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A Summary of Recent Corporate Tax Research

John R. Graham*

Taxes are thought to influence corporate decisions in many ways. For that reason, in the past decade a number of changes (or proposed changes) to the U.S. tax code have been made in an attempt to affect corporate behavior. For example, U.S. and European authorities have raised the possibility of eliminating or reducing the ability of companies to deduct interest payments from taxable income, because the tax-favored status of debt has reduced tax revenue collection and allegedly encouraged a “debt bias” of corporations. It is believed that by using too much debt financing, firms may have exacerbated economic downturns. Also, during the last two recessions, in an attempt to stimulate the corporate sector, the U.S. government has temporarily granted companies the ability to carry current-year losses back five years, in order to receive a refund on taxes paid during the past five years. Further, equity tax rates have been decreased for retail investors in an attempt to reduce the corporate cost of capital, and these changes are thought to have increased dividend payout. And, there have been proposals to disallow multinational companies from avoiding income taxes on profits earned overseas by their reinvesting those profits overseas. In this report, I summarize academic research on these and related issues.

In 1958 Modigliani and Miller (M&M) laid the groundwork for mod-

ern corporate finance research by demonstrating that when capital and informational markets are perfect, firm value is not affected by financial decisions. Five years later they showed that the existence of taxation can create an environment in which financial decisions affect firm value. In particular, M&M demonstrated that when corporate income is taxed and debt interest is a deductible expense, firm value can be increased by using debt financing rather than funding entirely from equity.

Several branches of research emanated from these basic insights. The first addresses whether the tax environment leads to firm-specific optimal capital structures and value enhancement. If there are costs to using too much debt (for example, expected financial distress costs or personal taxes on interest income), then firms with the greatest benefit to shielding taxes (for example, firms facing higher income tax rates) should be the ones with the greatest incentives to use debt financing. Much of my tax research focuses on how to measure these tax incentives in the context of a dynamic tax code.

One important feature of the tax code is that a firm can “carry back” current losses (by refile past tax returns) to receive a tax refund for taxes paid in recent years. Alternatively, if carrying back losses is not attractive, then firms can carry forward losses to offset taxable income in future years. Therefore, because the dynamic tax code allows firms to move income through time, it is necessary to forecast future taxable income to estimate current-period tax rates and tax incentives.

Capital Structure Choices and Simulating Corporate Marginal Income Tax Rates

In my early work, I simulated dynamic corporate marginal income tax rates that could explain the probability that a firm will be nontaxable and that allow it to carry losses forward and backward. I then used these simulated tax rates to document that firms respond to tax incentives when they make incremental financing choices,¹ and when they choose the level of debt and the level of leasing.² These corporate tax incentives hold up even in the presence of high personal tax rates on interest income.³

Most tax and capital structure research, including the work just mentioned, uses data drawn from financial statements, not data from actual tax returns. Given that financial statements consolidate worldwide income statements and balance sheets for multinational firms, but that tax rules and tax incentives vary by country, one might wonder how closely financial-statement-based research mirrors tax return data.⁴ In recent work, Lillian Mills and I access confidential tax returns to explore how closely tax rates estimated from financial statement data parallel those based on tax return data.⁵ Fortunately, we find that simulated tax rates based on financial statement data are very highly correlated with tax variables based on tax return data.

Capital Structure – Debt Bias

Documenting that tax rates are correlated with corporate capital structure choices suggests that firms may increase

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value by choosing debt optimally. However, some argue that an increased use of debt in response to tax incentives leads to negative outcomes. After all, the extent to which firms are able to increase value occurs directly because deducting interest expenses deprives the government of tax revenues. More than just reducing tax revenues, a “debt bias”—using extra debt in response to tax incentives—could result in too much debt in the system, increasing the probability that firms will become financially distressed, and thereby exacerbating or perhaps even causing economic downturns. Critics of debt bias argue that the ability to deduct interest should be eliminated or at least reduced. For this argument to have its greatest force, it should be the case that 1) tax incentives lead to a large increase in the use of debt, and that 2) the “extra” debt that firms use in response to tax incentives should lead to a material increase in the probability of experiencing financial distress.

Regarding whether taxes have a first-order effect on the use of debt, I have documented that a tax rate that is 10 percentage points higher (for example, 34 percent instead of the mean 24 percent) leads to debt usage that is 0.7 percent higher. Thus, while taxes do affect capital structure, the effect is moderate, providing only partial evidence of the first debt bias consideration. Regarding whether the extra debt usage increases the odds of encountering distress, two co-authors and I search for these effects when one might expect the negative effects of excess leverage to be at their worst: during the severe economic contractions during the Great Depression and during the years 2008–9.⁶ In the first stage of our analysis, we show that firms did in fact use more debt because of tax incentives during the Depression. However, we do not find any evidence that this extra debt increased the probability of encountering distress. Similarly, we do not find any evidence that debt bias led to negative outcomes during the recent recession. It is important to note that our failure to find negative effects of debt bias could be attributable to noise in the data (especially during the Depression era) and to our focus on nonfinancial firms. Clearly, there needs to be more research on

this important issue in general, and with respect to financial firms in particular.

Capital Structure – Tax Benefit Functions

One way to measure how much interest tax savings contribute to firm value involves estimating marginal tax benefit functions—that is, measuring the marginal tax benefit of each incremental dollar of tax deduction. By adding up the value created by each incremental dollar of interest deduction, one can estimate the contribution to firm value associated with the tax savings that flow from a given level of interest deductions. Two co-authors and I follow this approach and estimate that the equilibrium, gross tax benefit of interest deductions (ignoring all costs) equals about 10.5 percent of value across all firms, and about twice that much for the top decile of companies.⁷

Analogous to using supply shifts to identify demand curves, we use exogenous variation in benefit functions to deduce the cost-of-debt function that justifies the capital structure choices that firms make. By summing the area under the cost functions up to a given amount of debt, we estimate that the equilibrium all-in expected cost of debt equals about 7 percent of firm value. By summing up the area between the cost and benefit functions, we estimate that the equilibrium net benefits of debt (net of all costs) are about 3.5 percent of firm value. Again, these numbers are fairly moderate and do not suggest pervasive high leverage caused by severe debt bias.

Tax-Loss Carrybacks and Economic Stimulus

For the most part, U.S. companies in recent decades have been able to carry back current-period losses to receive a refund for taxes paid in the past two years. This feature of the tax code serves as an economic stabilizer by providing an infusion of liquidity to (previously profitable) companies that are currently struggling. During the last two recessions, the carryback period was temporarily lengthened to five years in an attempt to stimulate the corporate sector during an economic downturn.

Hyunseob Kim and I examine the economic impact of the stimulus during the most recent recession.⁸ Companies were given the option to carry back losses from either their 2008 tax year or their 2009 tax year to receive a refund for taxes paid during the previous five years. Had the carryback period remained at two years, we estimate the carryback feature of the tax code would have provided \$77 billion in tax refunds; allowing losses to be carried back an additional three years added an incremental \$54 billion in tax refunds to corporate coffers (this estimate ignores TARP recipients and the tax benefits granted to them). Interestingly, the increased benefit was particularly valuable to sectors that were hugely profitable during the economic boom of the mid-2000s but then suffered the greatest losses during the recession: housing, finance, and autos. That is, the U.S. government supported firms in these industries via changes to the tax code.

Payout Policy

One feature of the famous 2003 “Bush tax cuts” was to reduce the maximum tax rate on both qualifying dividends and capital gains to 15 percent, from 38 percent and 20 percent, respectively. This relative reduction in dividend taxation thus made dividends more attractive to taxable individual investors.⁹ Given this increased investor preference for dividends, one might expect companies to begin to pay out a larger proportion of profits via dividends. Research shows that there was a surge of dividend initiations following the May 2003 implementation of these tax breaks and that dividend hikes were largest at the companies that had the greatest net tax incentive to increase dividends, such as firms with proportionally more individual investors (which makes sense given that the tax cut was focused on individuals). Chetty and Saez show that the dividend increases were less likely to occur in firms for which the executives owned substantial stock options (which makes sense because options are not dividend protected, meaning that paying a dividend reduces the value of existing options).¹⁰

Thus, investor-level taxes affect cor-

porate payout choices. However, are taxes the dominant force driving payout policy? Based on surveys and one-on-one interviews, three co-authors and I document that CFOs agree with the general conclusion that firms increased dividends in response to the reduction in retail investor dividend tax rates—but we conclude that the 2003 tax effect on corporate payout decisions was overall moderate.¹¹ Executives indicate that non-tax conditions (such as generating long-run, sustainable earnings or facing lower growth prospects) are the first-order factors that determine payout policy and also determine whether a particular firm is at a margin where taxes would affect its payout decisions. In summary, most CFOs say that tax considerations matter but taxes are not the dominant factor in their decisions about whether to increase dividends or choose dividends over share repurchases.

Taxes on Foreign Profits

Economics and politics have merged into a contentious debate related to the extent to which U.S. firms should pay U.S. taxes on profits earned by their foreign divisions and subsidiaries. Under current law, taxes are paid to foreign authorities as the profits are earned—but taxes are not paid to the U.S. tax authority until the profits are returned home (“repatriated”) to the domestic parent. By surveying tax executives, two-coauthors and I learn that the ability to defer paying U.S. taxes is in fact one of the most important reasons that U.S. companies invest overseas.¹² Opponents of these tax rules argue that evidence like this is proof that U.S. firms shift jobs overseas to the detriment of domestic employment. (Supporters of the repatriation tax rules argue that they help U.S. firms compete overseas.)

If foreign profits are repatriated home, they are then taxed at a rate essentially equal to the degree to which the U.S. tax rate exceeds the tax rate in the foreign jurisdiction in which they were earned (for example, profits earned and taxed at an Irish corporate tax rate of 13 percent would be taxed an additional 22 percent when returned to the United States because the U.S. corporate income tax rate is 35 percent). In

2004, Congress passed the American Jobs Creation Act, which allowed firms to repatriate profits to the United States subject to a tax rate of no more than 5.25 percent and often much lower. Our research documents that many firms embraced this tax break and bought profits home to the United States. Perhaps surprisingly, we also show that some firms did not repatriate earnings, even at low repatriation tax rates, and even though repatriation would have a positive effect on actual cash flows, because it would lead to a reduction in reported earnings. That is, even at low tax rates repatriation is at times avoided by firms because it reduces earnings per share, which financial executives believe in turn hurts stock price. Interestingly, Senator Kay Hagen recently proposed instituting another “one time” reduction in taxes owed on repatriated profits. Justification for such a proposal is unclear given that, overall, academic research into the 2004 reduction in repatriation taxes does not provide clear evidence that on net firms used the funds brought home to increase investment or hiring.

In summary, the tax code is constantly under revision, in part in an attempt by authorities to alter corporate behavior. Recent research documents that tax incentives do affect corporate behavior, but the effects are often modest. I look forward to future research that helps explain why tax effects are not always as large as we might expect, whether the reason be measurement issues, offsetting nontax influences, or unanticipated changes in corporate behavior that occur as the economy re-equilibrates.

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² J. R. Graham, M. Lemmon, and J. Schallheim, “Debt, Leases, Taxes, and the Endogeneity of Corporate Tax Status,” *Journal of Finance*, 53, 1998, pp. 131–62.

³ J. R. Graham, “Do Personal Taxes Affect Corporate Financing Decisions?” *Journal of Public Economics*, 73, 1999, pp. 147–85.

⁴ For details, see J. R. Graham, J. Raedy, and D. Shackelford, “Accounting for Income Taxes,” NBER Working Paper No. 15665,

January 2010, and *Journal of Accounting and Economics* forthcoming

⁵ J. R. Graham and L. Mills, “Using Tax Return Data to Simulate Corporate Marginal Tax Rates,” NBER Working Paper No. 13709, December 2007, and *Journal of Accounting and Economics*, 44:2–3, 2008, pp.366–88.

⁶ J.R. Graham, S. Hazarika, and K. Narasimhan, “Financial Distress during the Great Depression,” NBER Working Paper No. 17388, August 2011, and *Financial Management*, forthcoming.

⁷ J. van Binsbergen, J. R. Graham, and J. Yang, “The Cost of Debt,” NBER Working Paper No. 16023, May 2010, and *Journal of Finance* 65:6, 2010, pp.2089–136.

⁸ J.R. Graham, and H. Kim, “The Effects of the Length of the Tax-Loss Carry back Period on Tax Receipts and Corporate Marginal Tax Rates,” NBER Working Paper No. 15177, July 2009, and *National Tax Journal*, 62, 2009, pp.413–27.

⁹ Alok Kumar and I find that individual investors form clienteles based on tax preferences of holding dividends and that individual investors shift holdings to tax-deferred accounts in response to higher income tax rates. See J.R. Graham and A. Kumar, “Do Dividend Clienteles Exist? Evidence on Dividend Preferences of Retail Investors,” *Journal of Finance* 61, 2006, pp. 1305–336.

¹⁰ R. Chetty and E. Saez, “Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut,” NBER Working Paper No. 10841, October 2004; J. Poterba, “Taxation and Corporate Payout Policy,” NBER Working Paper No. 10321, February 2004; J. Bouin, J. Raedy, and D. Shackelford, “Did Dividends Increase Immediately After the 2003 Reduction in Tax Rates?” NBER Working Paper No. 10301, February 2004.

¹¹ A. Brau, J. R. Graham, C. R. Harvey, and R. Michaely, “Payout Policy in the 21st Century,” NBER Working Paper No. 9657, April 2003, and *Journal of Financial Economics*, 77:3, 2005, pp. 483–527.

¹² J.R. Graham, M. Hanlon, and T. Shevlin, “Real Effects of Accounting Rules: Evidence from Multinational Firms Investment Location and Profit Repatriation Decisions,” *Journal of Accounting Research*, 49, 2011, pp.137–85.