Book-tax Conformity and Capital Structure

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Abstract

We examine the effect of increased book-tax conformity on corporate capital structure. Prior studies document a decrease in the informativeness of accounting earnings for equity markets resulting from higher book-tax conformity. We argue that the decrease in earnings informativeness impacts equity holders more than debt holders because of the differences in payoff structures between debt and equity investments such that increases in book-tax conformity lead to increases in firms' reliance on debt capital. We exploit a natural experiment in the U.S. and find that firms facing an increase in required book-tax conformity increase leverage relative to other firms. We also provide evidence of an increase in the cost of equity (but not of debt) capital for firms facing an increase in required book-tax conformity relative to control firms and that these increases in cost of equity capital are positively associated with an increase in leverage. Our findings are consistent with firms substituting away from equity and towards more debt in the presence of higher book-tax conformity.

Keywords: Book-tax conformity; leverage; capital structure

JEL codes: H20, H25, M41

1. Introduction

In this paper we examine the relation between book-tax conformity and corporate capital structure, where book-tax conformity describes the extent to which accounting income (following U.S. GAAP) and taxable income (following the Internal Revenue Code) mirror each other. The recent increase in book-tax differences has led to calls for increases in the conformity between book and taxable income in hopes that such an increase will lower firms' compliance costs, lower tax rates, dampen earnings management, and cause a decrease in the use of corporate tax shelters and other tax avoidance activities (Yin 2001, Carnahan and Novack 2002, Murray 2002, Desai 2003, Desai 2005, Desai 2006, Graetz 2005, Whitaker 2005, and Chan et al. 2010).[1] According to proponents not only would conformity lower compliance costs by requiring firms to only prepare one set of books, it would also decrease upwards earnings management by requiring that firms pay tax on such increases while decreasing tax shelters and tax avoidance by requiring firms seeking to minimize tax payments to also report lower income to shareholders. Such calls have led to proposals for greater conformity by both President Bush and President Obama under their respective frameworks for corporate tax reform (Hanlon et al. 2008, Treasury 2012).

The academic response to calls for increased conformity has mostly focused on the possible unintended consequence of decreased earnings informativeness to equity market participants.[2] For example, Hanlon et al. (2005) finds that conforming book income to taxable income would result in an estimated loss of information of about 50%. Using the same setting and similar sample we use in this paper, Hanlon et al. (2008) find a significant decrease in the informativeness of earnings for firms required to conform taxable income to

[1] Desai (2003, 2005, 2006), Yin (2001), and Whitaker (2005) all suggest moving the taxable income calculation closer to the book income calculation, that is, conforming or basing tax more on the book rules, which is the setting we study.

[2] Exceptions are McClelland and Mills (2007) and Hanlon and Maydew (2009), who examine tax revenue implications of increased book-tax conformity.

accounting income relative to firms not required to conform.[3] Consistent with these reduced informativeness results, using an international cross-country setting, Atwood et al. (2010) find a negative relation between book-tax conformity and the persistence of accounting earnings and Blaylock et al. (2015) find a positive relation between book-tax conformity and earnings management.

Our paper focuses on the possible capital structure implications of these recent academic findings. Because of the asymmetric payoff function of debt investments, debt holders' primary concerns are whether the value of a firm's assets falls below the firm's liabilities (Black and Scholes 1973) and whether the firm has sufficient current and future cash flows to meet its debt obligations (Jensen and Meckling 1976). Therefore, debt holders are likely less sensitive to decreases in earnings informativeness than equity holders, whose payoffs are likely more affected by the quality of earnings (Plummer and Tse 1999, Easton et al. 2009). These differences in payoffs suggest that an increase in book-tax conformity has the potential to shift the capital structure of U.S. firms toward debt. That such a shift would happen, however, is not inevitable. As Hanlon and Shevlin (2005) point out, it is possible that firms will voluntarily continue to disclose information about their earnings performance similar to current financial accounting income. Thus, an increase in book-tax conformity might have no impact on capital structure despite causing a decrease in financial statement informativeness. Therefore, the relation between book-tax conformity and capital structure is an empirical question.

We explore the natural experiment created by the enactment of the Tax Reform Act of 1986 (hereafter, TRA 86 or the Act) and build on and extend the results in Guenther et al. (1997) and Hanlon et al. (2008) who also exploited this setting. We examine a small sample

[3] Hanlon et al. (2008) were motivated by the findings in Guenther, Maydew, and Nutter (1997) that firms required to conform taxable income towards accounting income relative to firms not required to conform changed their financial reporting behaviour in response to the altered tax incentives by deferring more accrual revenue and/or accelerating more accrual expenses in the post-TRA 86 period.

of unique firms that were required by the TRA 86 to change their computation of taxable income from cash to accrual basis (hereafter, converting firms), therefore increasing their book-tax conformity. Guenther, et al. (1997) find that the converting firms changed their financial reporting behavior in that they deferred revenue and accelerated expenses and Hanlon et al. (2008) show that these changes reduced the informativeness of earnings to equity investors.

Using a difference-in-differences design, we compare the capital structure for converting firms pre/post TRA 86 (the first difference) while simultaneously considering changes in capital structure for non-converting firms (the second difference). Our research design allows us to control for any other regulatory and tax regime changes taking place at the same time such as the reduction in the top corporate statutory tax rate and to mitigate concerns with endogenity in firms choosing their method of calculating taxable income prior to TRA 86. We find that leverage increased by 6.4% for converting firms following enactment of TRA 86 relative to non-converting firms in the same 4-digit SIC industries as converting firms while controlling for size, book-to-market ratio, capital intensity, accounting profitability, annual market returns, and marginal tax rates. In additional analyses, we find that converting firms' cost of equity capital increased by 1.1% relative to non-converting firms in the post-TRA 86 period and that the increases in cost of equity capital are positively associated with increases in leverage. We find no significant increase in converting firms' cost of debt relative to non-converting firms. These findings are consistent with increases in book-tax conformity increasing firms cost of equity relative to debt capital and firms subsequently substituting away from equity and towards debt financing.

We believe our study makes a contribution to both accounting and finance literatures. While a large body of literature considers the effects of corporate taxation on capital

structure,[4] we believe ours is the first to examine how the overlap between financial and tax reporting rules affects firms' choices between equity and debt financing. Our results show a possible unintended consequence of increased conformity; namely, increased reliance on debt in firms' capital structure.

Our findings are particularly relevant given recent tax reform proposals. President Obama's recent framework for business tax reform includes plans to "reduce the gap between book income, reported to shareholders, and taxable income, reported to the IRS" (Treasury 2012, 10). Another key provision in the President's framework calls for a reduction in the bias toward debt financing citing concerns over overleveraging in the financial system, especially in times of economic stress (Treasury 2012, 10). Our findings suggest that increasing book-tax conformity could be counter-productive to other measures designed to curtail debt financing. Additionally while proponents of book-tax conformity claim that it will reduce corporate tax avoidance increasing corporate tax revenues, the increased use of tax deductible debt resulting from increased book-tax conformity will reduce corporate tax revenues.

The remainder of the paper is organized as follows: Section 2 describes related literature and develops hypotheses; Section 3 describes our natural experiment, sample selection and data; Section 4 presents our results, and Section 5 concludes.

2. Related Literature and Hypothesis Development

2.1 The book-tax conformity debate

There is a long-standing debate among academics and policy makers about the desirability of conforming book income to taxable income. The debate began in earnest in the late 1990s and early 2000s when there was considerable growth in the gap between pre-tax

[4] See Graham (2003) for a review of the literature on capital structure and taxes.

book income that firms reported to shareholders and taxable income that firms reported to the IRS. As noted by Hanlon et al. (2005), the ratio of pre-tax income to taxable income (calculated by the Treasury Department from confidential tax return data) increased from around 1.25 in the early 1990s to over 1.8 in the late 1990s. The reasons for this divergence between book income and taxable income are not fully known but some policymakers and academics speculated that the increase in the book-tax gap was largely the result of two forces: 1) a greater proportion of manager pay in the late 1990s was equity-based (stock and stock options) and managers responded by managing earnings upward, presumably to increase stock price (Desai 2003, Yin 2003, Hanlon and Shevlin 2005) and 2) a proliferation of tax shelters reduced taxable income, often with no corresponding decrease in book income (see Treasury 1999, Wilson 2009 and Lisowski 2010).

This belief led to calls to tax firms on their financial accounting income (e.g., Desai 2005; Whitaker 2005), or to at least carefully consider eliminating some of the differences between book and tax reporting (Hamilton and Radziejewska 2003). Proponents of greater book-tax conformity argue that under a conformed system firms would have fewer incentives to manage earnings upward, since upwards management would mean higher taxes; and fewer incentives to manage taxable income downward, since downward taxable income management to avoid taxes would require firms to report lower income to shareholders (Yin 2001, Carnahan and Novack 2002, Murray 2002, Desai 2003, Desai 2005, Desai 2006, Graetz 2005, Whitaker 2005, and Chan et al. 2010). These proponents also argue that conformity would result in compliance savings as a result of keeping only one set of books instead of two. For example, estimates in Slemrod and Blumenthal (1996) imply a potential savings in aggregate compliance costs of over $2 billion. Following this recent push toward greater conformity, President Bush's Tax Reform Panel considered the proposal to increase the level of book-tax conformity and recommended further study (see Hanlon et al. 2008).

Hanlon and Heitzman (2010) also note that when the European Union (EU) adopted IFRS for financial reporting, the EU seriously considered also adopting IFRS as a common consolidated tax base.[5] Most recently, one of the primary goals of President Obama's 2012 framework for corporate tax reform in the U.S. is to "reduce the gap between book income, reported to shareholders, and taxable income, reported to the IRS" (Treasury 2012, 10). Finally, many recent calls for corporate tax reform include lowering statutory tax rates while broadening the tax base by eliminating deductions and credits to remain revenue neutral. Such reforms, if passed, would increase book-tax conformity because of the elimination of these deductions and credits.

2.2 Book-tax conformity evidence

Guenther et al. (1997) examine a sample of firms required to shift from cash basis tax accounting to accrual basis tax accounting around TRA 86, with no change in their financial reporting method (that is, these firms used accrual basis accounting before and after the tax law change for book purposes). They examine changes in three ratios after TRA 86 for converting firms that they expect to reflect differences in the incentives of cash basis and accrual basis firms: accounts receivable/accounts payable, cash receipts/cash disbursements, and sales/expenses. They provide evidence that converting firms deferred more income (accounts receivable/accounts payable and sales/expenses decreased significantly) after the tax law change consistent with them responding to tax incentives to defer accrual income.

A related stream of literature relates to how changes in book-tax conformity affects earnings informativeness. While financial reporting standards allow managerial discretion that could decrease earnings informativeness because of manager's incentives to report earnings opportunistically, prior literature finds that accounting earnings summarize

[5] According to Hanlon and Heitzman (2010), the EU considered a common consolidated corporate tax base (CCCTB) to be used by all members. One proposal was to link the CCCTB to the common adoption by all EU members of IFRS. However, this proposal met opposition by members who did not want to cede control of their tax base to a foreign entity such as the International Accounting Standards Board.

information reflected in stock price better than various measures of cash flow and that, on average, managers use their discretion to convey value relevant information to the stock market rather than using it to fool market participants (e.g., Dechow 1994; Subramanyam 1996; Beaver and Engel 1996). These findings are consistent with managers using at least some of their discretion over accounting numbers to signal value relevant information to investors. Therefore, if managers were forced to report earnings based on the generally more rigid set of tax rules, managers would be more restricted in their ability to signal such private information to investors. Consistent with this line of reasoning, Hanlon et al. (2005) provide evidence that financial-statement-based estimates of taxable income in the U.S. are about 50% less informative to equity investors than book income, so the loss of information to investors would likely be significant if tax rules were used as the basis for book income.

Another way to achieve higher book-tax conformity would be to use book income as the tax base that firms use to calculate taxable income and to allow for slight deviations to achieve tax policy goals. The loss of information to investors would likely be smaller under such scenario because accounting rules could still be set by accounting regulators such as the FASB rather than by politicians. However, as Hanlon and Shevlin (2005) point out, the work by George Stigler (1971) on regulatory capture implies that politicians are unlikely to cede their authority to determine taxable income to accounting standard setters and over time financial reporting rules in such a regime would most likely end up being similar to the original tax rules (see also our discussion of IFRS adoption in the European Union in footnote 5). Furthermore, taxing book income would increase firms' incentive to report lower income to avoid taxes (e.g., many firms use LIFO accounting for inventory even though it generally results in lower book income), which adds bias to the reported earnings number as a measure of economic income.

Using the same setting used in this paper, Hanlon, et al. (2008) build on Guenther et al. (1997) and develop a model of the relation between returns and earnings adapted from Holthausen and Watts (1988) and Kothari (2001) to show that noise in a signal reduces the price reaction to the signal. They argue that "noise in earnings could increase with conformity because of managers' inability (due to the tax cost of doing so) to convey private information useful to external stakeholders through earnings. If managers are constrained in relaying this private information via earnings, noise in earnings will increase, reducing the ERC. Conversely, if book-tax conformity causes firms to report more accurately, as its proponents suggest, then noise will decrease and the ERC will increase. Our empirical results are consistent with increased book-tax conformity increasing the amount of noise in earnings, reducing its informativeness." (p. 295).

Related to the studies above, another stream of literature considers the effects of book-tax conformity on earnings informativeness in an international setting. Ali and Hwang (2000) compare earnings informativeness across several country-specific factors including the level of book-tax conformity and find that earnings are less informative in countries where book-tax conformity is higher. Guenther and Young (2000) find that earnings are more closely related to economic activity in the U.S. and the UK than in Germany, France, and Japan. They argue, among other things, that the U.S. and UK have powerful accounting standard setting bodies that are distinct from the tax authority. They hypothesize and find that earnings more closely reflect economic activity in the U.S. and UK because the accounting standards are relatively independent of the tax standards, thus allowing managers to better convey private information. Finally, Atwood et al. (2010) develop a new measure of book-tax conformity based on the proportion of current tax expense that cannot be explained by pre-tax book income. They examine whether earnings exhibit higher or lower persistence and whether the ability of earnings to predict future cash flows is higher or lower in countries

where book-tax conformity is high. They find that earnings are less persistent and less predictive of future cash flows when book-tax conformity is high and conclude that increased book-tax conformity likely reduces earnings quality.

Several studies also consider the likely effects of book-tax conformity on earnings management. Leuz et al. (2003) and Burgstahler et al. (2006) both study the relation between various institutions and earnings management in an international setting. Leuz et al. (2003) include an indicator variable for the degree of a country's book-tax conformity, and find an insignificant relation between book-tax conformity and earnings management. Burgstahler et al. (2006) use the same approach and find no (a positive) relation between book-tax conformity and earnings management for public (private) firms. They find a more positive relation between book-tax conformity and earnings management among private and public firms when tax rates are high. Finally, Blaylock et al. (2015) find a robust positive relation between book-tax conformity and earnings management in an international setting using the book-tax conformity measure developed in Atwood et al. (2010) and similar earnings management measures as Leuz et al. (2003) and Burgstahler et al. (2006).

Overall, prior evidence on book-tax conformity suggests that increasing book-tax conformity decreases earnings informativeness because firms are less able to use their discretion to signal value relevant information to investors, because they respond to tax incentives to defer income, and because firms in higher book-tax conformity regimes seem to engage in more earnings management. However, as Hanlon and Heitzman (2010) point out, we know very little about how book-tax conformity affects other corporate decisions.

2.3 Hypothesis development

Prior research provides compelling evidence that higher book-tax conformity leads to lower earnings informativeness. As noted earlier, Guenther, et al. (1997) examine firms that were required to convert from the cash basis to the accrual basis for tax purposes after TRA

86, and find that converting firms changed their financial reporting behaviour in response to the altered tax incentives by deferring more accrual revenue and/or accelerating more accrual expenses in the post-TRA 86 period. Hanlon et al. (2008) find that converting firms had less informative earnings after the change relative to a group of similar firms that always used the accrual-basis for tax purposes. Based on these findings they conclude that requiring firms to pay taxes on book income leads to less informative earnings even holding accounting standards constant because firms' responses to tax incentives increase the amount of noise in earnings as a measure of a firm's true economic income. We report our replication of the Hanlon et al. (2008) results below. In summary, prior literature provides evidence that the changed tax incentives facing converting firms lead to a change in their financial reporting behavior (Guenther et al. 1997) and that this change in behavior increased the noise in reported earnings (Hanlon et al. 2008).

We argue that this decrease in earnings informativeness documented in prior research will result in asymmetrical responses by the capital markets, such that book-tax conformity will lead to an increase in debt in firms' capital structures. Because lenders' primary concerns are whether the value of a firm's assets falls below the firm's liabilities (Black and Scholes 1973) and whether the firm has sufficient current and future cash flows to meet its debt obligations (Jensen and Meckling 1976), they are likely less concerned about losses in the informativeness of earnings brought about by increases in conformity than equity investors (Plummer and Tse 1999, Easton et al. 2009). Consequently, we expect this decrease in earnings informativeness to have no effect on firms' cost of debt. Indeed, Harris et al. (1994) and Guenther and Young (2000) note that European firms generally and German firms in particular, which tend to have higher book-tax conformity than U.S. firms, typically rely more on debt financing, although they do not perform any empirical tests on this relation. We expect equity investors, however, to demand a higher cost of equity capital. Prior literature

finds a decrease in the quality of accounting information when book-tax conformity increases (Hanlon et al. 2005; Hanlon et al. 2008, Atwood et al. 2010). Thus, we predict that this decrease in earnings informativeness leads to an increase in the cost of equity capital relative to debt capital, and therefore, to an increase in debt financing.

As Hanlon and Shevlin (2005) note, if firms voluntarily disclose the same level of information contained in pre-conformity reporting with the result that firms may not necessarily change their capital structures as a result of increased conformity. However, if such disclosures are viewed as being less reliable or less comparable then we would expect some investors to either leave the market or demand a higher return for equity. Both of these effects would again make equity more expensive relative to debt due to either less informative earnings or lower liquidity, and therefore also lead firms to shift their capital structures toward debt.

Based on the arguments above, we hypothesize that firms are likely to respond to information loss resulting from increased conformity by using more debt in their capital structure. We formally state this hypothesis (in alternative form) as follows:

Hypothesis 1: As book-tax conformity increases, firms increase the amount of leverage in their capital structure.

3. Research design, sample selection, and data

3.1 Research design

We employ a natural experiment, previously examined by Guenther et al. (1997) and Hanlon et al. (2008), in which The Tax Reform Act of 1986 (TRA 86) required firms with over $5 million in revenues to use the accrual method of accounting for tax purposes. Our tests examine a set of publicly traded firms that used accrual accounting for book purposes and cash accounting for tax purposes before TRA 86 and were subsequently

required to change the calculation of taxable income from the cash method of accounting to the accrual method – labelled converting firms. The new legislation resulted in an increase in the level of book-tax conformity for these firms by requiring book and taxable incomes to be computed using the same method of accounting. The requirement to conform book and taxable income under TRA 86 was a reasonably exogenous event, which did not arise as a result of firm behavior. Another key strength of this setting is that TRA 86 did not affect financial reporting rules, allowing us to hold financial reporting rules constant. Finally, an additional benefit of using this natural experiment is that the requirement to switch from cash basis to accrual basis accounting only affected a subset of firms, thus allowing us to employ a difference-in-differences design to study the effect of this change in book-tax conformity while controlling for changes in unaffected firms' capital structures due to changes in macroeconomic conditions or industry-wide factors.

In addition to requiring converting firms to compute taxable income using the accrual method, Congress also made several other changes to tax law as part of TRA 86. The top tax rates were lowered for both corporations (from 46% to 34%) and individuals (from 50% to 28%). Offsetting these statutory rate reductions, however, was a widening of the tax base. Among other provisions, Congress repealed the investment tax credit, lengthened the period of time over which fixed assets were depreciated, included more preference items and adjustments in the calculation of the corporate alternative minimum tax (including a book income adjustment that included 50% of the difference between adjusted pre-tax book income and adjusted taxable income as part of AMTI), and introduced uniform cost capitalization rules that generally required businesses to capitalize a greater portion of the costs associated with inventory and fixed assets to be deducted later when inventory was sold or to be recovered over time through depreciation deductions. The overall effect of these provisions was an increase in firms' effective tax rates (Shevlin and Porter 1992), due

primarily to the broadening of the tax base. Most relevant to our setting, Scholes et. al. (2014, Chapter 4) show that debt became relatively more tax-favored for corporations after TRA 86. While the statutory corporate tax rate was lowered from 46% to 34%, the relative change in personal tax rates on debt and equity (both ordinary and capital gains tax rates) also changed resulting in debt becoming somewhat more tax-favored post-TRA 86. By using a control sample that was affected by these changes in the tax code but were not required to change their computation of taxable income our research design allows us to capture the effects of increased conformity on leverage, holding the remaining aspects of the law change constant between treatment and control firms.

Our difference-in-differences research design allows us to use converting firms as their own control (i.e., we measure changes in converting firms' leverage from before to after TRA 86) as the first difference by comparing the converting firms' leverage pre/post the change. This first difference in the research design mitigates any self-selection issues in firms' decision to choose cash basis or accrual basis accounting prior to TRA 86. That is, there could be differences in the types of firms that chose the cash method of accounting versus firms that chose the accrual method of accounting pre-TRA 86. However, because each firm in the converting group acts as its own control in our empirical tests, the factors that lead to the choice to use cash accounting in the computation of taxable income should not explain any changes in converting firms' capital structure.

By using a control group of firms not changing their method of calculating taxable income as the second difference we also control for the macroeconomic effects of TRA 86 and firms' preference for debt relative to equity. In summary, our approach allows us to study the same firm under two different conformity regimes essentially giving us a within-firm test while also controlling for time-dependent industry and macroeconomic effects on leverage in a between-firm setting.

We use the following model to estimate the effect of book-tax conformity on leverage using our natural experiment:

$$Leverage_{it} = \alpha_0 + \alpha_1 Converting_{it} + \alpha_2 Post_{it} \quad (1),$$
$$+ \alpha_3 Converting_{it} * Post_{it} + \alpha_k Controls_{k,it} + \varepsilon_{it}$$

where *Leverage* is the book value of debt divided by the market value of assets (i.e., the sum of book value of debt and market value of equity). *Converting* is an indicator set to 1 if a firm was required to switch from the cash method to the accrual method for tax purposes, and 0 otherwise. *Post* is an indicator variable set to 1 if the year of the observation is post-TRA 86 (1988-1992) and 0 otherwise (i.e., if the observation is from 1981-1985). We exclude 1986 and 1987 because some firms were likely starting to change their behavior in anticipation of the law taking effect.

We use the following control variables in equation (1): the inverse of market value of assets, book-to-market ratio, PP&E, return on assets, annual stock return, and pre-interest marginal tax rate estimates from Blouin et al. (2010).[6] Variable construction for these variables are available in Appendix A. Because our econometric identification is time-dependent, we do not include year fixed effects.

Coefficients for equation (1) are estimated by ordinary least squares, and standard errors are clustered by firm and year. Our coefficient of interest is α_3, the incremental leverage effect for converting firms after TRA 86 relative to the leverage of converting firms before TRA 86 and relative to the leverage of non-converting firms before and after TRA 86. Based on our discussion in section 2, we expect α_3 to be positive, consistent with an increase in book-tax conformity having a positive effect on leverage.[7] If converting firms increase

[6] We use the Blouin et al. (2010) estimates of marginal tax rates to maximize sample size but obtain similar results using pre-interest marginal tax rate estimates from John Graham's website.

[7] The terms "converting firms" and "non-converting firms" relate specifically to the computation of taxable income. A key benefit of our setting is that all firms (i.e., converting and non-converting) use the accrual method of accounting to compute book income regardless of the tax regime. Thus, while book-tax conformity

disclosure in a credible manner, then we should observe a statistically insignificant coefficient on α_3 (Hanlon and Shevlin 2005). By controlling for the denominator of *Leverage* (i.e., the inverse of market value of assets) we ensure that the coefficient on *Converting*Post* is driven by changes in the numerator of *Leverage* (i.e., debt), rather than by changes in the denominator. Size could also be related to the collateral value of assets, which could affect leverage (Myers and Majluf 1984). Controlling for book-to-market accounts for agency costs associated with growth opportunities which could lead to different levels of debt (Myers 1984), while controlling for PP&E accounts for non-debt tax shields which could reduce the incentive to use leverage (DeAngelo and Masulis 1980). We control for return on assets and annual stock returns because prior literature suggests profitable firms face different agency costs in issuing debt (Myers 1980, Myers and Majluf 1984). Including the pre-tax marginal tax rate controls for differences in tax planning costs and activities (Graham 2000).

3.2 Sample selection and data

Guenther et al. (1997) begin with a sample of 94 firms identified as using accrual accounting for book income and cash accounting for tax purposes prior to TRA 86. Hanlon et al. (2008) further reduce this sample by deleting firms with missing data, firms with fiscal year-end changes, and firms that have 1985 sales of $5 million or less because these firms were not required to change accounting methods under TRA 86, and firms without necessary data for both 1985 and 1988. Our sample of 53 converting firms (i.e., *Converting* = 1) consists of Hanlon et al. (2008)'s sample, minus 3 firms with missing data. Following prior literature, we conduct our study from 1981 to 1992, where observations from 1986 and 1987 are eliminated from the sample, giving us a pre and post period of five years each.[8]

increases for "converting firms" and stays the same for "non-converting firms", the accrual method of accounting is used for all firms both prior to and after TRA 86.

[8] The 5 year period pre-post reflects a trade-off of wanting sufficient sample observations pre-post with concern over confounding events as the sample period increases.

Our control sample (i.e., *Converting* = 0) follows Guenther et al. (1997) and Hanlon et al. (2008), consisting of all US-incorporated firms (FIC = USA) in the intersection between Compustat XpressFeed and CRSP that use the accrual method for both book *and* tax purposes during the entire period of the study. We also require control firms to be of the same 4-digit SIC code as our treatment firms. Similar to the converting sample, we eliminate non-converting firms with missing data, those with 1985 sales of $5 million or less, and those without necessary data for both 1985 and 1988. All continuous variables are winsorized at the 1st and 99th percentiles by year to mitigate any effects of outliers.[9]

4. Results

4.1 Descriptive statistics

Table 1 displays descriptive statistics for our sample, classified into four groups: converting firms before TRA 86, converting firms after TRA 86, non-converting firms before TRA 86, and non-converting firms after TRA 86. Our sample of converting firms is very similar to the sample used by Hanlon et al. (2008). We have slightly fewer observations in both the pre- and post-TRA periods due to additional data requirements. However, sample converting firms have mean assets of $189 and $273 million in the pre- and post-TRA 86 periods respectively compared to $164 and $271 million in Hanlon et al. (2008). Annual stock returns in our converting sample are 25% and 13% respectively compared to 21.3% and 10.1% in Hanlon et al. (2008). Our sample of non-converting firms (n=4,186) is larger than the sample (n=3,126) in Hanlon et al. (2008) due to Compustat backfilling. However, our control firms are relatively similar in size (*Assets* = $751 and $1,153 compared to $803 and

[9] To ensure our regression results are not driven by influential observations we also eliminate influential observations using the DFFITS statistic (Belsley, Kuh, and Welsch 1980). After doing so, we find nearly identical results for our leverage and cost of capital tests. We also find similar results after using robust regressions and after eliminating observations with large studentized residuals.

$1,069) and returns (*Annual stock return* = 0.15 and 0.15 compared to 0.159 and 0.142) to Hanlon et al. (2008).[10]

Table 1 also displays significance levels for tests of means and medians between samples. As predicted under Hypothesis 1, tests of means and medians show that *Leverage* increased for converting firms after TRA 86. Table 1 also shows that there is little change in *Leverage* for non-converting firms in the post-TRA 86 period (see Figure 1, Panel A). In Figure 1, Panel B we also examine the aggregate change in unscaled debt for both converting and non-converting firms. To do so we sum unscaled debt for all firm-year observations in the pre- and post-TRA 86 periods for the two sets of firms, and then compute the percentage change in leverage from pre- to post-TRA 86. After doing so we find that converting firms increased leverage by 166%, while non-converting firms increased leverage by 48%.[11]

Consistent with prior literature we find that converting firms are smaller on average than non-converting firms both before and after TRA 86. We also find that converting firms experience higher asset growth than non-converting firms. Book-to-market is higher for non-converting firms in the pre-TRA 86 period, but there is no significant difference in the post-period. When comparing converting and non-converting firms Pre-TRA 86 we find that converting firms are less capital intensive while we find little support for differences in accounting and stock returns. We control for each of these elements in our multivariate tests. We also conduct further sensitivity checks with respect to size and growth differentials and find similar results (see section 4.4).

4.2 Correlations

[10] Guenther et al. (1997) report means and medians of sales, assets and inventory/assets separately across the converting and control firms but pooled across pre and post. Guenther et al. report mean assets for the converting firms of $191 which is comparable to our pooled mean of assets. However, the mean assets of $199 in Guenther et al. for the control firms is much smaller than in Hanlon et al. and our sample.

[11] Unscaled aggregate debt increases from $8,820 million to $23,467 million for converting firms, and from $350,464 million to $518,563 for non-converting firms. We note that there are 9 times as many firms in the con-converting sample compared to the converting sample and that non-converting firms are generally larger which explains the scale difference in aggregate debt.

Table 2 reports Pearson correlation coefficients for our sample. We find a positive and significant correlation between *Converting*Post* and *Leverage* (coefficient = 0.043, p-value = 0.004 respectively). Somewhat surprising, we observe a negative correlation between *Leverage* and pre-interest *Marginal tax rate*, although we find an insignificant association between the two in multivariate tests (see Table 3), indicating that this bivariate association is likely driven by differences in size or other control variables.

4.3 Multivariate results

Table 3 presents coefficient estimates for equation (1). Given our model, the intercept represents the conditional expectation of *Leverage* for a non-converting firm before TRA-86, holding constant assets, book-to-market, PP&E, return on assets, annual stock return and marginal tax rate. Adding the coefficient on *Converting* to the intercept gives the conditional expectation of *Leverage* for a converting firm pre-TRA 86, while adding the coefficient on *Post* to the intercept gives the conditional expectation of *Leverage* for a non-converting firm post-TRA 86. Finally, we arrive at the conditional expectation of *Leverage* for converting firms after TRA 86 by adding the intercept to the coefficients on *Post*, *Converting*, and *Converting*Post*. Therefore, the coefficient on *Converting*Post* represents changes in *Leverage* for converting firms over-and-above changes in *Leverage* for non-converting firms.

Table 3, Panel A estimates equation (1) for our full sample. The estimated coefficient on *Converting* (coefficient = -0.013, p-value > 0.10) is insignificant, consistent with no difference in *Leverage* between both sets of firms in the pre-TRA 86 period. The coefficient on *Post* is insignificant (coefficient = 0.007, p-value < 0.10), suggesting control firms did not exhibit changes in *Leverage* post-TRA 86. The coefficient on *Converting*Post* is positive and significant (coefficient = 0.064, p-value < 0.01), consistent with converting firms increasing *Leverage* relative to non-converting firms. The coefficients on most of the control variable are significant in the expected direction. The coefficient on *1 / Assets* is negative,

consistent with larger firms having higher leverage ratios. The coefficient on *PP&E* is positive and significant (coefficient = 0.225, p-value < 0.01). The coefficients on *Return on assets* and *Annual stock return* are negative and significant (coefficient = -0.131, p-value < 0.05, coefficient = -0.063, p-value < 0.01, respectively). The coefficient on *Book-to-market* is insignificant, suggesting it has little impact on our results despite the significant difference in means between converting and non-converting firms.

Table 3, Panel B estimates equation (1) for a reduced sample using propensity score matching. We use propensity score matching to ensure greater comparability between our samples of treatment and non-treatment firms. To do so we match each treatment firm (i.e., *Converting* = 1) to the non-treatment firm with the closest propensity score. Propensity scores are computed in 1985, so that the matching is unaffected by the exogenous event. As a result, our sample is reduced to 844 observations.[12] After estimating equation (1) using a propensity score matched sample we continue to find a statistically significant increase in leverage for converting firms relative to matched firms (coefficient = 0.058, p-value < 0.05). Overall, we find that converting firms experienced approximately between a 5.8 and 6.4 percent increase in leverage following TRA 86 relative to non-converting firms, consistent with Hypothesis 1.

Prior literature finds that firms generally underutilize debt tax shields (e.g., Graham 2000, Blouin et al. 2010). Thus, an increase in leverage may move firms towards a more optimal capital structure. In untabulated analysis, we examine how much more interest firms could incur before their marginal tax rate begins to decrease, similar to the kink analysis in Blouin et al. (2010).[13] A kink above 1 indicates that firms could increase debt and interest deductions before the marginal tax rate would begin to decline below the top statutory tax

[12] We use the following model to calculate propensity scores:
$Converting_i = \beta_1 1/Assets_{it} + \beta_2 Book\text{-}to\text{-}market_{it} + \beta_3 PP\&E_{it} + \beta_4 Return\ on\ assets_{it} + \beta_5 Annual\ stock\ return_{it} + \beta_6 Marginal\ tax\ rate_{it} + \varepsilon_{it}$
Following matching, we find no differences in means between converting and non-converting groups for the included covariates indicating covariate balance.
[13] We thank Jennifer Blouin for supplying us with kink data.

rate.[14] We find that kink is lower for converting firms prior to TRA 86, suggesting these firms were less likely to benefit from debt from a tax standpoint (*Converting* = -0.653, p-value < 0.01). We also find that non-converting firms experienced an increase in kink following TRA 86 (*Post* = 0.702, p-value < 0.01). However, we do not find that kink changed significantly for converting firms relative to non-converting firms following TRA 86 (*Converting*Post* = 0.171, p-value = 0.260). Thus, even though the converting firms significantly increased their leverage, from a tax perspective, the kink results suggest converting firms did not move toward a more optimal capital structure following an increase in conformity.

In untabulated analysis, we examine the likelihood that the converting firms become distressed as a result of the increase in leverage. To do this, we create an indicator variable for distressed firms that we set equal to one for firms with an Altman (1968) z-score less than 1.81 and zero otherwise. Altman found that firms with z-scores of 1.81 and lower eventually faced bankruptcy in his sample. We regress this indicator variable on *Converting*, *Post*, *Converting*Post*, and all control variables from Table 3. The estimated coefficient on *Converting*Post* is 0.072 (p-value < 0.05) suggesting that converting firms' likelihood of becoming distressed in the post-TRA 86 period increased 7.2% relative to control firms (and compared to a base of 19.8% of all sample firms being in the distress zone). This finding is consistent with the increase in leverage documented above. Finally, we examine univariate survival rates of firms to the end of our sample period, 1992, 5 years after TRA 86. We find that 40 of the 53 converting firms (75%) compared to 364 of the 533 control firms (68%) survived to the end of 1992. The difference in percentage survival rates is not significant at conventional levels (p-value < 0.28). We also examine the same difference in survival rates in

[14] Unconditionally, the mean for *Kink* equals 0.784 for converting firms prior to TRA 86 and 0.942 after. Meanwhile, the mean for *Kink* equals 1.255 for non-converting firms prior to TRA 86 and 1.235 after.

a multivariate setting, controlling for the set of covariates from Table 3 and find that the difference in survival rates is even smaller in this setting (i.e., 5.4% instead of 7%, p-value < 0.39).[15] Thus, although the Altman Z-scores decreased for the converting firms this decrease did not lead to economically nor statistically significant differences in survival rates, suggesting overall that the increase in leverage of the converting firms did not dramatically increase nontax costs.

4.4 Alternative specifications

We estimate several alternative specifications of equation (1) to verify the robustness of our results. The coefficient on *Converting*Post* for each of these specifications is reported in Table 4. First, we examine an alternative specification of *Leverage*. Prior literature examines both book leverage (i.e., scaled by book value of assets) and market leverage (i.e., scaled by market value of assets). Because we conduct our tests using market leverage, it is possible that changes in stock returns, which drive the denominator for market leverage, are driving our results. This possibility is unlikely, given that we control for the inverse of market value of assets and stock return; however, we also examine whether our results are robust to using book leverage and find similar results (coefficient = 0.071, p-value < 0.05). These results further ensure that our main results are not driven by changes in the market value of assets.

Second, we ensure that our results are not driven by differences in investment between converting and non-converting firms. Table 1 shows that assets grow at a faster rate from before TRA 86 to after for converting firms relative to non-converting firms. If converting firms experience greater investment growth than non-converting firms while choosing to finance such incremental investment with debt, then it is possible that our results

[15] We note the general economic stability of our post-TRA 86 period complicates the interpretation of this "no result," as it becomes more difficult to observe increases in bankruptcy in the absence of negative economic shocks.

are being driven by investment rather than book-tax conformity. We attempt to control for this alternative explanation in our main specification by controlling for both size and a proxy for investment opportunities (i.e., book-to-market ratio). However, in robustness tests we further address this possibility. To proxy for actual investment we further control for capital expenditures, research and development expenses, and inventory levels. After doing so we find similar results to those reported in Table 3 (coefficient = 0.060, p-value < 0.05).

Third, we address differences in size and asset growth rate of converting versus to non-converting firms. While we addressed above the possibility that differences in size and growth rate between converting and non-converting firms could be a proxy for higher investment, it could be that this growth is a result of other factors that could also be associated with leverage. To mitigate concerns that our results are driven by an unknown correlated omitted variable that is correlated with the growth rate of assets and leverage, we directly control for the firm-level growth in assets from before to after TRA 86. Specifically, we compute average assets for both pre- and post-TRA 86 periods. We then compute the firm-level percentage growth rate from the pre period to the post, and include this variable as an additional control in our multivariate tests. After doing so, we again find similar results (coefficient = 0.049, p-value < 0.05) suggesting that our results are not driven by a correlated omitted variable that is correlated with asset growth. As a further control, we also control for annual percentage changes in sales to account for possible growth in sales that might lead to changes in asset growth and possibly leverage. Again, we find similar results (coefficient = 0.064, p-value < 0.01). We also conduct our analysis using a sample of smaller control firms (i.e., first and second quintiles of market value of assets) and again find similar results (coefficient = 0.048, p-value < 0.05). Finally, while Table 1 indicates that asset means are quite different between converting and non-converting firms, median values are quite

comparable. Therefore, we estimate a median regression for equation (1) and find similar results (coefficient = 0.052, p-value < 0.01).

Fourth, to ensure our results are not driven by scaling leverage we estimate equation (1) substituting the natural log of total debt for our scaled measure of leverage. We continue to find a positive and significant coefficient on *Converting*Post*, suggesting our results are not driven by using a scaled version of *Leverage*.

Fifth, it could be that our leverage results are driven by changes in the relative attractiveness of the firms other tax planning activities for the converting firms making some more costly than others. Specifically, it is possible that converting firms, which were growing, were forced generally to recognize and be taxed on revenue earlier under accrual tax rules than under cash tax rules. Consequently, it became more attractive to converting firms to use more tax shields including debt as a result of this change in tax accounting rules. We believe this alternative explanation of our results is unlikely for two reasons. First, we expect changes in the attractiveness of using tax shields to affect the marginal tax rate, which is already included as a control in our multivariate tests. Nevertheless, we also control for additional variables which proxy for other tax planning activities (i.e., effective tax rate, intangible assets, and foreign income) and again find similar results (coefficient = 0.048, p-value < 0.05). Second, while an increase in book-tax conformity could lead to in increase in the value of tax shields, it is unclear why such an increase in book-tax conformity would also lead to a decrease in ERCs (as documented by Hanlon et al. 2008) if converting firms were simply issuing more debt to respond to a change in tax incentives.

4.5 Additional analysis – intermediate links between book-tax conformity and leverage

As noted above, we predict that increased book-tax conformity decreases earnings informativeness (Hanlon et al. 2008). We further predict that this decrease in earnings informativeness increases the cost of equity capital relative to debt, which leads to an

increase in firms' use of leverage. The links in this theory are summarized in the following diagram:

BTC (Link 1) > Earnings Informativeness (Link 2) > Cost of Capital (Link 3) > Leverage

While Hypothesis 1 links book-tax conformity to leverage, in additional analysis we consider the other links in this theory. We begin by replicating Hanlon et al. (2008) using the following model:

$$R_t = \alpha + \beta_1 Converting + \beta_2 Post_t + \beta_3 \Delta E_t + \beta_4 Converting * \Delta E_t + \beta_5 Post_t * \Delta E_t + \beta_6 Converting * Post_t + \beta_7 Converting * Post_t * \Delta E_t + \varepsilon_t \quad (2),$$

where R_t is the annual stock return beginning 4 months after the end of fiscal year *t-1*, ΔE_t is the change in earnings before extraordinary items from year *t-1* to year *t*, and other variables are previously defined.

We predict that converting firms' earnings response coefficients will decrease relative to control firms after TRA 86 consistent with Hanlon et al. (2008). The results of our replication are reported in Table 5. Due to Compustat backfilling, we have a larger sample (N = 4,626) than Hanlon et al. (2008) (N = 3,576). Overall, we observe slightly smaller earnings response (0.455) coefficients than Hanlon et al. (2008) (0.763). However, we find very similar differences between converting firms and control firms both before and after TRA 86. Our coefficient estimate for $Converting*\Delta E_t$ is 1.741 compared to 1.712 in Hanlon et al. (2008). Most importantly, our coefficient estimate for $Converting*Post_t*\Delta E_t$ is negative and statistically significant (coefficient = -1.748, p-value< 0.001) consistent with Hanlon et al. (2008) (coefficient = -1.740, p-value = 0.001). Thus, we observe a similar decrease in earnings informativeness for converting firms as Hanlon et al. (2008) in the post-TRA 86 period.

We then examine changes in the cost of equity capital for converting firms relative to non-converting firms. We estimate the cost of equity as a function of changes in conformity, and a set of controls following Dhaliwal et al. (2006). We estimate the following model:

$$\begin{aligned} Cost\ of\ equity_{it} = {} & \alpha_0 + \alpha_1 Converting_i + \alpha_2 Post_t + \alpha_3 Converting_i * Post_t \\ & + \alpha_4 Bmkt_{it} + \alpha_5 Bsmb_{it} + \alpha_6 Bhml_{it} \\ & + \alpha_7 ln(Dispersion)_{it} + \alpha_8 ln(LTG)_{it} + \varepsilon_{it} \end{aligned} \quad (3),$$

where *Cost of equity* is the implied cost-of-equity capital for firm *i* in June of year *t*, calculated as the average of four implied cost-of-equity capital estimates: *Rg*, *Rct*, *Roj*, and *Rmpeg*. *Rg* is the implied cost-of-equity capital estimate following Gebhardt, et al. (2001); *Rct* is the implied cost-of-equity estimate following Claus and Thomas (2001); *Roj* is the implied cost-of-equity capital estimate following Gode and Mohanram (2003); and *Rmpeg* is the implied cost-of-equity capital following Easton (2004). Like Dhaliwal et al. (2005) and Dhaliwal et al. (2006) we use the average of these four estimates. *Bmkt*, *Bsmb*, and *Bhml* are estimates from the Fama and French (1996) three-factor model to adjust for systematic risk. *ln(Dispersion)* is the log of the standard deviation of analyst estimates for year *t* earnings divided by the consensus forecast for year *t* earnings. *ln(LTG)* is the Institutional Brokers' Estimate System (I/B/E/S) analyst consensus long-term growth in earnings per share forecast reported in June of year *t*. If long-term growth forecast is not available, *ln(LTG)* equals the two-year-ahead earnings forecast divided by the one-year-ahead forecast minus one. *Converting* and *Post* are as previously defined. We predict a positive coefficient on α_3, consistent with cost of equity capital increasing for converting firms relative to non-converting firms in the post-TRA 86 period. The results of estimating equation (2) are presented in Table 6 Panel A. We observe a positive and statistically significant coefficient on α_3 (coefficient = 0.011, p-value < 0.05). Thus, we estimate that converting firms' cost of equity capital increase by 1.1% relative to non-converting firms in the post-TRA 86 period,

or about 7.6% of their pre-TRA cost of equity.[16,17] This result is consistent with our hypothesis that increasing book-tax conformity increases the cost of equity capital, which in turn leads to an increase in leverage.

We also examine the relation between book-tax conformity and the cost of debt using the following model:

$$\begin{aligned} \textit{Cost of debt}_{it} = {} & \alpha_0 + \alpha_1 \textit{Converting}_i + \alpha_2 \textit{Post}_t + \alpha_3 \textit{Converting}_i * \textit{Post}_t \\ & + \alpha_4\, 1/\textit{Assets}_{it} + \alpha_5\, \textit{Book-to-market}_{it}\ \alpha_6 \textit{PP\&E}_{it} \\ & + \alpha_7 \textit{Return on assets}_{it} + \alpha_8 \textit{Annual stock return}_{it} \\ & + \alpha_9 \textit{Marginal tax rate}_{it} + \varepsilon_{it} \end{aligned} \quad (4),$$

where *Cost of debt* is total interest expense divided by average debt (Francis and Pereira 2005). All other variables are as previously defined. We make no prediction on the sign of α_3 in this model. If converting firms experienced an increase (decrease) in the cost of debt, then we expect α_3 to be positive (negative), while if there is no relation between book-tax conformity and the cost of debt we expect α_3 to statistically insignificantly from zero. The results of estimating equation (3) are presented in Table 6 Panel B. The estimated coefficient on α_3 is positive (0.005) but statistically insignificant (t-stat = 0.57).[18]

Finally, we examine the relation between cost of equity and leverage. We expect that firms with higher cost of equity capital will use more leverage ceteris paribus. To test this prediction, we regress *Leverage* on *Cost of equity* and additional control variables. Note that in these tests we omit *Post* because we are not predicting a change in the relation between the

[16] We obtain 7.6% by dividing the increase in cost of equity for treatment firms relative to control firms (i.e., 1.1%) divided by pre-TRA cost of equity for treatment firms (i.e., 14.4%).

[17] For comparison purposes, we examine the magnitude of a change in the implied cost of equity capital surrounding an increase in noise as proxied by an internal control deficiency. Ashbaugh-Skaife, Collins, Kinney, and Lafond (2009) document an increase in the implied cost of equity of 93 basis points for firms first disclosing an internal control deficiency. They also find a decrease in the average cost of equity of 116 basis points around the release date of an unqualified SOX 404 opinion for firms most likely to report ICDs. We document a 101 basis point increase on average for our converting firms.

[18] We acknowledge that because measures of cost of debt derived from interest expense capture interest on all debt, rather than new debt, such proxies result in tests that are lower in power relative to tests using interest rates on new debt (which we do not have). However, we try to increase the power of the cost of debt test by limiting our post-TRA 86 sample to its last year and find very similar results.

cost of equity and leverage pre- post TRA 86 – we are documenting a positive association between cost of equity and leverage in our sample firms. In untabulated analysis, as expected, we find no difference in the slope coefficient on cost of equity pre-post TRA 86. We report the results in Table 7. Panel A presents the results for all sample firms and Panel B presents the results for converting firms only. In Panel A, we observe a positive (0.736) and statistically significant (p-value < 0.01) coefficient on *Cost of equity* consistent with firms using more leverage when their cost of equity is higher. In Panel B, we continue to observe a positive (1.500) and statistically significant (p-value < 0.01) coefficient on *Cost of equity* when we limit the sample to converting firms only. This result is consistent with those converting firms that had larger increases in their cost of equity also having larger increases in leverage consistent with our theory.

Overall, the results of our additional analysis of each of the links in our theory are consistent with the theory. Specifically, book-tax conformity is negatively related to earnings informativeness, is positively related to the cost of equity but not debt capital, and cost of equity capital is positively associated with leverage. These findings are consistent with our argument that firms increase their use of debt due to an increased cost of equity relative to debt when faced with higher book-tax conformity.

5. Conclusion

Our paper is motivated by the current debate over book-tax conformity in the US. Calls to increase book-tax conformity are predicated on the perceived benefits of conforming book and taxable incomes. However, recent academic papers focus on the negative effects conformity would have on accounting information. We draw from this literature and examine the capital structure consequences of increasing book-tax conformity. Our findings suggest that firms substitute away from equity financing in the presence of greater conformity.

Our findings are important for at least three reasons. First, our findings suggest that financial reporting rules interacting with tax rules, here increased book-tax conformity, have real effects on firms' financing decisions. Second, our results contribute to the debate about the likely effects of increasing the level of book-tax conformity in the U.S. Namely, increasing book-tax conformity will result in firms increasing their use of debt financing relative to equity. This is of particular concern given recent policy proposals to not only increase book-tax conformity but also decrease the use of tax-advantaged leveraged (Treasury 2012). Third, while proponents of book-tax conformity claim that that increasing conformity will increase corporate tax revenues by decreasing tax avoidance, our findings suggest the increased use of tax deductible debt resulting from increased book-tax conformity will mitigate any expected increase in corporate tax revenues. We believe our findings should be of interest to policy makers in weighing benefits and costs associated with higher conformity in the U.S.

Our study is not without limitations, as it employs a small sample from 1981 to 1992. However, to the extent we capture a causal mechanism with our difference-in-differences design, we believe our results should generalize to a larger and more recent sample. Finally, while we believe the increase in leverage we document for converting firms following TRA 86 is indeed an unintended consequence, we do not believe increases in leverage are necessarily undesirable. We do, however, believe policy proposals attempting to not only increase conformity but also to decrease leverage (such as recent proposals from Treasury) to be potentially at odds. Notwithstanding, we leave it up to readers to evaluate the overall desirability of potential increases in leverage resulting from greater mandatory conformity.

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Appendix A
Variable Definitions

Variable*	Description	Computation
Converting	Variable indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income in TRA 86	1 if converting firm; 0 otherwise
Post	Variable indicating the post 1986 time period	1 if observation is post 1986; 0 otherwise
Leverage	Total debt divided by market value of assets.	(dlc+dltt) / (prcc_f*csho+dlc+dltt)
1 / Assets	1 / market value of assets.	1 / (prcc_f*csho+dlc+dltt)
Book-to-market	Book value of equity divided by the market value of equity.	ceq / (prcc_f*csho)
PP&E	Net property, plant, and equipment divided by the market value of assets.	ppent / (prcc_f*csho+dlc+dltt)
Return on assets	Pretax income minus interest expense, divided by market value of assets.	(pi – xint) / (prcc_f*csho+dlc+dltt)
Annual stock return	Twelve-month buy and hold stock return.	(1+ret [CRSP])^12 - 1
Marginal tax rate	Marginal tax rate before interest	See Blouin et al. (2010)
Rg	Cost of equity capital estimate from Gebhardt et al. (2001)	See description in Appendix B
Rct	Cost of equity capital estimate from Claus and Thomas (2001)	See description in Appendix B
Roj	Cost of equity capital estimate from Gode and Mohanram (2003)	See description in Appendix B
Rmpeg	Cost of equity capital estimate from Easton (2004)	See description in Appendix B
ΔE	Change in earnings	(Ib – ib_lag1) / (csho_lag1*prcc_f_lag1)
Cost of debt	Average interest rate on debt	xint / [(dlc+dltt + dlc_lag1 +dltt_lag1) / 2]
ln(LTG)	Analyst 2-year ahead forecast growth	two-year ahead ltg[I/B/E/S] divided by the one-year-ahead ltg[I/B/E/S] minus one
ln(Dispersion)	Dispersion of analyst forecasts	log of the standard deviation of analyst estimates [I/B/E/S] for year *t* earnings divided by the consensus forecast for year *t* earnings [I/B/E/S].

(continued)

Appendix A, continued
Variable Definitions

Variable	Description	Computation
Bmkt	Fama and French (1996) market factor loadings	See Fama and French (1996). Factor loadings are obtained using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*.
Bsmb	Fama and French (1996) size factor loadings	See Fama and French (1996). Factor loadings are obtained using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*.
Bhml	Fama and French (1996) value factor loadings	See Fama and French (1996). Factor loadings are obtained using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*.

*All variables are from Compustat XpressFeed unless stated otherwise.

Appendix B
Cost of Equity Capital Measures

Gebhardt et al. (2001) estimate a residual income model using analyst earnings forecasts in years t+1 and t+2, long-term growth forecasts for year t+3 earnings, and terminal value estimates. Earnings forecasts beyond year 3 are estimated assuming the year t+3 return on equity (ROE) reverts to the industry median ROE by year t+T (T=12).

$P_t = B_t + \frac{FROE_{t+1} - r_g}{(1+r_g)} B_t + \frac{FROE_{t+2} - r_g}{(1+r_g)^2} B_{t+1} + TV$, where $FROE_{t+i}$ is forecasted ROE in period t+i and equals $FEPS_{t+i}/B_{t+i-1}$ for years 1-3, and B_{t+i} is year t+i book value of equity divided by the number of common shares outstanding in June of year t+i. Using clean surplus accounting, $B_{t+i} = B_{t+i-1} + FEPS_{t+I} \times (1-k)$. FEPS is forecasted earnings per share and $FEPS_1$ and $FEPS_2$ equal the 1-year- and 2-year-ahead consensus EPS forecasts in *I/B/E/S* in June of year t. $FEPS_3$ equals the 3-year-ahead EPS forecast, if available; otherwise $FEPS_3$ is $FEPS_2 \times$(1+long-term growth forecast). k is expected dividend payout ratio (dividends per share divided by earnings per share in year t – 1). If EPS ≤ 0, then k equals 6% of total assets at the beginning of year t. TV, the terminal value, is calculated as:

$$TV = \sum_{i=3}^{T-1} \frac{FROE_{t+i} - r_g}{(1+r_g)^i} B_{t+i-1} + \frac{FROE_{t+T} - r_g}{r_g (1+r_g)^{T-1}} B_{t+T-1}.$$

Claus and Thomas (2001) use the following residual income model:

$$P_0 = B_0 + \frac{ae_1}{(1+r_{ct})} + \frac{ae_2}{(1+r_{ct})^2} + \frac{ae_3}{(1+r_{ct})^3} + \frac{ae_4}{(1+r_{ct})^4} + \frac{ae_5}{(1+r_{ct})^5} + \frac{ae_5(1+g)}{(r_{ct}-g)(1+r_{ct})^5}.$$

ae_t is year t expected abnormal earnings equal to $FEPS_t - r_{ct} \times B_{t-1}$. For years 3-5, $FEPS_{t+i}$ equals the consensus EPS forecast, if available; otherwise $FEPS_{t+i} = FEPS_{t+i-1} \times$(1+long-term growth forecast). B_{t+i} equals $B_{t+i-1} + k \times FEPS_{t+i}$, assuming k=0.5. g, the growth in abnormal earnings beyond t+5, equals the yield on the 10-year Treasury note minus 3%.

Gode and Mohanram (2003) use a model based on Ohlson and Juettner-Narouth (2005):

$$r_{oj} = A + \sqrt{A^2 + \frac{EPS_t}{P_{t-1}}(g - (r_f - 0.03))}$$

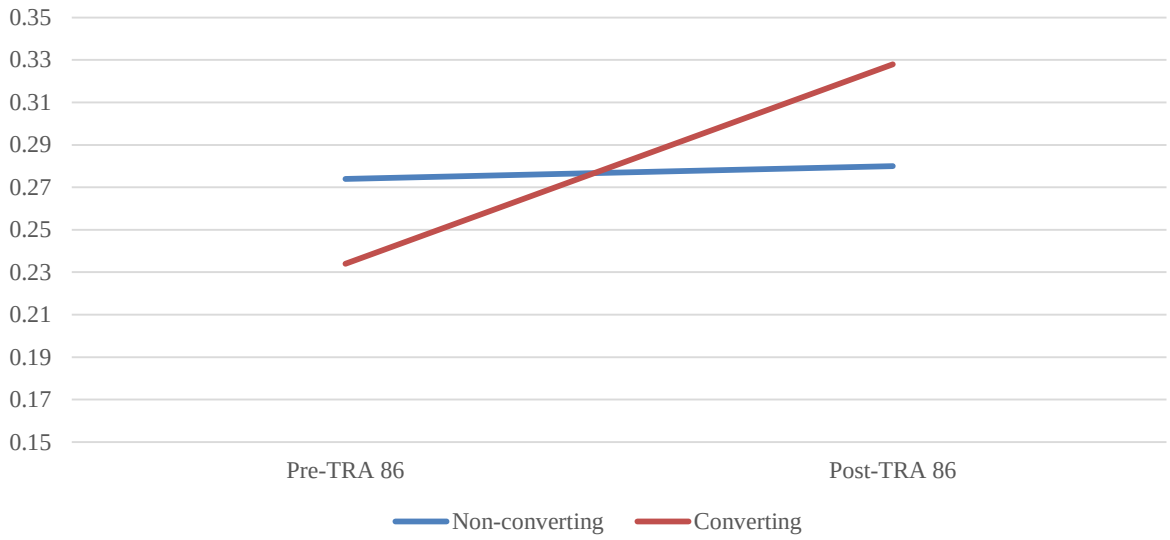
where $A = 0.5((r_f - 0.03) + \frac{DPS_{t+1}}{P_t})$, $g = \frac{(FEPS_{t+2} - FEPS_{t+1})}{FEPS_{t+1}}$, r_f = yield on a 10-year Treasury note, and DPS = dividends per share ($DPS_{t+1} = DPS_0$). This model assumes that *g* (short-term growth) decays asymptotically to a perpetual growth rate ($r_f - 0.03$) and requires that $FEPS_{t+1}$ and $FEPS_{t+2}$ be positive.

Easton (2004) uses a modified PEG ratio (PE ratio divided by the short-term rate of earnings growth, modified to include expected dividends in the estimate of short-term growth):

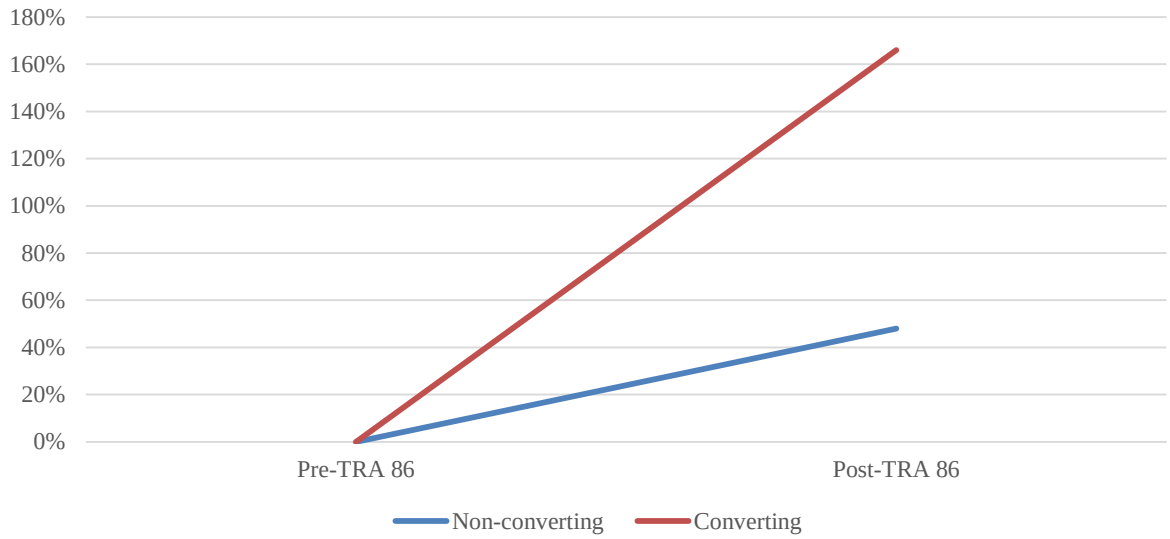
$P_0 = \frac{(EPS_{t+2} + r_{mpeg} DPS_{t+1} - EPS_{t+1})}{r_{mpeg}^2}$, where $EPS_2 \geq EPS_1 > 0$ and $DPS_{t+1} = DPS_0$. This model constrains $EPS_2 \geq EPS_1 > 0$ so the solution has two real roots, one of which is positive.

Figure 1
Leverage Before and After TRA-86

Panel A: *Leverage* before and after TRA-86



Panel B: Percentage change in aggregate unscaled debt following TRA-86



This figure plots changes in leverage from the pre- to post-TRA 86 periods for converting and non-converting firms. Panel A uses a scaled measure of leverage, where *Leverage* is total debt divided by the market value of assets. Panel B sums up total debt by converting and non-converting groups and examines the percentage change between pre- and post-TRA 86.

Table 1
Descriptive Statistics

(1) Conforming firms before conversion (*Converting* = 1 and *Post* = 0)

Variable	N	Mean	50th	Std Dev	difference in means (1)-(2)	difference in means (1)-(3)	difference in medians (1)-(2)	difference in medians (1)-(3)
Leverage	195	0.234	0.168	0.221	**-0.094**	**-0.040**	**-0.081**	**-0.046**
Assets ($)	195	189	102	233	**-84**	**-562**	-30	**-18**
Book-to-market	195	0.627	0.544	0.409	-0.051	**-0.111**	**-0.062**	**-0.052**
PP&E	195	0.308	0.220	0.262	-0.018	**-0.088**	-0.032	**-0.062**
Return on assets	195	0.085	0.094	0.104	**0.040**	0.012	**0.015**	-0.003
Annual stock return	195	0.255	0.084	0.713	**0.121**	**0.102**	0.044	0.032
Marginal tax rate	195	0.434	0.447	0.040	**0.120**	**0.014**	**0.115**	-0.004
ΔE	201	0.000	0.011	0.100	**-0.052**	0.000	0.003	0.004
Cost of debt	182	0.120	0.115	0.060	**0.013**	-0.008	**0.016**	**-0.006**
Cost of equity	59	0.145	0.144	0.031	**0.022**	**-0.016**	**0.024**	**-0.010**
Bmkt	59	1.109	1.159	0.502	-0.003	0.014	0.052	0.052
Bsmb	59	1.100	1.140	0.867	**0.537**	**0.527**	**0.659**	**0.666**
Bhml	59	-0.403	-0.435	0.626	-0.211	**-0.185**	-0.248	**-0.300**
ln(Dispersion)	59	-2.677	-2.749	1.089	-0.080	**-0.288**	-0.004	**-0.243**
ln(LTG)	59	0.200	0.183	0.081	**0.038**	**0.021**	**0.025**	**0.033**

(2) Conforming firms after conversion (*Converting* = 1 and *Post* = 1)

Leverage	230	0.328	0.249	0.287
Assets ($)	230	273	132	515
Book-to-market	230	0.678	0.607	1.018
PP&E	230	0.326	0.252	0.311
Return on assets	230	0.045	0.079	0.133
Annual stock return	230	0.134	0.040	0.607
Marginal tax rate	230	0.314	0.332	0.058
ΔE	229	0.052	0.008	0.368
Cost of debt	223	0.107	0.099	0.064
Cost of equity	74	0.123	0.120	0.024
Bmkt	74	1.112	1.107	0.318
Bsmb	74	0.563	0.481	0.620
Bhml	74	-0.192	-0.188	0.989
ln(Dispersion)	74	-2.597	-2.745	1.074
ln(LTG)	74	0.162	0.158	0.042

(continued)

Table 1, continued
Descriptive Statistics

(3) Non-conforming firms before conversion (*Converting* = 0 and *Post* = 0)

Leverage	1,771	0.274	0.214	0.241
Assets (S)	1,771	751	121	1585
Book-to-market	1,771	0.737	0.597	0.576
PP&E	1,771	0.397	0.282	0.340
Return on assets	1,771	0.073	0.097	0.132
Annual stock return	1,771	0.153	0.052	0.586
Marginal tax rate	1,771	0.420	0.451	0.074
ΔE	1,831	0.000	0.007	0.193
Cost of debt	1,678	0.128	0.121	0.059
Cost of equity	347	0.162	0.154	0.041
Bmkt	347	1.094	1.107	0.470
Bsmb	347	0.573	0.474	0.871
Bhml	347	-0.218	-0.135	0.728
ln(Dispersion)	347	-2.389	-2.506	1.026
ln(LTG)	347	0.178	0.150	0.088

(4) Non-conforming firms after conversion (*Converting* = 0 and *Post* = 1)

					difference in means (4)-(3)	difference in means (4)-(2)	difference in medians (4)-(3)	difference in medians (4)-(2)
Leverage	2,415	0.28	0.21	0.26	0.010	**-0.044**	-0.002	**-0.037**
Assets ($)	2,415	1,153	126	3,376	**402**	**881**	6	-6
Book-to-market	2,415	0.73	0.59	1.15	-0.009	0.051	-0.006	-0.016
PP&E	2,415	0.37	0.23	0.40	**-0.022**	**0.048**	**-0.057**	-0.027
Return on assets	2,415	0.02	0.07	0.20	**-0.049**	-0.021	**-0.025**	**-0.007**
Annual stock return	2,415	0.15	0.05	0.61	0.000	0.019	-0.005	0.008
Marginal tax rate	2,415	0.30	0.33	0.08	**-0.125**	**-0.019**	**-0.123**	**-0.003**
ΔE	2,365	0.04	0.01	0.33	**0.036**	-0.017	**0.002**	0.001
Cost of debt	2,203	0.11	0.10	0.08	**-0.018**	0.003	**-0.021**	0.001
Cost of equity	750	0.13	0.12	0.03	**-0.032**	**0.006**	**-0.030**	**0.005**
Bmkt	750	1.13	1.10	0.40	0.036	0.018	-0.003	-0.003
Bsmb	750	0.52	0.47	0.81	-0.056	-0.046	0.000	-0.007
Bhml	750	-0.33	-0.27	1.19	**-0.114**	-0.141	**-0.138**	-0.085
ln(Dispersion)	750	-2.54	-2.61	1.12	**-0.155**	0.053	**-0.109**	0.131
ln(LTG)	750	0.17	0.15	0.07	-0.009	0.008	0.002	-0.006

(continued)

Table 1, continued
Descriptive Statistics

Table 1 displays descriptive statistics for our main analysis. *Leverage* is total debt divided by the market value of assets. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. *Assets* ($) is the market value of assets. *Book-to-market* is book value of equity divided by the market value of equity. *PP&E* is net property, plant, and equipment divided by the market value of assets. *Return on assets* is income before extraordinary items divided by the market value of assets. *Annual stock return* is the twelve-month buy and hold stock return. *Marginal tax rate* is an estimate of firms' pre-interest marginal tax rate estimate obtained from Blouin et al. (2010). ΔE_t is the change in earnings before extraordinary items from year *t-1* to year *t*. *Cost of debt* is total debt interest expense divided by average debt. *Cost of equity* is the implied cost-of-equity capital for firm *i* in June of year *t*, calculated as the average of four implied cost-of-equity capital estimates: *Rg*, *Rct*, *Roj*, and *Rmpeg* (see Appendix B for computation details). *Bmkt*, *Bsmb*, and *Bhml* are factor loadings following Fama and French (1996), using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*. *ln(Dispersion)* is the log of the standard deviation of analyst estimates for year *t* earnings divided by the consensus forecast for year *t* earnings. *ln(Growth)* is the log of Institutional Brokers' Estimate System (I/B/E/S) analyst consensus long-term growth in earnings per share forecast reported in June of year *t*. If long-term growth forecast is not available, *ln(Growth)* equals the two-year-ahead earnings forecast divided by the one-year-ahead forecast minus one.

Table 2
Correlations

	Variable	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	*Leverage*	0.01	**0.03**	**0.04**	0.01	**0.19**	**0.38**	**-0.14**	**-0.24**	**-0.08**	**0.06**	**-0.07**	**0.28**	**0.07**	**0.07**	**0.20**	**0.34**	**-0.24**
(2)	*Converting*		-0.02	**0.72**	**-0.06**	-0.02	**-0.05**	**0.03**	0.02	**0.06**	0.01	-0.02	**-0.06**	-0.01	**0.10**	0.00	-0.04	0.03
(3)	*Post*			**0.20**	**0.05**	0.00	-0.02	**-0.14**	-0.01	**-0.62**	**0.07**	**-0.12**	**-0.40**	0.04	**-0.07**	-0.03	**-0.05**	**-0.08**
(4)	*Converting*Post*				**-0.04**	-0.01	**-0.03**	0.00	-0.01	**-0.08**	**0.03**	**-0.03**	**-0.11**	0.00	0.00	0.03	-0.02	-0.04
(5)	*1 / Assets*					**0.23**	**0.12**	**-0.36**	**-0.14**	**-0.31**	**0.03**	**0.06**	**0.20**	0.02	**0.23**	0.03	**0.17**	**0.08**
(6)	*Book-to-market*						**0.38**	0.01	**-0.16**	0.01	**0.06**	0.00	**0.36**	**0.08**	**0.08**	**0.09**	**0.33**	**-0.26**
(7)	*PP&E*							**-0.13**	**-0.23**	**-0.07**	**0.07**	-0.02	**0.33**	**0.13**	-0.01	**0.18**	**0.43**	**-0.28**
(8)	*Return on assets*								**0.21**	**0.46**	**0.23**	0.00	**-0.09**	-0.04	-0.03	**0.09**	**-0.35**	**-0.11**
(9)	*Annual stock return*									**0.08**	**0.15**	-0.01	**-0.15**	0.02	**0.07**	**0.06**	**-0.12**	**0.08**
(10)	*Marginal tax rate*										**-0.09**	**0.08**	**0.30**	**-0.09**	**0.05**	-0.04	**-0.08**	**0.06**
(11)	ΔE											0.00	**-0.08**	0.00	**0.05**	0.04	**-0.07**	0.00
(12)	*Cost of debt*												**0.07**	**-0.07**	-0.04	-0.01	-0.02	-0.01
(13)	*Cost of equity*													**0.12**	**0.14**	-0.02	**0.38**	**0.11**
(14)	*Bmkt*														**-0.10**	**0.24**	**0.18**	**0.16**
(15)	*Bsmb*															**0.13**	**0.14**	**0.16**
(16)	*Bhml*																**0.13**	**-0.24**
(17)	*ln(Dispersion)*																	-0.01
(18)	*ln(LTG)*																	

Table 2 displays Pearson correlation coefficients for the full sample. p-values are listed in italics. *Leverage* is total debt divided by the market value of assets. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. *1 / Assets* is 1 divided by the market value of assets. *Book-to-market* is book value of equity divided by the market value of equity. *PP&E* is net property, plant, and equipment divided by the market value of assets. *Return on assets* is income before extraordinary items divided by the market value of assets. *Annual stock return* is the twelve-month buy and hold stock return. *Marginal tax rate* is an estimate of firms' pre-interest marginal tax rate estimate obtained from Blouin et al. (2010). ΔE_t is the change in earnings before extraordinary items from year *t-1* to year *t*. *Cost of debt* is total debt interest expense divided by average debt. *Cost of equity* is the implied cost-of-equity capital for firm *i* in June of year *t*, calculated as the average of four implied cost-of-equity capital estimates: *Rg*, *Rct*, *Roj*, and *Rmpeg* (see Appendix B for computation details). *Bmkt*, *Bsmb*, and *Bhml* are factor loadings following Fama and French (1996), using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*. *ln(Dispersion)* is the log of the standard deviation of analyst estimates for year *t* earnings divided by the consensus forecast for year *t* earnings. *ln(Growth)* is the log of Institutional Brokers' Estimate System (I/B/E/S) analyst consensus long-term growth in earnings per share forecast reported in June of year *t*. If long-term growth forecast is not available, *ln(Growth)* equals the two-year-ahead earnings forecast divided by the one-year-ahead forecast minus one.

Table 3
Book-tax Conformity and Leverage

$$Leverage_{it} = \alpha_0 + \alpha_1 Converting_i + \alpha_2 Post_t + \alpha_3 Converting_i * Post_t + \alpha_4\, 1/Assets_{it} + \alpha_5 Book\text{-}to\text{-}market_{it} + \alpha_6 PP\&E_{it} + \alpha_7 Return\ on\ assets_{it} + \alpha_8 Annual\ stock\ return_{it} + \alpha_9 Marginal\ tax\ rate_{it} + \varepsilon_{it} \quad (1)$$

Panel A: Tests of H1 using full sample

	Coefficient	Std. Dev.	t-Stat
Intercept	0.219	0.041	5.29 ***
Converting	-0.013	0.027	-0.47
Post	0.007	0.014	0.46
*Converting*Post*	0.064	0.020	3.22 ***
1 / Assets	-0.374	0.134	-2.79 **
Book-to-market	0.018	0.016	1.09
PP&E	0.225	0.038	5.88 ***
Return on assets	-0.131	0.044	-3.00 **
Annual stock return	-0.063	0.018	-3.41 ***
Marginal tax rate	-0.042	0.083	-0.50
N		4,611	
R^2		0.188	

Panel B: Test of H1 using propensity score matched sample

	Coefficient	Std. Dev.	t-Stat
Intercept	0.441	0.080	5.49 ***
Converting	-0.002	0.033	-0.06
Post	-0.051	0.030	-1.67
*Converting*Post*	0.058	0.032	1.81 **
1 / Assets	-0.935	0.315	-2.97 **
Book-to-market	0.016	0.039	0.40
PP&E	0.237	0.062	3.82 ***
Return on assets	-0.190	0.057	-3.32 ***
Annual stock return	-0.058	0.033	-1.79
Marginal tax rate	-0.550	0.193	-2.85 **
N		844	
R^2		0.166	

Table 3 displays multivariate regression estimates for our natural experiment. Panel A uses our full sample, while Panel B uses a propensity score matched sample. Standard errors are clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively for one-sided tests examining H1 and for two-sided tests for the remaining variables. *Leverage* is total debt divided by the market value of assets. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting

in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. *1 / Assets* is 1 divided by the market value of assets. *Book-to-market* is book value of equity divided by the market value of equity. *PP&E* is net property, plant, and equipment divided by the market value of assets. *Return on assets* is income before extraordinary items divided by the market value of assets. *Annual stock return* is the twelve-month buy and hold stock return. *Marginal tax rate* is an estimate of firms' pre-interest marginal tax rate estimate obtained from Blouin et al. (2010).

Table 4
Alternative Empirical Specifications

$$Leverage_{it} = \alpha_0 + \alpha_1 Converting_i + \alpha_2 Post_t + \alpha_3 Converting_i * Post_t + \alpha_4\, 1/Assets_{it} + \alpha_5 Book\text{-}to\text{-}market_{it} + \alpha_6 PP\&E_{it} + \alpha_7 Return\ on\ assets_{it} + \alpha_8 Annual\ stock\ return_{it} + \alpha_9 Marginal\ tax\ rate_{it} + \varepsilon_{it} \quad (1)$$

	Leverage	
H1: α_3	(+)	
*Converting*Post*	Coeff	Std Err
Baseline model (Table 3)	0.064	0.020 ***
Different specifications of *Leverage* :		
Scaling total debt by book value of assets	0.071	0.031 **
Investment as an alternative explanation:		
Controlling for additional investment measures (i.e., *Capx* , *R&D* , *Inventory*)	0.060	0.032 **
Differences in size and asset growth as an alternative explanations:		
Controlling for firm-level growth in assets	0.049	0.020 **
Controlling for annual percentage changes in sales	0.064	0.020 ***
Deleting large control firms	0.048	0.020 **
Median regression	0.052	0.024 **
Differences in capital structure due to scaling as an alternative explanation:		
Using the log of unscaled total debt	0.355	0.195 **
Differences in tax planning as an alternative explanations:		
Controlling for effective tax rates, intangible assets, foreign income	0.048	0.020 **
Control variables	Yes	

Table 4 displays estimates for equation (1) under alternative scenarios (see section 4.4). Standard errors are clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively for one-sided tests examining H1. *Leverage* is total debt divided by the market value of assets. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. Control variables (see Table 3) are included but not reported.

Table 5
Replication of Hanlon et al. (2008)

$$\begin{aligned}\textit{Annual stock return}_{it} = {} & \alpha + \beta_1 Converting_i + \beta_2 Post_t + \beta_3 \Delta E_{it} \\ & + \beta_4 Converting_i * \Delta E_{it} + \beta_5 Post_t * \Delta E_{it} \\ & + \beta_6 Converting_i * Post_t + \beta_7 Converting_i * Post_t * \Delta E_{it} + \varepsilon_{it}\end{aligned}$$

Panel A: Replication of Hanlon et al. (2008) Table 3 Panel A

	(a) Hanlon et al. (2008)		(b) Replication	
	Estimate	p-value	Estimate	p-value
Intercept	0.158	0.128	0.142	0.160
Converting	0.054	0.112	0.076	0.133
Post	-0.032	0.756	-0.012	0.908
ΔE	0.763	0.000	0.455	0.000
*Converting** ΔE	1.712	0.001	1.741	0.000
*Post** ΔE	-0.268	0.094	-0.101	0.333
*Converting*Post*	-0.100	0.024	-0.128	0.042
*Converting*Post** ΔE	-1.740	0.001	-1.748	0.000
N	3,576		4,626	
R^2	0.069		0.043	

Panel B: Replication of Hanlon et al. (2008) Table 3 Panel B

Separate Group Coefficients

		Hanlon et al. (2008)	Replication
Control Pre	β_3	0.763	0.455
Converting Pre	$\beta_3+\beta_4$	2.475	2.195
Control Post	$\beta_3+\beta_5$	0.495	0.353
Converting Post	$\beta_3+\beta_4+\beta_5+\beta_7$	0.467	0.346

Coefficient Differences between Groups

	Hanlon et al. (2008)		diff	Replication		diff
Converting Pre vs Control Pre	2.475	0.763	1.712	2.195	0.455	1.741
Converting Post vs Converting Pre	0.467	2.475	-2.008	0.346	2.195	-1.849
Control Post vs Control Pre	0.495	0.763	-0.268	0.353	0.455	-0.101
Converting Post vs Control Post	0.467	0.495	-0.028	0.346	0.353	-0.008

Table 5 displays our replication of Hanlon et al. (2008). Standard errors are clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. *Annual stock return*$_t$ is the annual stock return beginning 4 months after the end of fiscal year *t-1*. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. ΔE_t is the change in earnings before extraordinary items from year *t-1* to year *t*.

Table 6
Book-tax Conformity and the Cost of Capital

Panel A: Book-tax Conformity and the Cost of Equity

$$Cost\ of\ equity_{it} = \alpha_0 + \alpha_1 Converting_i + \alpha_2 Post_t + \alpha_3 Converting_i * Post_t + \alpha_4 Bmkt_{it} + \alpha_5 Bsmb_{it} + \alpha_6 Bhml_{it} + \alpha_7 ln(Dispersion)_{it} + \alpha_8 ln(LTG)_{it} + \varepsilon_{it}$$

	Coefficient	Std. Dev.	t-Stat
Intercept	0.172	0.011	16.13 ***
Converting	-0.017	0.004	-4.19 ***
Post	-0.031	0.007	-4.22 ***
*Converting*Post*	0.011	0.005	2.39 **
Bmkt	0.009	0.003	3.48 ***
Bsmb	0.004	0.001	3.29 ***
Bhml	-0.004	0.001	-2.78 **
ln(Dispersion)	0.011	0.001	9.86 ***
ln(LTG)	0.015	0.018	0.82
N		1,230	
R^2		0.322	

Panel B: Book-tax Conformity and the Cost of Debt

$$Cost\ of\ debt_{it} = \alpha_0 + \alpha_1 Converting_i + \alpha_2 Post_t + \alpha_3 Converting_i * Post_t + \alpha_4\ 1/Assets_{it} + \alpha_5 Book\text{-}to\text{-}market_{it} + \alpha_6 PP\&E_{it} + \alpha_7 Return\ on\ assets_{it} + \alpha_8 Annual\ stock\ return_{it} + \alpha_9 Marginal\ tax\ rate_{it} + \varepsilon_{it}$$

	Coefficient	Std. Dev.	t-Stat
Intercept	0.111	0.010	11.42 ***
Converting	-0.008	0.008	-1.07
Post	-0.013	0.005	-2.60 **
*Converting*Post*	0.005	0.008	0.57
1 / Assets	0.088	0.053	1.64
Book-to-market	0.000	0.003	-0.15
PP&E	-0.007	0.007	-0.95
Return on assets	-0.006	0.020	-0.28
Annual stock return	-0.002	0.002	-0.80
Marginal tax rate	0.042	0.025	1.70 *
N		4,286	
R^2		0.021	

(continued)

Table 6, continued
Book-tax Conformity and the Cost of Capital

Table 6 examines the effect of book-tax conformity on the cost of capital. Panel A examines the effect of conformity on the cost of equity, while Panel B examines the effect of conformity on the cost of debt. Standard errors are clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively.

Panel A: *Cost of equity* is the implied cost-of-equity capital for firm *i* in June of year *t*, calculated as the average of four implied cost-of-equity capital estimates: *Rg*, *Rct*, *Roj*, and *Rmpeg* (see Appendix B for computation details). *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. *Bmkt*, *Bsmb*, and *Bhml* are factor loadings following Fama and French (1996), using monthly return data from the 48 months prior to the beginning of the calendar year *t* for a specific stock *i*. *ln(Dispersion)* is the log of the standard deviation of analyst estimates for year *t* earnings divided by the consensus forecast for year *t* earnings. *ln(Growth)* is the log of Institutional Brokers' Estimate System (I/B/E/S) analyst consensus long-term growth in earnings per share forecast reported in June of year *t*. If long-term growth forecast is not available, *ln(Growth)* equals the two-year-ahead earnings forecast divided by the one-year-ahead forecast minus one.

Panel B: *Cost of debt* is total debt interest expense divided by average debt. *Converting* is a dummy indicating firms which were forced to convert from cash basis to accrual basis accounting in computing taxable income. *Post* is a dummy variable indicating the post 1986 time period. *1 / Assets* is 1 divided by the market value of assets. *Book-to-market* is book value of equity divided by the market value of equity. *PP&E* is net property, plant, and equipment divided by the market value of assets. *Return on assets* is income before extraordinary items divided by the market value of assets. *Annual stock return* is the twelve-month buy and hold stock return. *Marginal tax rate* is an estimate of firms' pre-interest marginal tax rate estimate obtained from Blouin et al. (2010).

Table 7
Leverage and the Cost of Equity

$$Leverage_{it} = \alpha_0 + \alpha_1 Cost\ of\ equity_{it} + \alpha_2\ 1/Assets_{it} + \alpha_3 Book\text{-}to\text{-}market_{it} + \alpha_4 PP\&E_{it} + \alpha_5 Return\ on\ assets_{it} + \alpha_6 Annual\ stock\ return_{it} + \alpha_7 Marginal\ tax\ rate_{it} + \varepsilon_{it}$$

Panel A: Leverage and Cost of Equity (both Converting and Non-converting Firms)

	Coefficient	Std. Dev.	t-Stat
Intercept	0.067	0.042	1.60
Cost of equity	0.734	0.178	4.13 ***
1 / Assets	-3.013	0.647	-4.66 ***
Book-to-market	0.112	0.013	8.97 ***
PP&E	0.267	0.032	8.38 ***
Return on assets	-0.097	0.096	-1.01
Annual stock return	-0.011	0.014	-0.84
Marginal tax rate	-0.253	0.092	-2.74 **
N		1,446	
R^2		0.421	

Panel B: Leverage and Cost of Equity (Converting Firms Only)

	Coefficient	Std. Dev.	t-Stat
Intercept	0.116	0.125	0.92
Cost of equity	1.500	0.637	2.36 **
1 / Assets	-2.970	1.862	-1.60
Book-to-market	0.071	0.048	1.48
PP&E	0.339	0.091	3.71 ***
Return on assets	-0.305	0.169	-1.80
Annual stock return	-0.008	0.024	-0.33
Marginal tax rate	-0.546	0.218	-2.51 **
N		174	
R^2		0.439	

Table 7 displays multivariate regression estimates for the relation between leverage and the cost of equity (Panel A for converting and non-converting firms, Panel B for converting firms only). Standard errors are clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. *Leverage* is total debt divided by the market value of assets. *Cost of equity* is the implied cost-of-equity capital for firm *i* in June of year *t*, calculated as the average of four implied cost-of-equity capital estimates: *Rg*, *Rct*, *Roj*, and *Rmpeg* (see Appendix B for computation details). *1 / Assets* is 1 divided by the market value of assets. *Book-to-market* is book value of equity divided by the market value of equity. *PP&E* is net property, plant, and equipment divided by the market value of assets. *Return on assets* is income before extraordinary items divided by the market value of assets. *Annual stock return* is the twelve-month buy and hold stock return. *Marginal tax rate* is an estimate of firms' pre-interest marginal tax rate estimate obtained from Blouin et al. (2010).