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Corporate tax aggression and debt ☆

Shannon Lin [a,1], Naqiong Tong [b,*], Alan L. Tucker [c]

[a] Dalhousie University, Rowe School of Business, Room 4090, 6100 University Avenue, Halifax, Nova Scotia B3H 3J5, Canada
[b] Peking University, HSBC Business School, Shenzhen 518055, PR China
[c] 1654 Copper Beech Circle, Huntingdon Valley, PA 19006, USA

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ABSTRACT

We provide a tradeoff model of the capital structure that allows leverage to be a function of a firm's choice of tax aggressiveness. The model's testable implications are supported empirically. Debt use is inversely related to corporate tax aggression for most firms, and the relation is economically important. This substitution effect is especially evident for firms exhibiting high tax-shelter prediction scores. The effect attenuates for benign forms of tax avoidance and during the recent credit crisis period. For the most profitable firms, debt and tax aggression are complements. Our results extend the empirical findings of Graham and Tucker (2006).

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1. Introduction

Tradeoff models hold that the ability to expense interest on debt is a first-order determinant of corporate capital structure.[2] As first observed by DeAngelo and Masulis (1980), however, the use of non-debt tax shields, e.g., shelters, may temper the relevancy of debt-induced interest expense when determining optimal debt use. Non-debt tax shields, which are a form of corporate tax aggression, may substitute for interest expense and thereby dilute the principal benefit associated with debt financing assumed by tradeoff models, thus reducing the incentive to issue debt.[3]

Tradeoff models treat firms as "tax takers" and as such their effective tax rates are completely determined by the taxing authority. However, it is well documented that firms engage in tax planning to reduce their tax liabilities. For example, under FIN 48,[4] Merck & Co. reported an initial (first quarter 2007 10 K filing) liability for unrecognized tax benefits of about $5 billion. Shortly before its initial filing Merck reduced its liability for unrecognized tax benefits from $7.4 billion to about $5 billion, mainly due to a $2.3 billion settlement the company reached with the IRS in February 2007. This settlement involved an arguably illicit Bermuda-based tax sheltering special purpose vehicle. At the time Merck also was

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* Corresponding author. Tel.: +86 75526032535.

E-mail addresses: Shannon.Lin@Dal.ca (S. Lin), nqtong@phbs.pku.edu.cn (N. Tong).

[1] Tel.: +1 902 494 4143.

[2] See Graham and Leary (2011) for a review of tradeoff models of the capital structure. Tradeoff models generally have lacked strong empirical fit, e.g., profitable firms appear to use less debt than predicted (the under-leverage puzzle).

[3] See Hanlon and Heitzman (2010) for a continuum of tax avoidance activities, from benign accelerated depreciation to very aggressive shelters. Empirical evidence that non-debt tax shields temper the use of leverage includes the findings of Graham and Tucker (2006) that firms engaged in aggressive tax shelters exhibit lower leverage than their non-sheltering counterparts and that tax-sheltering firms have lower leverage during sheltering years than non-sheltering years.

[4] Financial Accounting Standard Board Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes.* As discussed momentarily, higher levels of FIN 48 reserves may be regarded as indicative of greater corporate tax aggressiveness. A recent development related to FIN 48 is Internal Revenue Service (IRS) Announcement 2010-9 and Schedule UTP (January 2010), which proposes that firms be required to disclose a concise description of each uncertain tax position for which the taxpayer has recorded a reserve in its financial statements, and the maximum amount of potential federal tax liability associated with each position.

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engaged in a nearly $2 billion transfer pricing tax shelter dispute with taxing authorities in Canada. In a recent and highly publicized case, Dow Chemical lost a $1 billion lawsuit with the U.S. Department of Justice which involved a transfer pricing dispute for tax years 1993–2003.[5] The leverage ratio of Dow declined markedly after 2002.[6]

There is a large corporate tax advisory industry, the effects of which on traditional financial policy hardly have been studied. Motivated by this gap in the literature, by weak empirical support for traditional tradeoff models, and by evidence of corporate tax avoidance, we first present a two-period tradeoff model that incorporates tax planning and then empirically test the model's major predictions, including that aggressive tax planning is an inverse determinant of corporate debt utilization for a large cohort of firms, a prediction that is robustly supported by the evidence. For very highly profitable firms, the model holds that tax avoidance and debt may be complements rather than substitutes; these firms may use both tax aggression and debt to reduce their tax obligations and the empirical evidence also supports this feature of the model. Finally, the model predicts and the evidence shows that debt use is more weakly related to more benign forms of tax aggression, a result consistent with the notion that aggression must be sufficiently powerful to overcome the costs of adjusting the capital structure.

More specifically, using 1500 US publicly-traded firms for the period 2006–2011,[7] we test whether various measures of corporate leverage are related to five different measures of tax aggressiveness: FIN 48 tax reserves (RESERVE), discretionary book-tax differences (DTAX), tax shelter prediction scores (SHELTER), cash effective tax rates (CASH_ETR), and effective tax rate (ETR).[8] Our results indicate that for most firms leverage is negatively related to four measures of tax aggression and that this substitution effect appears to be economically important. This inverse relation holds after accounting for factors that reliably determine corporate debt use and when using industry-adjusted leverage ratios. Inter-temporally, firms decrease (increase) their use of debt as their degree of tax aggressiveness increases (decreases), and thus the inverse relation between leverage and tax aggression also is evidenced on a within-firm basis. Further supporting our finding, we demonstrate that this relation weakens during the credit crisis of 2007–08, and our results strengthen with the removal of the crisis period from our main sample.[9] We also find that the relation between debt use and aggression is most (least) pronounced for the strongest (weakest) measure of aggressiveness (tax shelter prediction scores and cash effective tax rates, respectively).[10] Finally, we find that for very profitable firms, tax aggression and debt use are complements.

Our research is related to the literatures on capital structure, tax aggression, and accounting aggression. While we detail how our research relates to each of these bodies of literature below, we note here that we contribute to the literature by explicitly incorporating tax planning into the capital structure decision process; by documenting that the traditional interest tax shield may be a weaker determinant of debt use than previously thought; by demonstrating empirically that aggressive tax planning can lead to reduced leverage; by providing a test of the debt substitution hypothesis; and by providing a potential solution to the under-leverage puzzle. Perhaps our most important contributions are that we extend the results of Graham and Tucker (2006) to a much larger and more contemporary universe of firms, and we find that more benign forms of tax aggression have an attenuated influence on leverage choice.

This paper proceeds as follows. In Section 2 we discuss the related literature and further describe our contributions. In Section 3 we provide our tradeoff model and its testable hypotheses. Section 4 describes our regression model while Section 5 reports our data and test results. Robustness checks are performed in Section 6, and Section 7 concludes.

2. Related literature

Graham and Leary (2011) provide a comprehensive review of the empirical evidence regarding tradeoff models of the capital structure. Overall, tradeoff models have shown a disappointing fit to the data. A particularly troubling lack of fit is the under-leverage puzzle, a phenomenon first noted by Miller (1977) and Graham (2000) wherein profitable firms appear to be paying too much in taxes due to their underutilization of debt and, thus, the interest tax shield, in light of the expected costs of bankruptcy. The finding of Graham and Tucker (2006) that tax shelters appear to substitute for corporate debt utilization provides one compelling solution to the under-leverage puzzle. Their finding suggests that previous researchers' empirical results are biased toward finding lower leverage than predicted by tradeoff models of the capital structure, because these researchers utilize data sources that omit off-balance sheet debt substitutes, i.e., tax shelters. Once shelters are accommodated, firms may not be under-leveraged.[11]

While Graham and Tucker's sample of actual tax shelters is unique, it is, unfortunately, small and dated, thereby making their inferences about the relation between leverage and shelters tentative.[12] In addition, because their examination focuses on tax shelters Graham and Tucker's findings necessarily cannot be generalized to other, presumably less bold, forms of tax aggression. By using a large and recent sample that includes several measures of tax aggression, this research provides additional evidence on the

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[5] See http://www.reuters.com/article/2013/02/27/us-usa-tax-dow-idUSBRE91Q1AL20130227.

[6] See Bird and Tucker (2002), Graham and Tucker (2006), Tucker (2002), and Wilson (2009), among others, for detailed examples of firms attempting to exert control over their tax liability.

[7] The sample period is dictated by the availability of FIN 48 tax reserves. However, as reported herein, the inverse relation between debt use and tax shelter prediction (our main aggression variable of interest) holds for a longer sample period (beginning 2000).

[8] We expand on these measures below. Rego and Wilson (2012) find the measures to be strongly correlated.

[9] The relation between leverage and tax aggression, like the relation between leverage and any of its traditional explanatory variables, is expected to be attenuated during the credit crisis period. The use of the credit crisis provides us a powerful natural experiment to test (and support) our main hypothesis of tax aggression-debt substitution.

[10] Indeed, results related to cash effective tax rates are generally insignificant. Because the inverse relation between debt and tax aggression is most pronounced for tax shelter prediction, our results are consistent with Graham and Tucker (2006); the measure SHELTER is most consistent with the sample of actual shelters examined by these authors.

[11] Graham and Tucker's finding may give rise to another puzzle, namely why do not firms utilize more tax shelters in order to obviate paying taxes altogether? Desai and Dharmapala (2006) call this anomaly the "under-sheltering puzzle" and argue that entrenched managers may not be incentivized to pursue sheltering activities. Thus, Desai et al. view the foregoing of tax shelters as a form of agency cost. See Rego and Wilson (2012) for a related discussion.

[12] We emphasize that there is no controversy regarding Graham and Tucker's results. However, they caution that inferences based on their sample may not be relevant for other firms due to the limitations of their sample size, the large sizes of the shelters examined, and other considerations, including the age of their shelters. Most of their shelters were shut down long ago by the government. Some of their shelters date back twenty-five years or more. Shelters like the contingent payment installment sale deals sponsored by Merrill Lynch, which make up a large portion of their sample, were closed down years ago by various changes to the tax code, e.g. eliminating Internal Revenue Code (IRC) Temporary Regulation 453, which was the key element of the IRC needed to manufacture the paper capital losses in the Merrill-sponsored deals. For these reasons it is difficult to determine whether Graham and Tucker's conclusions about the influence of sheltering on capital structure hold today or are a relic of the past. Similar concerns presumably apply to the proprietary tax sheltering sample of Wilson (2009).

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