audit may both vary.

Conceptually, an accrual may be decomposed into a nondiscretionary component and a discretionary component. The nondiscretionary component represents a norm in the absence of uncertainty and bias and the discretionary component represents a deviation from the norm as a judgmental response to uncertainty and bias. In the absence of bias, the expected value of the discretionary component is zero.

Restating the prior decomposition,

$$\begin{matrix}\text{Reported Book} \\ \text{Income(t)}\end{matrix} = \begin{matrix}\text{Cash} \\ \text{Flows(t)}\end{matrix} + \begin{matrix}\text{Nondiscretionary} \\ \text{Accruals(t)}\end{matrix} + \begin{matrix}\text{Discretionary} \\ \text{Accruals(t)}\end{matrix} \quad (2)$$

If earnings are not subject to management, that is if no bias exists in the discretionary accruals, the expected value of the discretionary accruals is zero.

Accounting research into earnings management has been concerned with developing an expectations model (proxy) for discretionary accruals. The researcher attempts to predict the sign of the discretionary accrual proxy (DAP) consistent with the hypothetical response of management to an external event given an assumed willingness on management's part to control reported book income with respect to a goal. The test fails if DAP does not have a value significantly different from zero with the predicted sign.

5. Development of a Discretionary Accruals Proxy (DAP)

Total accruals is defined as reported book income (RBI) minus cash flows. Total accruals are treated as being composed of both a nondiscretionary accruals component and a discretionary accruals component, that is,

$$\text{RBI(t)} - \text{CF(t)} = \text{TA(t)} = \text{NA(t)} + \text{DA(t)}. \quad (3)$$

If an estimate of NA(t) (NAEST) is available, then a proxy for DA(t) (DAP) may be calculated:

$$TA(t) - NAEST(t) = DAP(t). \quad (4)$$

Differencing with a prior period has been used by some researchers in an effort to eliminate the need to develop NAEST(t):

$$\Delta TA(t,t^*) = TA(t) - TA(t^*)$$
$$= [NA(t) - NA(t^*)] + [DA(t) - DA(t^*)]. \quad (5)$$

The period often used for "t*" is "t − 1" as in Gramlich (1988). Differencing works if NA(t*) is approximately equal to NA(t) and if DA(t*) is small compared to DA(t). Many accounting researchers have used differencing with mixed results.[8]

6. Research Design

COMPUSTAT primary and secondary files were used to select all firms with data for 1980 to 1988 on total assets, total sales, current assets components, current liabilities components, gross plant, property and equipment,and depreciation for SIC industry codes of 2000 to 4899 (2000–2999 = nondurable manufacturing; 3000–3999 = durable manufacturing; 4000–4899 = transportation). A total of 641 firms were identified.

The firms were grouped into two-digit or three-digit SIC subindustries (15 within 2000–2999; 25 within 3000–3999; 7 within 4000–4899).

Total accruals were defined as change in current assets less change in cash less change in current liabilities plus change in income taxes payable plus changes in current maturities of long term debt less total depreciation (depreciation, depletion, and amortization).

Firms were classed as "large" within a subindustry if the 1985 total assets of the firm were equal to or greater than 80 percent of the 1985 total assets of the fifth largest firm in the subindustry. A firm was classed as "small" within the subindustry if the 1985 total assets of the firm were equal to or less than 10 percent of the 1984 total assets of the fifth largest firm in the subindustry. Zero-one variables were used for size: LARGE = 1 for large and zero otherwise; SMALL = 1 for small and zero otherwise. By default an intermediate firm was one that was neither large nor small.

Total accruals for 1981–85 scaled by lagged assets were regressed against the change in sales, and gross plant, property, equipment (both scaled by lagged assets), as well as interactions of LARGE and SMALL with change in sales and gross plant, property, and equipment, for a total of six regressors. The regression was run over each subindustry in deviation form without an intercept. The effective intercept for each firm was its mean total accruals for 1981–85. The slopes for the regressors were pooled cross-sectional time-series subindustry slopes without autocorrelation corrections.

The regression model had generally high F-statistics and significant probabilities (usually less than .001) across subindustries. Adjusted R-squared ranged from less than .05 (petroleum refining, printing) to more than .95 (pharmaceutical) with many in the range of .30 to .65 (including for example soap and perfume = .28, apparel = .30, paper = .33, chemicals = .35, textiles = .47, computers = .60, furniture = .65 and paint = .73). The high F-statistics suggest that the model has power. The range in R-squares suggest that change in sales and gross plant, property, and equipment, explain more of the variation in total accruals in some industries than in others. If we treat the error term in the regression as the proxy for discretionary accruals, the range of R-squares suggests a range in discretionary accruals across subindustries.

The individual firm intercepts and six pooled subindustry slopes were then used to forecast scaled total accruals for 1986–88. The forecast was taken as the nondiscretionary accruals estimate (NAEST scaled). The difference between the observed total accruals and the forecast (i.e., the forecast error) was taken as the discretionary accrual proxy (DAP scaled). An alternative model (MDAP) used the scaled mean of total accruals for 1981–85 as scaled NAEST and its forecast error as scaled DAP. The second model is essentially a form of differencing.

COMPUSTAT data on the 641 firms together with the NAEST forecast model (derived individual firm intercepts and subindustries slopes) were then delivered to the Office of Tax Analysis (OTA), U.S. Department of the Treasury on computer tape. The 641 firms were matched with the IRS Statistic of Income (SOI) Corporate Source Book tax return file for the period July 1987 to June 1988.[9]

A partitioning model was then constructed based on AMT status for the year beginning December 1987. The zero-one variable PART = 1 if the firm's tax liability was increased by the AMT and zero otherwise. A regression was run with scaled DAP as the dependent variable and PART as the regressor. The intercept is the mean scaled DAP of firms not on the AMT. The parameter of PART is the difference between the mean scaled DAP of corporations owing a net AMT and the intercept group. A t-test on

the parameter is used to determine if the difference is significant. (See McNichols and Wilson, 1988). The significance of the partition parameter of PART is interpreted as the significance of the partition with respect to explaining differences in the dependent variable DAP. If the AMT partition PART is found to be significant with respect to DAP, the interpretation is that the partition is associated with (possibly induced) the difference.

Following Gramlich (1988), a variable GDAP representing the one year change in total accruals scaled by lagged total assets was also regressed against the zero-one variable PART.

7. Research Findings

Initial tests were made of the hypothesis that corporations subject to the AMT had, as predicted by Gramlich (1988), significantly *negative* one-year changes (1987 less 1986) in total accruals on average for the first AMT year beginning December 1987 and significantly *positive* one-year changes (1986 less 1985) in total accruals for the immediately preceding year beginning December 1986 and ending November 1987. Results similar to Gramlich (1988) were obtained.

Tests were then made to see if corporations subject to the AMT had significantly *negative* DAPs on average for 1987, the first AMT year, and significantly *positive* DAPs for 1986. Our results agreed for 1987 but were to the contrary for 1986. Corporations subject to the AMT had on average significant *negative* DAPs for the year beginning December 1987. For the same firms, the DAP model was insignificantly *negative* for the year beginning December 1986.

Similar results for 1987 were obtained with a second model, MDAP, in which the scaled 1981–85 mean accrual is taken as NAEST, a form of differencing. For 1986, the MDAP model was insignificantly positive for firms subject to the AMT in 1987.

A group of firms were identified for each of the research questions that appeared to have eliminated all exposure to the AMT in 1987 through significant income-decreasing accruals. These firms would have paid an AMT in 1987 had the book income for AMT purposes been larger by the amount of the estimated income decreasing accrual taken.

8. Summary

This paper examined two research questions, the research question stated by Gramlich (1988) based on the one-year change in total accruals, and a second research question, namely, whether the accruals in 1987 were predictable for 1987 given non-AMT considerations such as the level of plant, property, and equipment and changes in the level of sales from 1986. Under the first research question, this paper suggests that were significant income-decreasing total accruals in 1987 compared to 1986 for firms subject to the AMT. Under the second research question, the results of this paper again suggest that there were significant income-decreasing accruals in 1987 for firms that paid the AMT relative to firms that did not pay the AMT if each group is compared to its predicted accruals for 1987 given non-AMT considerations such as the level of plant, property and equipment, and the change in the level of sales from 1986. In addition, a group of firms were identified for each of the research questions that appeared to have eliminated all exposure to the AMT in 1987 through significant income-decreasing accruals. These firms would have paid an AMT in 1987 had the book income for AMT purposes been larger by the amount of the estimated income decreasing accrual taken.

Endnotes

[1]This is a preliminary draft and conclusions are tentative pending further analysis. The views of the authors are their own and do not necessarily represent those of the U.S. Department of the Treasury. The authors wish to thank Lowell Dworin, Gerald Silverstein, and William Spiller, of the Office of Tax Analysis, U.S. Department of the Treasury, and Panu Sittiwong of the University of North Texas, and the participants in the November 2, 1990 Accounting Research Workshop at the University of North Texas. All errors remain those of the authors.

[2]See Schipper (1989) for a commentary on this genre of research.

[3]That concern was reiterated by John Wilkins, Acting Assistant Secretary (Tax Policy), U.S. Department of the Treasury, in his testimony on June 8, 1989, before the Select Revenues Subcommittee of the House Ways and Means Committee when it was considering revisions to the AMT proposed by Ways and Means Chairman Dan Rostenkowski (Wilkins, 1989).

[4]The SOI Corporate Source Book data file for 1987 contains tax return information on 86,646 corporations with year-ends of July 1987 through June 1988. The firms were selected by stratified sampling to represent all U.S. corporations. Larger firms have a 100 percent likelihood of selection. The

use of the data file is limited to employees of SOI, employees of the Office of Tax Analysis, U.S. Department of the Treasury, and employees of the Joint Committee on Taxation, U.S. Congress. In general, confidentiality laws require that no information be released that could identify a firm and that nostatistic be released that is the result of a calculation involving fewer than 3 firms.

[5]AMT book for a consolidated tax entity is the pre-tax book income of the consolidated financial entity *attributable to the consolidated tax entity* and may therefore differ substantially from the pre)tax book income of the financial entity reported to its shareholders and creditors (reported pre-taxbook). In particular, the AMT book of the parent (more accurately, of the tax entity to which the parent corporation of the financial entity belongs) will exclude all revenues and expenses of controlled foreign subsidiaries and possessions (e.g., Puerto Rico) subsidiaries, none of which may consolidate for tax purposes, and of domestic subsidiaries that do not qualify or qualify and do not elect consolidation for tax purposes.

[6]For all years, AMT credits are allowed for items involving timing differences (such as accelerated depreciation). For 1987 to 1989, items representing permanent differences (such as percentage depletion in excess of basis) do not generate a credit.

[7]For a summary of current developments, see McNichols and Wilson (1988), DeAngelo (1988), and Jones (1989).

[8]See McNichols and Wilson, (1988) and Gramlich (1988).

[9]The matching was performed by Paul Dobbins of OTA. The other authors were not permitted to know which firms were matched.

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THE PARTIALITY OF INDEXING CAPITAL GAINS

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In 1986 Congress made realized capital gains fully taxable, in the spirit of uniformity animating the 1986 reform. The effect on gains taxes was largely offset, to be sure, when Congress lowered the top rate from 50 percent to 28 percent, abandoning 70 years of rate progressivity. Congress also lowered the corporate tax rate. Nonetheless, the change did overturn a long tradition of excluding half or more of gains from taxable income. No special concern was shown for the phantom income element in nominal capital gains.

Now we are witnessing a major effort to revive the exclusion of part or all of capital gains from taxable income, partly on the grounds that much of the gains are "phantom" income, an illusion of inflation. President Bush is the most visible champion. In his 1988 campaign, relief for capital gains was nearly the only specific plank in the domestic platform. As President he has focused intensely on