Short-Term Incentive Effects of a Reduction in the NOL Carryback Period

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ABSTRACT: We examine whether the Taxpayer Relief Act of 1997 (TRA 1997), which reduced the net operating loss (NOL) carryback period from three to two years, created a short-term incentive effect to shift income to accelerate loss recognition in the tax year 1997. We find that our sample of NOL firms in the treatment year of 1997 display higher (lower) levels of income-decreasing (-increasing) earnings management, compared to a control sample of loss firms. When we focus strictly on the NOL firms in the transition year, we find that firms with higher reported income tax expense in fiscal year 1995 display greater income shifting to accelerate loss recognition. We also find that income shifting is greater for treatment NOL firms that expect to report losses in the post-TRA 1997 regime. Overall, our study highlights how changes in tax law provisions (as opposed to tax rate changes) affect firms' reporting behavior.

Keywords: net operating loss; NOL; Taxpayer Relief Act of 1997; TRA 1997; loss firms; discretionary accruals.

INTRODUCTION

T he influence of tax incentives on firm behavior has been subject to considerable scrutiny (e.g., Maydew 1997). Much of the attention has been directed at taxpayer response to tax rate changes (Blouin and Krull 2009; Foley et al. 2007; Baghai 2010; Desai et al. 2007). While not always readily apparent, changes to existing tax law provisions can affect a taxpayer's taxable income and tax liability and, as such, create incentive effects. We explore such a setting by examining short-term reporting incentives related to a reduction in the net operating loss (hereafter, NOL) carryback period under the Taxpayer Relief Act of 1997 (hereafter, TRA 1997).

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Section 172 of the Internal Revenue Code allows corporations to carry back their NOL, i.e., it allows current-period losses to be used to recover income taxes paid in prior years.[1] Losses not used in recovering income taxes paid in prior years can be carried forward to offset future taxable income. TRA 1997 reduced this carryback period from three to two years and extended the carryforward period from 15 to 20 years, effective for fiscal years beginning after August 5, 1997.

Absent the enactment of TRA 1997, a firm that does not recognize an NOL in the transitional year of 1997 (time t) will permanently forgo the recovery of taxes paid in 1994 (time $t-3$), i.e., the farthest year that a 1997 NOL can reach. However, TRA 1997 increased this opportunity cost in that if a firm does not report an NOL in 1997, it permanently forgoes the recovery of taxes paid in 1994 and 1995.[2] The increase in opportunity cost is due to the fact that an NOL reported in 1998 can only reach the tax years 1997 and 1996. Absent TRA 1997, the firm can still recover the taxes paid in 1995 by reporting an NOL in 1998. It is important to note that the pre- and post-TRA 1997 tax regimes involve identical opportunity costs, in that a failure to recognize an NOL in the current period results in the loss of recovery of taxes paid for a single tax year.[3] Hence, the loss firms from these regimes represent a useful benchmark against which we can compare loss firms that face a higher opportunity cost of tax recovery forgone due to TRA 1997. However, we avoid potential confounding issues related to different carryback periods by comparing firms in the transitional year against NOL firms in the pre-TRA 1997 regime. All these firms faced a three-year carryback regime.

To test our hypothesis related to the short-term incentives created by TRA 1997, we compare the income shifting behavior of NOL firms in the transition year against NOL firms in the pre-TRA 1997 regime.[4] To this end, we gather a sample of NOL firms that span the years 1995 through 1998. The treatment subsample consists of firms that report an NOL in the transitional fiscal year of 1997. On average, a treatment firm in our sample is at risk of permanently losing a $9.63 million federal income tax refund if it does not report a loss in the TRA 1997 transition year. Our control subsample consists of NOL firms from the pre-TRA 1997 period.

We focus on firm discretionary accruals to measure the extent to which firms undertook income shifting to accelerate NOL recognition. Our focus on discretionary accruals as a proxy for income shifting is similar in spirit to prior research that examines earnings management of book income surrounding the corporate Alternative Minimum Tax liability calculations (e.g., Boynton et al. 1992; Gramlich 1991, 1992). We expect the treatment firms to report a higher (lower) level of income-decreasing (-increasing) discretionary accruals. To further identify the incentive effect due to TRA 1997, we also distinguish between our treatment firms. First, we expect firms with higher taxes paid in 1995 to undertake greater income shifting to accelerate loss recognition in 1997. Second, we distinguish between firms for which income shifting to accelerate loss recognition is likely feasible. To this end, we identify treatment firms that were anticipated to report losses in the subsequent post-TRA 1997 period. For these firms, accelerating loss recognition through income shifting is more likely than for the other treatment firms.

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[1] A firm could elect to strictly carry forward its losses for a period of up to 15 years prior to the enactment of TRA 1997.

[2] The incremental incentive due to TRA 1997 is the loss of recovery of taxes paid in 1995.

[3] In the pre-TRA 1997 regime, if an NOL is not recognized in the current period, it leads to a permanent loss of recovery of taxes paid in time period $t-3$. In the post-TRA 1997 regime, a firm that does not report an NOL in the current period will permanently lose recovery of taxes paid in time period $t-2$. In both cases, the opportunity cost relates to the loss of recovery of taxes paid for a single tax year.

[4] Such a comparison holds the carryback period of three years constant across the treatment and control subsamples.

We find our treatment NOL firm-years display greater (lower) income-decreasing (-increasing) discretionary accruals than our control sample of NOL firm-years. Given the presence of nontax costs that can impede income shifting, we also carry out multivariate analysis to examine the incentive effect due to TRA 1997. We find our above result continues to hold after controlling for lagged accruals, market value of equity, whether the firm engaged in a merger or acquisition or a major financing activity, leverage, market-to-book ratio, whether the firm is in a litigious industry, whether it is a loss firm, and cash flow from operations.

Focusing within the sample of treatment NOL firm-years, we find that firms with higher reported income tax expense in fiscal year 1995 display greater income shifting to accelerate loss recognition. This finding highlights the impact of incremental opportunity cost due to TRA 1997 on income shifting behavior. Additionally, we find that income shifting is greater for treatment NOL firms that expect to report losses in the post-TRA 1997 regime. This supports the notion that income shifting to accelerate loss recognition to the transition year of 1997 is more applicable to these firms.

Maydew (1997) is closely related to our study. The Tax Reform Act of 1986 (TRA 1986) created a significant reduction in the top corporate tax rates. Maydew (1997) examines whether firms that reported net operating losses around TRA 1986 maximized the recovery of taxes paid in the higher tax rate regime. He finds supportive evidence in that his treatment NOL firms accelerate expenses, defer income items, and undertake discretionary charges to "increase the magnitude of the NOL and thereby increase the refund of prior years' taxes" (Maydew 1997, 84). Rather than the setting explored in Maydew (1997), we focus on a setting in which the tax rates remain constant, but the carryback periods are varied.

Overall, our study adds to the research examining the unique characteristics of loss firms. Loss firms have received relatively sparse attention in prior academic literature. Prior research emphasizes loss firms from a financial reporting perspective by focusing on how they are priced by investors (Collins et al. 1999; Joos and Plesko 2005). Other research examines loss firms from a tax perspective, including the information content of tax expense for loss firms (Dhaliwal et al. 2010). In addition, Plesko (2004, 733) finds that large aggregate differences between book and taxable income are caused by the increase in book-only expenses reported by loss firms. Our study differs from the aforementioned studies by focusing on whether loss firms shift income to accelerate losses surrounding the Taxpayer Relief Act of 1997. More specifically, our study fits into the literature on tax incentive effects. Prior research documents the effects of taxes on capital structure choices, payout policy, cash holdings, and repatriation of foreign earnings (e.g., Foley et al. 2007). However, much of this attention has focused on tax rate changes.[5] Although tax rate changes are important, tax legislation involves not only tax rate changes, but also changes to nontax rate provisions. We focus on this latter category related to a change in the NOL carryback period.

The second section explains the tax treatment of NOLs, provides the background information on the tax law change, and develops the testable hypotheses. The third section describes the empirical methods and sample. The fourth section reports and discusses the empirical results, and the fifth section concludes the paper.

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[5] For example, Albring et al. (2010) focus on the temporary tax reduction provided by the American Jobs Creation Act of 2004, and find that firms with fewer financial covenants in their private debt agreements or with greater access to public debt markets responded to this tax rate reduction by repatriating more foreign earnings.

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RELATED LITERATURE

Tax Treatment of Net Operating Losses

A net operating loss is an annual loss resulting from an excess of allowable business deductions over income for a tax year.[6] Prior to the enactment of TRA 1997, the Internal Revenue Code allowed a corporation reporting an operating loss for income tax purposes in the current year to carry the loss back or carry it forward to offset previous or future taxable income.[7] The corporation may carry a reported loss back three years (in sequential order, starting with the earliest of the three years). In such a case, the corporation receives a refund of income taxes previously paid. Alternatively, if the taxable income for the past three years is not enough to offset the amount of the current reported operating loss or if the corporation elects to forgo the carryback, the loss is sequentially carried forward 15 years and offset against future taxable income, if there is any. While an operating loss carryback will result in a definite and immediate income tax refund, a carryforward will reduce income taxes payable in future years only to the extent that taxable income is earned.

The Clinton Administration, in its budget for fiscal year 1998, recommended that the carryback period be reduced to one year and the carryforward period be extended to 20 years. The estimated tax savings was $3.5 billion over a five-year period. The final bill that was passed into law was a compromise that reduced the carryback period to two years for fiscal years beginning after August 5, 1997, and extended the carryforward period to 20 years.[8] In approving the shorter carryback period, the Senate Committee justified that any mismatching due to the 12-month income tax reporting cycle will involve deductions that relate to future, as opposed to past, income streams. In other words, a shorter carryback period is sufficient to remedy any potential mismatching of income and related expenses.

Development of Testable Hypotheses

In this study, we focus on whether the reduction in the NOL carryback period created an incremental incentive effect. Given the NOL carryback provision, an NOL recognized in the current period allows a firm to recover taxes paid in prior periods. Hence, there is an incentive for firms to undertake income shifting to recover as much of the taxes paid in the prior period as possible. Part of the incentive for firms to shift income surrounding TRA 1997 stems from the fact that an NOL not recognized in the current period results in the *permanent* loss of recovery of taxes paid in a prior year. To illustrate, suppose a current-period NOL can be carried back three years. If no NOL is recognized in the current period (time period *t*), the taxpayer permanently forgoes the recovery of taxes paid three years before, i.e., taxes paid in time period *t*−3. However, taxes paid in the prior two years can still be recovered in the subsequent period (time period *t*+1), albeit the tax amounts recovered will be smaller when one considers the time value of money.

When the NOL carryback period is reduced from three to two years, an NOL not recognized in the current period results in the permanent loss of recovery of taxes paid two years before (time period *t*−2). It is worth noting that, irrespective of whether the carryback period is two or three years, the absence of an NOL in the current period results in the permanent loss of recovery of taxes paid in a single tax year. The length of the carryback period simply alters the prior tax year for

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[6] The NOL provision, originally enacted in 1939, serves to remedy potential mismatching of income and expenses. Federal income tax law requires corporations to report income and file income tax returns based on a 12-month period. If a corporation has a business cycle that exceeds the 12-month period, then certain deductions that are allowed for tax purposes may relate to future or past income streams. Absent the NOL provision, a firm may find itself with excess business expenses not deductible due to this tax reporting constraint.

[7] Section 172(a)(1)(A).

[8] The tax code still allows the three-year carryback for the farming industry.

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which the taxpayer cannot recover the taxes paid. However, this conclusion does not hold for the transition period during which TRA 1997 is phased in. Before TRA 1997 was enacted, the absence of an NOL in 1997 resulted in the permanent loss of recovery of taxes paid in 1994. However, given the enactment of TRA 1997, a firm that does not recognize an NOL in 1997 permanently forgoes the recovery of taxes paid in 1994 and 1995. The higher incremental opportunity cost in terms of tax recovery forgone creates an added incentive for firms to recognize an NOL in 1997. As such, we predict that firms will undertake greater income shifting to recognize an NOL in this transition year. To evaluate this prediction, we contrast the income shifting behavior of NOL firms in the transition year of 1997 against other firms that recognized an NOL prior to TRA 1997. In comparing firms from the pre-TRA 1997 period against NOL firms in the transition year, the carryback period of three years is identical across all firms.

Before proceeding further, it is important to recognize that such incentive effects may not hold empirically. One reason is the presence of nontax costs that can make it expensive for a firm to undertake accelerated loss recognition. For instance, loss recognition may result in a firm violating some of its debt covenants. Alternatively, the presence of performance-based incentive compensation schemes may make it costly to the managers to accelerate loss recognition. Furthermore, auditors can deter managers from undertaking accelerated loss recognition. In light of these factors, it is important to remember that the issue of whether firms undertake income shifting surrounding TRA 1997 is an empirical question.

A corporation can accelerate loss recognition by deferring revenue or accelerating expenses (or both). Although income tax provisions for revenue and expense recognition can differ from financial reporting requirements, deferral of revenue recognition or acceleration of expenses for financial reporting purposes often produce similar effects on taxable income. Prior research documents that earnings management responds to tax incentives by focusing on the discretionary component of accounting accruals. Although discretionary accruals enable the manager to shift earnings between periods, nondiscretionary accruals are mandated by accounting standard-setting bodies (Guenther 1994). We use the discretionary accruals measure to evaluate the extent of intertemporal income shifting. As such, our testable hypothesis in the alternate form can be stated as follows:

H1: *Ceteris paribus*, NOL firms in the transition year of 1997 will report greater (smaller) income-decreasing (income-increasing) discretionary accruals in comparison to a control group of NOL firms from the pre-TRA 1997 period.

Although H1 is based on the premise that the transition year around TRA 1997 created an incentive for firms to accelerate loss recognition, this incentive effect need not be identical across firms. Distinguishing between firms will allow us to further identify whether the reduction in the carryback period induced income shifting. To this end, we differentiate between firms that were anticipated to report losses in the subsequent period and those that were not. The purpose of this differentiation is as follows.

Intertemporal income shifting is feasible if a firm anticipates reporting losses in future periods. These firms can accelerate loss recognition by deferring revenues, accelerating expense recognition, or both. Prior research provides evidence that firms accelerate loss recognition by disposing of assets and liabilities at a loss and reporting nonrecurring losses such as special items, discontinued operations, and extraordinary items (Maydew 1997). The aforementioned income shifting strategies increase the size of the NOL and, thus, increase the refund of prior-year taxes paid for firms expecting future losses. In contrast to these firms, other firms may have recognized losses in the TRA 1997 transition year simply due to negative revenue shocks. As such, these firms need not have resorted to income shifting to report an NOL in the current period. Distinguishing between these types of firms will allow us to better detect income shifting due to the reduction in the NOL carryback period. We use analyst earnings forecasts to distinguish between firms based on whether

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analysts anticipated these firms to recognize losses or otherwise. As such, our testable hypothesis in the alternate form can be stated as follows:

H2: With respect to NOL firms in the transition year, firms expected to report losses in 1998 are likely to report greater (smaller) income-decreasing (income-increasing) discretionary accruals.

SAMPLE SELECTION AND RESEARCH DESIGN

Sample Selection

To empirically evaluate the impact of the NOL carryback period reduction on discretionary accruals, we identify U.S. firms in Compustat between January 1, 1995, and July 31, 1998, with non-missing current federal income tax expense and available data to calculate discretionary accruals and control variables. We exclude financial, transportation, and utility firms (SIC codes 4000–4900 and 6000–6700) because these firms are subject to regulatory requirements (Maydew 1997). With these restrictions, we obtain an initial sample of 14,729 firm-year observations. We then delete firm-years with positive or zero federal tax expense in the current year, so that the firms remaining in the sample have negative current federal tax expense. In addition, we delete firms that did not have positive federal tax expense in 1995. We also delete firm-year observations with consecutive losses in each of the three prior years, because these firms had no positive income available to offset current-period operating losses. The final sample consists of 858 firm-years and 710 unique firms.[9]

The effective date of the Taxpayer Relief Act of 1997 was July 31, 1998. We define the pre-TRA 1997 period as January 1, 1995, through July 31, 1997, prior to the enactment of the regulation. We define the transition year of TRA 1997 as August 1, 1997, through July 31, 1998. We classify as the treatment group 292 net operating loss firms with fiscal years ending between August 1, 1997, and July 31, 1998, which are within the transition year. Firms in the treatment group report negative current federal tax expense for the fiscal year immediately preceding the effective date of TRA 1997, and report positive income tax expense in 1995 and, thus, have an incentive to accelerate the recognition of NOLs to avoid the larger recovery of taxes forgone. For example, a December year-end firm with an NOL for the fiscal year ending in December 1997 is classified as a treatment firm-year. Firms in the treatment group would forgo two carryback years if an NOL is not recognized in the current year. The remaining 566 net operating loss firms with fiscal years ending on or before July 31, 1997, constitute the pre-TRA control group. The sample selection criteria are summarized in Table 1.

Research Design

To examine the effect of the reduction in the NOL carryback period on discretionary accruals, we estimate the following baseline model:

$$
\begin{aligned}
DISCRETIONARYACCRUALS = \alpha + \beta_1 GROUP + \beta_2 BIG6 + \beta_3 L1ACC + \beta_4 lnMVE \\
+ \beta_5 MERG + \beta_6 FINAN + \beta_7 LEV + \beta_8 MB + \beta_9 LITIG \\
+ \beta_{10} LOSS + \beta_{11} CFO + \varepsilon.
\end{aligned} \tag{1}
$$

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[9] Endogeneity may be a concern in our study if accruals management generates the net operating loss. However, our small sample size does not allow us to use traditional approaches such as the instrumental variable estimator. "The instrumental variable estimator may be a very poor one in small samples" (Nelson and Startz 1990, 968). We run several sensitivity analyses to further confirm our main results.

TABLE 1

Summary of the Sample Selection Criteria

Firm-years from 1/1/1995 through 7/31/1998	30,891[a]
Firm-years not missing federal tax expense	30,875
Firm-years with financial data available to estimate empirical model	14,729
Firm-years with negative current federal tax expense and positive income tax expense in 1995	858[b]
Number of firm-years in the pre-TRA 1997 treatment group	292
Number of control group firm-years	566

[a] Excludes firms in financial services, transportation, and utility industries (SIC codes 6000–6700 or 4000–4900) consistent with Maydew (1997).
[b] Excludes firm-years if a firm has consecutive losses for each of the three prior years.

The dependent and independent variables in Model (1) are defined in Appendix A. To estimate Model (1), we use a pooled cross-sectional approach. Statistical inferences for the pooled regressions are based on "robust" t-statistics that are adjusted for residual correlation arising from pooling cross-sectional observations, i.e., the t-statistics are based on White (1980) hetero-scedasticity-adjusted robust variance estimates that are adjusted for within-cluster correlation where observations are clustered by firm.

Dependent Variables

We include four measures of discretionary accruals as alternative dependent variables. Our first measure uses the modified cross-sectional Jones (1991) model to separate normal accruals from total accruals (consistent with DeFond and Jiambalvo 1994; Subramanyam 1996). Specifically, we use the modified Jones (1991) model below in the cross-section by industry (based on two-digit SIC codes) and fiscal year:

$$ACCR_t/TA_{t-1} = \varphi_1[1/TA_{t-1}] + \varphi_2[(\Delta REV_t - \Delta AR_t)/TA_{t-1}] + \varphi_3[PPE_t/TA_{t-1}] + e_t. \qquad (2)$$

In this model:

$ACCR$ = total accruals calculated as income from continuing operations less operating cash flows from continuing operations;
TA = total assets;
ΔREV = change in sales revenue;
ΔAR = the change in accounts receivables;
PPE = gross property, plant and equipment;
t = year; and
DTA (discretionary total accruals) = the difference between total accruals and the estimated (fitted) normal accruals.

The other three alternative dependent variables estimate discretionary current accruals, since prior literature suggests that management has the most discretion over current accruals (Becker et al. 1998). We measure current accruals (*CA*) as net income before extraordinary items (Compustat item 123) plus depreciation and amortization (Compustat item 125) minus operating cash flows (Compustat item 308) scaled by beginning-of-year total assets (Ashbaugh et al. 2003). We estimate the following regression for each combination of industry (two-digit SIC code) and fiscal year:

$$CA_t = \alpha_1(1/TA_{t-1}) + \alpha_2(\Delta Rev_t - \Delta AR_t) + \varepsilon_t. \qquad (3)$$

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Next, we use the parameter estimates from Equation (3) to estimate expected current accruals (*ECA*) as the fitted values from Equation (3). Discretionary current accrual (*DCA*) is defined as current accruals (*CA*) minus expected current accruals (*ECA*).

Following Ashbaugh et al. (2003), we estimate two additional measures of current discretionary accruals adjusted for firm performance. We label portfolio performance-adjusted discretionary current accruals as *PADCA*, where firm performance is controlled for via a portfolio technique. Within each two-digit SIC code, we partition firms into deciles based on their ROA in the prior year to determine *PADCA*. *PADCA* controls for firm performance within two-digit SIC codes. *PADCA* is defined as a sample firm's discretionary current accruals (*DCA*) minus the median *DCA* for each *ROA* portfolio.

Following Ashbaugh et al. (2003), our fourth dependent variable measures performance-adjusted discretionary current accruals, *REDCA*, based on Kothari et al. (2005). Specifically, we include an additional variable, lagged *ROA*, in the regression model to control for firm performance on a firm-specific level. We first estimate the following regression by each two-digit SIC code and fiscal year:

$$CA_t = \gamma_1(1/TA_{t-1}) + \gamma_2(\Delta Rev_t - \Delta AR_t) + \gamma_3 Lag1ROA + \varepsilon_t, \tag{4}$$

where all variables are as defined before. We then use the parameters from Equation (4) to estimate expected current accruals, *ECAPC*, defined as the fitted value from Equation (4). We define *REDCA* as *CAPC* − *ECAPC*.

Control Variables

We include control variables which prior literature posits are relevant in determining discretionary accruals. Following Ashbaugh et al. (2003), we include a proxy for audit quality. Consistent with prior research, we expect firms audited by a Big 6 auditor to have lower discretionary accruals (e.g., Francis et al. 1999). *BIG6* is assigned a value of 1 if the firm is audited by a Big 6 auditor, and 0 otherwise. We predict a negative coefficient on *BIG6*. *L1ACC* is measured as the prior year's total current accruals scaled by beginning of year total assets. Ashbaugh et al. (2003) include *L1ACC* to proxy for the reversal of accruals, and expect the prior year's total current accruals to be negatively related to discretionary accruals. Thus, we predict a negative coefficient on *L1ACC*. Lang and Lundholm (1993) suggest that larger firms have an incentive to manage earnings less (report more accurately) in an attempt to avoid litigation. We use the variable *lnMVE*, measured as the natural log of a firm's market value of equity at fiscal year-end, as a proxy for the size of the audit client. The predicted sign for this variable is negative.

Ashbaugh et al. (2003) suggest that firms involved in a merger report higher discretionary accruals. We include *MERG*, assigned a value of 1 if the sample firm engaged in a merger or acquisition, and 0 otherwise. We predict a positive coefficient on *MERG*. We further control for the effect of the firm's financing activities on discretionary accruals. Prior research (Ashbaugh et al. 2003; Chung and Kallapur 2003; Rangan 1998; Teoh et al. 1998) suggests that significant changes in company financing are positively related to a firm's incentive to manage earnings. *FINAN* is assigned a value of 1 if *MERG* is not equal to 1 and number of shares outstanding increased by at least 10 percent, or long-term debt increased by at least 20 percent (Ashbaugh et al. 2003). Hence, in the regressions, the predicted sign for the variable *FINAN* is positive. We also include the variable *LEV*, measured as a firm's total assets less its book value of equity divided by its total assets, as a control variable. DeFond and Jiambalvo (1994) suggest that more-leveraged firms are more likely to use income-increasing accruals to avoid violating debt covenants; hence, we predict a negative coefficient on *LEV*.

The variable *MB* is included to control for growth opportunities, consistent with Ashbaugh et al. (2003). We calculate market-to-book ratio as a firm's book value of total liabilities plus market value of equity divided by book value of total assets. Menon and Williams (2004) suggest that the firm's growth is positively associated with discretionary accruals. Also, Barth et al. (1999) and Dechow and Skinner (2000) suggest that growth firms have a strong incentive to manage earnings in an attempt to sustain the stock price. Hence, the predicted sign for *MB* in the regressions is positive. We also include a proxy to control for firms in litigious industries. We assign a value of 1 if the firm operates in a highly litigious industry—including the following SIC codes: 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370–7374—and 0 otherwise (Francis et al. 1994). Consistent with Heninger (2001), the predicted sign for variable *LITIG* is positive.

The variable *LOSS* is assigned a value of 1 if the firm reports a loss in the current year, 0 otherwise. Ashbaugh et al. (2003) suggest that firms with current period losses report higher income-decreasing discretionary accruals; thus, we predict a negative coefficient on *LOSS*. Based on prior research (Ashbaugh et al. 2003; Chung and Kallapur 2003), a firm's cash flow from operations is expected to be negatively related to discretionary accruals. In the regressions, the variable *CFO* represents the cash flow from operations scaled by total assets, and the predicted sign for this variable is negative.

RESULTS

Univariate Tests

Table 2, Panel A, provides descriptive statistics for our full sample of 858 firm-year observations for the dependent, test, and control variables. The mean values for discretionary total accruals (*DTA*) and discretionary current accruals (*DCA*) are −0.046 and −0.032, respectively. The mean statistics for the alternative measures of discretionary current accruals, *PADCA* and *REDCA*, are −0.037 and −0.036, respectively. Approximately 34 percent of firm-year observations are treatment firms in the transition year of the Taxpayer Relief Act of 1997, and all firm-year observations have positive income tax expense in the 1995 tax year because of the way our sample is constructed. Our sample is composed of firms with negative current federal tax expense, a high percentage of which (76.2 percent) are loss firms. Eighty-eight percent of firms are audited by a Big 6 auditor, approximately 14.2 percent were involved in a merger or acquisition, and 30.3 percent are in a highly litigious industry. The average firm has a log of market value of equity (*lnMVE*) of 4.176 and a debt-to-asset ratio *(LEV)* of 0.560, and has few growth opportunities, as suggested by the market-to-book (*MB*) ratio of 1.280. The average sample firm has lagged accruals of 4.1 percent and cash flow from operations of 1.9 percent of prior-year assets. As compared to Ashbaugh et al. (2003), the average firm in our sample has a higher leverage ratio (*LEV*), higher prior-year discretionary accruals (*L1ACC*), fewer growth opportunities (*MB*), less merger (*MERG*) activity, and fewer firms are in litigious industries (*LITIG*). These differences are not unexpected, given that our sample includes only firms with negative current federal income tax expense.

Panel B of Table 2 reports descriptive statistics for treatment and control firms, and provides a Mann-Whitney Wilcoxon test of differences between treatment and control groups. The treatment firm subsample includes 292 firm-year observations, and the control group subsample includes 566 firm-year observations. Recall that the treatment firms have an incentive to accelerate the recognition of NOLs to avoid the larger recovery of taxes forgone. The untabulated mean value of federal income taxes paid in 1995 for our treatment firms is $9.63 million, suggesting that treatment firms in our sample are at risk of permanently losing, on average, a $9.63 million federal income tax refund if they do not report a loss in the transition year of TRA 1997.

The mean value of discretionary total accruals, *DTA*, is significantly lower for the treatment group of firms, as expected. However, the three alternative measures of discretionary current

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TABLE 2

Descriptive Statistics and Tests of Differences in Means by Group

Panel A: Descriptive Statistics for the Full Sample

Variable	n	Mean	Std. Dev.	Q1	Median	Q3
Dependent Variables						
DTA	858	−0.046	0.163	−0.105	−0.035	0.032
DCA	858	−0.032	0.150	−0.085	−0.023	0.037
PADCA	858	−0.037	0.149	−0.087	−0.026	0.030
REDCA	858	−0.036	0.145	−0.090	−0.026	0.032
Test Variable						
GROUP	858	0.340	0.474	0.000	0.000	1.000
Control Variables						
BIG6	858	0.880	0.325	1.000	1.000	1.000
L1ACC	858	0.041	0.136	−0.024	0.021	0.096
lnMVE	858	4.176	1.829	2.903	3.948	5.308
MERG	858	0.142	0.349	0.000	0.000	0.000
FINAN	858	0.071	0.257	0.000	0.000	0.000
LEV	858	0.560	0.276	0.367	0.570	0.718
MB	858	1.280	0.678	0.917	1.105	1.418
LITIG	858	0.303	0.460	0.000	0.000	1.000
LOSS	858	0.762	0.426	1.000	1.000	1.000
CFO	858	0.019	0.108	−0.029	0.029	0.079

Panel B: Descriptive Statistics for Treatment and Control Group of Firms with Positive Tax Expense In 1995

Variable	Treatment Group				Control Group				Mann-Whitney Wilcoxon Test (p-value)
	n	Mean	Median	Std. Dev.	n	Mean	Median	Std. Dev.	
Dependent Variables									
DTA	292	−0.063	−0.046	0.183	566	−0.036	−0.032	0.152	0.029
DCA	292	−0.043	−0.022	0.161	566	−0.027	−0.023	0.144	0.482
PADCA	292	−0.049	−0.027	0.160	566	−0.032	−0.026	0.143	0.395
REDCA	292	−0.048	−0.028	0.150	566	−0.030	−0.025	0.142	0.370
Control Variables									
BIG6	292	0.897	1.000	0.304	566	0.871	1.000	0.335	0.263
L1ACC	292	0.027	0.013	0.128	566	0.049	0.024	0.140	0.013
lnMVE	292	4.310	4.012	1.927	566	4.106	3.926	1.774	0.232
MERGE	292	0.158	0.000	0.365	566	0.134	0.000	0.341	0.356
FINAN	292	0.055	0.000	0.228	566	0.080	0.000	0.271	0.183
LEV	292	0.528	0.528	0.258	566	0.577	0.590	0.284	0.029
MB	292	1.315	1.147	0.606	566	1.262	1.076	0.712	0.025
LITIG	292	0.274	0.000	0.447	566	0.318	0.000	0.466	0.184
LOSS	292	0.747	1.000	0.436	566	0.770	1.000	0.421	0.440
CFO	292	0.023	0.027	0.115	566	0.017	0.029	0.104	0.624

The details of definitions and measurements of all the variables are reported in Appendix A.

accruals (*DCA*, *PADCA*, *REDCA)* are not significantly different between treatment and control firms. Thus, Table 2, Panel B, provides limited univariate evidence consistent with our hypothesis that the reduction in the NOL carryback period provided an incentive for treatment firms to accelerate their losses into the period immediately preceding the effective date of TRA 1997. However, the univariate analysis does not account for other time-varying factors that can impact the relation between discretionary accruals and *GROUP*. We use multivariate analysis to address these issues. As compared to treatment firms, the average control firm has higher prior-year accruals (*L1ACC*), a higher leverage ratio (*LEV*), and a lower market-to-book (*MB*) ratio. We control for the variables included in Table 2, Panel B, in our multivariate tests to assess the impact of the reduced NOL carryback period on discretionary accruals.

Table 3 provides the Pearson correlation coefficients among the dependent, test, and explanatory variables. Our primary interest is in the relation between discretionary accruals for treatment and control firms (*GROUP*). To the extent that the Taxpayer Relief Act of 1997 encouraged managers to manipulate their accruals to recognize a loss in the transition year, treatment firms should have lower discretionary accruals (i.e., higher income-decreasing discretionary accruals). Thus, we expect a negative correlation of *GROUP* with four measures of discretionary accruals, *DTA*, *DCA*, *PADCA*, and *REDCA*. The discretionary accrual measures are negatively related to *GROUP* and are statistically significant for *DTA* and *REDCA*. These results provide preliminary evidence that firms responded to the change in net operating loss carryback rules by reporting higher income-decreasing accruals in the transition year.[10]

Other univariate relations reported in Table 3 are also worth noting. The discretionary accrual measures are negatively correlated with leverage (*LEV*), loss (*LOSS*), and cash flow from operations (*CFO*). Several control variables also exhibit statistically significant correlations with each other. We control for these variables in our multivariate tests to assess the marginal impact of *GROUP* on discretionary accruals.

Multivariate Tests—Tests of H1

To test our hypothesis related to the short-term incentives created by TRA 1997, we compare the income shifting behavior of NOL firms in the transition year against NOL firms in the pre-TRA 1997 regime. Such a comparison holds the carryback period of three years constant across the treatment and control subsamples. Table 4 reports the regression results from the OLS regression of Model (1) using the full sample of firms. The sample firms coded as 1 for the *GROUP* variable have negative current federal tax expense, a three-year carryback period, and positive income tax expense in 1995. These firms will lose two years of carryback due to the 1997 tax law change, and control firms coded as 0 for the *GROUP* variable will not. To correct for heteroscedasticity and serial correlation, we calculate all t-statistics using Huber-White robust standard errors (White 1980). We also adjust for firm-level clustering.

Column 1 reports results using discretionary total accruals (*DTA*) as the dependent variable. The model explains discretionary accruals well, with an adjusted R^2 of 0.24, which is higher than the adjusted R^2 of 0.18 reported in Ashbaugh et al. (2003). Turning to our control variables, we find

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[10] We include firms in our sample if the firm has negative federal income tax expense as defined by Compustat item 63. We then categorize the firm as a treatment or control firm based on the fiscal year-ends (*GROUP* is coded 1 if the fiscal year ends between August 31, 1997, and July 31, 1998. *GROUP* is coded 0 if the fiscal year ends between January 1, 1995, and July 31, 1997). We code *LOSS* based on Compustat item 172, which is a financial reporting income/loss measure. Therefore, the *GROUP* variable, in part, reflects the fact that the firm has negative federal income tax, and the *LOSS* variable is based on a financial reporting income number. There may not necessarily be a complete overlap between the two sets of firms. In fact, only 76.2 percent of the sample firms report a loss in the income statement (per Table 2, Panel A).

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TABLE 3

Pearson Correlations for Dependent, Test, and Control Variables

Variable	DTA	DCA	PADCA	REDCA	GROUP	BIG6	L1ACC	lnMVE	MERG	FINAN	LEV	MB	LITIG	LOSS
DCA	0.905 (0.00)													
PADCA	0.896 (0.00)	0.991 (0.00)												
REDCA	0.884 (0.00)	0.970 (0.00)	0.967 (0.00)											
GROUP	−0.078 (0.02)	−0.051 (0.14)	−0.054 (0.11)	−0.058 (0.09)										
BIG6	0.048 (0.16)	0.046 (0.18)	0.044 (0.20)	0.059 (0.08)	0.038 (0.26)									
L1ACC	0.009 (0.79)	−0.001 (0.99)	−0.035 (0.31)	−0.059 (0.08)	−0.076 (0.03)	−0.057 (0.10)								
lnMVE	0.083 (0.01)	0.051 (0.13)	0.040 (0.25)	0.062 (0.07)	0.053 (0.12)	0.350 (0.00)	−0.050 (0.15)							
MERG	−0.074 (0.03)	−0.051 (0.14)	−0.063 (0.07)	−0.057 (0.10)	0.032 (0.36)	0.017 (0.62)	0.095 (0.01)	0.065 (0.06)						
FINAN	−0.050 (0.14)	−0.042 (0.22)	−0.043 (0.20)	−0.044 (0.19)	−0.046 (0.18)	−0.051 (0.13)	0.046 (0.18)	0.028 (0.42)	−0.113 (0.00)					
LEV	−0.154 (0.00)	−0.210 (0.00)	−0.185 (0.00)	−0.206 (0.00)	−0.084 (0.01)	0.016 (0.65)	0.007 (0.83)	0.040 (0.24)	0.078 (0.03)	0.022 (0.53)				
MB	−0.054 (0.12)	−0.040 (0.24)	−0.055 (0.10)	0.042 (0.21)	0.037 (0.28)	0.067 (0.05)	0.011 (0.75)	0.322 (0.00)	0.082 (0.02)	0.137 (0.00)	0.022 (0.52)			
LITIG	−0.023 (0.49)	−0.020 (0.57)	−0.020 (0.55)	−0.022 (0.51)	−0.045 (0.18)	0.041 (0.23)	−0.041 (0.23)	0.014 (0.69)	−0.051 (0.14)	−0.015 (0.67)	−0.060 (0.08)	−0.001 (0.97)		
LOSS	−0.261 (0.00)	−0.244 (0.00)	−0.240 (0.00)	−0.255 (0.00)	−0.026 (0.44)	−0.105 (0.00)	0.134 (0.00)	−0.303 (0.00)	0.063 (0.07)	−0.048 (0.16)	0.069 (0.04)	−0.075 (0.03)	0.088 (0.01)	
CFO	−0.261 (0.00)	−0.274 (0.00)	−0.270 (0.00)	−0.285 (0.00)	0.026 (0.44)	0.035 (0.30)	−0.095 (0.01)	0.185 (0.00)	−0.148 (0.00)	−0.050 (0.14)	−0.039 (0.25)	−0.096 (0.00)	−0.034 (0.31)	−0.191 (0.00)

The sample size is 858 firm-year observations.
The details of definitions and measurements of all the variables are reported in Appendix A.

TABLE 4

Ordinary Least Squares Regression
(Dependent Variable is Alternative Measures of Discretionary Accruals)

Variable	Prediction	Parameter Estimates (Standard Error In Parenthesis)			
		DTA	*DCA*	*PADCA*	*REDCA*
Intercept		0.116	0.129	0.122	0.120
		(0.02)***	(0.02)***	(0.02)***	(0.02)***
GROUP	−	−0.031	−0.022	−0.022	−0.024
		(0.01)***	(0.01)**	(0.01)**	(0.01)***
BIG6	−	0.000	0.006	0.006	0.009
		(0.02)	(0.01)	(0.01)	(0.01)
L1ACC	−	0.033	0.015	−0.024	−0.050
		(0.07)	(0.07)	(0.07)	(0.06)
lnMVE	−	0.011	0.007	0.006	0.007
		(0.00)***	(0.00)***	(0.00)**	(0.00)***
MERG	+	−0.051	−0.034	−0.037	−0.034
		(0.02)***	(0.02)**	(0.02)**	(0.02)**
FINAN	+	−0.053	−0.041	−0.041	−0.040
		(0.03)**	(0.03)*	(0.03)*	(0.03)
LEV	−	−0.089	−0.113	−0.098	−0.107
		(0.02)***	(0.02)***	(0.02)***	(0.02)***
MB	+	−0.030	−0.023	−0.025	−0.023
		(0.01)***	(0.01)***	(0.01)***	(0.01)***
LITIG	+	−0.011	−0.010	−0.010	−0.011
		(0.01)	(0.01)	(0.01)	(0.01)
LOSS	−	−0.113	−0.100	−0.100	−0.097
		(0.01)***	(0.01)***	(0.01)***	(0.01)***
CFO	−	−0.567	−0.522	−0.515	−0.531
		(0.08)***	(0.07)***	(0.07)***	(0.07)***
n		858	858	858	858
R^2		0.24	0.24	0.22	0.29

*, **, *** Denote significance at the 10, 5, and 1 percent levels, respectively, on a one-tailed test for coefficients with sign predictions and a two-tailed test without sign predictions.
The details of definitions and measurements of all the variables are reported in Appendix A.

the coefficients on *LEVERAGE*, *LOSS*, and *CFO* are negative and significant, consistent with our univariate evidence and prior literature (Ashbaugh et al. 2003). The results suggest that more-leveraged firms, loss firms, and firms with higher levels of operating cash flows report higher income-decreasing discretionary accruals to take advantage of the one-year transition period prior to TRA 1997. The coefficients on *lnMVE*, *MERG*, *FINAN*, and *MB* are opposite in sign compared to findings in Ashbaugh et al. (2003). However, the findings for these control variables are consistent with prior research (e.g., Kallapur et al. 2010; Warfield et al. 1995), which basically suggests that the relation between earnings management metrics and the control variables is not always clear-cut, with coefficients differing in signs across studies.

We next discuss the results related to our predicted relation between the change in the NOL carryback rules and discretionary total accruals. We argue that the change in NOL carryback rules should affect firms' incentive to manage discretionary accruals to report higher income-decreasing

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discretionary accruals to recognize a loss in the current period. The intercept of the regression represents the mean discretionary accruals for the control firms. The test variable of interest is *GROUP*. The coefficient on *GROUP* captures the difference in magnitude of discretionary accruals for the transition-year treatment group relative to the pre-TRA 1997 control group. We expect treatment firms to have a stronger incentive to recognize an NOL in the current year because they will forgo two years of prior income taxes paid. In comparison, control firms will forgo only one year of prior income taxes paid if the firm does not recognize an NOL in the current year. We find a negative and highly significant coefficient on *GROUP* ($\beta = -0.031$; t = 2.81), suggesting that, on average, discretionary accruals are lower for firms in the treatment group.[11] This result supports H1 and is consistent with the notion that transition-year treatment firms used accruals to accelerate losses into the period immediately preceding the effective date of TRA 1997.[12] Overall, the results support the argument that firms responded to the higher opportunity cost in the transition year because of the possibility of forgoing the larger permanent tax recovery. They also complement recent findings by Dhaliwal et al. (2010), who show that tax expense and other tax disclosures provide incremental information about the persistence of losses for firms reporting accounting losses.

We also examine three measures of discretionary current accruals including *DCA*, *PADCA*, and *REDCA*. We estimate Equation (1) for each measure and report results in the second, third, and fourth columns in Table 4.[13] The adjusted R^2s in the models range from 0.22 to 0.29. These statistics are comparable to the adjusted R^2 of 0.24 in the model using discretionary total accruals as the dependent variable. The results for our test variable, *GROUP*, and the control variables are consistent with the results based on discretionary total accruals, and provide further support that the change in NOL carryback rules encouraged managers to report lower discretionary accruals (higher income-decreasing discretionary accruals) to report a loss in order to recapture prior taxes paid.

To further analyze the short-term incentive created by the reduction in the NOL carryback period, we distinguish between firms in the transition year. As noted above, TRA 1997 increased the opportunity cost of not recognizing an NOL in 1997, in that the absence of an NOL in 1997 will result in firms permanently forgoing the recovery of taxes paid in 1994 and 1995. The incremental effect due to TRA 1997 is the forgone recovery of taxes paid in 1995. For firms that paid high federal income taxes in 1995, the incentive to undertake income shifting to recognize an NOL in 1997 is the strongest. To provide evidence on this issue, we identify a benchmark sample of 193 firms using the same criteria as our treatment firms with one difference; namely, these firms do not report positive income tax for the 1995 tax year. The sample of firms used in these tests consists of firms in the treatment year with negative current federal tax expense, a three-year carryback period, and positive income tax expense in 1995. Because all firms are in the treatment year, the firms will

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[11] As a sensitivity test, we also redefine the control period to include only a post-TRA 1997 time period, specifically, August 1, 1998, through July 31, 2000. The treatment group remains the same as in our main tests (firms with negative current federal tax expense from August 1, 1997, through July 31, 1998). Our results using this alternative control period are similar to those reported in the paper. Specifically, the results suggest that treatment firms used accruals to manage losses into the period prior to the TRA 1997, as compared to a group of control firms in the post-TRA 1997 period. As an additional sensitivity analysis, we use a pseudo sample of treatment firms after TRA 1997 with negative current federal tax expense from August 1, 2000, through July 31, 2001. In addition, we use a pseudo control group defined as August 1, 1998, through July 31, 2000. We do not find income-decreasing earnings management in the pseudo treatment year, as compared to the set of pseudo control firms. The results of this sensitivity test suggest that the results reported in the paper are due to the effect of the TRA 1997 tax rule changes, because we do not see a similar effect in the pseudo treatment year.

[12] As a sensitivity analysis, we exclude profitable firms from our sample and re-estimate the models using the 654 *LOSS* firms. Our results remain unchanged as a result of this deletion.

[13] We also re-estimate our models by excluding 78 control firms that appear more than once in our sample. The results using the remaining sample of 702 firm-year observations are robust to such an exclusion.

lose two years of carryback because of the 1995 tax law change. Treatment firms report positive income tax in 1995; control firms do not report positive income tax expense in 1995.

Table 5, Panel A, presents descriptive statistics of several firm characteristics for our subsample of 292 treatment firms, along with the benchmark sample of 193 firms. Moreover, the table reports the test statistics using a Mann-Whitney Wilcoxon test for differences between the two groups. Treatment firms that report positive income tax expense in the 1995 tax year have significantly lower *DTA*, *DCA*, *PADCA*, and *REDCA* compared to the benchmark firms that do not report positive income tax expense in the tax year 1995. This univariate evidence suggests that firms with positive income tax expense in the 1995 tax year have an incentive to manage discretionary accruals to report a current-period loss. The loss can be used to offset prior-year income that will generate a refund of prior income taxes paid. Firms reporting positive income tax expense in the 1995 tax year are larger (*lnMVE*), a higher percentage are loss firms (*LOSS*), and they are audited by Big 6 auditors (*BIG6*). Firms with positive income tax expense in the 1995 tax year, on average, have fewer financing activities (*FINAN*) and lower leverage (*LEV*) and market-to-book ratios (*MB*).

Panel B of Table 5 reports regression results for estimating Model (1) using a sample of 485 firms. In contrast to Table 4, the estimated models reported in Table 5, Panel B, replace the *GROUP* variable with a dichotomous variable, *POSINCTAX*, to distinguish between firms that report positive income tax expense in the 1995 tax year. The *POSINCTAX* variable examines whether firms that report positive income tax expense report higher income-decreasing discretionary accruals. Recall that this analysis recognizes that the incentives faced by firms in the transition-year treatment group will be a function of the taxes paid in prior periods.[14] For example, treatment firms with positive income tax expense in the 1995 tax year will forgo income taxes paid if they do not recognize an NOL in the current year. Therefore, we expect differential earnings management to be more (less) likely to occur among firms that report (did not report) positive income taxes in the 1995 tax year.

The results reported in Panel B of Table 5 are consistent with this expectation. In Column 1, the coefficient on *POSINCTAX* ($\beta = -0.056$; t $= -3.00$) is negative and statistically significant at the 0.01 level, suggesting that firms that report positive income tax expense in the 1995 tax year report higher income-decreasing discretionary total accruals. This evidence supports the view that the change in NOL carryback rules motivated managers to manage discretionary accruals to accelerate losses in the transition year. The results also support the contention that there is a higher opportunity cost in the transition year of TRA 1997 due to the larger permanent tax recovery forgone, and that this encourages firms to accelerate loss recognition. In Columns 2 through 4, where discretionary current accruals are the dependent variables, we find similar results. In Column 2, where discretionary current accruals, *DCA*, is the dependent variable, the coefficient on *POSINCTAX* ($\beta = -0.032$; t $= 2.15$) is negative and statistically significant at the 0.05 level. Similarly, the coefficients on *POSINCTAX* are negative and statistically significant in Columns 3 and 4, where *PADCA* and *REDCA* are the dependent variables, respectively. Overall, the results in Table 5 show that firms with greater incentive to recognize a loss in the current period report higher income-decreasing discretionary accruals.

Multivariate Tests—Tests of H2

Next, we focus on a subsample of 148 treatment firms with Institutional Brokers Estimation Systems (I/B/E/S) data for one-year-ahead analyst forecasts to test H2. We conduct subsample analysis on firms that expect (do not expect) to incur losses in the subsequent year because treatment firms with forward-looking losses are more likely to accelerate the recognition of NOLs.

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[14] In contrast, the tests in Table 4 view the tax status of the treatment and control groups as random.

TABLE 5

Descriptive Statistics and Regression Results

Panel A: Descriptive Statistics for 292 (193) Treatment (Benchmark) Firms That Report (Do Not Report) Positive Current Income Tax Expense for the Tax Year 1995

Variable	n	Positive Income Tax for the Tax Year 1995 Mean	Median	Std. Dev.	n	No Positive Income Tax for the Tax Year 1995 Mean	Median	Std. Dev.	Mann-Whitney Wilcoxon Test (p-value)
Dependent Variables									
DTA	292	−0.063	−0.046	0.183	193	−0.005	0.010	0.210	<0.001
DCA	292	−0.043	−0.022	0.161	193	−0.001	0.011	0.181	0.001
PADCA	292	−0.049	−0.027	0.160	193	−0.008	0.001	0.177	0.001
REDCA	292	−0.048	−0.028	0.150	193	−0.011	−0.004	0.178	0.003
Control Variables									
BIG6	292	0.897	1.000	0.304	193	0.772	1.000	0.421	<0.001
L1ACC	292	0.027	0.013	0.128	193	0.040	0.015	0.211	0.346
lnMVE	292	4.310	4.012	1.927	193	3.633	3.540	1.869	<0.001
MERG	292	0.158	0.000	0.365	193	0.114	0.000	0.319	0.177
FINAN	292	0.055	0.000	0.228	193	0.155	0.000	0.363	<0.001
LEV	292	0.528	0.528	0.258	193	0.624	0.586	0.391	0.022
MB	292	1.315	1.147	0.606	193	1.567	1.228	1.020	0.020
LITIG	292	0.274	0.000	0.447	193	0.249	0.000	0.433	0.537
LOSS	292	0.747	1.000	0.436	193	0.601	1.000	0.491	<0.001
CFO	292	0.023	0.027	0.115	193	0.027	0.026	0.138	0.784

Panel B: Ordinary Least Squares Regression for Subsample of Treatment Firms (Test Variable is whether Firm has Positive Federal Income Tax Expense in the Tax Year 1995)

Variable	Prediction	Parameter Estimates (Standard Error in Parenthesis) DTA	DCA	PADCA	REDCA
Intercept		0.188 (0.04)***	0.159 (0.03)***	0.153 (0.03)***	0.131 (0.03)***
POSINCTAX	−	−0.056 (0.02)***	−0.032 (0.02)**	−0.032 (0.01)**	−0.032 (0.01)**
BIG6	−	−0.045 (0.03)*	−0.020 (0.02)	−0.021 (0.02)	−0.001 (0.02)
L1ACC	−	0.052 (0.04)	−0.006 (0.04)	−0.036 (0.04)	−0.043 (0.05)
lnMVE	−	0.008 (0.01)*	−0.002 (0.00)	−0.001 (0.00)	−0.002 (0.00)
MERG	+	−0.063 (0.04)**	−0.036 (0.03)	−0.043 (0.03)*	−0.026 (0.03)
FINAN	+	−0.026 (0.04)	−0.022 (0.03)	−0.021 (0.03)	−0.012 (0.03)
LEV	−	−0.043 (0.03)*	−0.063 (0.03)***	−0.051 (0.03)**	−0.068 (0.03)***
MB	+	−0.021 (0.01)**	−0.003 (0.01)	−0.008 (0.01)	−0.003 (0.01)

(continued on next page)

TABLE 5 (continued)

| | | Parameter Estimates (Standard Error in Parenthesis) | | | |
Variable	Prediction	*DTA*	*DCA*	*PADCA*	*REDCA*
LITIG	+	0.020	0.014	0.011	0.013
		(0.02)	(0.01)	(0.01)	(0.02)
LOSS	−	−0.157	−0.123	−0.121	−0.114
		(0.02)***	(0.02)***	(0.02)***	(0.01)***
CFO	−	−0.687	−0.573	−0.574	−0.491
		(0.13)***	(0.13)***	(0.13)***	(0.14)***
n		485	485	485	485
Adjusted R^2		0.25	0.23	0.23	0.20

*, **, *** Denote significance at the 10, 5, and 1 percent levels, respectively, on a one-tailed test for coefficients with sign predictions and a two-tailed test without sign predictions.
The details of definitions and measurements of all the variables are reported in Appendix A.

We proxy for a sample firm's expectation of a future loss by using the one-year-ahead consensus (median) analyst's earnings forecast on I/B/E/S as of the fiscal year-end. The sample of firms used in these tests consists of firms with negative current federal tax expense, a three-year carryback period, and positive income tax expense in 1995. All firms in this test are treatment firms that will lose two years of carryback because of the 1997 tax law change. Moreover, treatment firms expect to report losses in the next year, whereas control firms do not expect to report losses in the subsequent year.

Table 6, Panel A, presents descriptive statistics for our subsample of treatment firms that have positive (negative) one-year-ahead analyst forecasts. Treatment firms with negative forward-looking earnings have significantly lower *DTA* and *DCA*, as compared to treatment firms that report positive forward-looking earnings. This univariate evidence provides partial support for the notion that firms with negative expected earnings have greater incentive to manage discretionary accruals to take advantage of the opportunity to offset a current period loss with prior-year income, and receive a refund of prior income taxes paid. Firms reporting negative one-year-ahead analyst forecasts are smaller (*lnMVE*), and a higher percentage were involved in mergers (*MERG*) and report losses (*LOSS*) in the current year. Firms with negative forward-looking earnings also have fewer financing activities (*FINAN*) and growth opportunities (*MB*) and report lower cash flows from operations (*CFO*).

In contrast to Table 4, the estimated models reported in Table 6, Panel B, include a dichotomous variable, *NEGFOR*, for whether the firm reports negative (positive) one-year-ahead analyst forecasts. The *NEGFOR* variable is the variable of interest for the test of H2, which predicts that firms with negative forward-looking earnings are more likely to report higher income-decreasing discretionary accruals. We exclude the *BIG6*, *FINAN*, and *LOSS* variables in Table 6, Panel B, because 100 percent of firms with negative one-year-ahead analyst forecasts are audited by a Big 6 auditor, 0 percent have financing activities, and 90 percent are loss firms. The adjusted R^2s in these models range from 0.18 to 0.22, which are similar to the adjusted R^2s reported in Table 4. The findings for the control variables are similar to those reported in Table 4.

The coefficients on *NEGFOR* for each model estimated with an alternative measure of discretionary accruals, in Columns 1 through 4, are negative and statistically significant at the 0.10 level. The results suggest that the subset of transition-year treatment firms identified as expecting losses use accruals to accelerate losses into the period immediately preceding the effective date of

TABLE 6

Descriptive Statistics and Regression Results (Reduced Sample)

Panel A: Descriptive Statistics for Treatment Firms with Positive Tax in 1995 with I/B/E/S Data that have Negative (Positive) One-Year-Ahead Analyst Forecasts

Variable	n	Negative One-Year-Ahead Analyst Forecast Mean	Median	Std. Dev.	n	Positive One-Year-Ahead Analyst Forecast Mean	Median	Std. Dev.	Mann-Whitney Wilcoxon Test (p-value)
Dependent Variables									
DTA	21	−0.117	−0.110	0.220	127	−0.041	−0.035	0.141	0.076
DCA	21	−0.102	−0.061	0.167	127	−0.037	−0.019	0.111	0.065
PADCA	21	−0.108	−0.070	0.163	127	−0.044	−0.027	0.112	0.110
REDCA	21	−0.110	−0.066	0.170	127	−0.042	−0.026	0.110	0.134
Control Variables									
BIG6	21	1.000	1.000	0.000	127	0.984	1.000	0.125	0.574
L1ACC	21	−0.005	0.003	0.130	127	0.033	0.016	0.140	0.257
lnMVE	21	4.739	4.493	1.814	127	5.412	5.061	1.667	0.157
MERG	21	0.333	0.000	0.483	127	0.102	0.000	0.304	0.005
FINAN	21	0.000	0.000	0.000	127	0.063	0.000	0.244	0.243
LEV	21	0.504	0.500	0.302	127	0.533	0.534	0.240	0.421
MB	21	1.258	1.158	0.448	127	1.403	1.249	0.579	0.204
LITIG	21	0.429	0.000	0.507	127	0.291	0.000	0.456	0.213
LOSS	21	0.952	1.000	0.218	127	0.638	1.000	0.483	0.005
CFO	21	−0.009	0.009	0.095	127	0.054	0.057	0.091	0.007

Panel B: Ordinary Least Squares Regression for Subsample of Treatment Firms with Positive Tax in 1995 that have I/B/E/S Data for One-Year-Ahead Analyst Forecast (Test Variable is Whether Firm has a Negative [Positive] One-Year-Ahead Analyst Forecast)

Variable	Prediction	Parameter Estimates (Standard Error in Parenthesis) *DTA*	*DCA*	*PADCA*	*REDCA*
Intercept		−0.134 (0.05)***	−0.031 (0.03)	−0.037 (0.04)	−0.016 (0.04)
NEGFOR	−	−0.061 (0.05)*	−0.079 (0.04)**	−0.079 (0.04)**	−0.084 (0.04)**
L1ACC	−	−0.019 (0.09)	−0.079 (0.09)	−0.101 (0.10)	−0.124 (0.10)
lnMVE	−	0.019 (0.01)**	0.015 (0.01)**	0.015 (0.01)***	0.013 (0.01)**
MERG	+	−0.119 (0.05)**	−0.061 (0.05)	−0.065 (0.05)	−0.060 (0.04)
LEV	−	0.085 (0.07)	−0.066 (0.04)	−0.046 (0.04)	−0.060 (0.04)
MB	+	−0.017 (0.03)	−0.020 (0.02)	−0.028 (0.02)	−0.025 (0.02)
LITIG	+	0.002 (0.03)	0.025 (0.02)	0.024 (0.02)	0.012 (0.02)

TABLE 6 (continued)

Variable	Prediction	Parameter Estimates (Standard Error in Parenthesis)			
		DTA	*DCA*	*PADCA*	*REDCA*
CFO	−	−0.381 (0.14)***	−0.436 (0.12)***	−0.443 (0.12)***	−0.446 (0.12)***
n		148	148	148	148
Adjusted R^2		0.18	0.21	0.22	0.22

*, **, *** Denote significance at the 10, 5, and 1 percent levels, respectively, on a one-tailed test for coefficients with sign predictions and a two-tailed test without sign predictions.

The details of definitions and measurements of all the variables are reported in Appendix A.

TRA 1997. Overall, these results complement Maydew (1997), who examines a tax rate change surrounding TRA 1986 and finds that his sample NOL firms accelerate expenses and defer income taxes to recover prior taxes paid in the higher tax rate regime. We explore a setting with constant tax rates, but variation in the carryback period, and find evidence that points to the incentive effect due to the larger opportunity cost in terms of the permanent recovery of taxes forgone.

CONCLUSION

Much of the extant literature has focused on tax incentive effects associated with rate changes. In contrast, we focus on how a change in a nontax rate provision affects taxpayer behavior. Specifically, we focus on TRA 1997, which reduced the net operating loss carryback period from three to two years. This law created an immediate, but short-term, incentive effect in that it increased the opportunity cost of not recognizing an NOL in the transitional period, i.e., the 1997 tax year. Typically, if a firm does not recognize an NOL, it forgoes the recovery of taxes paid for a single tax year. For instance, in the pre-TRA 1997 regime, if a firm does not recognize an NOL in 1996, it forgoes the recovery of taxes paid in 1993. However, if a firm does not recognize an NOL in 1997, the firm forgoes the recovery of taxes paid in 1994 and 1995. This paper examines whether the higher opportunity cost in terms of the recovery of taxes forgone influences firms to accelerate loss recognition in the transitional year of 1997. To test our hypothesis related to the short-term incentives created by TRA 1997, we compare the income shifting behavior of NOL firms in the transition year against NOL firms in the pre-TRA 1997 regime. Such a comparison holds the carryback period of three years constant across the treatment and control subsamples.

Comparing to a control sample of NOL firm-years, we find our treatment NOL firm-years, i.e., firms that reported NOLs in the transition year of 1997, display greater (lower) income-decreasing (-increasing) accruals. This is consistent with the argument that treatment firms undertake greater income shifting to avoid the larger opportunity cost of tax recovery forgone. To further probe the short-term incentive effect due to TRA 1997, we distinguish between firms in our treatment sample. First, we identify firms based on the level of taxes paid in the tax year 1995. The taxes in that year represent the incremental tax recovery forgone due to TRA 1997. We find greater income shifting for firms that report a higher level of 1995 taxes paid. Income shifting to accelerate loss recognition is likely applicable to firms that anticipated future losses. To this end, we use analyst earnings forecasts to identify firms with future expected losses. Consistent with our prediction, we find greater income shifting for these firms.

Although firm response to tax-related incentives has received considerable scrutiny, much of the attention has been directed at incentives arising from changes in tax rates. However, Congress

also alters various nontax rate provisions to achieve its policy and revenue objectives. Unlike tax rate changes, the incentive effects associated with changes within tax law provisions may not be apparent. Nonetheless, they can create substantial incentive effects. Our study suggests more inquiry on these changes will increase our understanding of tax effects on taxpayer behavior.

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APPENDIX A

Definition of Variables

Variable Names	Variable Definitions
Dependent Variables	
DTA	Discretionary total accruals based on the modified Jones (1991) model.
DCA	Discretionary current accruals based on Ashbaugh et al. (2003).
PADCA	The discretionary current accruals measure controlling for performance using the portfolio match technique (Ashbaugh et al. 2003).
REDCA	The discretionary current accruals measure controlling for performance by including the prior years' ROA in the estimation of expected accruals (Ashbaugh et al. 2003).
Test Variables	
GROUP	1 if the firm is a treatment group, 0 otherwise (0 represents the control group). A firm is considered a treatment firm if the fiscal year ends between August 31, 1997, and July 31, 1998.
POSINCTAX	1 if the firm reports positive income tax expense in the 1995 tax year, and 0 otherwise.
NEGFOR	1 if the firm has a negative one-year-ahead analyst forecast, and 0 otherwise. The negative one-year-ahead analyst forecast is calculated using I/B/E/S data.
Control Variables	
BIG6	1 if the firm is audited by Arthur Andersen, Coopers & Lybrand, Ernst & Young, Deloitte & Touche, Peat Marwick, Main, or Price Waterhouse (identified by Compustat item 149), and 0 otherwise.
L1ACC	Last year's total current accruals equal to net income before extraordinary items (Compustat item 123) plus depreciation and amortization (Compustat item 125) minus operating cash flows (Compustat item 308) scaled by beginning-of-year total assets.
lnMVE	The natural log of a firm's price per share at fiscal year-end (Compustat item 199) multiplied by the number of shares outstanding (Compustat item 25) measured in millions of dollars.
MERG	1 if the sample firm engaged in a merger or acquisition, and 0 otherwise. Merger or acquisition is identified by Compustat AFTNT1; "AA" indicates an acquisition (purchase and/or pooling) and "AB" indicates a significant merger/acquisition whereby the effects on the prior year's sales constitute 50 percent or more of the reported sales for that year.
FINAN	1 if the merger is not equal to 1 and number of shares outstanding increased by at least 10 percent, or long-term debt increased by at least 20 percent, and 0 otherwise.
LEV	A firm's total assets less book value of equity (Compustat item 60) divided by total assets.
MB	A firm's market-to-book ratio defined as a firm's total liabilities plus market value of equity divided by book value of total assets.
LITIG	1 if the firm operates in a high-litigation industry (SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370–7374), and 0 otherwise.
LOSS	1 if the firm reports a net loss (Compustat item 172), and 0 otherwise.
CFO	Operating cash flows, defined as Compustat item 308, scaled by beginning-of-year assets.