Book-Tax Conformity and the Information Content of Earnings

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Abstract: We examine whether the information content of earnings is inversely related to the degree of conformity between financial accounting income and taxable income. Our inquiry exploits a natural experiment first examined by Guenther et al. (1997) in which a set of U.S. firms were forced to increase their book-tax conformity as a result of a change in the tax law. We find evidence consistent with the increase in book-tax conformity reducing the usefulness of financial accounting earnings. The information content of earnings as measured by the long-window earnings response coefficients and the R-squared from a regression of returns on earnings decreases for this set of firms after the tax law required greater book-tax conformity. We find that the declines are significantly larger than the changes in the same measures for an industry-matched sample of firms not required to increase conformity. These results add to the academic literature on the interaction of taxes and financial reporting as well as to the policy debate about whether the U.S. should conform the tax law to GAAP, a debate that has recently intensified.

1.   Introduction

This paper examines the effect of book-tax conformity on the information content of financial accounting earnings. We use a natural experiment first examined by Guenther, Maydew and Nutter (1997, hereafter GMN) in which a set of publicly traded firms were required to switch for tax purposes from the cash method of accounting to the accrual method thereby increasing the level of conformity between book and taxable incomes. GMN find that after the required change in the tax rules these firms deferred more income for financial reporting purposes because of the increased trade-off between financial accounting and tax. In other words, once the two incomes were more closely aligned, the firms reported lower financial accounting earnings, all else constant, in order to save (defer) tax dollars.

Book-tax conformity and its effects on the information content of reported earnings is an important topic of inquiry to both policy makers and academic researchers. The difference between reported book and taxable incomes grew substantially in the 1990s according to estimates made by several governmental agencies and researchers (e.g., Plesko 2000 and 2002, Treasury 1999). While the reason for this divergence is not known with certainty, many argue that one or both of the income measures were being opportunistically reported by management. One suggestion to curb this behavior has been to conform the two income measures into one, thereby forcing firms to trade-off high accounting earnings against lower taxes, which some believe would discourage aggressive financial and tax reporting. For example, one commentator states "The [book-tax] gap can and should be narrowed…The result would be a stronger incentive for companies to tell it like it is. If executives want to overstate income to fool shareholders, they'll pay higher

taxes as a result. If they are tempted to understate income in order to escape taxes, they'll suffer with their shareholders. That kind of change in incentives would do far more to clean up corporate accounting than any amount of regulatory oversight" (Murray, 2002). John Buckley, Democratic tax council for the House Ways and Means Committee, claimed: "If you had greater book/tax conformity, Enron probably would never have happened" (Carnahan and Novack, 2002). Indeed, increased book-tax conformity is one of the alternatives being considered by President Bush's Tax Reform Panel.[1] While it is possible that book-tax conformity could be a partial cure for some problems of aggressive tax and financial reporting, book-tax conformity could have severe unintended consequences, rendering the cure more damaging than the disease.

One unintended consequence is how firms respond to book-tax conformity in reporting their income and then how investors will use the new earnings number that is reported. GMN investigate the former and report that firms deferred income in their financial accounting reporting in response to a change in the tax law that required more conformity. We examine the latter, how investors use this new earnings information – is it more or less informative to the market?

How taxes affect financial reporting has been the subject of extensive research, though most of this research has examined the effect on the financial reporting behavior of firms (see Shackelford and Shevlin, 2001 for a review). In settings with a high degree of book-tax conformity, deferral of taxable income can lead to tax-induced lower financial accounting income (i.e., tax-induced conservatism). Prior studies obtain variation in book-tax conformity by looking across countries (for example, Ball, Kothari, and Robin, 2000; Guenther and Young, 2000). These studies report that the informativeness of earnings is

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[1] See Harris (2005) and Graetz (2005).

lower in countries with a high degree of book-tax conformity than it is in countries with little book-tax conformity. This paper holds the country constant (i.e., the United States) and obtains variation in book-tax conformity by examining a natural experiment in which a set of firms was required to increase their book-tax conformity as a result of a change in the tax law. The sample consists of firms originally identified in GMN that were required to switch for tax purposes from the cash method to the accrual method (hereafter referred to as "cash" firms) as a result of the Tax Reform Act of 1986 (TRA 86). Before they were required to switch, these firms faced relatively low levels of book-tax conformity because they used the accrual method for financial reporting purposes but the cash method for tax purposes. Once they were required to use the accrual method for both book and tax purposes, their degree of book-tax conformity increased.

We test the implications of taxation-driven conservatism for the information content of earnings using two different methods. Because any results obtained from testing the information content of earnings for the cash basis firms before TRA 86 compared to after TRA 86 could be due to other factors that affected all firms during that time period, we obtain a 'matched' set of firms from the same four-digit industries (SIC codes) as the cash basis firms (hereafter, accrual basis firm-years). We examine both long-window earnings response coefficients and the R^2s from regressions of returns on earnings for the different sub-samples of firms to determine whether the information content of the cash basis firms' earnings was affected by the conformity requirement in TRA 86. We employ a difference in differences approach comparing the cash basis firms before and after TRA 86 to the accrual basis firms before and after TRA 86. We find evidence consistent with earnings becoming less useful to the market for the cash basis firms and

this decrease being significantly different from the observed change for the accrual basis sample. Both the long window ERC and the R^2s from regressions of returns on earnings decline for the cash basis firms and significantly more so than for the accrual basis firms. These results are robust to different measures of earnings (earnings before extraordinary items and pre-tax earnings) and to the inclusion of other control variables in the ERC regressions.

The paper proceeds as follows. In the next section we review the sample, tests and findings of GMN. In section 3 we develop our hypotheses. In section 4 we discuss our sample, variable measurement, and empirical tests. Section 5 presents our results and section 6 concludes.

2.   Related Research

2.1   *Guenther, Maydew and Nutter (1997)*

GMN examine the impact of book-tax conformity on firms' financial reporting and tax planning activities. They identify a small set of publicly traded firms (66 firms with available data) that prior to the Tax Reform Act of 1986 (TRA 86) were allowed to use the cash method of accounting (other than for purchases and sales of inventory items) for tax purposes and the accrual method of accounting for financial reporting purposes. As a result, for these firms the year-end acceleration of financial statement income imposed no tax costs as long as cash collections were not also accelerated. In addition, by deferring (accelerating) cash collections (payments) firms could defer taxable income without affecting book income. TRA 86 required large firms (sales in excess of $5 million) to use

the accrual accounting method for tax purposes, strengthening the degree of book-tax conformity for these firms.

GMN show that the cash basis firms recognized (reported) more book income than accrual basis firms prior to TRA 86. Specifically, GMN examine three financial statement ratios indicative of the degree to which firms accelerate or defer earnings and cash flows: 1) the ratio of accounts payable to accounts receivable, which they interpret as an overall measure of accrual and/or cash flow management, 2) the ratio of cash receipts to cash disbursements, their measure of receipts and payments management, and 3) the ratio of sales to expenses (both measured under the accrual method for financial reporting), their measure of revenue and expense management. They compare the cash firms to a matched set of accrual firms (matched by 4 digit industry membership) prior to TRA 86 and then compare how the cash basis firms changed their reporting after TRA 86 relative to the accrual basis firms.

Using both univariate and multivariate analysis, GMN report results generally consistent with their hypotheses that cash basis firms recognized greater income before TRA 86 and that they decreased the level of revenue recognized relative to the accrual basis firms after TRA 86. More specifically, prior to TRA 86, the cash basis firms have significantly higher ratios of accounts receivable to accounts payable and sales to expenses, indicating that the cash basis firms accrued revenues and deferred expenses to a greater degree than did the accrual basis firms. They also find evidence consistent with the cash basis firms reducing these same ratios to a greater extent than the accrual basis firms after TRA 86 indicative of a greater decrease in the acceleration of income and deferral of expenses, consistent with the tax costs of these actions constraining this behavior. The

authors conduct robustness checks for self-selection (because the group of cash basis firms

chose to use the cash method of accounting for tax purposes prior to TRA 86),

profitability, and growth and report results inconsistent with these factors adversely

affecting the results of their empirical tests. Overall, GMN conclude that their results

suggest that increasing the extent of book-tax conformity causes firms to defer financial

statement income.

2.2   Other Related Research

Watts (2003a,b) argues that there are four economic determinants of conservatism;

contracting, litigation, regulation, and taxation. Conservative accounting generally requires

a higher degree of verification to recognize good news as gains than to recognize bad news

as losses (Basu 1997, Watts 2003a, b). By tax-induced conservatism we are referring to

unconditional conservatism in the overall reporting of income and balance sheet accounts

rather than conditional conservatism (i.e., conditional upon a loss occurring then the

accounting system recognizing that particular loss sooner rather than later or in other

words more timely recognition of economic losses). Watts (2003a, b) predicts and GMN

provide evidence that this unconditional conservatism is greater with higher levels of

book-tax conformity because firms will report a lower book income in order to minimize

their taxes. However, tax-induced conservatism is a response to tax policy and tax laws

rather than an effort on the part of management to report economic losses in a more timely

fashion to provide investors more information or ward off potential litigation. Thus, what

tax-induced conservatism means for the usefulness of the earnings number is unclear.

Some indirect evidence is provided on our research question by two recent studies. Using a large sample of U.S. firms, Hanlon, Kelley and Shevlin (2005) predict and find that financial accounting earnings provide more information to the market than estimated taxable income (exhibits greater relative information content) but that both income measures provide incremental information for stock price formation. Thus, they argue that if book and taxable incomes are conformed to one measure, the capital markets in the U.S. will suffer an information loss. Further, they argue that if book income is conformed to follow the tax rules, they estimate a loss of approximately 50% of the current explanatory power of earnings. However, because Hanlon et al. (2005) base this 50% loss on the likely premise that the conformed income measure will be very similar to today's taxable income measure, their evidence is necessarily indirect in nature (i.e., we do not know exactly what income number these firms would report if book and taxable incomes were conformed). Note also that Hanlon et al. (2005) had to estimate taxable income from financial statement information raising concerns about measurement error in their taxable income estimate. In contrast, our study examines financial accounting earnings for a set of firms where an increase in conformity was required, thus eliminating the need to estimate taxable income.

Similarly, Kelley (2005) uses a broad sample and investigates whether firms with large differences between operating cash flows and taxable income report financial accounting earnings more conservatively arguing that these firms face the greatest costs of reporting a divergent set of incomes. In addition, Kelley (2005) examines whether the information content of financial accounting information is impaired because of taxation generated conservatism but finds no evidence that this is the case. However, again because

the U.S. has never implemented a regime where book and taxable incomes are closely aligned, these questions cannot be directly addressed using a large sample of U.S. firms.

We note that there are two notable cases where sub-samples of firms have been affected by an increase in conformity as a result of tax law changes in the U.S. One case was the implementation of the Alternative Minimum Tax in 1986, which required a link to book income in the calculation of the alternative tax. However, the evidence on whether this affected firms' financial reporting behavior is mixed (Gramlich 1991, Dhaliwal and Wang 1992, and Choi et al. 1998) and there is no study to our knowledge that investigated changes in the information content of earnings surrounding the implementation of the AMT book-tax link.[2] Another example is the LIFO conformity rules. While much of the early evidence was mixed on the market reaction to a LIFO adoption, Kang (1993) and Hand (1993) provide plausible explanations for the observed negative reaction for LIFO adoptions: firms that adopt LIFO expect input prices to rise. However, to our knowledge there is no study that examines the information content of earnings surrounding the implementation of the LIFO conformity rules. Because the income effect of being on LIFO must be disclosed in the firm's financial statements, the loss in information content because of conformity in this case is likely not comparable to other types of book-tax conformity requirements where disclosure of the low conformity outcome is not required. An increase in book-tax conformity that affected firms' reported earnings has been identified for a small sample of firms by GMN. This small sample of firms from GMN

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[2] In addition to the mixed evidence on whether the AMTBIA actually led firms to change their reported income, an additional problem is ex ante identifying firms likely affected by the AMTBIA, which then adjusted their reported income. Ex post identification (from references by firms themselves to being subject to the AMTBIA) also is problematic in that these are firms that did (or could not) avoid the AMTBIA. In either sample identification approach, the tests are likely low power.

offers a unique opportunity to study the capital market effects of requiring an increase in book-tax conformity in a U.S. setting.

Although the U.S. has not implemented a regime that closely links the two income measures, and thus large sample evidence is unavailable using U.S. data, several international studies have examined these issues. Ali and Hwang (2000) examine the relation between measures of information content of financial accounting data and several country specific factors. The country specific factors examined by Ali and Hwang (2000) include the degree to which tax rules influence financial accounting measurements, the involvement of a private sector body in the standard setting process, and whether the country has a bank-oriented or market-oriented financial system. Ali and Hwang (2000) find that the information content of earnings is lower when tax rules significantly influence financial accounting measurements. This result is consistent with tax laws being influenced by political, social, and economic objectives rather than the information needs of investors. This evidence would lead to the prediction that if book and tax incomes are conformed in the U.S., there would be a loss of value-relevant information in the capital markets. [3]

Ball, Kothari and Robin (2000) also find that valuation in code-oriented countries (i.e., where tax and book incomes are very closely linked) is much less related to reported earnings, consistent with the findings of Ali and Hwang (2000). Similarly, Guenther and

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[3] In another study, Harris, Lang, and Moller (1994) examine the value relevance of German accounting measures over a period in which the German accounting rules were considered by many to be particularly deficient in the information disclosed to investors. The German system included a closer link between book and taxable incomes, and a greater emphasis on both detailed prescriptive regulations and the needs of debtholders. Harris et al. (1994) also examine an earnings number calculated by the German financial analyst society, which was meant to represent the "permanent earnings" of the companies. The study reports that the correlation between 18-month returns and annual earnings for German firms is generally similar to that in the U.S. They also report that the earnings number produced by the analysts have more explanatory power for returns relative to the reported earnings, thus providing an example of an alternative form of information acquisition that arises when financial accounting does not provide the type of information demanded by investors (i.e., analyst groups calculating alternative measures of earnings).

Young (2000) report evidence consistent with accounting earnings in the U.K. and the U.S.

being more closely related to underlying economic activity than accounting earnings in

France and Germany. They predict these results because of differences in legal systems

and the demand for accounting information, differences in legal protection for external

stakeholders, and differences in the degree of tax conformity in the different countries.

However, using international data does not directly answer the question of what would

happen in the U.S. because earnings quality is an endogenous function of market demands,

political influences, and the incentives of involved parties that are specific to each country

(Ball, Robin and Wu 2003). Thus, we examine the question directly using a unique set of

U.S. firms at a time when their level of book-tax conformity increased as a result of a tax

law change.[4]

3.   **Hypothesis Development**

Financial accounting income is reported under Generally Accepted Accounting

Principles (GAAP) and is intended to provide outside stakeholders (investors, creditors,

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[4] There have also been several recent studies regarding book-tax differences and earnings quality. Although not directly related, a discussion regarding how those studies relate to our predictions and findings is warranted. One example is Hanlon (2005) which presents results consistent with firms having large book-tax differences in a cross-section of firms having lower earnings persistence. Thus, one may be tempted to believe that if we just eliminate these differences and conform book and taxable income that earnings quality will improve because firms will not be able to manage earnings anymore. However, in a setting where book and taxable incomes are required to be conformed the only way that firms' earnings will become more value relevant is if the majority of book-tax differences for all firms were driven by earnings management of the type on which firms could avoid paying taxes. As stated in Hanlon (2005) there are many reasons that firms can have book-tax differences—1) different rules governing the calculation of the incomes because the two measures are intended for different purposes, 2) firms being tax aggressive, 3) firms managing earnings, and 4) a combination of these factors. Thus, in our study if prior to TRA86 the cash basis firms were opportunistically reporting earnings and then could not do so after TRA 86 because of the tax constraint *and* they did not manage earnings downward after TRA 86 because of tax incentives we would likely see an increase in the information content of earnings after TRA 86. However, because there are many reasons for the book-tax differences to exist prior to TRA 86 and there was likely a behavioral response by firms in response to the increase in conformity causing them to manage earnings downward after TRA 86 (because the market knows their conformity increased) we predict a decrease in the information content for these firms after TRA 86.

regulators, etc.) with reliable and relevant information regarding firm performance. In

contrast, taxable income is calculated in accordance with the Internal Revenue Code (IRC)

to determine corporate tax liabilities. The objectives of the IRC are to provide a

framework for efficient and equitable determination of tax liabilities and subsequent

collection of revenue, and to provide incentives for firms to engage in, or not engage in,

particular activities, and to reward particular constituencies (Scholes et al. 2005; Manzon

and Plesko, 2002).

GAAP provides managers with considerable discretion in their choice of

accounting procedures (Watts and Zimmerman 1986, 215). Accruals can be used by

management to convey private information useful to external stakeholders (Dechow 1994)

but they can also be used opportunistically. Hanlon et al. (2005) argue that conforming

book income and taxable income would reduce the information content of earnings

because managers would report earnings to minimize taxes thereby losing the means by

which to convey relevant and reliable information regarding firm performance through

earnings. As a result, investors would have to get this information elsewhere (and this

information acquisition would be costly). Thus, our hypothesis is as follows:

H1: The information content of earnings for the cash basis firms decreases after TRA 86.

The alternative hypothesis is that firm managements use the accruals process

opportunistically to such a great degree that the information content of earnings does not

decline after the required increase in book-tax conformity. The argument is that under

greater conformity, managers would be forced to balance the trade-off between reporting

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for tax and book and thus the earnings would be more representative of actual firm performance and thereby more informative (Desai 2004).[5]

4.   Sample, Descriptive Statistics, and Empirical Design

4.1   Sample

Our sample selection criteria are described in Table 1. We begin with the sample of 94 firms identified by GMN as using the cash basis of accounting prior to TRA 86.[6] We delete observations with missing data for our tests, firms with fiscal year end changes and firms which have 1985 sales of $5 million or less because firms with less than $5 million in sales were not required to change accounting methods under TRA 86.[7] We also require firms to have available data in at least both the years 1985 and 1988 to be retained in the sample. Our final sample consists of 56 firms that used the cash method for tax purposes prior to TRA 86 and were then required to switch to the accrual for tax purposes. We refer to these firms as the "cash basis firms." We also gather a sample of what are essentially control firms from the same four digit SIC codes that used the accrual method for tax purposes during the entire period of the study; referred to as the "accrual basis firms." We include firm-years with available data in the time period from 1981-1985 for the pre-TRA 86 period and firm-years with available data in the time period from 1988-1992 for the post-TRA 86 period.   Because our hypothesis is concerned with the relation between

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[5] We note in information content tests comparing cash flows and accounting earnings, accounting earnings exhibits greater relative information content than cash flows (Dechow, 1994) in spite of this potential for earnings management. Taxable income is generally based on accrual concepts but some of the rules for revenue recognition are based on cash flows such that taxable income is a mixture of accrual and cash flow basis of computing income (Hanlon et al. (2005)).
[6] GMN use a keyword search of financial statement tax footnotes on the NAARS file of the LEXIS/NEXIS data base for 1985 using the terms 'cash basis' and 'cash method'. They exclude firms in the commercial banking and savings and loan industries because these firms have special tax and financial accounting rules not applicable to the majority of firms.
[7] IRC §448.

returns and earnings our tests are conducted on firm-years rather than an average of data over the years for a firm (as in GMN). In total, we have 3,208 firm-years of data consisting of 404 cash basis firm-years and 2,804 accrual basis firm-years.

4.2 Descriptive Statistics

Table 2 contains descriptive statistics for the sample. Our measure of earnings (ΔE) is the change in earnings before extraordinary items (Compustat data #18) from year t-1 to year t, scaled by the market value of equity (*MVE*, data #199 * data #25) at the end of year t-1.[8] Our measure of returns (*R*) is the raw buy and hold 12 month return beginning in the fourth month after the fiscal year end of t-1 and ending 3 months after the fiscal year-end of year t. *ASSETS* are the total assets of the firm at year-end (data #6), *SALES GROWTH* is defined as the percentage increase in current-year sales over the prior year sales (data #12), and *LEVERAGE* is defined as the long-term debt of the firm scaled by total assets (data (#9+#34)/#6). Return on assets (*ROA*) is defined as earnings before extraordinary items dividend by average total assets (data #18/average data#6), earnings-to-price (*E/P*) is earnings before extraordinary items divided by market value of equity at year-end (data#18/MVE), and book-to-market (*B/M*) is defined as the book value of equity at year-end divided by *MVE (data #60/MVE)*.

Comparing cash method firms to accrual method firms, the data indicate that the cash method firms tend to be smaller than the accrual firms both before and after TRA 86, whether measured by *MVE* or by *ASSETS*. Most of the other measures are not significantly different between cash and accrual firms with a few exceptions. There is

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[8] We also test earnings defined as pre-tax earnings and find very similar results described below in section 5.4.

weak evidence that cash method firms grew more rapidly than accrual method firms before TRA 86 (in terms of mean *R* and mean and median *SALES GROWTH*). Following TRA 86 cash method firms had higher *LEVERAGE* than accrual method firms.

The fact that there are some differences between cash and accrual firms underscores the importance of utilizing a natural experiment. If there had been no exogenous change in book-tax conformity and we had merely compared cash method firms to accrual method firms, it would be difficult to isolate effects of book-tax conformity on reporting behavior given the other differences across the firms. With the 2 x 2 design in the current study, we are able to observe the same cash method firms under two different book-tax conformity regimes, essentially giving us a within-firm test. To control for time-varying industry or macro effects we also compare to a set of accrual method firms in the same pre and post-time periods that were not affect by the change in book-tax conformity.

4.3   Empirical Design

We first examine the difference-in-differences in the long-window earnings response coefficient between the cash and accrual basis firms. Following Francis et al. (2005) and others, we interpret the slope coefficient relating returns to earnings obtained from regressions of annual returns on annual earnings changes as a measure of the informativeness of earnings. Thus, we interpret differences in the slope coefficients between our sub-samples of firms as providing evidence on differences in the credibility or informativeness of accounting information. In our case, this difference, if any, is

associated with each of the sub-sample's level of book-tax conformity.[9] We use the

following regression model:

$$R_t = \alpha + \beta_1 CASH + \beta_2 POST_t + \beta_3 \Delta E_t + \beta_4 CASH * \Delta E_t + \beta_5 POST * \Delta E_t + \beta_6 CASH * POST_t$$

$$+ \beta_7 CASH * POST_t * \Delta E_t + \varepsilon \qquad (1)$$

where *CASH* is an indicator variable set equal to 1 if the firm is a cash basis firm and zero

if the firm is an accrual basis firm; *POST* is an indicator variable set equal to 1 if the year

of the observation is post-TRA 86 (1988-1992) and zero if the observation is prior to TRA

86 (1981-1985)[10]; ΔE_t and R_t are as defined above. Using this specification we can

investigate whether cash firms' average ERC declined post-TRA 86 more so than the

average ERC of the accrual firms. This approach controls for any differential in the post-

TRA period for all firms attributable to other factors and for any differential in returns

between the cash and accrual basis firms not attributable to earnings. The main coefficient

of interest is the final coefficient, β_7. This represents the incremental effect of being a cash

basis firm after TRA 86 on the relation between reported earnings and returns relative to

being a cash basis firm before TRA 86 and relative to being an accrual basis firm before

and after TRA 86. Our predicted sign for this coefficient is negative—consistent with the

information content of earnings declining for the cash basis firms from the pre to post TRA

86 period and relative to the decline for accrual basis firms.

Additional coefficients of interest in this specification include, β_3, which

represents the ERC for accrual firms prior to TRA 86 and for which we predict a positive

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[9] Francis et al. (2005) cite other papers which capture the informativeness of earnings in the coefficient relating returns to earnings (e.g., Teoh and Wong, 1993; Imhoff and Lobo, 1992; Warfield et al., 1995; Subramanyam and Wild, 1996; Fan and Wong, 2002; and Yeo et al., 2002).
[10] Similar to GMN, we exclude observations from the years 1986 and 1987 because TRA86 was phased in over those two years.

sign. The coefficient β_4 represents the incremental effect of being a cash firm pre-TRA 86 and should have a positive sign if cash firms prior to TRA 86 have reported earnings that are more informative than earnings of accrual basis firms prior to TRA 86. The coefficient β_5 is the incremental effect on the ERC from being an accrual basis firm post-TRA 86, which controls for any change in the return-earnings relation for all firms attributable to something other than the increase in book-tax conformity required by TRA 86.

We next estimate the basic returns earnings regression for each sub-sample of firm-years separately (cash basis firms before TRA 86, cash basis firms after TRA 86, accrual basis firms before TRA 86, and accrual basis firms after TRA 86) to obtain the regression R^2s. The specification is as follows:

$$R_t = \alpha + \beta \Delta E_t + \varepsilon \qquad (2)$$

where all variables are as defined above.

We employ randomization techniques to test the significance of the difference in the R^2s between the four groups.[11] To do this we first calculate the difference-in-differences in R^2s for the sub-samples by subtracting the R^2s from estimating regression (2) over cash basis firms in the post-TRA 86 period from the R^2s from estimating regression (2) over cash basis firms in the pre-TRA 86 period. We then calculate a similar difference for the accrual basis firms by subtracting the R^2s from estimating regression (2) over accrual basis firms in the post-TRA 86 period from the R^2 from estimating regression (2) over accrual basis firms in the pre-TRA 86 period. We then subtract the difference for the accrual basis

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[11] We note that while Francis et al. (2005) call tests of R^2s an alternative measure of informativeness, they do not test the explained variability of the returns-earning relation. The cite problems comparing R^2s across samples and the lack of a model that maps signal credibility into the explained variability of the earnings return relation. We employ this alternative test, however, because of its wide use in the accounting literature and for completeness in our analysis (see Kothari, 2001 for a summary).

firm sample from the cash basis firm sample difference. This provides the difference-in-differences of the R^2s .

To test whether this difference-in-differences is significant we assign each observation randomly to each of the four groups while retaining the same relative proportion of each group to the overall sample. Thus, in other words, any firm-year observation could be randomly assigned to any of the four different groups regardless of their actual identity. After randomly assigning firms to the four groups, we compute the same difference-in-differences between the R^2s between the four sub-samples as described above. We repeat this randomization nine hundred and ninety-nine times. The randomization procedure generates a distribution under the null hypothesis of no association, or no decline in the test statistic. We then compute the percentage of times the difference-in-differences in the randomized data is greater than or equal to the 'true' difference-in-differences computed from the actual data to derive the probability of our event occurring by chance. In addition, we also test the significance of the magnitude of the differences between the cash basis and accrual basis firm-years using the standard deviations from the randomized sample distribution.

5.   Empirical Results

5.1   Difference-in-Differences ERC Regression Test

Table 3 presents the results of estimating regression equation (1).[12] The coefficient on earnings, β_3, is significant and positive as expected, indicating that the return-earnings relation is positive for accrual firms prior to TRA 86. The coefficient on Cash*ΔE, β_4, is

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[12] All standard errors for this regression estimation are robust standard errors using the Huber-White correction with clustering at the firm level

also significantly positive (p=0.0015, one-tailed test) indicating that the cash basis firm-years have a greater ERC prior to TRA 86 relative to the accrual basis firm-years in that same time period. This result is consistent with greater information content of earnings for firms allowed to use different accounting methods for book and tax (cash basis firms) relative to firms where the income measures are conformed to a greater degree (accrual basis firms). This result is similar to the cross-country findings that the information content of earnings is greatest in countries with low degrees of book-tax conformity. However, the result could be caused by other differences between these two samples for reasons unrelated to the method of accounting used for tax. To control for these potential differences we focus on the coefficient on Cash*Post*ΔE, β_7, as our main variable of interest. The coefficient on Post*ΔE, β_5, is designed to capture any broad changes in information content after TRA 86 and is insignificant (p<0.10, two-tailed test). β_7 is negative and significant (p-value = 0.0015, one-tailed test) indicating that the cash basis firms exhibit a decline in their ERC around TRA 86 that is greater than the decline in the ERC for the accrual basis firms over the same period. Thus, the evidence is consistent with an increased level of book-tax conformity reducing the information content of earnings.

5.2   Difference-in-Differences in R^2s

Table 4 presents the results of estimating equation (2) over each of the four sub-samples of firm-years separately and Figure 1 graphs the R^2s for each group. The R^2s from the regression using the cash basis firm-years prior to TRA 86 is the largest of any of the four sub-samples at 0.1646 (versus 0.0793 for cash basis firm-years after TRA 86, 0.0518

for accrual basis firm-years before TRA 86, and 0.0672 for accrual basis firm-years after TRA 86) indicating that earnings explains more of the variation in returns for this sub-sample relative to the other three sub-samples of firm-years. This is consistent with settings of low book-tax conformity being associated with high information content of earnings. To examine statistical significance of the difference in the R^2s we turn to the randomization analysis.

Table 5 presents the results of the randomization tests. First, note that the R^2s of the returns on earnings regression drops for the cash basis firm-years by 0.0853 from the 0.1646 prior to TRA 86 to 0.0793 after TRA 86. Using the standard deviation from the distribution of R^2s from the randomized data, we find that this decrease in the R^2s for the cash basis firm-years is statistically significantly different from zero (t-stat of 23.148). For the accrual basis firm-years we find that the R^2s actually *increase* slightly from 0.0518 in the pre-TRA 86 period to 0.0672 in the post-period a difference, which is also significantly different from zero (t-stat of -32.386).   We then test the significance of the difference in the R^2s differences by conducting a two sample t-test using the standard deviations from the randomized data for the accrual and cash basis firms and find that the change in the cash basis firm-years R^2s from before TRA 86 to the period after TRA 86 is significantly greater than the change for the accrual basis firm-years over that same time period (t-stat of 27.10).

We also compute out of the nine hundred and ninety-nine times that the data are randomized, how many times the change in R^2s from pre-TRA 86 to post-TRA 86 for the firm-years assigned the 'cash basis' label exceeds the same difference for the firms assigned the 'accrual basis' label by an amount at least as large as the difference in the

actual data. In other words, how many times is the randomized data's difference-in-differences greater than or equal to 0.1007? We find that in only 9.6% of the cases using randomized data would we have obtained a result similar to that from the actual data. This percentage can be interpreted similar to a p-value: the probability of a difference-in-differences in R^2s as large as what we observe in our sample happening by chance is less than 10%.

5.3   *The Effect of Loss Firms*

Our hypothesis predicts and our main results above show that greater book-tax conformity is associated with a loss of information content in reported financial accounting earnings. The results in Guenther et al. (1997) are consistent with this lower information content in earnings occurring as a result of firm management reporting lower financial accounting earnings in order to save tax dollars rather than providing private information through earnings. Because the tax incentives are to lower reported income, increasing conformity could result in more reported losses. Indeed, in our sub-samples of firm-years, 18 (21) percent of the cash (accrual) basis firm-years prior to TRA 86 report a loss, 30 (28) percent of the cash (accrual) basis firm-years after TRA 86 report a loss, indicating a greater increase in reported losses for the cash basis firms relative to the accrual basis firms.

This differential in rates of loss observations could affect our results. Hayn (1995) shows that the explanatory power and earnings response coefficients are lower for loss observations. To investigate the effect of loss firm observations on our study we re-estimate equation (1) after excluding loss observations from the sample: our results

weaken. Our difference-in-differences interaction term coefficient, β_7 (the coefficient on the interaction of CASH*POST*ΔE), is still negative and is significant at a p-value of 0.045, one-tailed. However, we note that the weakening of our results after deleting observations with losses demonstrates that our results are driven by a combination of two factors: 1) cash basis firms adopting more conservative accounting and thus reporting more losses, which have lower ERCs and 2) ERCs for firms with positive earnings actually declining after conformity increases. It seems that a larger portion of the results may be driven by an increase in the reporting of losses. However, if one believes the greater incidence of losses for the cash basis firms is a result of the increase in book-tax conformity and the resulting change in incentives for firm management, then the effect of the loss firms on our results is not problematic but rather further exemplifies that a consequence of book-tax conformity is that there will be a loss of information to market participants.

5.4   Additional Analysis

In our main specification of the difference-in-differences in the ERCs between cash basis and accrual basis firms we do not include additional control variables that may affect returns in order to report results comparable to our R^2s analysis which consists of simple regressions of returns on earnings changes focusing on R^2s changes only as a function of earnings. However, to provide additional evidence that our results in Table 3 are not affected by correlated omitted variables we include several additional control variables in the regression. The variables we include are 1) size (measured as the natural log of total assets (data #6)), 2) the book-to-market ratio (data #60/ (data #199 * data #25)), 3) return

on assets (data #18/ the average of data #6 in years t and t-1), and 4) leverage scaled by

assets ((data #34 + data #9)/ data #6)). When including these additional control variables

we find that the coefficient on 1) size is significantly negative (p-value of <0.001), 2)

book-to-market is significantly negative (p-value <0.001), 3) return on assets is

significantly positive (p-value < 0.001), and that on 4) leverage is insignificantly different

from zero. With regard to our main variable of interest in the difference-in-differences

specification (β_7 in equation (1)) we find that it remains significantly negative (p-value of

0.004, one-tailed) as predicted.[13] The remaining coefficients in the regression are of

similar significance. We also estimate the regression by including interaction terms of the

change in earnings variable with each of the four control variables mentioned above.

Again, the results are similar to our main analysis with the difference-in-difference

coefficient of interest remaining negative and significant (p-value of 0.0014, one-tailed).

Because the definition of earnings we use in our analysis, earnings before

extraordinary items, is after the tax expense on the firm's income statement, we conduct a

sensitivity analysis using pre-tax earnings (data #170) in place of earnings before

extraordinary items to make sure the accounting for income taxes before and after TRA 86

does not induce our results. Although there was no explicit change in the accounting

standard regarding the accounting for income taxes, firms' tax expense could have changed

significantly because of all the tax law changes in TRA 86. Using the revised definition of

earnings, our results are unchanged. In the ERC difference-in-differences regression

(Table 3) the coefficient on the main variable of interest is significantly negative (p-value

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[13] Again, all standard errors for this regression estimation are robust standard errors using the Huber-White correction with clustering at the firm level.

of 0.0032, one-tailed). Thus, our results are robust to the use of pre-tax earnings rather than earnings before extraordinary items.

Finally, because there is some evidence of firms shifting income into post-TRA 86 tax years in order to take advantage of lower tax rates (Guenther, 1994; Scholes, Wilson and Wolfson, 1992), we estimate our difference-in-differences regression by excluding data for the tax year 1988 to ensure that our results are not somehow driven by this income shifting. Again, we find results consistent with Table 3, the coefficient on the difference-in-difference term, β_7, is negative and significant with a p-value of 0.0009, one-tailed. Overall, the main inferences of the analysis are unaffected by the inclusion of control variables, the use of pre-tax earnings as the main regressor, or by the exclusion of tax years to which income may have been shifted by firms in response to the lower tax rates implemented in TRA 86.

6. Conclusions

This paper examines the effect of book-tax conformity on the information content of financial accounting earnings. We use a natural experiment in which a sample of publicly traded firms were required to switch from the cash method of accounting to the accrual method for tax purposes, thereby increasing the level of conformity between book and taxable incomes. GMN examine this same set of firms and find that after the required change in the tax rules these firms deferred more income for financial reporting purposes because of the increased trade-off between financial accounting and tax. In other words, once the two incomes were more closely aligned, the firms reported lower financial accounting earnings, all else constant, in order to save (defer) tax dollars.

We examine the market's use of this more closely aligned earnings number. We predict that earnings that are more closely linked to taxable income will be less informative to market participants. We predict that increased conformity would reduce the information content of earnings because managers would report earnings to minimize taxes rather than convey private information about firm performance.

We find evidence consistent with our predictions. Firms that were required to convert to the accrual basis method for tax purposes, which increased the level of conformity between tax and financial accounting reporting, experienced a decline in long-window ERCs and in the explanatory power of earnings for returns in the period following TRA 86. In order to ensure that this decline was not caused by a macroeconomic event that affected all firms, not just those subject to the increased conformity requirement of TRA 86, we compare the decline in these measures to the changes in the ERC and R^2s for a sample of industry-matched firms not subject to the conformity changes imposed by TRA 86. We find that the sample of firms required to switch to the accrual basis method for tax purposes had significantly greater declines in the long-window ERC and in explanatory power of earnings for returns over the same time period. Thus, the evidence indicates that increasing book-tax conformity tends to result in a degradation of the information content of financial reporting earnings.

Many proponents of increased book-tax conformity have claimed the easy fix for corporate financial misreporting is to eliminate or reduce the differences between book and taxable incomes. From the tax side, another set of proponents makes the same argument in terms of constraining aggressive tax reporting. In both cases the idea is that with stronger conformity firms will have less ability to simultaneously engage in aggressive tax

reporting and aggressive financial reporting. While even this claim is debatable (see Hanlon and Shevlin 2005), our study provides evidence that the behavioral response to an increase in book-tax conformity will result in less informative earnings being reported to shareholders. We believe this to be the case even if is the tax law was changed to conform with GAAP because that is exactly what occurred in our small sample of firms in this study.

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Figure 1
Graph of R^2s for Each Sub-Sample of Firm-Years
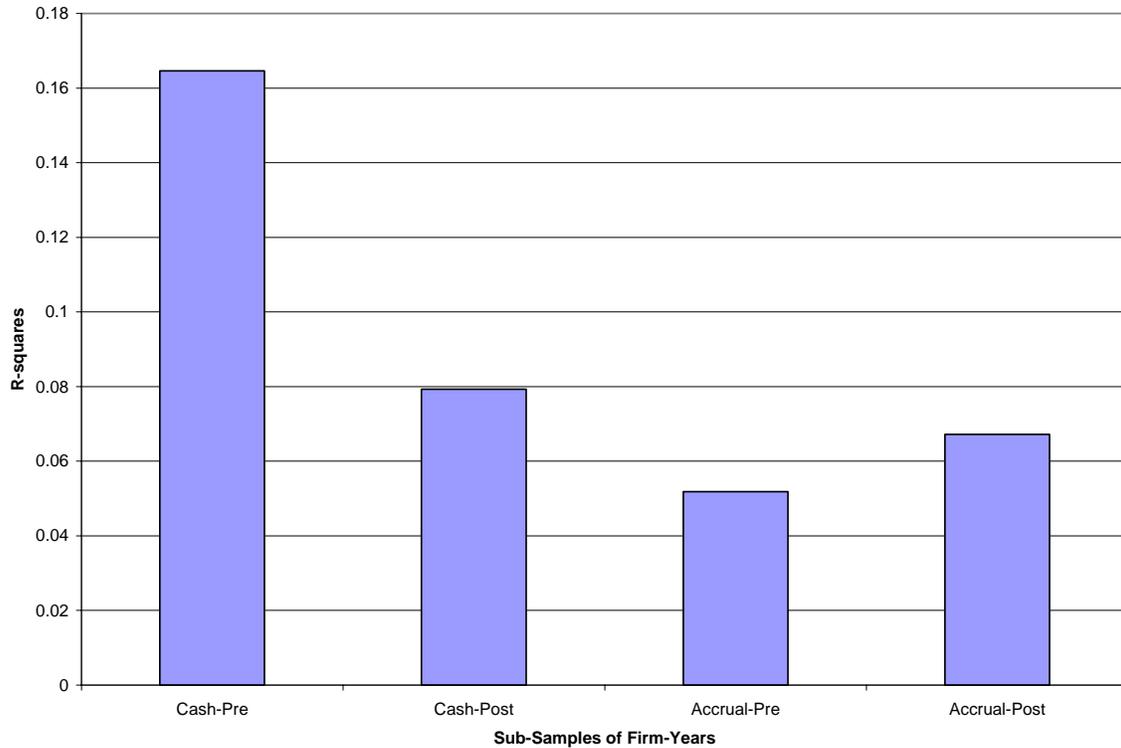
Cash-Pre is the sub-sample of firm-years 1981-1985 for the cash basis firms (those firms that were previously on the cash-basis method for tax purposes and were required to switch to the accrual method after TRA 86). Cash-Post is the sub-sample of firm-years 1988-1992 for the cash basis firms (after the switch to the accrual method). Accrual-Pre is the sub-sample of firm-years 1981-1985 for the accrual basis firms (those that were on the accrual basis method of accounting for tax purposes prior to TRA 86). Accrual-Post is the sub-sample of firm-years 1988-1992 for the accrual basis firms.

Table 1
Sample Selection

	Observations
Cash Basis Sample	
List of cash basis firms from Guenther, Maydew, and Nutter (1997) sample	94
Less:	
Firms with missing lagged market value of equity and with fiscal year end change	7
Firms with Compustat data in only 1985 or 1988	18
Firms with missing earnings data for either year	2
Firms not on crsp or with missing returns for either year	8
Firms that have no matching accrual basis firms in the same four digit sic code	3
Total Cash Basis Sample - number of firms	56
Number of firm-years available for the sample of 56 firms for the years	
1981-1985 and 1988-1992	404
Accrual Basis Sample	
Firm-years in the Compustat file matching four digit industries as the cash sample with	
1985 sales > $5 million, and observations in both years 1985 and 1988,	4,162
for years 1981-1985 and 1988-1992	
Less:	
Firm-years with missing earnings or return data	954
Less cash basis firm observations	404
Total Accrual Basis Sample - firm-years (377 firms)	2,804
Total Sample Cash and Accrual Firm-Year Observations	3,208

Cash basis sample includes the firms required to switch from the cash basis method of accounting for tax purposes to the accrual basis method following TRA 86. Guenther, Maydew, and Nutter (1997) provide evidence with these firms deferring more financial accounting income as a result of the increase in book-tax conformity after this change. The accrual basis sample includes firms in the same industries as the cash basis firms but were already on the accrual basis of accounting for tax purposes prior to TRA 86.

Table 2
Descriptive Statistics

Pre-TRA 1986	Cash Basis Sample (N=404) n=165					Accrual Basis Sample (N=2,804) n=1,153					difference in mean	difference in median
	mean	st. dev.	25%	median	75%	mean	st. dev.	25%	median	75%	p-value	p-value
R_t	0.060	0.585	-0.295	-0.075	0.364	-0.035	0.542	-0.366	-0.153	0.097	0.0360	0.0529
$\Delta E_t =$	0.00027	0.108	-0.014	0.011	0.027	-0.001	0.175	-0.037	0.003	0.029	0.9362	0.0885
$MVE_t =$	138.884	177.741	26.744	65.453	173.201	679.359	1,869.914	22.515	88.776	392.913	0.0001	0.0213
$MVE_{t-1} =$	126.390	196.151	24.903	53.935	133.573	609.907	1,649.993	200.902	78.740	349.758	0.0001	0.0073
$Assets_t$	159.727	226.526	31.779	72.157	181.903	805.854	1,890.660	28.682	109.219	512.559	0.0001	0.0100
Sales Growth$_t$	0.183	0.300	0.022	0.148	0.303	0.128	0.322	-0.040	0.075	0.215	0.0409	0.0003
E/P_t	0.033	0.114	0.026	0.055	0.084	0.006	0.258	0.017	0.058	0.092	0.0202	0.7312
B/M_t	0.637	0.442	0.313	0.520	0.808	0.712	0.555	0.360	0.593	0.934	0.0523	0.0981
ROA_t	0.057	0.074	0.019	0.060	0.107	0.045	0.096	0.011	0.055	0.102	0.0709	0.2118
Leverage$_t$	0.215	0.199	0.043	0.166	0.336	0.228	0.193	0.070	0.178	0.351	0.4246	0.2561

Post TRA 1986	n=239					n=1,651						
	mean	st. dev.	25%	median	75%	mean	st. dev.	25%	median	75%		
R_t	0.046	0.349	-0.038	0.008	0.046	0.052	0.605	-0.342	-0.088	0.192	0.2092	0.4061
$\Delta E_t =$	0.105	0.625	-0.354	-0.075	0.448	0.034	0.287	-0.033	0.009	0.043	0.6092	0.9780
$MVE_t =$	165.051	335.299	18.950	57.780	180.348	1,155.397	3,195.857	23.475	102.830	584.639	0.0001	0.0001
$MVE_{t-1} =$	152.630	283.043	21.556	58.327	179.142	1,004.474	2,651.437	23.144	92.603	515.310	0.0001	0.0001
$Assets_t$	271.256	499.650	47.154	120.162	259.721	1,068.964	2,377.849	37.060	159.659	680.636	0.0001	0.0118
Sales Growth$_t$	0.075	0.221	-0.044	0.063	0.168	0.094	0.269	-0.026	0.074	0.178	0.2395	0.3648
E/P_t	-0.104	0.426	-0.044	0.048	0.074	-0.067	0.390	-0.021	0.046	0.077	0.2080	0.5928
B/M_t	0.787	0.703	0.353	0.654	1.064	0.747	0.682	0.360	0.609	0.949	0.3980	0.1661
ROA_t	0.008	0.104	-0.024	0.026	0.063	0.019	0.109	-0.012	0.034	0.075	0.1495	0.0577
Leverage$_t$	0.286	0.235	0.086	0.240	0.426	0.231	0.201	0.063	0.189	0.355	0.0008	0.0020

This table contains descriptive statistics for the sample. Our measure of earnings (*ΔE*) is the change in earnings before extraordinary items (Compustat data #18) from year t-1 to year t, scaled by the market value of equity (*MVE*, data #199 * data #25) at the end of year t-1. Our measure of returns (*R*) is the raw buy and hold 12 month return beginning in the fourth month after the fiscal year end of t-1 and ending 3 months after the fiscal year-end of year t. *ASSETS* are the total assets of the firm at year-end (data #6), *SALES GROWTH* is defined as the percentage increase in current-year sales over the prior year sales (data #12), and *LEVERAGE* is defined as the long-term debt of the firm scaled by total assets (data (#9+#34)/#6). Return on assets (*ROA*) is defined as earnings before extraordinary items dividend by average total assets (data #18/average data#6), earnings-to-price (*E/P*) is earnings before extraordinary items divided by market value of equity at year-end (data#18/MVE), and book-to-market (*B/M*) is defined as the book value of equity at year-end divided by *MVE (data #60/MVE)*.

Table 3
Difference in Differences Earnings Response Coefficient Tests

$$R_t = \alpha + \beta_1 CASH + \beta_2 POST_t + \beta_3 \Delta E_t + \beta_4 CASH * \Delta E_t + \beta_5 POST * \Delta E_t + \beta_6 CASH * POST_t$$

$$+ \beta_7 CASH * POST_t * \Delta E_t + \varepsilon \qquad\qquad (1)$$

	Predicted Sign	Coefficient	Robust St. Err	T-stat	p-value
Intercept		0.199	0.0162	12.32	<0.0001
Cash	?	0.033	0.0438	0.75	0.4560
Post	?	-0.071	0.0194	-3.69	<0.0001
ΔE	+	0.806	0.1493	5.40	<0.0001
Cash*ΔE	+	1.688	0.5600	3.01	0.0015
Post*ΔE	?	-0.326	0.1709	-1.91	0.0570
Cash*Post	?	-0.079	0.0563	-1.41	0.1600
Cash*Post*ΔE	-	-1.726	0.5712	-3.02	0.0015
N		3,208			
R squared		0.073			

Cash is an indicator variable set equal to one if the firm is a cash basis firm as defined in Table 1, and zero otherwise. Post is an indicator variable set equal to one for years 1988-1992 (post-TRA 86) and zero otherwise. All other variables are as defined previously or interactions of previously defined terms. P-values are one tailed if we have a predicted sign and two-tailed where no sign is predicted. Robust standard errors are computed using Stata's robust command and specifying each firm as a cluster. This statistic is the Huber-White standard errors and fixing within cluster correlation because we have the same firm in the sample repeated times.

Table 4

OLS Regressions of Returns on Earnings for the Period before TRA 86 and after TRA 86 and for Cash Basis and Accrual Basis Firms

$$R_t = \alpha + \beta \Delta E_t + \varepsilon \qquad (2)$$

Panel A: Cash Basis Firms

Cash Basis Firm-Years 1981-1985 (N=165)	Coefficient	St. Err	T-stat	p-value	Adj R squared
Intercept	0.232	0.04658	4.98	<.0001	0.1646
ΔE_t	2.494	0.4321	5.77	<.0001	

Cash Basis Firm-Years 1988-1992 (N=239)	Coefficient	St. Err	T-stat	p-value	Adj R squared
Intercept	0.081	0.03357	2.41	0.0165	0.0793
ΔE_t	0.443	0.09543	4.64	<.0001	

Panel B: Accrual Basis Firms

Accrual Basis Firm-Years 1981-1985 (N=1,153)	Coefficient	St. Err	T-stat	p-value	Adj R squared
Intercept	0.199	0.01764	11.29	<.0001	0.0518
ΔE_t	0.806	0.10081	7.99	<.0001	

Accrual Basis Firm-Years 1988-1992 (N=1,651)	Coefficient	St. Err	T-stat	p-value	Adj R squared
Intercept	0.128	0.01265	10.1	<.0001	0.0672
ΔE_t	0.480	0.04382	10.95	<.0001	

All sub-samples and variables are as defined in Tables 1 and 2.

Table 5
Difference in Difference Test for R^2s:
Randomization Test of Significance of R^2s and t-tests of the Differences in R^2s

Panel A: Cash basis firm-years (n=404)

Actual R^2 of the cash basis firms 1981-1985	0.1646
Actual R^2 of the cash basis firms 1988-1992	0.0793
Actual difference	0.0853
t stat for difference from zero	23.15
Standard deviation of randomized cash basis distribution	0.0741

Panel B: Accrual basis firm-years (n=2,804)

Actual R^2 of the accrual basis firms 1981-1985	0.0518
Actual R^2 of the accrual basis firms 1988-1992	0.0672
Actual difference	-0.0154
t stat for difference from zero	-32.39
Standard deviation of randomized accrual basis distribution	0.0252

Panel C: Difference in Difference Tests

Difference in R^2 difference of cash firms less the R^2 difference of accrual firms	0.1007

Magnitude Statistical Test
 T-test of whether the difference in difference in R^2 is significantly
  different from zero (using standard deviations from randomized data)   27.10

Randomization test:
 Randomize firms over all four groups (cash firms pre and post TRA 86 and
  accrual firms pre and post TRA 86). Test how many times the randomized
  sample has a difference in difference greater than or equal to the
  actual difference in difference in R^2 from the data in their true groupings.

p-value (one-tailed)   0.096