

## Accounting for Behavioral Considerations in Business Tax Reform: The Case of Expensing

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*One of the fundamental questions in business tax reform is whether to allow firms to immediately expense investments or require economic cost recovery. The conventional view is that expensing would generate stronger growth effects holding revenues constant. This view is rooted in traditional models of corporate finance that assume firms look at the net present value of expected tax payments when incorporating taxes into investment decisions. But this traditional view ignores the possibility that firms focus on more salient measures of taxes as well. If so, they may respond less to expensing than this theory suggests because expensing does not lower their financial accounting tax liability and, all else equal, requires a higher statutory rate.*

*This paper considers whether firms undervalue expensing due to a focus on these non-economic tax metrics and, if so, what this implies about business tax reform if the goal is to increase US investment. It develops a framework for what cost recovery rules are optimal, and then uses new and existing data to parameterize this framework, holding constant long-run revenues and the relative tax treatment of debt and equity. While the empirical evidence is still nascent, it tentatively concludes that applying economic cost recovery to public and very large companies in order to pay for a lower statutory tax rate would generate more US investment and growth than expensing—reducing the relevant tax rate on such companies by more than two percentage points estimated conservatively, and possibly by much more. This estimate is sensitive to the underlying empirical parameters and could easily change. But it does cast doubt on the conventional view that expensing would generate much more US investment and growth than the alternatives. It also contrasts with estimates by non-partisan Congressional staff that expensing as part of a business cash-flow tax would generate modestly higher growth, and with far more dramatic positive growth estimates by some prominent think tanks.*

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## I. Introduction

One of the fundamental questions in business tax reform is whether to allow companies to immediately deduct the cost of investments or instead require them to deduct the cost over time in line with the decline in value of the asset purchased. When combined with other reforms, the first approach, called expensing, would convert our business income tax into a tax on consumption or cash flow. The second, economic cost recovery, would make it a tax on income. Either approach would probably be better than our current system, which is a tortured hybrid of the two. It allows firms to deduct the cost of investments more quickly than they decline in value, but not to deduct the entire cost upfront. In the process, it generates wildly different effective tax rates on different investments, with little discernable policy rationale.<sup>1</sup>

The difference between these two approaches is vast, amounting to more than \$1.8 trillion over ten years.<sup>2</sup> Holding long-run revenue and other features of the tax code constant, economic cost recovery could finance a roughly four percentage point cut in the corporate tax rate, while expensing would require a corporate rate that is three to four percentage points higher than our current rate. Despite these stakes, policymakers advocating reform have not settled on which is the goal, swinging back and forth between the two approaches over the past roughly 15 years in ways that are not clearly partisan. The bipartisan tax reform panel appointed by President George W. Bush proposed expensing.<sup>3</sup> President Obama and the former chairmen of the tax-writing committees, Sen. Baucus (D-MT) and Rep. Camp (R-MI), proposed moving toward economic cost recovery in 2012 to 2014.<sup>4</sup> More recently, President Trump and House Republicans have proposed expensing again.<sup>5</sup>

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<sup>1</sup> See *infra* note 33.

<sup>2</sup> See *infra* Table 5.

<sup>3</sup> THE PRESIDENT'S ADVISORY PANEL ON FEDERAL [TAX REFORM, SIMPLE, FAIR, AND PRO-GROWTH: PROPOSALS TO FIX AMERICA'S TAX SYSTEM XV](#) (Nov., 2005).

<sup>4</sup> WHITE HOUSE AND DEP'T OF TREASURY, [THE PRESIDENT'S FRAMEWORK FOR BUSINESS TAX REFORM](#) 10 (Feb. 2012) [hereinafter PRESIDENT'S FRAMEWORK 2012] (implicitly proposing economic cost recovery); SENATE FINANCE COMMITTEE CHAIRMAN, [SUMMARY OF STAFF DISCUSSION DRAFT: COST RECOVERY AND ACCOUNTING](#) (Nov. 21, 2013) [hereinafter SFC SUMMARY] (offering a detailed legislative proposal to move as close as possible to economic cost recovery); HOUSE WAYS AND MEANS COMMITTEE MAJORITY TAX STAFF, [SUMMARY OF DISCUSSION DRAFT: TAX REFORM ACT OF 2014](#) (2014) (proposing changes that would move closer to economic cost recovery). See also WHITE HOUSE AND DEP'T OF TREASURY, [THE PRESIDENT'S FRAMEWORK FOR BUSINESS TAX REFORM: AN UPDATE](#) 18 (Apr. 2016) [hereinafter PRESIDENT'S FRAMEWORK 2016].

<sup>5</sup> House Republican leadership proposed expensing in their business tax reform framework, as did President Trump during his campaign. [A BETTER WAY: TAX REFORM TASK FORCE REPORT](#) 25–26 (June 24, 2016); Jim Nunns, Len Burman, Ben Page, Jeff Rohaly & Joe Rosenberg, [An Analysis of Donald Trump's Revised Tax Plan](#), TAX POL'Y CTR. (Oct. 18, 2016). To provide some further examples of the back and forth, the 1986 reform act under President Reagan slowed down depreciation deductions, moving in the direction of economic cost recovery. The bipartisan Bowles-Simpson commission implicitly proposed moving in the direction of economic cost recovery in 2010 by proposing to eliminate all business tax expenditures. THE NAT'L COMM'N ON FISCAL RESPONSIBILITY AND REFORM, [THE MOMENT OF TRUTH](#) 33 (Dec. 2010). Senate Finance Committee Ranking Member Wyden (D-OR) has proposed slowing down the cost recovery rules since 2007, including in bipartisan bills with Sen. Gregg (R-NH) and Sen. Coats (R-IN). Bipartisan Tax Fairness and Simplification Act of 2010, S. 3018, 112th Cong. (2010); Bipartisan Tax Fairness and Simplification Act of 2011, S. 727, 112th Cong. (2011).

The conventional view among academics is that expensing is clearly the better approach. While there are many potential goals of business tax reform, one particularly important and widely-held objective is reducing distortions to the location and magnitude of investment in order to increase investment in the US. Expensing reduces the tax rate on new US investment to zero or below, while increasing the tax rate on returns to existing investments, if revenue is held constant.<sup>6</sup> Assuming no changes to the tax rules of other countries, this improves incentives to invest in the US rather than abroad. As the thinking goes, it should therefore increase growth.<sup>7</sup> This view is rooted in traditional models of corporate finance theory that assume firms act to maximize the net present value of their future expected after-tax cash earnings.<sup>8</sup>

But one thing missing from this traditional theory is the possibility that firms seek to maximize other metrics as well. Indeed, this paper is motivated by conversations with dozens of CEOs, CFOs and tax directors of Fortune 100 companies during my time in government. When asked about their investment decision making processes, almost all said that they account for taxes by focusing on the statutory (“headline”) tax rate or their financial accounting (“book”) tax rate—not something closer to the actual, discounted taxes that they expect to pay on returns on an investment. This could be because managers themselves act irrationally, or because they rationally respond to agency costs and the biases, heuristics, and limited information of other actors, such as investors and analysts.<sup>9</sup> Either way, it implies that many respond to the incentives created by salient measures of taxes, rather than the actual taxes they pay.

These potential behavioral considerations matter for business tax reform because they mean firms would respond less to the positive investment incentives created by expensing than traditional corporate finance theory suggests. Expensing does not lower a company’s book tax liability because the financial accounting rules completely disregard the economic benefit of deferring tax payments. Instead, if expensing is paid for by increasing the statutory rate, it would ironically increase firms’ book tax liability on marginal investments. As a result, expensing could induce less US investment, rather than more, to the extent that firms’ investment decisions are influenced either by their book tax expense or their statutory tax rate rather than the actual taxes they pay. This may be part of the reason why, in practice, most other countries have slowed down their cost recovery rules and used the revenue to lower their statutory rate when reforming their business income tax system, contrary to the prescriptions of the traditional view.<sup>10</sup>

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<sup>6</sup> As discussed *infra* Part II.B, expensing reduces the tax rate on new US investment to zero if coupled with repeal of interest deductibility and other investment incentives, like the research and development tax credit. If enacted on a standalone basis, expensing would result in negative tax rates on new debt-financed US investment. For businesses subject to the corporate income tax, this analysis ignores taxes at the investor level.

<sup>7</sup> N. GREGORY MANKIW, *MACROECONOMICS* 244 (9th ed. 2015).

<sup>8</sup> This traditional view is sometimes referred to as the investment principle. ASWATH DAMODARAN, *APPLIED CORPORATE FINANCE* 3 (3rd ed. 2010).

<sup>9</sup> See *infra* notes 84-86 & accompanying text.

<sup>10</sup> ORG. FOR ECON. COOPERATION AND DEV., *FUNDAMENTAL REFORM OF CORPORATE INCOME TAX*, 21, 25, figs.1.2 & 1.6, OECD Tax Policy Studies No. 16 (2007); Michael P. Devereux, [Issues in the Design of Taxes on Corporate Profit](#), 65 NAT’L TAX J. 709, 714 (Sept. 2012). Other countries have, in a sense, adopted expensing by enacting and expanding single-tier, value-added taxes (VATs), which effectively allow businesses to immediately deduct the cost of all their

The question posed by this paper is whether firms do indeed undervalue the ability to defer tax payments due to a focus on book earnings or the statutory tax rate and, if so, what this implies about business tax reform if the goal is to increase US investment.<sup>11</sup> With the question so defined, it claims that the optimal cost recovery rules depend on the capital-weighted metrics for tax liability upon which managers actually make investment decisions, and the revenue-equivalent rates and credits under different policy alternatives. If managers weight their book or statutory tax rate strongly enough, the optimal approach is not expensing but economic cost recovery, with the revenue raised used to finance an investment tax credit or a lower statutory rate. The analysis assumes policymakers are considering revenue-neutral alternatives, but it would generally be the same if policymakers wanted to increase or decrease revenue as part of reform.

The paper then parameterizes this framework based on empirical evidence of firms' decision making processes and revenue estimates of relevant reforms. While the empirical evidence is still nascent, it tentatively concludes that applying economic cost recovery to public and very large companies in order to pay for a statutory rate cut would generate the largest positive effect on investment—reducing the relevant tax rate for such companies by at least 2 percentage points compared to the expensing alternative and estimated conservatively, and possibly by much more. (There is not sufficient data to parameterize the framework for private or smaller companies, even roughly.) This conclusion is heavily dependent, though, on the underlying empirical parameters, and could easily change based on new evidence. The reader should therefore interpret this paper as providing plausible support for the notion

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investments. This paper does not focus on VATs for two reasons. First, VATs represent an even more fundamental reform than shifting to economic cost recovery or expensing within the context of our current income tax. While both VATs and income taxes with expensing are forms of consumption taxes, the VATs that exist eliminate the taxation of labor and capital income at the individual level and therefore cannot apply progressive marginal rates. (A VAT could be structured to tax wages at the individual level at progressive rates through a so-called X-tax, but thus far this type of VAT has never been enacted.) See, e.g., DAVID F. BRADFORD, *UNTANGLING THE INCOME TAX* (1986); Itai Grinberg, [Implementing a Progressive Consumption Tax: Advantages of Adopting the VAT Credit-Method System](#), 59 NAT'L TAX J. 929 (2006). Second and relatedly, it seems unlikely that we will entirely replace our income tax with a VAT and thus the question of whether our income tax should adopt expensing or economic cost recovery remains relevant. As recently as 2010, the Senate voted 85-13 in favor of a resolution opposing the US adopting a VAT. 156 CONG. REC. 53, S2364 (daily ed. Apr. 15, 2010) (Senate Vote No. 115). None of our competitors rely exclusively on VATs. Instead, they have supplemented their income and payroll taxes with VATs. ORG. FOR ECON. COOPERATION AND DEV., *CONSUMPTION TAX TRENDS* 40, tbl.1.A1.7 (2014). Interestingly, the financial accounting rules treat expensing in the context of a VAT differently from an income tax. A firm's book tax expense only includes the VAT they owe in the current year on their pre-tax book earnings, not the VAT they may owe in the future on those earnings, essentially assuming that the time value of money is infinite rather than zero. Financial Accounting Standards Board, ASC 740-10-05-07. This different financial accounting treatment may partially explain why our competitors have moved their income taxes closer to economic cost recovery while simultaneously expanding their VATs.

<sup>11</sup> This article takes as given that the goal of business tax reform is to increase US business investment (subject to a budget constraint), either by increasing the domestic savings rate or increasing the share of global investment that is in the US. However, many may rightly take issue with this being the sole objective. For example, it ignores the growth effects of human capital investment and distributional concerns. For such readers, this paper may nonetheless be interesting as a challenge to the central argument of expensing proponents—that it will best increase US investment and therefore growth—even taken on its own terms.

that a statutory rate cut paid for by economic cost recovery would have a more positive effect on investment than expensing based on the best empirical evidence to date, and as offering a framework and methodology for adjusting these conclusions as the empirical evidence continues to evolve.

Finally, the paper offers some tentative policy recommendations based on these estimates. It argues that policymakers should consider applying economic cost recovery to all businesses, including those taxed on a passthrough basis, and using the revenue raised to lower the corporate tax rate and increase its progressivity. To the extent that future research finds that smaller businesses respond more to expensing than other policy alternatives, policymakers should consider expanding Section 179 expensing, rather than enacting expensing for firms based on other indicia of their size. It further argues that we should attempt to address the underlying drivers of many managers focusing on non-economic tax metrics by reforming the financial accounting rules and executive compensation incentives, and by requiring large firms to disclose some portions of their actual tax returns. If such changes were actually implemented and effective, expensing coupled with a repeal of interest deductibility would probably become the optimal approach for increasing US investment. But unfortunately such efforts are unlikely to succeed in practice.

This paper sits at the intersection of two lines of literature on tax reform. The first is how to account for behavioral biases and heuristics in designing taxes. This literature is increasingly robust regarding the behavior of individuals,<sup>12</sup> but relatively sparse regarding the behavior of businesses,<sup>13</sup> presumably because many assume that businesses are better able to process and respond to the complex incentives that the tax system creates. While probably true, the paper details how even extremely large business and their investors may resort to heuristics and salient tax metrics in the face of uncertainty, agency costs, and incomplete or overwhelming information, with important policy implications.

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<sup>12</sup> See, e.g., Jeffrey B. Liebman & Richard J. Zeckhauser, [Schmeduling](#) (Oct. 2004) (unpublished manuscript) (on file with Harvard University); Esther Duflo et al., [Saving Incentives for Low- and Middle-Income Families: Evidence from a Field Experiment with H&R Block](#), 121 Q. J. ECON. 1311 (2006); BEHAVIORAL PUBLIC FINANCE 173-258 (Edward J. McCaffery & Joel Slemrod eds., 2006); Edward J. McCaffery & Jonathan Baron, *Isolation Effects and the Neglect of Indirect Effects of Fiscal Policies*, 19 J. BEHAV. DECISION MAKING 289 (2006); Aradhna Krishna & Joel Slemrod, *Behavioral Public Finance: Tax Design as Price Presentation*, 10 INTL TAX & PUB FIN 189 (2003); Amy Finkelstein, *EZ-Tax: Tax Salience and Tax Rates*, 124 Q. J. ECON. 969 (Aug., 2009); Raj Chetty, Adam Looney & Kory Kroft, [Salience and Taxation: Theory and Evidence](#), 99 AM. ECON. REV. 1145 (Sept., 2009); Brian Galle, [Hidden Taxes](#), 87 WASH U. L. REV 59 (2009); Deborah H. Schenk, [Exploiting the Salience Bias in Designing Taxes](#), 28 YALE J. REG 253 (2011); David Gamage & Darien Shanske, [Three Essays on Tax Salience: Market Salience and Political Salience](#), 65 TAX L. REV 19 (2011); A. T. Hayashi, [The Legal Salience of Taxation](#), 81 U. CHI. L. REV. 1443 (2013); Sarah B. Lawsky, [Modeling Uncertainty in Tax Law](#), 65 STAN. L. REV. 241 (2013); Jacob Goldin, *Optimal Tax Salience*, 131 J. PUB. ECON. 115 (2015).

<sup>13</sup> Some of the few studies that do focus on the behavior of firms include *infra* notes 19–20; Raj Chetty & Emmanuel Saez, [Dividend and Corporate Taxation in an Agency Model of the Firm](#), 2 AM. ECON. J.: ECON. POLICY 1 (2010); James Alm & Chandler McClellan, *Rethinking the Research Paradigms for Analyzing Tax Compliance Behavior*, (Tulane Economics Working Paper 1211, 2012). The focus on individuals rather than firm behavior holds in fields beyond tax. See, e.g., Devin G. Pope and Justin R. Sydnor, *Behavioral Economics: Economics as a Psychological Discipline*, in THE WILEY BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 807-10 (Gideon Keren & George Wu, eds., 2015) (noting almost all of the literature how behavioral biases impact contract design and product structure focus on the individual rather than firm side of the market).

The second line of literature is on whether to adopt a business consumption or “cash-flow” tax (through expensing and disallowing interest deductions) or a real business income tax (through economic cost recovery). This is a decades-old debate and, as noted, the conventional view is that a business cash-flow tax is clearly superior from a growth perspective.<sup>14</sup> Indeed, the non-partisan congressional agency the Joint Committee on Taxation (JCT) currently estimates that including economic cost recovery in business tax reform would generally reduce the capital stock and economic growth, while expensing would increase it.<sup>15</sup> Some prominent think tanks go much farther. The Tax Foundation, for example, estimates that expensing would increase GDP by more than 5% in 10 years, and that these growth effects would pay for 60% of its cost within the first decade.<sup>16</sup> It is difficult to overstate how important these macroeconomic estimates are—especially JCT’s—for determining the structure of and political prospects for any business tax reform package.

In contrast, this paper suggests that JCT and others may have the sign wrong for very large and public companies—which represent more than half of all investment.<sup>17</sup> At a minimum, they may overestimate the positive growth effects of expensing for them.<sup>18</sup>

This article builds on several important recent articles. For example, Neubig (2006) and Hanna (2009) argue that business tax reform discussions have paid insufficient attention to financial statement impacts, including proposals to change the cost recovery rules.<sup>19</sup> Graham, Hanlon, Shevlin and Shroff

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<sup>14</sup> See, e.g., Joseph Bankman & David A. Weisbach, [The Superiority of an Ideal Consumption Tax over an Ideal Income Tax](#), 58 STAN. L. REV. 1413 (2006).

<sup>15</sup> See, e.g., JOINT COMMITTEE ON TAXATION, [MACROECONOMIC ANALYSIS OF THE “TAX REFORM ACT OF 2014”](#), JCX-22-14, 12–16 (Feb. 26, 2014). See also Nicholas Bull et al., [Corporate Tax Reform: A Macroeconomic Perspective](#), 64 NAT’L TAX J. 923, 940 (2011).

<sup>16</sup> TAX FOUNDATION, [OPTIONS FOR REFORMING AMERICA’S TAX CODE](#) 6, 77 (2016). It also states that “Out of all of the [86] options in this book, full expensing would deliver some of the largest economic growth for each dollar of federal revenue lost.” *Id.*

<sup>17</sup> John Asker et al., [Corporate Investment and Stock Market Listing: A Puzzle?](#), 28 REV. FIN. STUDIES 342, 345 (2015) (finding that public firms alone account for 47% of aggregate nonresidential fixed investment in 2010).

<sup>18</sup> This paper focuses on revenue-neutral alternatives. If expensing were deficit-financed as many have proposed, the effects on US investment and growth would be even smaller or more negative because deficits tend to crowd out private investment. For example, JCT estimates that deficit financing a permanent extension of bonus depreciation (a form of partial expensing) would slightly increase growth within the 10-year budget window, but thereafter the sign of the growth effects is uncertain due to the negative effect of deficits on private investment. JOINT COMMITTEE ON TAXATION, [A REPORT TO THE CONGRESSIONAL BUDGET OFFICE OF THE MACROECONOMIC EFFECTS OF H.R. 2510](#), JCX-134-15 (Oct. 27, 2015). Some, such as the Tax Foundation, ignore the negative effect of such deficit increases on private investment based on an implausible assumption that US private investment is perfectly elastic, with private savings and foreign capital inflows instantly increasing in response to higher demand for borrowing so as to hold US private interest rates constant. Josh Barro, [Tax Cuts Still Don’t Pay for Themselves](#), N.Y. TIMES (Mar. 17, 2015); Chad Stone & Chye-Ching Huang, [Trump Campaign’s “Dynamic Scoring” of Revised Tax Plan Should Be Taken With More Than a Grain of Salt](#), CENTER ON BUDGET & POLICY PRIORITIES (Sept. 15, 2016).

<sup>19</sup> Tom Neubig, [Where’s the Applause? Why Most Corporations Prefer a Lower Rate](#), 111 TAX NOTES 483, 484 (2006); Christopher H. Hanna, [Corporate Tax Reform: Listening to Corporate America](#), 35 IOWA J. CORP. L. 283, 286, 322–24 (2009) (arguing that tax preferences should take the form of rate cuts or, secondarily, permanent rather temporary differences, in order to maximize effectiveness). See also David I. Walker, [Financial Accounting and Corporate](#)

(2017) survey executives on how they incorporate taxes into their investment decisions and find that they rely extensively on non-economic tax metrics.<sup>20</sup> Edgerton (2012) finds that an investment tax credit is twice as effective as accelerated depreciation at inducing investment on a revenue-equivalent basis, which he attributes to managers focusing on after-tax book earnings impacts.<sup>21</sup> But by design, Edgerton (2012) does not consider whether and under what circumstances a lower statutory rate (paid for by economic cost recovery) would have a more positive effect on investment than expensing, which is probably the more relevant question in current policy debates. This paper expands on this significant work. It differs in offering the first theoretical framework for assessing the relative impact on US investment of three revenue-equivalent policy options—expensing, a lower statutory tax rate, and an investment tax credit—and in empirically grounding that framework with new and existing data in order to reach preliminary policy conclusions.<sup>22</sup>

In order to make the topic manageable, this paper focuses on whether expensing, a statutory rate cut, or an investment tax credit would most effectively increase US investment, holding revenue constant. As such, it sets aside several important alternative arguments for and against expensing, though it does offer some preliminary thoughts on these issues at the end.

For example, the paper is not about simplification. Many argue that expensing is simpler because it does not require companies to keep track of depreciation deductions on each asset they own. But our cost recovery system could be radically simplified by allowing companies to pool their deductions across categories of investments, as Canada allows and as former Chairman Baucus and current Ranking Member Wyden have proposed.<sup>23</sup> Similarly, the paper is not about fairness. Some argue a business cash-flow tax would be more progressive and it is possible that it would, as a matter of political economy,

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[Behavior](#), 64 WASH. & LEE L. REV. 927, 1008 (2007) (also arguing policymakers should consider how financial accounting standards impact corporate decisions, but not focusing on investment effects of tax cost recovery rules).

<sup>20</sup> John R. Graham et al., [Tax Rates and Corporate Decision Making](#), REV. FIN. STUDIES (forthcoming, 2017).

<sup>21</sup> Jesse Edgerton, [Investment, Accounting, and the Salience of the Corporate Income Tax](#) 4 (Nat'l Bureau of Econ. Research, Working Paper No. 18472, 2012).

<sup>22</sup> In contrast, Hanna, *supra* note 19, does not develop a theoretical framework or explore the circumstances under which different cost recovery options would most effectively increase investment. It is also restricted to public companies. Graham et al. (2017), *supra* note 20 provides the best estimates to date of firms' relative reliance on different tax metrics and explores the reasons why many do not rely on their marginal tax rate, but does not focus on tax policy implications. Edgerton, *supra* note 20, does not consider the possibility that firms rely on their statutory rate (rather than their marginal tax rate or book tax rate) in making investment decisions. Edgerton also compares policy options with equivalent present value costs rather than those with equivalent budgetary costs as estimated by JCT. JCT's long-standing practice is not to take into account the time value of money in their estimates. JOINT COMMITTEE ON TAXATION, [OVERVIEW OF REVENUE ESTIMATING PROCEDURES AND METHODOLOGIES](#), JCX-1-05, 12 (Feb. 2, 2005). Instead, their estimates of changing the cost recovery rules are largely driven by budget window effects and the rate of growth of capital investment. For better or worse, members of Congress are likely to rely on JCT's estimates in determining which policies have equivalent revenue effects so JCT's estimates are more relevant to real world policy decisions.

<sup>23</sup> See SFC SUMMARY, *supra* note 4; Senate Finance Committee Ranking Member Ron Wyden, [Summary of Discussion Draft: Cost Recovery Reform and Simplification](#) (Apr. 26, 2016).

raise more revenue over time. But the framework in this paper implies that it may instead be less progressive, and there are reasons to question these important political economy claims.

Finally, the paper sets aside the critical question of how reforming our cost recovery rules would interact with other potential efficiency-enhancing tax reforms. Most notably, advocates of expensing typically propose repealing interest deductibility at the same time, thereby converting our hybrid business income-consumption tax into a business consumption tax. Such a reform package would eliminate the current tax bias in favor of debt-financing by corporations—a significant accomplishment.<sup>24</sup> But this is the result of a separate policy change, not expensing itself. Indeed, it is also possible and desirable to eliminate the debt bias as part of a shift to economic cost recovery. Moreover, history and the experience of other countries provide little comfort that policymakers will address the debt bias if they enact expensing, or that they are more likely to do so in this scenario than if they enact economic cost recovery.<sup>25</sup> If they do not, expensing would result in highly negative tax rates on debt-financed investment, weakening the argument for this approach.<sup>26</sup>

The paper proceeds as follows. Part II provides background on the current tax and accounting rules, and summarizes the empirical literature on the extent to which businesses rely on different tax metrics when incorporating taxes into their investment decisions. Part III develops a framework for what cost recovery rules are optimal if firms do not always follow the traditional corporate finance prescription to rely on the expected present value of taxes due when making investment decisions. Part IV parameterizes this framework based on new and existing empirical evidence and revenue estimates. Part V offers preliminary policy recommendations based on these estimates. It also offers some thoughts on whether other potential rationales for expensing, beyond its potential to increase US investment, would change these recommendations. Part VI concludes.

## II. Background

### A. Current Tax Treatment of Investment Costs

For many decades, tax academics have debated whether businesses should be allowed to deduct the cost of investments immediately through expensing, or should instead have to deduct the costs over time in line with the decline in value of the asset purchased through economic cost recovery rules.<sup>27</sup>

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<sup>24</sup> In fact, it would create a bias in favor of equity financing by C corporations unless the treatment of interest, dividends, and capital gains were equalized at the individual level.

<sup>25</sup> See *infra* Part V.C.1. Other countries have, in a sense, adopted cash-flow consumption taxes that eliminate interest deductibility by enacting single-tier value-added taxes (VATs). See the discussion at *supra* note 10.

<sup>26</sup> As discussed *infra* Part V.C.1, another potential rationale for expensing is that it would facilitate certain international reforms, principally moving to a destination base with border adjustments. Setting aside the policy merits, it seems unlikely that the WTO would uphold such a reform even if coupled with a business cash-flow tax.

<sup>27</sup> For example, the Meade Committee in the UK proposed a cash-flow business tax in 1978. INSTITUTE FOR FISCAL STUDIES, [THE STRUCTURE AND REFORM OF DIRECT TAXATION](#) (1978). See also Mervyn A. King, *The Cash Flow Corporate Income Tax*, in THE EFFECTS OF TAXATION ON CAPITAL ACCUMULATION (Martin Feldstein ed., 1987). Some expensing proposals do not permit an immediate deduction for long-lived assets or those that tend to increase in value, such as land. See, e.g., IRC § 179, A BETTER WAY, *supra* note 5. But most allow businesses to expense these investments

These deductions over time are called depreciation for tangible assets and amortization for intangible assets.

Current law requires businesses to depreciate or amortize assets, but is far more generous than economic cost recovery.<sup>28</sup> For example, until 2018, all businesses can immediately deduct 50% of the cost of most tangible investments (called bonus depreciation).<sup>29</sup> An assortment of investments, such as intangible drilling and film and TV production costs, can be immediately expensed under specific carve-outs in the Code. In addition, under Section 179 expensing, businesses spending less than \$500,000 on tangible investments can deduct 100% of the cost of such investments.<sup>30</sup> To the extent that businesses haven't immediately deducted the full cost of tangible assets under any of these provisions, they can deduct the remaining cost faster than the asset declines in value under the accelerated depreciation rules.<sup>31</sup>

Intangible assets receive similarly preferred treatment relative to economic cost recovery. For example, all advertising and research and development costs can be deducted immediately even though such spending generally creates assets (such as goodwill or intellectual property) that retain some value beyond the current year.<sup>32</sup>

Together these accelerated cost recovery provisions create wildly different effective tax rates on different types of industries and investments, with little discernable policy rationale.<sup>33</sup>

### ***B. Incentive Effects of Expensing vs. Economic Cost Recovery***

A central goal of business tax reform is to increase the amount and productivity of US investment in order to accelerate economic growth. One way to increase the productivity of investment is to eliminate distortions to the mix of investments by harmonizing the effective tax rates on different investment

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as well. *See, e.g.*, The American Business Competitiveness Act, H.R. 4377, 114th Cong. (2016); Rubio, *supra* note 5. Some even allow deductions for qualified cash accounts. U.S. DEP'T OF TREASURY, [BLUEPRINTS FOR BASIC TAX REFORM](#) (1977).

<sup>28</sup> Some assets, such as land, cannot be depreciated or amortized, and the cost can only be deducted when they are sold or exchanged.

<sup>29</sup> Bonus depreciation is limited to new tangible property with a recovery period of 20 years or less. The percentage phases down to 40% for property placed in service in 2018 and 30% in 2019. IRC § 168(k).

<sup>30</sup> Unlike bonus depreciation, Section 179 expensing applies to both new and used tangible property that is depreciable, regardless of its recovery period. Businesses can deduct 100% of the first \$500,000 spent on such property if their total yearly acquisitions total \$2 million or less. The \$500,000 threshold is reduced dollar-for-dollar if total yearly acquisitions exceed \$2 million. IRC § 179. It is generally limited to tangible personal property though computer software and some real estate are also eligible. IRC § 179(d)(1).

<sup>31</sup> IRC § 168.

<sup>32</sup> IRC § 174. Furthermore, IRC § 197 allows amortization over fifteen years for certain intangibles that arguably increase in value over time.

<sup>33</sup> For example, among C corporations the effective marginal tax rate ranges from 7% for railroad track to 42% for nuclear fuel. CONGRESSIONAL BUDGET OFFICE, [TAXING CAPITAL INCOME](#) 3 (Dec. 2014). The effective tax rate ranges from 15% for utilities to 30% for the construction industry. PRESIDENT'S FRAMEWORK 2016, *supra* note 3, at 7.

categories. This could be accomplished while maintaining the current overall level of accelerated cost recovery, or by moving to economic cost recovery or expensing.

Expensing, however, could increase the aggregate amount of US investment because, under certain assumptions, it reduces the marginal tax rate on all new US investment to zero or below.<sup>34</sup> Assuming constant tax rates, constant returns, and full loss offsets, allowing a business to deduct the cost of an investment upfront is equivalent to exempting the income generated by that investment from tax.<sup>35</sup> In reality, however, many investments generate supra-normal returns, or rents. In this case, expensing reduces the marginal tax rate to zero or below on the “normal” return to new investments.<sup>36</sup> But the marginal rate on rents is the statutory tax rate reduced by the value of any other tax benefits.<sup>37</sup>

As detailed in Part IV and the Appendix, expensing would cost hundreds of billions of dollars just in the first 10 years. Assuming no other policy changes, paying for the steady state cost of expensing that is attributable to businesses subject to the corporate income tax (“C corporations”) would require raising the corporate tax rate by about 3.5 percentage points, from 35% to 38.5%. Full expensing would therefore lower the marginal tax rate on normal returns to new US investment to zero or below, but would raise the tax rate on returns to existing investments and rents.

In contrast, economic cost recovery would increase the marginal tax rate on normal returns to new US investment compared to current law, while reducing the marginal rate on existing investments and rents. It is by far the largest potential source of revenue from corporate base broadening that could be used to lower the statutory tax rate.<sup>38</sup> The steady state revenue raised from applying economic cost

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<sup>34</sup> Expensing reduces the tax rate on new US investment to zero if coupled with repeal of interest deductibility and other investment incentives, like the research and development tax credit. If enacted on a standalone basis, expensing would result in negative tax rates on new debt-financed US investment and potentially some equity-financed investment as well if it is eligible for significant tax expenditures. For businesses subject to the corporate income tax, this analysis ignores taxes at the investor level.

<sup>35</sup> See, e.g., Alvin C. Warren, *How Much Capital Income Taxed under an Income Tax is Exempt under a Cash-Flow Tax?*, 52 TAX L. REV. 1 (1996). To see this, suppose a company earns \$100 pre-tax that it would like to invest in an asset producing a 10% return. Its marginal tax rate is 35%. Under expensing, it can invest the full \$100 because it can deduct the cost of the investment. The asset will earn 10% per year, and its after-tax return will be 6.5%. This is the equivalent to exempting the yield from the investment. Under that scenario, the company initially can only invest \$65 because it has to pay tax on its \$100 of pre-tax earnings. But thereafter it will owe no tax on the 10% return on its \$65 investment, so its after-tax return on its initial \$100 of pre-tax earnings is also 6.5%.

<sup>36</sup> Warren, *supra* note 35, at 4–6. By normal, I am referring to both the risk-free rate of return and excess returns for risk taking.

<sup>37</sup> Returning to the example in *supra* note 35, suppose the company can only invest \$65 in an asset producing a 10% return and all other assets produce a 5% return. Then, under expensing, it will earn a 6.5% after-tax return on its first \$65 of investment and a 3.25% return on its remaining \$35 of investment, for a total of \$5.36 annually ( $6.5\% \times \$65 + 3.25\% \times \$35$ ). Under yield exemption, it would earn a 10% after-tax return on its investment of \$65, or \$6.50 annually. The difference of \$1.14 is equivalent to paying tax on the “rent” portion (5%) of the return on an after-tax investment of \$65, while exempting the normal (5%) return on that investment.

<sup>38</sup> The next largest base broadening measure, the deduction for domestic manufacturing, would raise only about \$190 billion over 10 years, which could finance a corporate rate cut of less than 2 percentage points. OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES: BUDGET OF THE US GOVERNMENT, FY17 229 (2016). This sets aside taxes on

recovery to C corporations could finance a corporate rate reduction from 35% to 31%, assuming no other policy changes. (Again, details are in Part IV and the Appendix.)

Thus, if the goal is to increase aggregate US investment and businesses respond rationally to marginal tax rates, expensing appears to be the clear winner. Holding revenue constant and setting aside tax expenditures, expensing exempts normal returns to new US investment from tax, creating a strong incentive to increase US investment. While expensing taxes returns to existing investments and rents at a rate that is roughly three percentage points higher than current law, this should, at least in theory, have little effect on US investment. Existing investment has by definition already occurred and rents should theoretically only arise on projects that are inframarginal.<sup>39</sup> On the other hand, economic depreciation appears to be the worst of both worlds. It raises the tax rate on normal returns to new US investment, while unproductively cutting the rate on existing investments and rents by about four percentage points.

But appearances can be deceiving. What this analysis misses is the possibility that businesses make investment decisions based not only on the marginal tax rate on their marginal investment, but also on other tax metrics, such as the impact on their financial statement income or their statutory tax rate.

### ***C. Financial Accounting Treatment of Investment Costs and Taxes***

Accelerated cost recovery and expensing provide quite large economic benefits to firms, by allowing them to defer tax payments without paying interest. But despite these large effects, the financial accounting rules treat accelerated cost recovery as having no effect on a firm's bottom line.<sup>40</sup> To understand why, it is necessary to distinguish how these rules calculate pre-tax income and how they calculate a firm's tax liability.<sup>41</sup>

Suppose a firm invests in an asset that costs \$100, declines in value by 10% every year, and generates \$20 of sales annually. Suppose also that the business can deduct 20% of the cost of the asset on its tax return, due to accelerated cost recovery provisions, and the tax rate is 35%. Under the tax rules, the business will then have zero taxable income in the first year, so will owe zero tax and its after-tax Haig-Simons income will be \$10. But under the financial accounting rules, the firm calculates its pre-tax income in the first year as the \$20 of sales minus the \$10 decline in the value of the asset, for \$10 in pre-tax net income. Essentially, the book depreciation rules require something akin to economic cost

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specific industries or activities that are not base broadeners, such as a financial transactions tax or carbon tax. It also sets aside deferral for foreign income of US companies.

<sup>39</sup> Taxes on pre-existing investments can be distortionary if they are foreseeable or avoidable.

<sup>40</sup> This sub-section is a summary of the GAAP financial accounting rules, which all US public companies and some US private companies are required to follow. All of the rules discussed are identical under the International Financial Reporting Standards (IFRS), which 116 countries have adopted. IFRS FOUND., [FINANCIAL REPORTING STANDARDS FOR THE WORLD ECONOMY](#) (2015).

<sup>41</sup> This section draws on the excellent summaries of these rules in H. Michelle Hanlon, [What Can We Infer about a Firm's Taxable Income from Its Financial Statements?](#) 4 NAT'L TAX J. 831 (2003) and Hanna, *supra* note 19.

recovery.<sup>42</sup> The firm’s \$20 tax deduction for depreciation will obviously affect how much taxes the firm owes and how much income it reports on its tax return. But it has no effect on the firm’s pre-tax book income because the book depreciation rules are completely separate and independent from the tax depreciation rules.

The financial accounting rules do of course require firms to calculate their tax liability in order to report their after-tax net income. But they do so in a different way from the tax code. A fundamental tenet of financial accounting—the “matching principle”—is that any expenses associated with an item of book income must be counted in the same year as the income is booked. This includes taxes. In our example, the firm has \$10 of pre-tax book income in the first year. The matching principle requires that it calculate its book tax liability for the current year as the total tax it currently owes on this \$10 of pre-tax income and *will ever owe on this income in the future*. Thus, if the tax rate is 35%, the business has to report \$3.50 of tax liability. This may seem odd because the firm actually has no tax liability or tax liability (\$20 of sales minus a \$20 tax depreciation deduction). The way the financial accounting rules address this conundrum is to say that the firm has \$3.50 of tax liability, composed of \$0 of current tax expense and \$3.50 of deferred tax expense. The net result is that the firm’s after-tax book income is \$6.50—exactly what it would be if there was no accelerated cost recovery tax provision at all. Table 1 summarizes these book and tax calculations.

**Table 1: Example of Difference Between Tax and Financial Accounting**

	Tax Accounting	Financial Accounting
<b>Gross Income</b>	\$20	\$20
<b>Cost Recovery</b>	(\$20)	(\$10)
<b>Pre-Tax Income / Taxable Income</b>	\$0	\$10
<b>Income Tax</b>	\$0	\$3.50
Current Tax Expense	-	\$0
Deferred Tax Expense	-	\$3.50
<b>After-Tax Income</b>	\$10	\$6.50

Importantly, the financial accounting rules do not apply any discount rate to deferred tax liabilities. Put differently, they require firms to ignore the time value of money.<sup>43</sup> So even though the firm gets to defer paying the \$3.50 of taxes that it will ultimately owe on its \$10 of economic income in the first year, the financial accounting rules ignore this significant benefit. They treat the firm as having \$6.50 in after-tax income in the first year, even though the firm has more economic income (how much more depends on

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<sup>42</sup> Technically the financial accounting rules do not require true economic cost recovery. Instead, they permit businesses to select among several approved methods, some of which presumably reflect economic depreciation more precisely than others. See Walker, *supra* note 19 at 981-82.

<sup>43</sup> Both GAAP and IFRS bar firms from discounting deferred taxes. See Financial Accounting Standards Board, ASC 740-10-30-8; ERNST & YOUNG, [IFRS, US GAAP AND RAP: COMPARISON AND BASICS](#) 28 (2014).

how long it can defer this \$3.50 in tax liability and the discount rate).<sup>44</sup> In fact, under the financial accounting rules, the firm has \$6.50 of after-tax book income regardless of whether, for tax purposes, it can deduct its entire \$100 investment in the first year or none at all.

In stark contrast to tax benefits taking the form of accelerated cost recovery, the financial accounting rules do treat many other tax benefits as increasing a firm's bottom line. The distinction is between "temporary" and "permanent" tax benefits. Because the financial accounting rules ignore the time value of money, they ignore the benefits of tax provisions that allow a firm to delay paying a nominal amount of tax but do not forgive the tax entirely. Accelerated cost recovery is currently the largest such "temporary" tax benefit. The ability to defer paying US tax on the earnings of foreign subsidiaries until those earnings are repatriated is another significant example.<sup>45</sup> Examples of permanent tax benefits include lowering the statutory rate and tax credits.<sup>46</sup> Returning to our example, suppose the firm's tax rate was cut to 25% or it could claim a 10% tax credit on the investment. The financial accounting rules would then fully recognizing the value of the tax benefit, treating the firm as having \$7.50 in after-tax book income.

At this point, the reader may wonder whether there is a backdoor way for the public to discern the value of accelerated cost recovery to a firm even if it does not impact the firm's after-tax book earnings. Firms' actual tax returns are not public so potential investors have to rely on their financial statements for tax information.<sup>47</sup> But could a savvy investor or analyst use information from other parts of the financial statement to calculate the deferral benefits of accelerated cost recovery and thereby estimate the firm's actual after-tax economic income that year, taking into account the present value of current and future taxes due on that income? Unfortunately the answer is no, not really.

The financial statement includes three relevant sections: the income statement, the balance sheet, and the statement of cash flows. It also includes a tax footnote that provides additional details on all three. None of this information is detailed enough for investors to calculate the value of accelerated cost recovery. The tax footnote does say how much of the firm's estimated tax liability on its current year income is paid currently versus deferred. But it does not say how long the firm can defer this tax liability, which is critical for calculating the economic benefit. Moreover, the financial accounting rules do not require firms to break down the sources of deferred tax liabilities in any precise or consistent way, which could otherwise be a way to estimate the benefit of deferral. Some firms may, for example, report what

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<sup>44</sup> One might ask how valuable this benefit is in today's low interest rate environment. But even though the government's borrowing cost is low, businesses still face substantial borrowing costs, so the ability to defer tax benefits remains a valuable benefit for them. See, e.g., Thomas J. Brennan & Alvin C. Warren Jr., *Realization and Lock-In When Interest Rates Are Low*, TAX NOTES 1151 (Aug. 22, 2016).

<sup>45</sup> See, e.g., Robert H. Dilworth, [Tax Reform: International Tax Issues and Some Proposals](#), INT'L TAX J. 5, 36-39 (2009).

<sup>46</sup> For more examples, see Hanna, *supra* note 19 at \_\_.

<sup>47</sup> This assumes the firm is audited and must disclose its financial statements, which is a requirement for all public companies and for large, widely-held private firms. Specifically, private companies with more than \$10 million in assets and 2,000 or more investors in a class of equity must register and file audited financial statements with the SEC, which are then publicly available. Securities Exchange Act of 1934, § 12(g), 15 USC 78l(g) (2011); 17 C.F.R. § 240.12g-1 (2016).

portion of their deferred tax liability is attributable to depreciation versus amortization versus other sources. But many others do not. And even those that do report this breakdown, do not report what portion of their deferred tax liability is attributable to, for example, 5-year property versus 30-year property. All of this detail would be necessary to calculate the economic value of tax deferral in even a rough way.

The actual taxes paid by the firm in the current year are reported in the cash flow statement or the tax footnote.<sup>48</sup> But this figure overestimates the value of accelerated cost recovery instead by ignoring the future tax liability associated with a given item of income, essentially discarding the matching principle of the financial accounting rules.<sup>49</sup> In addition, it provides investors and analysts with relatively little insight into the firm's after-tax income—let alone its marginal after-tax return on a marginal investment. This is because the firm's taxable income is not reported anywhere in the financial statement and can differ dramatically from the firm's pre-tax book income.<sup>50</sup> For example, actual taxes paid may exclude taxes paid on income from related businesses that have to be consolidated for financial accounting but not tax purposes.<sup>51</sup>

In short, financial statements treat accelerated cost recovery and expensing as providing no economic benefit to firms. What's more, investors and the public have precious few ways to determine the value of accelerated cost recovery to a company by cobbling together other information.<sup>52</sup> On the other hand, the value to a firm of a lower statutory tax rate and tax credits is readily apparent from the firm's financial statements. If managers care about what they can publicly *demonstrate* to be the after-tax effects of their investment decisions, and not just the actual after-tax effects, accelerated cost recovery may be less effective at increasing US investment than one might otherwise expect. To explore this possibility, the next section reviews the evidence of how managers and other stakeholders actually incorporate taxes into their investment decisions.

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<sup>48</sup> Statement of Cash Flows, Statement of Financial Accounting Standards No. 95, ¶¶ 92, 121 (Financial Accounting Standards Bd. 1987).

<sup>49</sup> Put differently, this measure effectively applies an infinite discount rate to the deferred tax liability associated with an item of income, rather than the zero discount rate that the financial accounting rules apply.

<sup>50</sup> For example, different consolidation rules apply when calculating income for book and tax purposes, and taxes paid in the current year may include payments or refunds due to resolution of audit issues from prior years. Hanlon, *supra* note 41. Some of these differences could be addressed by aggregating actual cash taxes paid over several years and dividing it by aggregate pre-tax book income over the same period. This measure is sometimes called the long-run cash effective tax rate, and provides a very rough sense of a firm's average tax rate. Michelle Hanlon & Shane Heitzman, [A Review of Tax Research](#), 50 J. ACCT. & ECON. 127, tbl.1 at 140 (2010). But it still ignores consolidation differences, overestimates the value of accelerated cost recovery rather than ignoring it, and provides investors and analysts with no sense of the present value of taxes due on a marginal investment.

<sup>51</sup> Hanlon, *supra* note 50, at 845-50.

<sup>52</sup> Perhaps an investor or analyst could comb through the text of financial reports and press stories and glean that the company invests a lot in, for example, cable infrastructure because it is a telecom company. And perhaps from this, they could estimate that the firm will benefit a lot from accelerated depreciation for network equipment. But this would be a very rough and time-intensive approach to figuring out whether and how much the firm benefits from accelerated cost recovery, and would generate little information about how it compares to its industry competitors.

**D. Evidence of Managers’ and Other Stakeholders’ Reliance on Different Tax Metrics**

Traditional corporate finance theory assumes that managers act to maximize the fundamental value of the firm.<sup>53</sup> According to the investment principle, they only invest in assets and projects where the net present value of expected cash flows exceeds their risk-adjusted cost of capital.<sup>54</sup> This in turn maximizes the firm’s fundamental value and share value under the strong form of the efficient market hypothesis: that investors are fully informed and rational, and therefore that share prices incorporate all public and private information about firm value.

In this canonical view, managers incorporate taxes into their investment decisions by considering what I will refer to as their *marginal tax rate*: the present value of current and future taxes they will owe on their marginal investment, divided by the present value of its expected pre-tax returns.<sup>55</sup> They should not care about their *statutory tax rate* or their *book tax rate*, as defined in Table 2. Both can differ substantially from their marginal tax rate because the former ignores the value of all tax benefits, and the latter ignores the value of deferring tax payments, among other differences.

**Table 2: Potential Tax Metrics Used in Investment Decisions**

Tax Metric	Definition
<i>Marginal Tax Rate</i>	$\frac{\text{Present value of current and future taxes due on firm's marginal investment, including tax expenditures}}{\text{Present value of marginal investment's expected pre-tax returns}}$
<i>Book Tax Rate</i>	$\frac{\text{Financial accounting statement tax expense}}{\text{Financial accounting statement pre-tax earnings}}$
<i>Statutory Tax Rate</i>	Firm’s tax bracket, disregarding tax expenditures

<sup>53</sup> Corporate finance theory is a bit of a misnomer. This body of literature is actually about both corporations and other businesses.

<sup>54</sup> ASWATH DAMODARAN, APPLIED CORPORATE FINANCE 2–4 (3rd ed. 2010). This is also called the hurdle rate.

<sup>55</sup> This definition follows MYRON S. SCHOLES ET AL, TAXES AND BUSINESS STRATEGY: A PLANNING APPROACH \_\_\_ (5th ed. 2015). The academic literature employs to a host of different tax metrics, and their definitions vary across and sometimes within fields. The marginal tax rate definition used here is similar to the term effective marginal tax rate (EMTR), but differs in that the EMTR assumes that all marginal investments produce only “normal” returns and not rents, whereas this definition does not include that assumption. See, e.g., COUNCIL OF ECONOMIC ADVISERS, [ECONOMIC REPORT OF THE PRESIDENT](#) 210, 224 (Feb. 2015). It is also similar to the term forward-looking average effective tax rate (AETR), but differs in that it focuses on the marginal investment decision, not any discrete investment choice. COUNCIL OF ECONOMIC ADVISERS, *supra* at 210, 224; OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT, [MEASURING AND MONITORING BEPS, ACTION 11: 2015 FINAL REPORT](#) 87 (2015). (Others use the term AETR differently to refer to a weighted average of the statutory tax rate and the effective marginal tax rate. See Michael P. Devereux & Rachel Griffith, [Evaluating Tax Policy for Location Decisions](#), 10 INT’L TAX & PUB. FIN. 107, 108 (2003).) The legal literature often defines “marginal tax rate” to take into account tax provisions other than the rate brackets (e.g., tax expenditures), but looks at the current year impacts of those other tax provisions rather than their present value, as I do here.

Contrary to this conventional view, a long line of literature finds that managers do not act just to maximize the firm’s fundamental value and do not focus exclusively on their marginal tax rate when incorporating taxes into their investment decisions. As summarized in Shackelford and Shevlin (2001), Hanlon and Heitzman (2010), and Shackelford, Slemrod and Sallee (2011), a number of studies find that managers will incur real costs, including paying more in taxes, in order to increase or smooth their book earnings.<sup>56</sup> For example, Dyreng (2009) finds that as firms approach the threshold of violating their debt covenants, they become more willing to manage book income even at the expense of paying more taxes.<sup>57</sup> Erickson, Hanlon and Maydew (2004) identify 27 firms that paid \$320 million in real cash taxes on book earnings later alleged to be fraudulent.<sup>58</sup> Scholes, Wilson and Wolfson (1990) finds that banks defer realizing losses and accelerate realizing gains in order to smooth their book earnings and improve their regulatory capital position.<sup>59</sup>

These econometric findings are reinforced by extensive survey data finding that managers focus heavily on their statutory and book tax rates when making decisions about whether and where to invest, placing little emphasis on their marginal tax rate. Graham, Hanlon, Shevlin and Shroff (2017) asked top tax executives at 500 corporations what tax rate their company primarily uses to incorporate taxes into their investment decision-making process. In response, 44% said they primarily rely on their statutory tax rate, 41% on their book tax rate, and only 13% on their marginal tax rate.<sup>60</sup> When asked about decisions about where to locate new facilities, their replies were similar with even fewer (9%) citing their marginal tax rate.<sup>61</sup> One potential explanation is that managers only focus on these other tax metrics if they are similar to their firm’s marginal tax rate. Graham et al do find that firms’ statutory tax rates and marginal tax rates are fairly similar for the vast majority of firms. But when the difference between the statutory tax rate and marginal tax rate is larger, they find that firms are more likely to rely on the marginal tax rate when making decisions with only borderline significance.<sup>62</sup> And they find no significant relationship between how likely firms are to rely on their book tax rate as the difference between their book tax rate and marginal tax rate increases.<sup>63</sup>

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<sup>56</sup> Douglas A. Shackelford & Terry Shevlin, *Empirical Tax Research in Accounting*, 31 J. ACCT. & ECON. 321 (2001); Hanlon & Heitzman, *supra* note 50 at 147–48; Douglas A. Shackelford, Joel Slemrod, & James M. Sallee, [Financial Reporting, Tax, and Real Decisions: Toward a Unifying Framework](#), 18 INT’L TAX & PUB. FIN. 461 (2011).

<sup>57</sup> Scott Dyreng, [The Cost of Private Debt Covenant Violation](#) (Sept. 26, 2009) (working paper).

<sup>58</sup> Merle Erickson et al., *How Much Will Firms Pay for Earnings That Do Not Exist? Evidence of Taxes Paid on Allegedly Fraudulent Earnings*, 79 ACCOUNTING REV. 387 (2004).

<sup>59</sup> Myron S. Scholes et al., *Tax Planning, Regulatory Capital Planning, and Financial Reporting Strategy for Commercial Banks*, 3 REV. FIN. STUDIES 625, 646-49 (1992).

<sup>60</sup> Graham et al. (2017), *supra* note 20, at tbl.3. Three percent responded “other.” The figures for statutory and book tax rate include those who responded that they use both their US and jurisdiction-specific statutory or book tax rate (jurisdiction-specific presumably adjusts for differences across US states and countries). For further details see *infra* note 114 and Appendix A.

<sup>61</sup> 46% said they rely upon their statutory tax rate, 43% said their book tax rate, and only 9% said their marginal tax rate. *Id.*

<sup>62</sup> *Id.* at tbl.4, panel B.

<sup>63</sup> *Id.*

What's more, in earlier work, Graham et al (2005) find that an astonishing 41% of CEOs would be willing to pass up a positive net present value investment in order to meet the analyst consensus estimate of their book earnings per share.<sup>64</sup> This suggests that quite a sizable share of managers may disregard real tax costs in order to reduce their book tax rate and meet book earnings targets.

This evidence of firms focusing to some degree on their book or statutory tax rate is further buttressed by work examining how other firm stakeholders incorporate taxes into their decisions. There is extensive evidence that capital markets are not perfectly efficient, and that investors and analysts are less likely to incorporate information that is complicated or less salient.<sup>65</sup> A firm's marginal tax rate certainly meets these criteria. As discussed, it is difficult for investors and analysts to determine a firm's marginal tax rate based on public information. But to the extent that investors and analysts can use financial statements to develop a better approximation of a firm's marginal tax rate, a number of econometric studies find that they do not dig that deep. Instead, investors and analysts largely focus on firms' statutory or book tax rates. For example, Chen and Schoderbek (2000) find that analysts often incorrectly incorporate tax changes with clear earnings effects, such as rate increases, into their forecasts.<sup>66</sup> Dyreng (2009) finds that lenders often include covenants in their debt contracts that trigger a higher interest rate if the firm fails to meet a specified after-tax book earnings target, even though they could rely on a more sophisticated measure of after-tax firm performance, including requesting the firm's tax returns as a condition of lending.<sup>67</sup> Powers, Seidman and Stomberg (2015) find that investors rely more on the less-precise statutory tax rate than various book tax rate measures when valuing stocks.<sup>68</sup> This is despite the fact that tax costs are, on average, a larger share of sales than research and development, interest, or advertising.<sup>69</sup>

While investors and analysts obviously cannot directly make investment decisions for firms, their focus on statutory and book tax rates may heavily influence managerial decisions if managers care about

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<sup>64</sup> John R. Graham, Campbell R. Harvey & Shiva Rajgopal, *The Economic Implications of Corporate Financial Reporting*, 40 J. ACCT. & ECON. 37 (2005).

<sup>65</sup> See, e.g., Stefano DellaVigna, [Psychology and Economics: Evidence from the Field](#), 47 J. ECON. LIT. 315 (2009); Malcolm Baker & Jeffrey Wurgler, [Behavioral Corporate Finance: An Updated Survey](#), in HANDBOOK OF THE ECONOMICS OF FINANCE (2013).

<sup>66</sup> Kevin C. W. Chen & Michael P. Schoderbek, *The 1993 Tax Rates Increase and Deferred Tax Adjustments: A Test of Functional Fixation*, 38 J. ACCT. RES. 23 (2000) (finding that analysts generally failed to incorporate the impact of the 1993 corporate tax increase on deferred taxes, and that mistakes were not sensitive to the size of the error). See also Marlene A. Plumlee, *The Effect of Information Complexity on Analysts' Use of That Information*, 78 ACCT. REV. 275 (2003) (finding that analysts' revisions of their forecasts tended to impound the impact of less complex changes in the Tax Reform Act of 1986, but not more complex changes); Sangwan Kim, Andrew P. Schmidt & Kelly Wentland, [Analysts and Taxes](#) (Sept. 7, 2015) (working paper) (finding that analysts underreact to tax-based financial statement information in their earnings forecasts, but underreact less when information processing costs are lower).

<sup>67</sup> Dyreng, *supra* note 57 at 4-5.

<sup>68</sup> Kathleen Powers et al., [Examining Which Tax Rates Investors Use for Equity Valuation](#) (Sept. 22, 2015) (working paper) (examining the response of stock returns to surprise changes in a firm's statutory tax rate or various measures of their book tax rate and finding the response is generally strongest to changes in the statutory tax rate). The authors do not consider the extent to which investors rely on the firm's marginal tax rate.

<sup>69</sup> Powers et al., *supra* note 68.

short-term share prices because they are myopic or there are agency costs. Management compensation is tied fairly heavily to firms' share price and book earnings. For example, a 2014 survey found that performance-based restricted stock accounted for 41% of executive compensation among the major US corporations in their sample.<sup>70</sup> Ironically, this structure is often justified as a way to reduce agency costs, on the theory that linking executive compensation to share price or book earnings will better align the interests of managers and owners.<sup>71</sup> But when a manager's compensation is based on after-tax book earnings, she has an incentive to focus on the book tax rate.<sup>72</sup> And when her compensation is based on share price, she has an incentive to focus on either the book or statutory tax rate to the extent that these tax metrics drive short-term share prices more than the marginal tax rate.

There is evidence that managers respond to these incentives. For example, Bergstresser and Philippon (2006) find that book earnings management is greater in companies whose CEO's compensation is sensitive to current share prices.<sup>73</sup> Edmans, Fang, and Lewellen (2014) find that public firms managers whose equity incentives are about to vest (and are therefore likely to sell firm stock soon) undertake significantly less investment in order to boost the firm's short-term earnings.<sup>74</sup>

Another way to understand the impact of accelerated cost recovery on managers' investment decisions is through econometric analysis of time-series data covering periods when the cost recovery rules have been more or less generous.<sup>75</sup> This literature generally finds a short-term increase in US private investment in response to accelerated cost recovery provisions. In reviews of studies, Hassett and Hubbard (2002) and Hassett and Newmark (2008) conclude that the elasticity of private investment with

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<sup>70</sup> Allan Sloan, [Remember That CEO Pay Cap? It's Even Less Effective Than We Knew](#), PROPUBLICA (Mar. 4, 2016). See also Lucian Bebchuk & Yaniv Grinstein, [The Growth of Executive Pay](#), 21 OXFORD REV. ECON. POL'Y 283, 290 (2005) (finding that equity-based compensation accounted for 55% of total compensation paid to the top five executives of S&P 500 companies in 2003). Over half of large companies use total shareholder return as a metric of performance for executive pay and 37 percent use book earnings per share growth. Gretchen Morgenson, [Pay for Performance? It Depends on the Measuring Stick](#), N.Y. TIMES (Apr. 12, 2014). See also Matteo Tonello, [CEO and Executive Compensation Practices: 2015 Edition](#), HARVARD LAW SCHOOL FORUM ON CORPORATE GOVERNANCE AND FINANCIAL REGULATION (Sept. 15, 2015).

<sup>71</sup> Another reason is a section of the tax code, which denies deductions for executive compensation above \$1 million that is not performance-related. IRC § 162(m).

<sup>72</sup> Interestingly, Armstrong et al find that only tax director compensation is linked to taxes (book taxes specifically), while other top executive's compensation is not linked to taxes at all. Christopher S. Armstrong, Jennifer L. Blouin, and David F. Larcker, *The Incentives for Tax Planning*, 53 J. ACCT. & ECON. 391, 401 (2012).

<sup>73</sup> Daniel Bergstresser & Thomas Philippon, *CEO Incentives and Earnings Management*, 80 J. FIN. ECON. 511 (2006).

<sup>74</sup> Alex Edmans, Vivian W. Fang, & Katharina A. Lewellen, [Equity Vesting and Investment](#), REV. FIN. STUDIES (forthcoming).

<sup>75</sup> The most researched example is bonus depreciation. I.R.C. § 168(k). Other work has examined changes to accelerated depreciation, Section 179 expensing (which is limited to small-ish investments), and the investment tax credit. Bonus depreciation has been temporarily enacted, expanded, decreased, and allowed to expire numerous times since 2001. GARY GUENTHER, CONG. RESEARCH SERV., RL31852, [THE § 179 AND BONUS DEPRECIATION EXPENSING ALLOWANCES: CURRENT LAW AND ISSUES FOR THE 114TH CONGRESS](#) 7–8 (2015). Currently, businesses can claim 50% bonus depreciation in tax years 2016 and 2017, 40% in 2018, and 30% in 2019, after which it expires.

respect to the tax-adjusted cost of capital is between -0.25 and -1.<sup>76</sup> A more recent paper by Zwick and Mahon (2014) examines the effects of bonus depreciation using the most complete dataset yet.<sup>77</sup> Their estimates for very large firms are in line with the prior literature, with much stronger responses among smaller firms.<sup>78</sup> But in all of these studies the response could just be due to timing effects, with firms accelerating investments but not changing their aggregate investment level over time.<sup>79</sup> The evidence on whether accelerated cost recovery results in permanent increases in aggregate investment is more mixed. Hines (1998) concludes the evidence of a positive impact of any tax incentives on aggregate investment is relatively weak.<sup>80</sup> More recently, in a study of 14 OECD countries, Bond and Xing (2015) examine the effect of the tax component of the cost of capital (including both changes in the statutory rate and cost recovery provisions) on long-run private investment by manufacturers. They estimate that the long-run elasticity is -0.4 for all non-residential capital and -0.7 for equipment, though they find no significant relationship between taxes and investment in structures.<sup>81</sup>

The real question raised by this paper, though, is not whether accelerated cost recovery increases aggregate US private investment when debt-financed, but whether it has a larger or smaller effect than other policies with an equivalent budgetary cost. The most relevant paper on this question is Edgerton (2012), which uses the many changes in the investment tax credit and depreciation rules between 1962 and 2005 to examine the impact of each among public firms. He finds that investment tax credits induce about twice as much investment per dollar of discounted revenue cost.<sup>82</sup> (He does not examine the

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<sup>76</sup> Kevin A. Hassett & R. Glenn Hubbard, *Tax Policy and Business Investment*, in HANDBOOK OF PUBLIC ECONOMICS [43] (2002); Kevin A. Hassett & Kathryn Newmark, *Taxation and Business Behavior: A Review of the Recent Literature*, in FUNDAMENTAL TAX REFORM: ISSUES, CHOICES AND IMPLICATIONS 191, \_\_\_ (John Diamond and George Zodrow eds., 2008).

<sup>77</sup> Eric Zwick & James Mahon, [Tax Policy and Heterogeneous Investment Behavior](#) 28 (Nat'l Bureau of Econ. Research, Working Paper No. 21876, 2016).

<sup>78</sup> *Id.* at 24, 29.

<sup>79</sup> For example, bonus depreciation has only been enacted on a temporary basis. As such, it creates an enormous incentive to pull forward investment into the year(s) in which it is in place. Indeed, House and Shapiro argue that this incentive is essentially infinite for long-lived assets. Christopher L. House & Matthew D. Shapiro, [Temporary Investment Tax Incentives: Theory with Evidence from Bonus Depreciation](#), 98 AM. ECON. REV. 737 (2008). Zwick and Mahon do not find evidence that the investment response is just a timing shift (as opposed to an aggregate increase in investment), though it is difficult to identify timing shifts because they may be spread out of multiple years. Zwick & Mahon, *supra* note 77, at 22–23.

<sup>80</sup> James Hines, [Investment Ramifications of Distortionary Subsidies](#) 2, (Nat'l Bureau of Econ. Research, Working Paper No. 6615, 1998).

<sup>81</sup> Stephen Bond & Jing Xing, *Corporate Taxation and Capital Accumulation: Evidence from Sectoral Panel Data for 14 OECD Countries*, 130 J. PUB. ECON. 15, 16 (2015).

<sup>82</sup> Edgerton, *supra* note 20, at 4. Edgerton's coefficients on each tax policy and the difference between the two are significant in some specifications and insignificant in others that include year fixed effects. He notes that the tax coefficients are biased downward by including year fixed effects if the tax change was used as a counter-cyclical policy tool because then the year coefficient picks up some of the tax effect. In many cases, changes to depreciation and investment tax credits do appear to be responses to the business cycle (and have been presented that way by policymakers).

relative efficacy of a statutory rate cut.) Edgerton attributes this difference to managers basing their investment decisions in part on the impact on their after-tax book earnings.<sup>83</sup>

In sum, extensive econometric and survey evidence suggests that firms do not focus strictly on the marginal tax rate when making investment decisions, and often focus heavily on their book tax rate or statutory tax rate instead. In addition, while much more empirical research is needed, the one paper to date on the relative effectiveness of accelerated cost recovery at increasing US investment suggests expensing is less effective than at least one policy alternative: investment tax credits.

There are a number of potential explanations for why firms rely less on the marginal tax rate than traditional corporate finance theory assumes. One possibility is that investors and analysts focus these other tax heuristics due to a combination of uncertainty, incomplete information, costly information processing, or low salience. Managers respond in turn by focusing on these metrics,<sup>84</sup> either because they are myopically focused on short-term share prices or rationally responding to institutional incentives created by the biases and heuristics of investors and analysts.<sup>85</sup> Another possibility is that managers themselves are boundedly rational, relying on tax heuristics rather than their marginal tax rate.<sup>86</sup> As the next Part turns to the optimal policy response, the actual explanation does not matter so

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<sup>83</sup> *Id.* Another relevant paper is Bond & Xing, *supra* note 81. Among classes of investments where they find a significant tax impact, they do not find a statistically significant difference in the impact of revenue-equivalent changes in the statutory tax rate versus cost recovery provisions. *Id.* at 25-26.

<sup>84</sup> Graham et al. (2017), *supra* note 20 supports the hypothesis that managers focus on these tax heuristics because investors and analysts do. For example, they find that firms with a high analyst following are significantly more likely to rely on their book tax rate in making decisions (and significantly less likely to rely on their statutory tax rate or marginal tax rate), which the authors attribute to the greater salience of the book tax rate to analysts. *Id.* at 3, 17, tbl.4. Graham et al. (2017) also find that managers of firms with high institutional ownership are significantly more likely to use their marginal tax rate, which the authors attribute to institutional owners more effectively monitoring managers and curbing agency costs. *Id.* at 17-18, tbl.4.

<sup>85</sup> For example, focusing on tax heuristics like the statutory tax rate and book tax rate can avoid real costs if a debt covenant triggers higher interest costs if a firm fails to meet a book earnings target. See Dyreng, *supra* note 57. It can increase the manager's own compensation if it is linked to the firm's share price or after-tax book earnings, as is often the case. See *infra* notes 70–74 & accompanying text. Further, even if managers are focused on fundamental value, they may rationally choose to maximize their firm's short-term share price so that they can sell shares when they are temporarily overvalued and repurchase when they are temporarily undervalued, thereby benefitting long-term investors. Baker & Wurgler, *supra* note 65, at 361.

<sup>86</sup> Although managers have access to far more information about a firm's taxes than its investors, they still may find it difficult or overwhelming to calculate the marginal tax rate for each investment decision, or they may draw their tax experts too late into the decision making process about whether and where to invest. There is an emerging literature to support this hypothesis. For example, John R. Graham & Campbell R. Harvey, [The Theory and Practice of Corporate Finance: Evidence from the Field](#), 60 J. FIN. ECON. 187, 196-209, 232 (2001) find in a survey that CFOs rely heavily on rules of thumb (such as the internal rate of return rule or the payback period rule) when making investment decisions, and over half do not use a project-specific discount rate. Graham et al. (2017), *supra* note 20 find that managers with a degree in accounting are significantly more likely to focus on the marginal tax rate (by 7 percentage points) and significantly less likely to focus on the book tax rate (by 14 percentage points). *Id.* at 3, tbl. 5 Panel C. In addition, researchers have extensively debated how to estimate the marginal rate of firms and different estimation methodologies have produced quite different results. See, e.g., Graham et al. (2017), *supra* note 20 at tbl.1 (mean marginal tax rate estimate ranges from 21% to 34%); Jennifer Blouin et al., [Have the](#)

long as these behavioral tendencies are fixed. But these explanations do have different policy implications if these biases and heuristics can be reduced or eliminated, as discussed in Part V.

### III. A Framework for Optimal Cost Recovery Tax Rules Incorporating Behavioral Considerations

The question posed by this paper is whether firms undervalue the ability to defer tax payments due to a fixation on the book or statutory tax rate and, if so, what this implies about business tax reform, assuming that the goal is to increase US investment. The previous section has hopefully established the answer to the first question: firms do not look purely at their marginal tax rate when incorporating taxes into their investment decisions.

This Part lays out the theoretical implications of firms not focusing exclusively on the marginal tax rate for three significant choices in business tax reform: the statutory rate, the generosity of cost recovery provisions, and the generosity of any investment tax credit. While each choice is continuous, they are grouped into three stylized policy options.<sup>87</sup>

- (1) Expensing paid for with a higher statutory rate (*a business cash-flow tax*),
- (2) Cutting the statutory rate paid for with a shift to economic cost recovery (*a pure business income tax*), and
- (3) An investment tax credit paid for with economic cost recovery (*a business income tax with an ITC*).

For ease of exposition, this Part makes several simplifying assumptions. First, it ignores other tax expenditures. Second, it focuses on revenue-neutral options, though it applies equally if the policy alternatives instead raised or lost revenue by assuming a correspondingly higher or lower initial statutory rate. Third, it only applies to businesses subject to the corporate income tax (“C corporations”). It could be extended to passthrough businesses by assuming any revenue raised from economic cost recovery attributable to them is used to lower their rates or pay for an ITC for passthroughs, but this would create a number of compliance challenges discussed in Part V. Fourth, it

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[Tax Benefits of Debt Been Overestimated?](#), 98 J. FIN. ECON. 195 (2010). While outside researchers do not have access to all the private firm information that managers do, these different results illustrate the conceptual difficulties in estimating marginal tax rates.

<sup>87</sup> Another policy option this paper does not consider is an allowance for corporate equity (ACE), which has similar incentive effects as a business cash-flow tax. While an ACE has some strong supporters in academic circles and has been enacted in some countries, it has never been proposed by a major US lawmaker. See, e.g., Stephen R. Bond & Michael P. Devereux, *On the Design of a Neutral Business Tax Under Uncertainty*, 58 J. PUB. ECON. 57 (1995); Hayley Reynolds & Thomas Neubig, [Distinguishing Between “Normal” and “Excess” Returns for Tax Policy](#) 11-13, 17-21 (OECD Taxation Working Papers No. 28, 2016). An ACE in the US might be treated as a permanent tax benefit and therefore more favorably than expensing. However, compared to expensing, it would be more difficult to ensure that an ACE only taxes rents because doing so requires policymakers to know what each firm’s “normal” (marginal) rate of return is and apply difference allowances on this basis. See Reynolds & Neubig, *supra* at 13-15, 23-27.

only considers equity-financed investment. The analysis could be extended to debt-financed investment in two ways. One is to assume that all three stylized policy options eliminate the debt bias by disallowing or curtailing interest deductions for C corporations and making corresponding changes to the taxation of corporate profits at the individual level. Holding revenue constant, this would permit lower statutory tax rates under all three approaches. The other way (and the approach taken in Part IV and the Appendix due to data limitations) is to assume no change in interest deductibility and account for the fact that debt-financed investment would therefore continue to be subject to lower book tax rates and marginal tax rates than equity-financed investment.<sup>88</sup> Finally, the analysis here assumes that business tax reform is not accompanied by changes in the accounting rules or the tax metrics upon which firms rely. This assumption is relaxed and the policy implications explored at the end of this Part and in Part V.

This Part begins by considering the extreme examples of firms relying strictly on the marginal tax rate or completely disregarding it. It then turns to the more realistic scenario of heterogeneity within and across firms.

### **A. Pure Reliance on the Marginal Tax Rate**

If firms focus solely on their marginal tax rate and the goal is to maximize US investment subject to a budget constraint, a business cash-flow tax generally dominates. As explained in Section II.B and summarized in Table 3, this approach reduces the marginal tax rate on normal returns to new investments to zero. In contrast, a pure business income tax would counterproductively raise the rate on normal returns to new US investment, while cutting the rate on rents and on existing investments.

**Table 3: Effect on Marginal Tax Rate of Different Reform Options**

Type of Investment and Return	Business Cash-Flow Tax	Pure Business Income Tax	Business Income Tax with ITC
“Normal” returns on new investments	Lower to zero	Raise	No change
Rents on new investments	Raise	Lower	No change
Returns on existing investments	Raise	Lower	No change

A business income tax with an ITC would be the second best approach. If all the revenue raised from economic cost recovery were used to finance the ITC, the marginal tax rate on new investment remain the same as current law, rather than rising as under a pure business income tax.

One caveat to this analysis is that an ITC would create distortions among investments if past experience is any guide. As a result, it may have less positive effects on investment than one would otherwise expect. Both expensing and a pure business income tax largely eliminate distortions to inter-asset

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<sup>88</sup> Marginal book tax rates on debt-financed investment are lower because interest deductions are a permanent tax benefit. Under this approach to incorporating debt-financed investment into the analysis, the first option is not really a business consumption tax because the tax rate on debt-financed investment is negative, partially or fully offsetting any positive tax on business consumption (i.e., business profits that are not reinvested).

investment decisions. While there are exceptions and challenges to achieving this goal in both models,<sup>89</sup> these challenges are even larger for an ITC because it reduces tax liability rather than taxable income.<sup>90</sup> Specifically, in order to apply the same marginal tax rate to all investments, an ITC would need to be refundable and to make up for all differences in the pre-ITC marginal tax rate on investments within and across firms. These rates can vary because of differences in the statutory rate (e.g., due to a progressive rate schedule) or other tax provisions (e.g., foreign tax credits).<sup>91</sup> There are also important collateral state and local tax consequences.<sup>92</sup>

A second caveat is rents from new investments. As explained in Section II.B, a business cash-flow tax would apply a higher rate to such rents than current law, while a pure business income tax would reduce the rate on such rents, taxing them at the same rate as normal returns. In theory, rents should only arise on projects that are inframarginal because firms will invest first in projects producing supra-normal returns. If so, this higher taxation of rents under a business cash-flow tax should have no effect on aggregate US investment. But to the extent that some marginal investments do produce rents, for example because they are lumpy, then the case for a business cash-flow tax is correspondingly weakened.<sup>93</sup>

### **B. Zero Reliance on the Marginal Tax Rate**

At the other extreme, if firms completely disregard their marginal tax rate, the cost recovery rules should be slowed down significantly. In fact, if firms only consider their book or statutory tax rate, theoretically economic cost recovery is too generous. Instead, firms should only be allowed to deduct the cost of investments when they are sold. This is because both the book and statutory tax rate entirely disregard the time value of money.

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<sup>89</sup> Expensing generally reduces the marginal tax rate to zero for all new investments. However, this assumes no rents, constant tax rates over time, full loss offsets, and repeal of interest deductions and all investment-related tax expenditures. See *supra* Part II.B and *infra* Part III.D. Similarly, a pure business income tax generally applies the same marginal rate to all new investments; it is just positive rather than zero. This is true even if there are rents, but requires eliminating tax expenditures and the bias in favor of debt-financed investment. An additional challenge with economic cost recovery is that it is impossible to implement in a way that is perfectly accurate because doing so would require valuing every business asset every year. But it is possible to move much closer to economic cost recovery. See, e.g., *infra* notes 196–203 & accompanying text.

<sup>90</sup> For further discussion of the challenges of constructing an ITC that is neutral among different types of investments, see Alan J. Auerbach & Lawrence H. Summers, [The Investment Tax Credit: An Evaluation](#) (Nat'l Bureau of Econ. Research, Working Paper No. 404, 1979); Jane G. Gravelle, [Using Business Tax Cuts to Stimulate the Economy](#) 9–10 (Congressional Research Service, Jan. 18, 2013).

<sup>91</sup> Like the other models, these rates can also differ because of tax expenditures or the bias in favor of debt-financing.

<sup>92</sup> States and localities tend to mirror the federal definition of taxable income and therefore are likely to adopt expensing or economic cost recovery if the federal income tax does. Ruth Mason, [Delegating Up: State Conformity with the Federal Tax Base](#), 62 DUKE L.J. 1267, 1269 (2013). They are less likely to mirror federal tax credits, though some do. *Id.* at 1316. In order to equalize the marginal tax rate on new investments across jurisdictions, state and local governments would, like the federal government, need to enact an ITC that makes up for all differences in the pre-ITC marginal tax rate within and across firms that are attributable to their tax systems.

<sup>93</sup> For an example, see *infra* note 37.

To understand the intuition, suppose policymakers could reduce a firm's book tax expense on a new investment by \$1 at the cost of the firm actually paying \$2 more in taxes. If the firm cares only about its book tax rate, it will respond by investing more. This is essentially what happens under a pure business income tax compared to current law. The actual marginal tax rate on new investment is higher because the business cannot deduct the cost as quickly. But its book tax expense—and therefore its *relevant* tax rate for making investment decisions in this hypothetical—is lower because the book tax rate is a function of the new, lower statutory tax rate and disregards the time value of money. What's more, if policymakers could increase these numbers (say to \$2 and \$4, respectively) by slowing down cost recovery even further, they should do so because the firm will respond even more positively. The same is true if the firm cares only about its statutory rate.<sup>94</sup>

Conversely, a business cash-flow tax raises the relevant marginal tax rate on new investment if firms focus solely on their book or statutory rate. The actual marginal tax rate is zero because allowing a business to deduct the investment cost upfront is generally equivalent to exempting the yield on the investment. But these accelerated deductions have no value to firms from a book tax perspective, while the higher statutory rate that pays for expensing is treated as a tax increase. As a result, firms should respond by investing less.

The relative benefits of a pure business income tax versus a business income tax with an ITC depend on the degree to which firms focus on their book versus statutory tax rate. If they focus solely on their statutory tax rate, a pure business income tax will increase investment, while one with an ITC will have no effect (assuming all the revenue raised from economic cost recovery is devoted to the ITC). But if they focus solely on their book tax rate, a business income tax with an ITC should be more effective to the extent that businesses consider marginal book tax effects and not just their overall book tax rate.<sup>95</sup> The reason is that, holding revenue constant, an ITC devotes all the revenue raised from economic cost recovery to reducing the marginal book tax rate on new investment, while a pure business income tax applies some to reducing the rate on existing investments as well.<sup>96</sup>

These propositions about how business investment will respond to the three policy alternatives if firms focus exclusively on one tax metric are summarized in Table 4.

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<sup>94</sup> In this case, a pure business income tax results in a lower relevant tax rate than current law because it cuts the statutory rate while paying for it with a change with no perceived cost. And lowering the statutory rate even further through slower cost recovery should result in the firm increasing their investment even more.

<sup>95</sup> By overall book tax rate I mean the firm's prior-year total book tax expense, divided by its total pre-tax book earnings. By marginal book tax rate, I mean the firm's current-year expected book tax expense attributable to the investment in question, divided by its expected pre-tax book earnings from the investment.

<sup>96</sup> In a dynamic setting, firms should also respond more positively to a business income tax with an ITC if they focus on their overall book tax rate. The reason is that, over time, firms that invest more will have a lower overall book tax rate.

**Table 4: Effect on Investment vs. Current Law if Focus Solely on One Tax Metric**

Tax Metric	Business Cash-Flow Tax	Pure Business Income Tax	Business Income Tax with ITC
<b>Marginal Tax Rate</b>	Increase	Decrease	No change
<b>Statutory Tax Rate</b>	Decrease	Increase	No change
<b>Book Tax Rate</b>	Decrease	Increase	Increase*

\* Increase larger than under pure business income tax if managers focus on marginal book tax rate.

### C. *Heterogeneous Reliance on Tax Metrics*

In the real world, it is clear that firms focus on different tax metrics. In addition, individual firms probably do not focus exclusively on the tax metric that predominates in their decision making processes. For example, a firm that focuses on its book tax rate when making investment decisions may nevertheless consider the impact on its cash tax liability to some extent. Thus, a more realistic assumption is that there is heterogeneity across firms and mixed motives within firms.

This assumption of heterogeneity has one narrow implication: the theoretical approach of only allowing businesses focused on their book or statutory rate to deduct the cost of investments when they are sold (in order to finance an even lower statutory rate or larger ITC) will not work in practice. Under such a reform, most assets would quickly have large built-in losses because they are declining in value but firms could not claim depreciation or amortization deductions. If such firms value reducing their actual cash tax liability at all, they will simply sell such assets in order to realize the loss, and then buy them back if necessary.<sup>97</sup>

This heterogeneity assumption also has a more general implication: the optimal approach is to minimize the *relevant* tax rate on new investment, which in turn depends on (1) firms' capital-weighted mix of tax metrics, and (2) the revenue-equivalent rates and credits under different policy alternatives. The capital-weighted mix matters because the goal posited here is to maximize the aggregate amount of investment, not the percentage of individual firms increasing investment. It is tempting to assume that whichever capital-weighted metric predominates should, in and of itself, determine the optimal policy approach.<sup>98</sup> But understanding the revenue-equivalent rates and credits is also key to determining the relevant tax rate under different policy approaches, and therefore which approach will generate the largest increase in US investment.

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<sup>97</sup> There are anti-abuse rules (e.g., the wash sale rules) designed to address such transactions, but firms can and would find ways around them if the incentive to realize losses was large enough.

<sup>98</sup> As noted *supra* note 11, this paper assumes the sole goal of business tax reform is to increase US investment subject to a budget constraint, and uses the term optimal in that sense. Many may rightly take issue with this objective function. Defining the objective in this way implies that minimizing the relevant tax rate on investment is optimal because one is only concerned with minimizing excess burden attributable to firms substituting away from investment and not with income effects causing them to misallocate their budget. *Cf.*, Goldin, *supra* note 12, at 115; Gamage and Shanske, *supra* note 12, at 60–79.

More formally, the optimal approach is the one that minimizes the relevant tax rate on new investment, calculated as follows:

1.  $RTR_{EX} = (W_{STR} + W_{BTR}) * STR_{EX}$
2.  $RTR_{ECR} = STR_{ECR}$
3.  $RTR_{ITC} = W_{STR} * STR + (W_{MTR} + W_{BTR}) * (STR - ITC)$

RTR is the relevant tax rate and W is the weighting placed on each tax metric in investment decisions. EX refers to expensing with a higher statutory rate (a business cash-flow tax), ECR to economic cost recovery with a lower statutory rate (a pure business income tax), and ITC to economic cost recovery with an investment tax credit with the ITC expressed as a reduction in the statutory tax rate.<sup>99</sup> STR refers to the statutory tax rate, BTR to the book tax rate, and MTR to the marginal tax rate. Thus, for example,  $RTR_{EX}$  is the relevant tax rate under a business cash-flow tax, and  $W_{STR}$  is the capital-weighted emphasis that firms place on the statutory tax rate.

To illustrate how this plays out in practice, suppose that policymakers are initially choosing between a pure business income tax and a business cash-flow tax. The current statutory tax rate is 35%, and the revenue-neutral statutory rate is 30% under economic cost recovery and 40% under expensing. When making investment decisions, firms rely 40% on their statutory tax rate, 40% on their book tax rate, and 20% on their marginal tax rate on a capital-weighted basis.

In this scenario, the capital-weighted relevant tax rate under a pure business income tax is simply the statutory rate of 30%. This is true regardless of the mix of tax metrics. Obviously the relevant tax rate is 30% if firms focus on their statutory rate. But both the book and marginal tax rate are also equal to the statutory tax rate if there is no ITC and, in the case of the marginal tax rate, no accelerated cost recovery.

On the other hand, the capital-weighted relevant tax rate under a business cash-flow tax is 32%. To the extent that firms focus on the marginal tax rate, their relevant tax rate is zero, assuming normal returns. But 80% of their focus is on the book and statutory tax rate, both of which are treated as the statutory rate of 40% because expensing generates no benefit under these metrics.

Now suppose policymakers want to consider a third option of a business income tax with an ITC. Let's say that economic cost recovery could pay for an ITC equal to 10% of the cost of the investment, holding the statutory rate constant. This ITC is equivalent to a 10 percentage point reduction in the tax rate on income generated from the investment (from the current 35% to 25%), again assuming normal returns.

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<sup>99</sup> In practice, it would be very difficult to construct an ITC that is equivalent to a statutory rate cut because it would need to depend on the expected return on the investment.

Under the ITC option, the capital-weighted relevant tax rate is then 29%. It is 35% to the extent firms focus on the statutory tax rate. But it is 25% to the extent that they focus on their book tax rate or marginal tax rate. This is different from expensing because tax credits reduce book tax liability, while accelerated cost recovery does not.

In this example, policymakers should therefore adopt a business income tax with an ITC. Interestingly, this is the case even though it improves incentives for a smaller percentage of investment than a pure business income tax. The ITC only improves incentives for the 60% of investment that is influenced by firms' book or marginal tax rates; a pure business income tax improves incentives for the 80% of investment that is shaped by their book or statutory rate. But the pure business income tax worsens incentives (compared to current law) for investment influenced by the marginal tax rate. Moreover, the ITC improves incentives by a larger amount when it has any effect, because all of the revenue raised from economic cost recovery is devoted to reducing the tax rate on new rather than old investment.

#### ***D. Discussion***

As noted above, this framework assumes that business tax reform is not accompanied by changes in accounting rules or the tax metrics upon which firms rely. This assumption might not hold, though, in several circumstances. For example, the Financial Accounting Standard Board (FASB), which sets the U.S. financial accounting standards, could determine that the federal income tax should be treated as a VAT or sales tax if Congress enacted expensing for all businesses. For VATs, the financial accounting rules effectively assume the time value of money is infinite, rather than zero, when calculating a firm's book deferred tax expense.<sup>100</sup> In this scenario, expensing would therefore generate a much larger book tax benefit than its actual economic value. Firms focused on their book tax rate should in turn respond to expensing by increasing investment, strengthening the case for a business cash-flow tax. FASB might be more inclined to consider such a reclassification if business tax reform included other consumption tax features that the House Republican plan and others have proposed, like shifting the international business tax system to one based on the place of sale.<sup>101</sup>

But even under this type of business tax reform, called a destination-based cash-flow tax, FASB seems unlikely to change their treatment of our tax system. The federal income tax as a whole would still remain an income tax in important ways—most notably by taxing wages, which account for about two-thirds of the base of VATs, at the individual level.<sup>102</sup> Moreover, the fact that Congressional supporters of a destination-based cash-flow tax have taken pains to emphasize that their proposal is not a VAT probably further depresses the chances of FASB determining that it should be treated as one nonetheless.<sup>103</sup>

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<sup>100</sup> Financial Accounting Standards Board, ASC 740-10-05-07.

<sup>101</sup> See A BETTER WAY, *supra* note 5 at 28-29; Alan J. Auerbach, [A Modern Corporate Tax](#), CENTER FOR AMERICAN PROGRESS and THE HAMILTON PROJECT (2010).

<sup>102</sup> Reuven S. Avi-Yonah & Kimberly Clausing, [Problems with Destination-Based Corporate Taxes and the Ryan Blueprint](#) 7 (Univ. of Michigan Law & Econ. Research Paper Series No. 16-029, Dec. 2016).

<sup>103</sup> See A BETTER WAY, *supra* note 5 at 15.

The assumption that business tax reform is not accompanied by changes in the tax metrics upon which firms rely also might not hold if firms are more likely to focus on their marginal tax rate as the gap widens between that tax metric and their book or statutory tax rate. Graham et al (2017) find mixed evidence for this hypothesis. In their survey, there is a weakly significant relationship between relying on the marginal tax rate and the gap between it and the statutory tax rate, while there is no significant relationship with respect to the book tax rate gap.<sup>104</sup> Theoretically, this hypothesis may or may not hold depending on why firm managers focus on non-economic tax metrics. If they do so as an efficient heuristic—in order to reduce decision making costs when the tax difference is minimal—a larger gap between the tax metrics should result in firms focusing more on the marginal tax rate. The same is true if investors and analysts use non-economic tax metrics as an efficient heuristic and firms managers respond to their actions. On the other hand, if managers, investors and analysts focus on non-economic tax metrics because of greater salience, cognitive limits, limited information (e.g., because tax returns are not public), agency costs (e.g., compensation based on after-tax book earnings), or other corporate governance failures (e.g., tax experts are only brought in after investment decisions are made), then a larger gap may have no effect. Nevertheless, to the extent that a large gap does result in more reliance on the marginal tax rate, this would require a more nuanced framework and strengthen the case for a business cash-flow tax.

This framework further assumes that the responsiveness of firm investment to changes in the tax rate is independent of the tax metric(s) upon which firms rely. But if, for example, firms focused primarily on the marginal tax rate are more responsive to tax changes in general, this would also strengthen the case for a business cash-flow tax.

Cutting the other way, this framework assumes all marginal investments produce no rents. To the extent that they do, the marginal tax rate on marginal new investment is higher under a business cash-flow tax and lower under a pure business income tax, thereby weakening the case for a business cash-flow tax.<sup>105</sup>

The framework also assumes that a business cash-flow tax is structured in a way that fully exempts “normal” returns. This requires allowing businesses to claim full and immediate tax refunds for losses, which no prominent proposals for expensing permit. Absent full loss offsets, a business cash-flow tax will tax “normal” returns quite heavily in some cases.<sup>106</sup> One alternative is to allow businesses to carryforward losses with interest as under the House Republican plan.<sup>107</sup> But in order to exempt “normal” returns, the interest rate must then equal the “normal” rate of return, which is specific to each firm and therefore unknowable.<sup>108</sup> As a result, the House Republican plan will tax some “normal” returns and exempt some rents. To the extent that a business cash-flow tax does tax “normal” returns, the marginal tax rate on marginal new investment is higher and the case for a business cash-flow tax is weakened.

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<sup>104</sup> Graham et al. (2017), *supra* note 20, at tbl.4, panel B.

<sup>105</sup> *Cf.* Devereux & Griffiths, *supra* note 55.

<sup>106</sup> See Tom Neubig, *Expensed Intangibles Have a Zero Effective Tax Rate...NOT!*, TAX NOTES, 959, 960 (Sept. 10, 2007).

<sup>107</sup> A BETTER WAY, *supra* note 5, at 26.

<sup>108</sup> Reynolds & Neubig, *supra* 87 at 12-13.

A further question is whether dynamic responses could change the framework presented here. For example, it is possible that firms focused on the marginal tax rate would have higher earnings over time. Such firms should respond more to expensing and therefore invest in positive net-present-value projects where other firms do not. This could in turn eventually result in these firms thriving, while firm focused on non-economic tax metrics grow more slowly or fail. Even managers focused on book earnings might learn to focus on the marginal tax rate by observing the success of their competitors who do so. Firms focused on their marginal tax rate should have higher pre-tax book earnings over time (though with a permanent and potentially large lag), which should convert into higher after-tax book earnings, even if book earnings still disregards the value of expensing itself.

But if these hypothesis were true, we should already see managers of larger or more successful firms focusing more on their marginal tax rate, given that a large share of investment that can already be expensed. Thus far, there is no evidence that this is the case.<sup>109</sup> Part of reason may be that this dynamic response would take time and many managers do not stay in their positions long enough to reap the benefits. But it may also be because firms avoid real economic costs from focusing on other tax metrics. For example, debt covenants and regulatory capital requirements are often based on measures of after-tax earnings that ignore the benefits of accelerated cost recovery.<sup>110</sup>

#### **IV. Parameterizing the Framework**

In order to give a sense of the real world implications of this framework, this Part applies parameters to it based on the best evidence available to date, including previously non-public estimates of the revenue effects of economic cost recovery. It tentatively concludes that applying a pure business income tax to public companies would generate the largest positive effect on US investment—reducing their relevant tax rate on new investment by at least 2 percentage points, estimated conservatively and holding revenue constant. The results are similar for very large private companies. There is not sufficient data to parameterize the framework for smaller private companies, even roughly. Further details on how I constructed these estimates are in the Appendix.

Because the empirical evidence is still nascent, this analysis should be interpreted as providing plausible support for applying a pure business income tax to public and very large businesses as the best way to increase US investment, rather than a precise estimate of the benefits.

##### **A. Public Firms**

Starting with public companies, the existing empirical evidence suggests they focus roughly 44% on their statutory tax rate, 43% on their book tax rate, and 13% on their marginal tax rate, weighted by firm size, when making investment decisions.<sup>111</sup> These estimates are drawn from Graham et al (2017), which is

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<sup>109</sup> See, e.g., Graham et al. (2017), *supra* note 20, tbl. OA2 (finding that 11% firms below the median in their sample primarily focus on their marginal tax rate, while only 13% of firms above the median do, and that the difference is statistically insignificant). See also discussion in Part V.A.1.

<sup>110</sup> See, e.g., Dyreng, *supra* note 57 at 4-5; Scholes et al., *supra* note 59.

<sup>111</sup> See Graham et al. (2017), *supra* note 20, at tbl. OA2.

currently the only work that estimates the extent to which managers rely on the three different tax metrics that are the focus of this paper.<sup>112</sup> These estimates are subject to the usual caveats about survey data. However, their sample is statistically representative of public firms and there is little reason why respondents would misrepresent their decision making processes.<sup>113</sup> If anything, their estimates probably represent an upper bound on the extent to which managers focus on the marginal tax rate because of framing effects.<sup>114</sup>

For revenue effects, I rely on a combination of JCT estimates of economic cost recovery and expensing (again, for further details see the Appendix). JCT's estimates account for micro-dynamic responses (e.g., changes in the mix of investment) but hold constant aggregate US investment and GDP. As summarized in Table 5, economic cost recovery would raise about \$990 billion over the first 10 years, and about \$615 billion over 10 years from C corporations in steady state. (The revenue raised is front-loaded because businesses have to deduct a smaller portion of the cost of new investments within the 10-year budget window, but initially there would be no corresponding increase in deductions for old investments.) Assuming no other policy changes, this revenue raised from C corporations in steady state could finance a corporate rate reduction from 35% to 31%. In contrast, full expensing would cost about \$835 billion over the first 10 years, of which about \$520 billion represents revenue from C corporations in a steady state.<sup>115</sup> Assuming no other policy changes, paying for the C corporation portion of this steady state cost would require raising the corporate tax rate by about 3.5 percentage points, from 35% to 38.5%.

To the best of my knowledge, these are the first estimates of what JCT is likely to determine is the steady-state, revenue-neutral corporate tax rate under economic cost recovery and expensing.<sup>116</sup> While

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<sup>112</sup> As summarized in Section II.D, some other work does estimate the relative influence of two metrics (e.g., the statutory versus book tax rate) on the decisions of firm stakeholders.

<sup>113</sup> Graham et al. (2017), *supra* note 20, at 10-11. The precise question Graham et al. posed to tax executives was "What is the primary tax rate your company uses to incorporate taxes into each of the following forecasts or decision making processes?" *Id.* at 11. These figures are for the investment decision context. As discussed in Part III.C, managers may consider multiple tax metrics when making decisions, but their survey does not ask executives whether they consider multiple metrics and, if so, how much they rely on each. This analysis therefore assumes that respondents' answers, weighted by firm size, are representative of how much all public firms weight the different tax metrics in investment decisions, including when they incorporate multiple metrics into their decisions. While not ideal, this is the best evidence available to date and it is unclear in which direction more granular data would push.

<sup>114</sup> The survey defined marginal tax rate as "an estimation of the change in the present value of taxes from earning a marginal dollar of income, where the present value computation takes into account net operating loss carrybacks and carryforwards." The survey did not define the other tax metrics. The authors acknowledge that this probably biases the responses somewhat by heightening awareness of the marginal tax rate metric and therefore argue that the results for marginal tax rates likely represent an upper bound. Graham et al. (2017), *supra* note 20, at 12.

<sup>115</sup> At the time of these estimates, bonus depreciation expired at the end of 2013 so they assume bonus depreciation is not in place. Under current law, bonus depreciation phases down and then expires at the end of 2019. *See supra* note 75. This implies that expensing would lose less revenue over 10 years if enacted today, and economic cost recovery would raise more.

<sup>116</sup> The Tax Policy Center and the Tax Foundation have estimated the cost of expensing, but not the revenue-neutral corporate tax rate either within the budget window or in steady state. These estimates have also generally been within the context of much broader tax reform proposals that may interact with the estimate for expensing,

some may quibble with JCT’s methodology, their estimates are what matters when comparing policy alternatives in the sense that if policymakers agree that business tax reform should be revenue-neutral (or raise or lose \$X), they are the non-partisan scorekeeper who will determine whether that agreement is met.

**Table 5: Revenue Effects of Economic Cost Recovery vs. Expensing (Billions \$)**

	All, 2014-2023	C Corps Only, Steady State	Revenue-Neutral Corporate Rate
<b>Economic Cost Recovery</b>	\$988	\$615	30.9%
<b>Full Expensing</b>	(\$835)	(\$520)	38.5%

\* Assumes rate dialed to maintain steady state revenues raised from C corps.

These estimates set aside the question of how to treat passthrough businesses by only using the revenue raised (or lost) from C corporations to lower (or raise) the corporate rate. As a result, they do not assume any transfer to or from the passthrough sector, though this is less of an issue with public firms because virtually all of them are C corporations.

Applying these parameters to the framework laid out in Part III (and adopting the same assumptions, such as revenue-neutrality and no other tax expenditures), the size-weighted relevant tax rate on new investment is 31% under a pure business income tax and 34% under a business cash-flow tax. This initial estimate, however, is both an underestimate and an overestimate of the relevant tax rate differential. On the one hand, it disregards the substantial amount of one-time revenue that would be raised under economic cost recovery (about \$235 billion) and lost under expensing (about \$195 billion). If one accounted for the present value of this one-time revenue, the rate differential would be larger. On the other hand, because it assumes no change to the deductibility of interest, the marginal tax rate on debt-financed investment is highly negative under expensing, rather than zero. And it is zero under a pure business income tax, rather than the statutory tax rate.<sup>117</sup> In addition, the book tax rate would be lower under both alternatives because interest deductions are treated as a “permanent” tax benefit and therefore reduce book tax expense.

After correcting for these issues, under my preferred approach, the relevant tax rate on new investment is roughly 27.3% under economic cost recovery and 29.6% under expensing, as summarized in Table 6.<sup>118</sup>

biasing it upward or downward. See, e.g., Len Burman et al., [An Analysis of Governor Bush’s Tax Plan](#), TAX POL’Y CTR. (Dec. 8, 2015).

<sup>117</sup> Again, this analysis ignores other tax expenditures, which can drive the marginal tax rate even lower.

<sup>118</sup> As explained in the Appendix, I correct for the debt issue by assuming that the marginal tax rate under a business cash-flow tax is 0% for equity financed investment and -38.8% for debt-financed investment. As a result, I am analyzing a proposal that is actually much more generous than a business cash-flow tax.

The cleaner way to address the debt issue would be to assume, as many have proposed, that the reforms analyzed here were coupled with repeal or limits on interest deductibility and corresponding changes to investor-level taxes that eliminate the bias in favor of debt-financing under a pure business income tax and a business cash-

**Table 6: Estimates of Relevant Tax Rate for Public Corporations**

	Economic Cost Recovery	Expensing
<i>Initial Estimate</i>		
Statutory Tax Rate	30.9%	38.5%
MTR on Equity-Financed Investment	30.9%	0%
Relevant Tax Rate	30.9%	33.5%
<i>Adjusting for One-Time Revenue and Interest Deductibility</i>		
Statutory Tax Rate	30.5%	38.8%
MTR on All Investment	19.8%	-13.6%
BTR on All Investment	26.6%	33.1%
<b>Relevant Tax Rate</b>	<b>27.3%</b>	<b>29.6%</b>

This differential is still conservative. For example, it does not account for the cost of permitting expensing for land or all intangible assets (as opposed to just some intangible assets). It also underestimates the cost of expensing by very conservatively assuming that the cost of allowing businesses to expense \$1 of investment is the same for assets that are eligible for bonus depreciation and those that are not. In fact, the cost of expensing for non-bonus-eligible assets should be substantially higher because they are longer lived. Further, it does not incorporate more recent JCT estimates finding a much lower cost of lowering the corporate rate because these estimates may interact with the cost recovery proposals. In alternative calculations in the Appendix that address these latter two issues, the relevant tax rate differential would more than triple to over 8 percentage points.

The third policy option is a business income tax with an ITC. Unfortunately, there are no recent estimates of the cost of an ITC so it is not possible to parameterize the framework for one. However, my preliminary sense is that a lower statutory rate may be more effective than an ITC, notwithstanding the fact that the latter is better targeted on new investment.

Both lower the book tax rate, so the first question is how much more firms focus on their statutory tax rate (which only a pure business income tax would lower) versus their marginal tax rate (which only an ITC would lower). Graham et al (2017) find that a plurality of public firms (and of large firms) use the statutory tax rate as the primary tax metric for their investment decisions, while only a small minority rely on their marginal tax rate.<sup>119</sup> Powers, Seidman and Stomberg (2015) use movements in stock prices after tax surprises to identify the tax metric used by investors, and find that investors are more likely to

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flow tax. For example, President Obama proposed a haircut to interest deductions in conjunction with moving closer to economic cost recovery. PRESIDENT'S FRAMEWORK 2016, *supra* note 4, at 18. House Republican leadership has proposed eliminating interest deductions and reducing individual tax rates on interest income in conjunction with expensing. A BETTER WAY, *supra* note 5, at 18, 26. Unfortunately, there are no public revenue estimates that allow this comparison. But, as explained in the Appendix, the differential between the revenue-neutral statutory rates under this approach should be roughly the same as the estimates here.

<sup>119</sup> Graham et al. (2017), *supra* note 20, at tbl. OA2.

use the statutory tax rate than the book tax rate when valuing stock.<sup>120</sup> Therefore, it seems reasonable to conclude that public firms focus somewhat more heavily on their statutory tax rate than their book tax rate, and much more heavily on both than on their marginal tax rate.

If this is the case, then a pure business income tax could have the strongest positive effect on US investment. Whether it does depends on a second currently unknown question: how costly an ITC is relative to a statutory rate cut. Regardless of the answers to these questions, it is likely that a business income tax with an ITC would induce more US investment than a business cash-flow tax, consistent with the findings in Edgerton (2012).<sup>121</sup>

### **B. Very Large Firms**

Turning to very large firms, the estimates are identical. Graham et al (2017) also include some very large private firms in their survey, and find they are more likely to rely on their statutory tax rate and less likely to rely on their book tax when making investment decisions compared to public firms.<sup>122</sup> This is unsurprising because only public firms are required to publicly release financial statements, though many private firms prepare them for lenders and internal purposes.<sup>123</sup> Specifically, when large private firms are included, Graham et al find that 45% of large firms focus on their statutory tax rate, 42% on their book tax rate, and 13% on their marginal tax rate, weighted by firm size.<sup>124</sup> Applying these slightly different parameters, the size-weighted relevant tax rates on new investment remain the same under my preferred specification.

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In sum, applying the best evidence available to date to the framework offered here suggests that a pure business income tax is likely to have the largest positive effect on US investment for public and very large companies. Compared to a business cash-flow tax and based on conservative assumptions, it is equivalent to reducing the relevant tax rate on new investment by more than 2 percentage points, and possibly much more.

These rough estimates are highly sensitive to the underlying empirical parameters so should be treated with caution.<sup>125</sup> Indeed, the signs could change as the empirical evidence continues to evolve. But—with

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<sup>120</sup> See Powers et al., *supra* note 68.

<sup>121</sup> Edgerton, *supra* note 20.

<sup>122</sup> Graham et al. (2017), *supra* note 20, at tbl.OA2.

<sup>123</sup> Technically some private firms have to release financial statements but it is rare. See *supra* note 47.

<sup>124</sup> See Graham et al. (2017), *supra* note 20, at tbl.OA2. The firms in their sample have an average of \$7.8 billion in assets. Among 80% of firms in their sample that are public, the average is \$9.2 billion; among private firms it is \$2.5 billion. *Id.* at 9.

<sup>125</sup> As the empirical evidence evolves, the important issue will be whether the magnitude of the empirical parameters changes. Policymakers should be less concerned with the level of statistical significance of the parameter estimates. Statistical significance is important when assessing the desirability of policies where incorrectly preserving with the status quo has less downside cost than incorrectly enacting a change. But in tax, the deadweight loss of deviating from the optimal policy rises with the square of the deviation in either direction. In the face of uncertainty, policymakers should craft tax policy based on the best average empirical estimates

respect to public and very large companies—they do cast doubt on the conventional view that a business cash-flow tax would generate much more US investment than the alternatives.

## V. Policy Implications

The findings above suggest that economic cost recovery coupled with a lower statutory rate would induce a larger increase in US investment among public and very large companies than either expensing or an investment tax credit on a revenue-equivalent basis. This is important because such firms represent over half of US investment but JCT and others currently estimate that a revenue-neutral shift to expensing would increase US investment and economic growth.<sup>126</sup> It is difficult to understate how important these macroeconomic estimates are—especially from JCT—for determining the structure of and political prospects of any business tax reform package.

Nevertheless, there are at least three reasons to question whether applying a pure business income tax to very large and public companies is the best approach from a policy perspective. First, due to data limitations, the analysis thus far has not considered the optimal approach for firms that are smaller or taxed on a passthrough basis. If it differs, the costs of differential treatment could outweigh the benefits. Second, the analysis has assumed that the behavioral tendencies of firms are fixed. But if policy changes can increase the extent to which firms rely on their marginal tax rate in the first place, expensing financed by a higher statutory tax rate could become the best approach instead. Third, this paper is focused on which cost recovery rules are likely to increase US investment the most. But other potential rationales for expensing might outweigh this objective. This final Part offers some preliminary thoughts on each of these issues in turn.

It argues that policymakers should consider applying economic cost recovery to all businesses, including those taxed on a passthrough basis, and using the revenue raised to lower the corporate tax rate and increase its progressivity. To the extent that future research finds that smaller businesses do respond more to expensing, policymakers should consider expanding Section 179 expensing, rather than enacting expensing for firms that are private or below a size threshold. This Part also argues that policymakers should attempt to address the underlying drivers of many managers focusing on non-economic tax metrics by reforming the financial accounting rules and executive compensation incentives, and by requiring large firms to disclose some portions of their actual tax returns, but that such efforts are unfortunately unlikely to succeed in practice. Finally, it argues that the best alternative rationale for expensing (at least for those who want to maintain or increase business tax revenue) is the possibility that it will result in relatively more revenue over time as a matter of political economy if enacted on a bipartisan basis.

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available, rather than ignoring evidence with meaningful policy implications simply because it does not rise to a 95% significance level.

<sup>126</sup> See *supra* notes 15, 16, and 18.

## **A. Increasing US Investment if Reliance on Different Tax Metrics Is Fixed**

### *1. Smaller Firms*

Part IV parameterized this paper’s framework with data for public and very large companies. Unfortunately there is no equivalent evidence on the extent to which smaller firms rely on the three tax metrics considered in this paper. Graham et al (2017) include some private firms but they are hardly small, with average assets of \$2.4 billion.<sup>127</sup>

The most relevant paper with data on smaller firms is Zwick and Mahon (2016), which examines the effects of bonus depreciation on domestic investment using the most complete dataset yet, composed of non-public IRS data on 120,000 firms.<sup>128</sup> They find a dramatically higher response among companies below the top decile of annual sales (over \$234 million), which represent roughly 55% of US investment in their sample.<sup>129</sup> Interestingly, they find no investment response among firms of any size that are non-taxable in the current year, even though most non-taxable firms would benefit from claiming bonus depreciation on current year investment through loss carryforwards or carrybacks.<sup>130</sup> This suggests that the response is limited to firms that receive a cash benefit in the current year.

The policy implications of Zwick and Mahon’s findings depend on the reason why smaller firms that are currently taxable are more responsive. One possibility is that smaller firms focus more on their marginal tax rate than large firms. This might be because large firms are more likely to face discrete choices about what country in which to locate projects earning rents, in which case the marginal tax rate moves closer to the statutory rate.<sup>131</sup> Alternatively, it could be because smaller firms are more likely to have owner-managers whose interests are aligned with maximizing fundamental value, or because they are not as subject to investors’ and analysts’ fixation on book earnings.<sup>132</sup> If smaller firms do focus relatively more on their marginal tax rate, the relevant tax rate on new investment under a business cash-flow tax

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<sup>127</sup> Graham et al. (2017), *supra* note 20 at 9.

<sup>128</sup> Their sample includes about 1.8% of all C and S corporation returns. Zwick & Mahon, *supra* note 77, at 9.

<sup>129</sup> Zwick & Mahon, *supra* note 77, at 12, 28, 31. The 55% figure is my extrapolation from their data and assumes that no sole proprietorships or corporations claiming Section 179 are in the top 10%, while the same proportion of partnerships are in the top 10% as C and S corporations combined.

<sup>130</sup> *Id.* at 26.

<sup>131</sup> For example, large companies are probably more likely to face the choice of whether to locate investment exploiting a patent (which often generate rents) in one country versus another because they are more likely to have multinational operations. Devereux and Griffiths argue that the relevant tax metric for such decisions is a mix of the marginal tax rate on an investment earning a “normal” rate of return and the statutory tax rate, with the relative importance of the statutory tax rate increasing as the share of returns on the investment attributable to rents increases. Devereux & Griffiths, *supra* note 55, at 108. *See also* Neubig, *supra* note 19.

<sup>132</sup> *See, e.g.*, Amar Bhidé, [The Hidden Costs of Stock Market Liquidity](#), 34 J. FIN. ECON. 31 (1993); Asker, *supra* note 17, at 343. Over 80% of larger private firms are managed by their controlling shareholder. Asker, *supra* at 355.

should be lower for them than the rough estimates above, though it is unclear whether the difference would be large enough to reverse Part IV's conclusions.<sup>133</sup>

Another possibility is that smaller firms consider their marginal tax rate just as rarely as large firms. But unlike large firms, they are more likely to be cash constrained and face high external financing costs.<sup>134</sup> This second possibility is more consistent with Zwick and Mahon's finding that non-taxable firms of any size do not respond to bonus depreciation. If this is the underlying explanation, then smaller firms should respond more than large firms to any tax benefit that frees up cash, regardless of whether the benefit is contingent on new investment. Bonus depreciation and expensing have this effect. But so do ITCs and a lower statutory rate. For that matter, non-tax programs like expanding small business lending programs should also be considered.

Absent further evidence, there is little reason to believe that applying a pure business income tax to smaller firms would reduce US investment relative to the other policy alternatives. This assumes that any revenue raised from them through economic cost recovery is used to lower their statutory rate. In the case of C corporations, this would require increasing the progressivity of corporate tax rates in addition to cutting the top rate. However, as a practical matter, the question is largely moot. About 70% of businesses already qualify for expensing under Section 179.<sup>135</sup> It is highly unlikely that policymakers would repeal or significantly curtail this benefit.<sup>136</sup>

Nonetheless, it is worth considering how to reform the cost recovery rules if subsequent research reveals that Zwick and Mahon's findings are driven by smaller firms focusing more on their marginal tax rate—and to a degree that expensing is optimal for them.

In this scenario, there are at least three ways policymakers could draw the line between businesses subject to economic cost recovery versus expensing: by firm size, amount of capital expenditures or whether the firm is public or private. As Weisbach (2000) argues, the most efficient way to draw lines in the tax code is in a way in which close substitutes are taxed alike.<sup>137</sup> Doing so minimizes the efficiency losses associated with taxpayers adjusting their affairs to get on the preferred side of the line. This theory implies that distinguishing firms based on their level of capital expenditures would be more efficient than distinguishing them based whether they are public, while conditioning tax treatment on firm size would generate the most distortions.

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<sup>133</sup> For example, if these firms relied twice as heavily on the marginal tax rate as firms in the Graham et al. (2017) sample, their relevant tax rate would be lower under a business cash-flow tax than under a pure business income tax. But if they relied on it 50% more heavily, this would not be the case.

<sup>134</sup> See, e.g., Zwick & Mahon, *supra* note 77, at 32.

<sup>135</sup> In 2014, the percentage of firms claiming Section 179 divided by those claiming Section 179 or bonus depreciation was 71 percent. The comparable figure for firms eligible for each provision was 68 percent. See John Kitchen and Matthew Knittel, *Business Use of Section 179 Expensing and Bonus Depreciation, 2002-2014*, 21-25 (Dep't of the Treasury, Office of Tax Analysis Working Paper 110, Oct. 2016). These estimates are restricted to investments in property with a life of 20 years or less.

<sup>136</sup> While many of the firms that benefit from Section 179 are not small, it is viewed as a tax benefit for small businesses with all the political support that entails. It also meaningfully simplifies tax filing for many businesses that are actually small.

<sup>137</sup> David A. Weisbach, [Line Drawing Doctrine and Efficiency in the Tax Law](#), 84 CORNELL L. REV. 1627 (1999).

The benefit of distinguishing firms by their amount of capital expenditures is that only this measure can avoid creating a cliff effect, applying fundamentally different tax regimes to firms on each side of the line. Instead, policymakers could permit expensing for all capital expenditures up to some threshold, much like current Section 179, and economic cost recovery for all investment above. This reduces the incentive for companies to adjust their affairs to get into their preferred category.<sup>138</sup>

The benefit of distinguishing firms by whether they are public rather than by their overall size is that it is far less frequent and more complicated for firms to transition between public and private status than to cross a given size threshold. As a result, public and private firms are not close substitutes. Public firms certainly can go private, but doing so is a major business decision that entails losing valuable access to equity markets. In contrast, firms that are close to, for example, an income or assets threshold can fairly easily spin off units in order to get below the threshold. Firms are also more likely to naturally crisscross such a size threshold, creating administrative and compliance costs if this pushes them in and out of fundamentally different tax regimes.

However, applying different cost recovery rules to public and private companies would still create several distortions and new sources of complexity. It would create an incentive for firms that prefer the tax treatment of the other group to switch their status. For example, firms that focus relatively heavily on their marginal tax rate would prefer the expensing regime and might go private. This would deprive them of valuable access to capital markets and could make their business activities less transparent.<sup>139</sup> In addition, there is the question of how to handle private firms that pay the corporate income tax. Currently about 30% of corporate income tax revenue comes from private firms.<sup>140</sup> If private firms were eligible for expensing, they probably should not be able to claim any corporate income tax cut financed by economic cost recovery because they would not pay for its cost. Otherwise, there would be a large incentive for all firms to go private. But this would add further complexity to the Code.<sup>141</sup>

For all these reasons, expanding Section 179 appears to be the best approach if future evidence suggests that expensing is more effective at increasing US investment for small and medium-sized businesses than a statutory rate cut or an investment tax credit.

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<sup>138</sup> One downside to this approach is that it is not political realistic or administrable to eliminate interest deductions for debt used to finance investments that are expensed under Section 179. As a result, it produces a negative effective tax rate on such investments.

<sup>139</sup> Such firms may still have to publicly disclose their financial statements if they are large and widely held. See *supra* note 47.

<sup>140</sup> About 10% of C-corporations are public, but these public companies make up about 71% of corporate income tax revenue. Charles Boynton, Portia DeFilippes, and Ellen Legel, [A First Look at 2012 Schedule M-3 Reporting and Multinational Type](#), TAX NOTES 1507, tbls. 1B, 1C (Dec. 21, 2015).

<sup>141</sup> A further issue with drawing the line between public and private companies is that only about two-thirds of public firms are in the top 10% of firms that Zwick and Mahon find respond less strongly to accelerated cost recovery. However, they account for the lion's share of investment among public firms. Conversation with Eric Zwick.

## 2. Passthrough Businesses

Another critical question in reforming the cost recovery rules is how to treat passthrough businesses, which represent 60% of all business income, including a meaningful share of large business income.<sup>142</sup> There are a number of theoretical and practical complications with transitioning to a pure business income tax for passthrough businesses. Because they are by definition taxed immediately at the individual level, using the revenue raised from economic cost recovery to lower their statutory tax rate would require lowering the individual income tax rates. If such rate cuts applied to all income, the analytic framework set forth in Part IV would need to be revised. Essentially, the positive impact on investment would be substantially smaller for reforms that reduce the statutory or book tax rate (i.e., an ITC or statutory rate cut) because much of the revenue raised would be used to cut rates on labor income and not capital investment. An alternative approach proposed by some is to use the revenue raised to lower the rates on passthrough business income only.<sup>143</sup> But establishing a new, separate rate schedule for passthrough income would create large tax planning opportunities for individuals to recharacterize their labor income as passthrough business income. To give a sense of the scale, two recent proposals to address similar tax planning opportunities under current law together raise almost \$300 billion over 10 years.<sup>144</sup>

One way to sidestep these challenges would be to revisit the idea of applying a pure business income tax only to public companies. With rare exceptions, publicly-traded companies must pay the corporate income tax, so this approach would effectively exclude passthroughs from economic cost recovery and any associated cut to the statutory rate.<sup>145</sup> However, applying a business cash-flow tax to private companies would raise many of the same complications just described. For example, would expensing be paid for by raising the individual income tax rate on all income or just passthrough business income?

A better way to address these challenges would be to apply economic cost recovery to all businesses and use all of the revenue raised to lower the corporate income tax rate, while potentially expanding Section 179. For example, President Obama proposed raising the amount of investment that can be expensed under Section 179 from \$500,000 to \$1 million.<sup>146</sup> The definition of expenses eligible for Section 179 could also be expanded.<sup>147</sup> In Zwick and Mahon (2016), firms in the top decile of annual

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<sup>142</sup> PRESIDENT’S FRAMEWORK 2016, *supra* note 4, at 10. 42% of businesses with over \$50 million in gross receipts are taxed on a passthrough basis. These passthroughs account for about 12% of tax receipts from such large businesses. IRS Statistics of Income, [SOI Integrated Business Dataset](#) (Nov. 2007).

<sup>143</sup> For example, the House Republican plan proposes a top rate of 25% on passthrough income and 33% on other ordinary income, while President Trump has proposed rates of 15% and 33%, respectively. A BETTER WAY, *supra* note 5 at \_\_; Nunns et al., *supra* note 5 at \_\_.

<sup>144</sup> DEP’T OF THE TREASURY, [GENERAL EXPLANATIONS OF THE ADMINISTRATION’S FISCAL YEAR 2017 REVENUE PROPOSALS](#) 162–63, 169-171, 269 (Feb. 2016) [GREEN BOOK FY17] (proposals to rationalize NIIT and SECA taxes and to tax carried interest as ordinary income). In estimating the revenue effects of Trump’s proposal to reduce the tax rate on passthrough business income to 15%, the Tax Policy Center assumed half of high-wage workers would eventually become passthrough entities in order to claim the lower rate. Nunns et al., *supra* note 5 at 5.

<sup>145</sup> I.R.C. 7704(a). Public firms that are largely conduits for passive investment income, such as RICs, REITs, and natural resource master limited partnerships, can pay tax on a passthrough basis. I.R.C. 7704(c), (d).

<sup>146</sup> GREEN BOOK FY17, *supra* note 144, at 30. The proposal costs \$32 billion over 10 years.

<sup>147</sup> See *supra* note 30.

sales (those which are much less responsive to bonus depreciation) have annual investments of roughly \$6 million and above.<sup>148</sup>

This approach would have the ancillary benefit of reducing existing distortions in favor of passthrough businesses. Currently the effective marginal rate on new investment by passthrough businesses is about 5 percentage points lower than that of C corporations.<sup>149</sup> Partially as a result, passthrough business income has grown from one-quarter of net business income in 1980 to 60% today.<sup>150</sup> This bias in favor of passthrough businesses distorts business activity. For example, it encourages firms to go or remain private, depriving them of access of equity markets and reducing transparency.

Nevertheless, such a proposal would be challenging politically. To generalize, many Congressional Republicans are loath to raise taxes on passthroughs, even if the increase is limited to very large passthroughs and reduces tax biases in their favor under current law.<sup>151</sup> And many Congressional Democrats are loath to raise taxes on manufacturers, some of which might face higher overall tax burdens (even if lower relevant tax rates) if the cost of slower cost recovery rules exceeded the benefits of a statutory rate cut.<sup>152</sup>

### **B. Addressing Behavioral Biases and Heuristics**

All of this may nevertheless be unnecessary if we could change the tax metrics that firms use in their investment decisions. If firms started focusing more on their marginal tax rate and less on non-economic measures in the form of their book and statutory rate, a business cash-flow tax would probably be the better approach for all businesses. The key is to get firms to more accurately value the benefit of tax deferral.

If the underlying problem is bounded rationality on the part of investors or analysts, one way to do this is to improve the tax disclosure on financial statements. For example, accounting authorities could require firms to calculate and disclose the present value of their deferred tax expense, including depreciation and amortization, so that investors and analysts can value stock more accurately. Managers should in turn respond more strongly to accelerated cost recovery, either because they care about their share value or because this enables them to better understand their marginal tax rate.

But there are several challenges with this approach. There are long-standing disagreements about the extent to which financial statements should discount assets and liabilities in general, and deferred tax assets and liabilities specifically.<sup>153</sup> Accounting authorities have considered and rejected discounting

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<sup>148</sup> Zwick & Mahon, *supra* note 77, at 12.

<sup>149</sup> PRESIDENT'S FRAMEWORK 2016, *supra* note 4, at 10.

<sup>150</sup> *Id.*

<sup>151</sup> See, e.g., Joseph Lawler, [Few Options for the Biggest Obstacle to Tax Reform](#), WASH. EXAM. (Apr. 24, 2015).

<sup>152</sup> [DEBBIE STABENOW U.S. SENATOR FOR MICHIGAN, Senators Say Tax Reform Proposals Must Consider Impact on Manufacturing](#) (Nov. 17, 2013).

<sup>153</sup> See, e.g., John N. Kissinger, *On Discounting Deferred Income Taxes*, 10(3) ACAD. OF ACCOUNTING & FIN. STUDIES J. 1 (2006).

deferred income tax expense several times.<sup>154</sup> Historically, a large majority of accountants have opposed such a shift, for reasons ranging from conceptual objections to whether deferred tax liabilities are sufficiently fixed or have actually been incurred, to the complexity that such a shift would entail.<sup>155</sup> For example, discounting deferred tax assets and liabilities would require accounting authorities to decide whether to apply one discount rate to all firms or allow it to vary by firm size, industry, and other factors. While firms' discount rates almost surely do vary in the real world, permitting different discount rates could facilitate manipulation, thereby reducing the reliability of information conveyed by financial statements.

Congress could force the accounting authorities to discount deferred income tax expense, but it is unlikely to do so in conjunction with business tax reform. The Securities and Exchange Commission (SEC) has primary authority to prescribe the form and content of financial statements. It has delegated authority to set the US financial accounting rules (US GAAP) to the Financial Accounting Standard Board (FASB), a private independent organization. In rare instances, Congress has mandated that SEC change the financial accounting rules on a specific issue.<sup>156</sup> But such statutory changes fall outside the jurisdiction of the Congressional tax-writing committees, complicated prospects for such legislative coordination.<sup>157</sup>

In addition, while discounting deferred tax liabilities is probably substantively desirable if it could be implemented effectively, the matter is not free from doubt. If financial statements disclosed the marginal tax rate, it could have the perverse effect of increasing tax distortions to investment decisions by making taxes on investment more salient.<sup>158</sup> Right now, many investors appear to ignore taxes altogether because the information processing costs are too high.<sup>159</sup>

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<sup>154</sup> See, e.g., SFAS No. 96, Accounting for Income Taxes 171-72 (1987); SFAS No. 109, Accounting for Income Taxes 198-99 (1992).

<sup>155</sup> Kissinger, *supra* note 153 at 4-13.

<sup>156</sup> One example is the Sarbanes-Oxley Act of 2002 (SOA), which required the SEC to adopt rules disclosing material off-balance sheet transactions. Sarbanes-Oxley Act Section 401(b). The SEC did so in SEC Release Nos. 33-8182. SOA also mandated the SEC to consider adopting "principles-based accounting standards." After much back and forth between the SEC and FASB, FASB eventually adopted the "fair-value measurement" standard for valuing certain assets, which was consistent with this mandate. FAIR VALUE MEASUREMENTS, Statement of Fin. Accounting Standards No. 157 (Fin. Accounting Standards Bd. 2006).

<sup>157</sup> The committees of jurisdiction are the House Financial Services Committee and the Senate Banking, Housing, and Urban Affairs Committee.

<sup>158</sup> Generally the optimal commodity tax is partially but not fully salient in order to balance the benefits of a zero-salience tax in eliminating substitution effects against the costs of magnifying income effects. Goldin, *supra* note 12, at 116. See also Gamage & Shanske, *supra* note 12, at 60-79. This article is concerned only with substitution effects. See *supra* note 98.

<sup>159</sup> See *supra* notes 67-69, 155 & accompanying text. See also Jana S. Raedy et al., [Is There Information Content in the Tax Footnote?](#), SOCIAL SCIENCE RESEARCH NETWORK ELECTRONIC J. (D2011) (finding results consistent with investors ignoring the tax footnote because of complexity which requires accounting and tax expertise to understand); Marlene A. Plumlee, *The Effect of Information Complexity on Analysts' Use of That Information*, 78 ACCOUNTING REVIEW 275, 293 (2003) (suggesting that reporting requirements should be adjusted to reduce complexity).

Given these political economy hurdles, a more promising avenue for addressing investor or analyst bounded rationality is to require large firms to disclose some portions of their actual tax returns, which would fall under the jurisdiction of the tax-writing committees. For example, Blank (2014) and others have proposed requiring firms to disclose their Schedule M-3, which reconciles their after-tax income as reported under book and tax rules.<sup>160</sup> The M-3 only lists aggregate differences in depreciation and amortization deductions, but Congress could require that they disclose their Schedule M-3 and an attached statement reporting the present value of these differences or breaking down the aggregate differences grouped by the recovery period of the asset.<sup>161</sup> Thus far, such proposals have encountered stiff opposition from some in the business community, who (inaccurately) allege that any such requirement will create a significant risk of forcing them to disclose proprietary information.<sup>162</sup> But there is mounting pressure to require multinational enterprises to publicly disclose basic tax information as an outgrowth of the OECD BEPS initiative.<sup>163</sup>

If the underlying problem is agency costs or manager bounded rationality instead, policymakers could change executive compensation rules to encourage firms to create compensation incentives that are better linked to fundamental value. Currently performance-based compensation is frequently based on share price and book earnings, which do a relatively poor job (or no job, in the case of book earnings) of incorporating the present value of tax deferral.<sup>164</sup> Most performance based compensation of top executives does not incorporate taxes at all.<sup>165</sup> Compensation for tax directors is associated with the book tax rate but not cash taxes paid, so also ignores the value of accelerated cost recovery.<sup>166</sup> A better measure might be pre-tax book earnings minus the present value of book tax expense. However, managers could still game this measure, for example by manipulating the tax cushion.<sup>167</sup> And, once again, it is unlikely that business tax reformers could convince policymakers to pursue these changes at the same time.

Even if all of these changes were enacted, it is unclear how much impact they would have. As summarized in Section II.D, managers, analysts and investors seem to be surprisingly unsophisticated in incorporating even obvious tax information. There is little market interest in having access to more

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<sup>160</sup> Joshua D. Blank, [Reconsidering Corporate Tax Privacy](#), 11 N.Y.U. J.L. & Bus. 31, 109–20 (2014). Cf. David Lenter et al., [Public Disclosure of Corporate Tax Return Information](#), 56 NAT'L TAX J. 803 (2003) (proposing disclosure of reconciliation of book and tax concepts of income before the Schedule M-3 existed); RICHARD D. POMP, [CORPORATE TAX POLICY AND THE RIGHT TO KNOW](#), FISCAL POLICY INSTITUTE (1993); Edward D. Kleinbard and Peter C. Canellos, [Disclosing Book-Tax Differences](#), TAX NOTES (Aug. 12, 2002).

<sup>161</sup> The latter option would enable investors and analysts to calculate the present value of accelerated cost recovery if they were willing to do the work.

<sup>162</sup> See Blank, *supra* note 160, at 115.

<sup>163</sup> Marie Sapirie, [News Analysis: Is it Time to Disclose Corporate Tax Return Information?](#) TAX NOTES (Jun. 13, 2016).

<sup>164</sup> See *supra* note 70.

<sup>165</sup> See Armstrong et al., *supra* note 72.

<sup>166</sup> *Id.*

<sup>167</sup> Tax cushions are items in the income tax “reserve” accounts that involve some degree of subjective estimation, such as the reserve for uncertain tax positions.

book-tax reconciliation information.<sup>168</sup> On the other hand, these stakeholders do appear to incorporate tax information more accurately when information processing costs are lower.<sup>169</sup>

In short, policymakers should explore these reforms. But given the low likelihood of them being enacted or effective, it is worth pursuing tax reforms that assume firm behavior will continue as it is, rather than becoming more rational, as we might wish.

### **C. Alternative Potential Rationales for Expensing**

The question posed by this paper is what approach to reforming the cost recovery tax rules is likely to generate the largest increase in US investment on a revenue-equivalent basis. However, there are a number of other potential rationales for moving to full expensing. This final section offers some preliminary thoughts on them. It argues that these alternative rationales do not appear to make the case for expensing any stronger, with the possible exception of the likely revenue consequences.

#### *1. Other Efficiency Rationales*

The traditional efficiency argument in favor of expensing is that it reduces the tax rate on marginal investments to zero and should therefore induce more investment and result in higher economic growth. A related argument is that it is better targeted on increasing investment than a statutory rate cut because all the benefits flow to new investment. However, this is only a compelling efficiency rationale to the extent that firms actually perceive and respond to the change. As argued above, the evidence to date suggests that public and very large firms would treat a revenue-equivalent business income tax with economic cost recovery and a lower statutory tax rate as lowering the tax rate on new investment by even more.

Another standard efficiency argument in favor of expensing is that it would be simpler and would eliminate disparities in how different investments are taxed. As summarized in Section II.A, our current system applies very different tax rates to different types of investments and industries, often driving investment away from its most productive use.<sup>170</sup> It is also extraordinarily complex, requiring firms to calculate the depreciation of each asset they own under more than 100 different schedules.<sup>171</sup>

These are compelling arguments for expensing. But they are also compelling arguments for economic cost recovery. The rate disparities arise because our current accelerated cost recovery rules provide larger benefits to some investments than others. Economic cost recovery would eliminate this differential treatment as well. Some argue that it is hard to craft cost recovery rules that actually mirror the decline in the value of assets. While true, the cost recovery discussion draft by former Chairman Baucus demonstrates that our cost recovery rules could be reformed in a way that much more closely

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<sup>168</sup> See Sapirie, *supra* note 163 (quoting Douglas Shackelford).

<sup>169</sup> See, e.g., Kim et al., *supra* note 66 (finding that analysts more accurately incorporate tax information when management issues consistent earnings forecasts and they can more easily retrieve tax information from financial statements).

<sup>170</sup> One caveat to this is the possibility that certain investments, such as research and development, have positive externalities.

<sup>171</sup> Wyden, *supra* note 23.

matches economic income.<sup>172</sup> It also proposes allowing firms to aggregate their tangible assets into five pools when calculating depreciation. This approach, which is the law in Canada and has also been proposed by Ranking Member Wyden, would dramatically simplify cost recovery for businesses by eliminating the need to calculate depreciation separately for each of their assets.<sup>173</sup>

A further argument sometimes offered in favor of expensing is that it would facilitate some types of international tax reform. For example, Auerbach (2010) and the current House Republican leadership have proposed coupling expensing with a destination-based international tax system.<sup>174</sup> This combination is appealing for supporters of a destination-based system because it increases the likelihood of such a system withstanding a WTO challenge. But it seems likely that even a destination-based business cash-flow tax would still constitute an impermissible export subsidy under the WTO rules.<sup>175</sup>

President Obama and former Chairman Camp proposed a different approach to international reform: allowing US firms to deduct a basic return on their foreign investments (which is akin to expensing) as part of a new minimum tax on foreign earnings. But, for supporters of a minimum tax, there is no intrinsic reason why the cost recovery rules for foreign investment need to mirror those for domestic investment.

The most important potential efficiency rationale for expensing is the possibility that it could be coupled with reforms that eliminate the debt bias for C corporations.<sup>176</sup> Under current law, C corporations can deduct interest payments but not dividends paid. At the individual level, interest is taxed at ordinary rates, while dividends and capital gains are taxed at preferential rates. When coupled with our accelerated cost recovery rules, this results in a negative marginal tax rate on debt-financed investment by C corporations. Indeed the spread between the effective marginal tax rate on equity-financed and debt-financed equipment in the US is the second largest among our competitors.<sup>177</sup>

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<sup>172</sup> For details on the proposal, see *infra* notes 196–203 and accompanying text.

<sup>173</sup> The exception is real property, which still must be depreciated on an asset-by-asset basis. However, some expensing proposals exclude real property as well.

<sup>174</sup> Auerbach, *supra* note 101; A BETTER WAY, *supra* note 5. This approach was also proposed by the 2005 President's Advisory Panel on Federal Tax Reform. THE PRESIDENT'S ADVISORY PANEL, *supra* note 3.

<sup>175</sup> WTO rules permit border adjustments, which are a key component of such destination-based taxes, for indirect (consumption) taxes but not direct (income) taxes. Expensing would render the business tax system closer to a subtraction-method VAT economically, but it still would not be a VAT because wages would be deductible. See, e.g., Itai Grinberg, *Where Credit Is Due: Advantages of the Credit-Invoice Method for a Partial Replacement VAT*, 63 TAX L. REV. 309, 347-48 (2010); Avi-Yonah & Clausing, *supra* note 102 at 5-12. The fact that Congressional supporters have taken pains to emphasize that their proposal is not a VAT would probably not help the WTO case either. See A BETTER WAY, *supra* note 5 at 15.

<sup>176</sup> There is no debt bias for pass-throughs because there is no entity-level tax and all business income is immediately taxable at the investor level.

<sup>177</sup> The spread is 66 percentage points at the corporate level and 36 percentage points when accounting for individual income taxes as well. PRESIDENT'S FRAMEWORK 2016, *supra* note 4, at 9. By comparison, the average spread at the corporate level among our competitors is 51 percentage points. PRESIDENT'S FRAMEWORK 2012, *supra* note 4, at 6.

The potential negative consequences of this debt bias for the economy are large. It results in some firms making investments with a negative pre-tax return. It also results in firms being more highly leveraged, which can contribute to economic instability by making them more vulnerable in recessions.<sup>178</sup> Moreover, Auerbach (2010) suggests that firms' responsiveness to the debt bias has been growing over time as a result of financial innovation in credit markets.<sup>179</sup>

Almost all expensing proposals repeal interest deductibility (or propose an equivalent measure) at the same time, rendering the reform a business cash-flow tax on both equity-financed and debt-financed investment.<sup>180</sup> This would more than eliminate the debt bias if there was no change to the taxation of C corporation investors. It would also raise a large amount of revenue, potentially enough to pay for expensing so that policymakers would not need to raise the statutory rate in order to maintain revenues.<sup>181</sup> In contrast, many proposals to address the debt bias in the context of a business income tax (such as a dividend imputation credit or dividend paid deduction) have a large revenue cost. If these were the only two alternatives, there would be less of a difference between the statutory tax rate under a business cash-flow tax and a pure business income tax, weakening the case for the latter.

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<sup>178</sup> Auerbach, *supra* note 101, at 4. The academic literature puzzles over why firms don't respond even more to the debt bias than they do. *See, e.g.*, John R. Graham, *How Big are the Tax Benefits of Debt?*, 55 J. OF FIN. 1901 (2000); Blouin et al. (2010), *supra* note 86.

<sup>179</sup> Auerbach, *supra* note 101, at 4.

<sup>180</sup> Auerbach proposes expensing together with an alternative approach to eliminating the debt bias that would have the same effect. Under his approach, firms would include loan proceeds in taxable income and then could deduct both interest and principal payments. Auerbach, *supra* note 101, at 9. As Cunningham and Engler explain, this has both benefits and drawbacks compared to eliminating interest deductibility. Noel B. Cunningham & Mitchell L. Engler, *Prescription for Corporate Income Tax Reform: A Corporate Consumption Tax*, 66 TAX L. REV. 445 (2013).

<sup>181</sup> For example, Patel and McClelland (2017) estimate that a corporate cash-flow base that disallows interest deductions would have been about as large as the corporate income tax base in place from 2003-2014. However, they note that their estimates for the income tax base included 50% or 100% bonus depreciation in most years studied, reducing the differential. They also assume that a number of unrelated tax expenditures (e.g., Section 199, corporate charitable deductions) are repealed as part of the move to a cash-flow tax but are retained under the income tax. Further, they assume that all losses are disallowed in both systems; allowing loss carryovers or refunds reduces the cash-flow tax base by much more than it reduces the income tax base. All three assumptions make the corporate cash-flow tax base appear larger relative to the corporate income tax base. Elena Patel & John McClelland, [What Would a Cash Flow Tax Look Like For U.S. Companies? Lessons from a Historical Panel](#) 12-14, 18-19 (Treasury Dep't Office of Tax Analysis Working Paper 116, Jan., 2017). *See also* Roger H. Gordon, Laura Kalambokidis, & Joel Slemrod, *Do We Now Collect Any Revenue from Taxing Capital Income?*, 88 J. PUB. ECON. 981, 989 (2004) (estimating that full expensing combined with disallowing interest deductions would have been roughly revenue-neutral in 1995, controlling for the business cycle); Burman et al., *supra* note 116, at 8 (estimating that allowing expensing for all investment and disallowing interest deductions on new loans would lose \$1.5 trillion in the first ten years and gain \$485 billion in the second ten years). Such proposals for a business cash-flow tax would raise less revenue if interest income was taxed at the preferential rate applied to capital gains and dividends, as House Republican leadership has proposed. A BETTER WAY, *supra* note 5 at 18. In contrast, they would raise even more revenue if coupled with increasing the rates on dividends and capital gains, a possibility that Auerbach raises. Auerbach, *supra* note 174, at 13.

But there are other alternatives. One could also address the debt bias in a pure business income tax in ways that raises revenue, permitting a larger statutory rate reduction on a revenue-equivalent basis. For example, one could apply a haircut to the interest deduction that is roughly equivalent to the second layer of tax on dividends and capital gains. Indeed, President Obama proposed coupling an interest haircut with slower cost recovery rules.<sup>182</sup> Or, like dividends, one could disallow interest deductions at the firm level and tax interest at the preferential dividend rate at the individual level.

Proponents of expensing may counter that we are more likely to address the debt bias in the context of a move to expensing than economic cost recovery, given that almost all permanent expensing proposals combine the two. This is an important consideration. But history and the experience of other countries provide little comfort that, in reality, policymakers would repeal interest deductibility if we adopted permanent expensing. Thus far, we have not repealed or limited interest deductibility during the periods when we offered 50% or even 100% expensing. We have not limited interest deductions for the roughly 70% of businesses that currently expense their investments under Section 179.<sup>183</sup> During his campaign, President Trump initially proposed permanent expensing while preserving interest deductibility.<sup>184</sup> While he later shifted his proposal to an election where manufacturers could claim one or the other but not both, such an election could engender widespread gaming.<sup>185</sup> No other country has eliminated interest deductibility, and those that have applied a haircut to interest deductions have done so in the context of accelerated cost recovery, not expensing. And they have generally restricted such interest haircuts to multinational enterprises that are highly-leveraged, rather than applying them broadly.<sup>186</sup>

Moreover, if we are unlikely to eliminate the debt bias in conjunction with expensing, the case for expensing is weaker for all businesses because it would then apply highly negative marginal tax rates to debt-financed investment.

In short, it would be a strong argument in favor of expensing if we were more likely to eliminate the debt bias under that model than in conjunction with economic cost recovery. And it would be a strong argument against expensing if we are likely to preserve interest deductibility. As a matter of political economy, it is unclear which is more likely to be the case.

## 2. Fairness

Supporters of expensing generally focus on its potential efficiency and simplification benefits, but some argue that it would be fairer as well. This raises two questions. Would a business cash-flow tax be more

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<sup>182</sup> PRESIDENT'S FRAMEWORK 2012, *supra* note 4, at 10; PRESIDENT'S FRAMEWORK 2016, *supra* note 4, at 18.

<sup>183</sup> See *supra* note 135.

<sup>184</sup> Donald J. Trump, [An America First Economic Plan: Winning the Global Competition](#) (Detroit Economic Club, Aug. 8, 2016); Richard Rubin, [Donald Trump's Tax Ideas Could Boost Debt-Laden Real Estate Firms](#), WALL ST. J. (Aug. 18, 2016);

<sup>185</sup> Nunns et al., *supra* note 5 at 5, 23. For example, businesses might flip back and forth over time between electing expensing and taking interest deductions, bunching their investment and borrowing activities accordingly. They might also accomplish this objective by using separate entities, or through mergers and acquisitions.

<sup>186</sup> For a summary of such interest haircuts (also called thin capitalization rules), see Jennifer Blouin et al., [Thin Capitalization Rules and Multinational Firm Capital Structure](#), IMF WORKING PAPER 14-12, tbl.1 (2014).

or less progressive than a pure business income tax? And is it likely to raise more or less revenue as a matter of political economy?

Starting with progressivity, there is a long literature on the incidence of the corporate income tax that is hotly contested. But the current rough consensus is that the substantial majority of the tax is borne by owners of capital, with a small minority borne by labor. The US Treasury Office of Tax Analysis (OTA) and the Tax Policy Center (TPC) currently estimate that about 60% of the corporate income tax is borne by corporate equity and about 40% of the burden is split equally between labor and all capital in the long run.<sup>187</sup> Their rationale is that roughly 40% of corporate equity returns represent “normal” return to corporate equity, and that taxes on “normal” returns are partially shifted to non-corporate capital owners (because investment shifts to the non-corporate sector, reducing pre-tax returns in it) and partially shifted to labor (because capital investment shifts outside the US, reducing US labor productivity).<sup>188</sup> They estimate that the remaining roughly 60% of corporate equity returns represent rents, the taxation of which is borne entirely by corporate equity owners because they do not respond by shifting investment to the non-corporate sector or abroad.<sup>189</sup> OTA and TPC further estimate that half of the burden of cost recovery rules is borne by labor and half by all capital because depreciation and amortization only burden “normal” returns and not rents.<sup>190</sup> On this basis, they assume that a business cash-flow tax would be more progressive than a pure business income tax, holding revenue constant.<sup>191</sup>

While not the focus of this paper, the theory presented here implies that the incidence should actually be largely the reverse of OTA’s and TPC’s assumptions. That is, if firms largely disregard the value of accelerated cost recovery when making investment decisions as this paper and other research suggests, a business cash-flow tax should be less progressive than a pure business income tax, holding revenue constant. In this case, expensing should have little or no effect on investment and its benefits should be reaped almost entirely by capital.<sup>192</sup> Meanwhile, a higher corporate rate (which would be necessary to pay for expensing, holding revenue constant) should reduce investment in the corporate sector and the US overall by more than expected, so its burden should fall more heavily on labor and all capital. The net result is that a business cash-flow tax should increase tax burdens on labor and reduce them on the owners of capital compared to both a pure business income tax and current law.

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<sup>187</sup> Julie Ann-Cronin et al., [Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology](#), OFFICE OF TAX ANALYSIS, TECHNICAL PAPER 5 (2012); Jim Nunns, [How TPC Distributes the Corporate Income Tax](#), TAX POLICY CENTER 1 (Sept. 13, 2012). Technically OTA estimates that 63% of the burden is borne by corporate equity, 18% by all capital and 18% by labor. *Id.* at 7-8.

JCT and CBO currently estimate that 75% of the corporate income tax is borne by capital and 25% by labor. They do not distinguish between taxes on “normal” returns and rents in their analysis. JOINT COMMITTEE ON TAXATION, [MODELING THE DISTRIBUTION OF TAXES ON BUSINESS INCOME](#), JCX-14-13, 7-8 (Oct. 16, 2013); CONG. BUDGET OFFICE, [THE DISTRIBUTION OF HOUSEHOLD INCOME AND FEDERAL TAXES, 2008 AND 2009](#), 16–18 (2012).

<sup>188</sup> Cronin, *supra* note 187 at 8; Nunns, *supra* note 187 at 2-8.

<sup>189</sup> Cronin, *supra* note 187 at 7; Nunns, *supra* note 187 at 2-8.

<sup>190</sup> Cronin, *supra* note 187 at 26-27; Nunns, *supra* note 187 at 1.

<sup>191</sup> See, e.g., Patel & McClelland, *supra* note 181 at 4. Auerbach makes a similar argument in Auerbach, *supra* note 101174, at 10.

<sup>192</sup> Whether it was borne just by corporate equity or all capital would depend on the sectors to which it applied.

Another fairness consideration is who benefits from expensing among the owners of capital. As explained in Section II.B, a pure business income tax provides a windfall to old capital by reducing the statutory rate, paid for by effectively increasing marginal rates on new investment. A business cash-flow tax has the opposite effect. A pure business income tax also taxes normal returns and rents at the statutory tax rate, whereas a business cash-flow tax exempts normal returns from tax but taxes rents at a higher (revenue-equivalent) statutory rate.

This raises the question of whether we care, from a fairness perspective, how old capital is taxed versus new capital, and how rents are taxed versus normal returns. On both counts, I don't see a strong fairness argument either way if one assumes, in line with this paper, that Section 179 will remain so truly small businesses will not face higher tax burdens. On the one hand, old capital owners may disproportionately represent recipients of large inheritances. I have argued elsewhere that we should tax inheritances more heavily than we do.<sup>193</sup> On the other hand, old capital owners are older and should therefore, on average, have lower lifetime income than younger generations, assuming continued economic growth. Meanwhile, taxing rents more heavily sounds progressive, and the rents themselves should make owners of business producing rents higher-income. But if any shift to a business cash-flow tax would only raise taxes on rents of large businesses, which are disproportionately owned by portfolio investors, then rents may tell us relatively little about the income of the investor burdened.

Accounting for the international context does not seem to strengthen the fairness case for expensing. If expensing were coupled with significant limits on interest deductions, this would reduce earnings stripping and the incentive to invert. This could in turn result in less capital mobility, in which case the incidence of the corporate tax would fall more on capital and less on labor. But as just explained, one could also limit interest deductions under a pure business income tax. Moreover, the estimates in Part IV suggest that a pure business income tax would reduce the perceived incentive to shift profits and real investment overseas more than a revenue-equivalent business cash-flow tax, by reducing the statutory and book tax rates. In this case, a pure business income tax should fall less on labor than current law or a business cash-flow tax.<sup>194</sup>

The other important fairness concern is how each approach would affect revenues as a matter of political economy. Theoretically both approaches could be structured to be revenue-equivalent on a present value basis. But the real world result could be very different. As noted in Section IV.A, expensing entails a large one-time revenue cost (about \$195 billion) within the first ten years, above and beyond the steady state revenue loss. Economic cost recovery entails a parallel one-time revenue gain (about \$235 billion).

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<sup>193</sup> Lily L. Batchelder, [What Should Society Expect from Heirs? A Proposal for a Comprehensive Inheritance Tax](#), 63 TAX L. REV. 1 (2009).

<sup>194</sup> A more complicated question is whether a destination-based tax would be more or less progressive, holding revenue constant. If it is—and if expensing is necessary and sufficient to render such a system WTO-compliant—this could be a fairness argument in favor of expensing. But the primary argument why a destination-based tax is more progressive is that it increases the tax burden on rents (by eliminating profit shifting), which induces less investment response than taxing normal returns. This once again assumes that firms focus on their marginal tax rate and not other tax metrics when making investment decisions. Moreover, it is highly questionable whether expensing would, in and of itself, render a destination-based tax WTO compliant. See *supra* note 175.

This dynamic creates a real possibility that a pure business income tax would lose revenue over time, even if policymakers agreed on a bipartisan basis that the goal was, for example, revenue neutrality compared to current law. Policymakers focused on the budget window (or interested in cutting business tax revenue) would argue that revenue-neutrality means using all of the revenue raised from economic cost recovery within the budget window to pay for a permanently lower statutory rate. Once the one-time revenue was exhausted, the steady state revenue from economic cost recovery would not be sufficient to pay for the lower rate. Others focused on the long-term (or interested in maintaining or increasing business tax revenue) would argue that revenue-neutrality means only using the steady state portion of the revenue raised from economic cost recovery to lower the statutory rate. This would result in a one-time increase in tax revenue within the budget window, and no change thereafter. Indeed, these are the precise positions taken by some Republican and Democratic leaders, respectively, in recent tax reform efforts. Ultimately which view prevails would be a matter of negotiating leverage and skill. But Congress is likely to weigh the impact within the budget window disproportionately, increasing the likelihood that a pure business income tax would lose revenues if enacted on a bipartisan basis.

In the current political context where the House, Senate and Presidency are all controlled by the same party, it is also possible that Congress could enact business tax reform on a strictly partisan basis, using the reconciliation process to avoid a filibuster in the Senate. In this case, a different set of considerations comes into play. Reconciliation legislation cannot increase budget deficits in any year outside the budget window (but can increase deficits as much as policymakers desire within the budget window).<sup>195</sup> As a result, policymakers who want to cut business tax revenue cannot use the one-time revenue from a pure business income tax to facilitate passage of a reform bill that actually loses revenue in the long-term. Thus, the likely impact of each approach on revenues in the context of a reconciliation bill is more ambiguous.

## VI. Conclusion

This paper has considered whether firms undervalue tax deferral due to a focus on non-economic tax metrics like the book and statutory tax rate and, if so, what this implies about business tax reform if the goal is to increase US investment. While the empirical literature is still nascent, it tentatively concludes that applying economic cost recovery to public and very large companies would generate more US investment and growth than expensing. This contrasts with the modest positive growth impacts from expensing estimated by non-partisan Congressional staff and the far more dramatic estimates by some prominent think tanks.

Far more research is needed on how businesses, especially small and medium-sized ones, incorporate taxes into their investment decisions, and whether policy changes could impact the tax metrics upon which firms rely. Nevertheless, this paper does cast doubt on the conventional view that a business cash-flow tax would generate much more US investment and growth than the alternatives.

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<sup>195</sup> David Reich & Richard Kogan, [Introduction to Budget “Reconciliation”](#), CTR. ON BUDGET & POLICY PRIORITIES (Nov. 29, 2016).

## Appendix

This appendix explains the paper’s methodology for calculating revenue-neutral corporate tax rates under economic cost recovery and expensing, and converting them to relevant tax rates.

### ***Economic Cost Recovery***

The economic cost recovery estimates start with estimates by the Joint Committee on Taxation (JCT) of former Senate Finance Committee Chairman Baucus’s cost recovery discussion draft.<sup>196</sup> For tangible assets, the proposal replaces the current 40 different depreciation schedules with five.<sup>197</sup> These five groupings were defined by economic depreciation rates, as determined by the Congressional Budget Office (CBO), based on Bureau of Economic Analysis data.<sup>198</sup> The dividing points were selected at natural break points in economic depreciation rates.<sup>199</sup> CBO then estimated the weighted average economic depreciation rate for each group, adjusted for inflation.<sup>200</sup> This was the depreciation rate assigned to each group. The proposal would allow taxpayers to depreciate on a “pooled” basis so they need not calculate depreciation separately for each of their individual assets as under current law.<sup>201</sup>

For intangible assets, the proposal repeals expensing for advertising and research and experimental (R&E) expenses. Instead, taxpayers would have to amortize R&E expenses over five years, and could deduct half of advertising expenses immediately and the remaining half ratably over five years. These periods were selected based on the (limited) empirical evidence of the decline in value of such

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<sup>196</sup> Estimates on file with author.

<sup>197</sup> For further details on the proposal, see SFC SUMMARY, *supra* note 4; JOINT COMMITTEE ON TAXATION, [TECHNICAL EXPLANATION OF THE SENATE COMMITTEE ON FINANCE CHAIRMAN’S STAFF DISCUSSION DRAFT TO REFORM CERTAIN BUSINESS PROVISIONS](#), JCX-19-13 (Nov. 21, 2013); CONG. BUDGET OFFICE, [INFORMATION ON THE DEPRECIATION OF ASSETS](#) (letter to Chairman Baucus from Director Elmendorf, Nov. 21, 2013); STAFF OF S. FINANCE COMM., [Chairman’s Staff Discussion Draft Legislative Language](#) (Nov. 21, 2013).

<sup>198</sup> There were two exceptions for simplicity purposes. SFC SUMMARY, *supra* note 4.

<sup>199</sup> CBO (2013), *supra* note 197. The principal exception is real property, which was grouped together regardless of the economic depreciation rates of classes of assets within that group. *Id.*

<sup>200</sup> CBO (2013), *supra* note 197.

<sup>201</sup> Under pooling, the taxpayer could deduct an amount each year equal to their basis in the pool times the pool’s depreciation rate. The basis in each pool at year’s end would equal the prior year’s ending balance of basis in the pool minus proceeds from sales and dispositions in the current year. To the extent the balance of the basis in the pool becomes negative, the taxpayer would recognize ordinary income, thereby recapturing any excess depreciation deductions. SFC SUMMARY, *supra* note 4, at 6. Under the proposal, real property is not eligible for pooling and is depreciated on a straight-line method over a period that CBO estimated has a present value equal to the economic rate of decline. Excessive deductions for real property are also recaptured at ordinary rates. *Id.* Real property was treated differently because such purchases tend to be larger and less frequent so pooling could result in more errors relative to economic depreciation.

expenditures.<sup>202</sup> The proposal also extends the amortization period for certain intangible assets and repeals a number of carve-out permitting expensing for specific assets or delaying realization of gains.<sup>203</sup>

As summarized in Table 7, JCT estimated that this proposal would raise \$988 billion over 10 years.<sup>204</sup> Of this amount, about \$850 billion would come from C corporations<sup>205</sup> and about \$615 billion from C corporations in steady state.<sup>206</sup> This \$615 billion in steady-state revenue from C corporations could pay to reduce the corporate rate to 30.9% on a revenue-neutral basis.<sup>207</sup>

**Table 7: Revenue Effects of Economic Cost Recovery**

	2014-2023 Billions \$
Reformed Depreciation for Tangible Assets	655
Amortization of R&D	164
Amortization of Advertising	139
Other Amortization Provisions	29
<b>Total</b>	<b>988</b>
Portion Attributable to C Corps	848
<b>Steady State Portion Attributable to C Corporations</b>	<b>615</b>
<b>Revenue-Neutral Corporate Rate</b>	<b>30.9%</b>

These estimates raise an important conceptual issue: in a sense, they misrepresent the budgetary cost of the proposals. JCT looks only at nominal revenue flows and does not account for the time value of money in their revenue estimates. Ideally JCT would estimate the present value of revenue raised by economic cost recovery because the budgetary effects all stem from how much taxpayers are able to defer tax payments. This applies equally, however, to the corporate rate reduction. So long as all the nominal revenue raised from economic cost recovery is converted to a corporate rate cut with roughly

<sup>202</sup> See SFC SUMMARY, *supra* note 4, at 8 (referencing CORRADO, HULTEN & SICHEL, INTANGIBLE CAPITAL AND ECONOMIC GROWTH, Fed. Reserve Board, FINANCE AND ECONOMICS DISCUSSION SERIES 2006-24 (2006)).

<sup>203</sup> See SFC SUMMARY, *supra* note 4, at 6-9; JOINT COMMITTEE ON TAXATION (2013), *supra* note 197, at 5–10, 34–38, 58–60.

<sup>204</sup> This estimate does not include the proposals to expand and make permanent Section 179 expensing or change the accounting rules in the Baucus discussion draft. See *Chairman’s Staff Discussion Draft Legislative Language*, *supra* note 197 at §§ 1, 51-56.

<sup>205</sup> JCT estimated that 86% of the revenue raised by the entire package came from C corporations. This figure is derived by multiplying the revenue raised by the economic cost recovery provisions by 86%.

<sup>206</sup> JCT estimated that 62% of the revenue raised by the entire package came from C corporations in steady state. This figure is derived by multiplying the revenue raised by the economic cost recovery provisions by 62%.

<sup>207</sup> JCT estimated that the steady state revenue raised from C corporations by the entire package (\$602 billion) could pay for lowering the corporate rate to 31.0%, implying that each percentage point reduction in the corporate rate costs \$151 billion over 10 years. This figure is derived by dividing the steady state revenue raised from C corporations by economic cost recovery proposals (\$615 billion) by \$151 billion.

the same cost and time path, the present value of the two should be the roughly same and the errors in estimating the budgetary cost should cancel out.

### **Expensing**

The expensing estimates start with JCT estimates of the cost of making bonus depreciation permanent. Because bonus depreciation only allows businesses to deduct 50% of the cost of new investments and excludes some assets, I then doubled the cost and grossed it up for the depreciable assets that are excluded.<sup>208</sup> As summarized in Table 8, this results in 100% expensing costing about \$835 billion over the same 10 year period. Applying the same multipliers as the economic cost recovery estimates,<sup>209</sup> about \$714 billion of this cost is attributable to C corporations and about \$520 billion to C corporations in steady state. To maintain revenue-neutrality, this \$520 billion in steady-state revenue from C corporations would require raising the corporate rate to 38.5%.

**Table 8: Revenue Effects of Expensing**

	2014-2023 Billions \$
Permanent Bonus Depreciation	281
<b>100% Expensing for All Depreciable Assets</b>	<b>835</b>
Portion Attributable to C Corps	717
<b>Steady State Portion Attributable to C Corporations</b>	<b>520</b>
<b>Revenue-Neutral Corporate Rate</b>	<b>38.5%</b>

### **Relevant Tax Rates**

To calculate the relevant tax rates, I relied on the Graham et al (2017) estimates that publicly-traded firms focus roughly 44% on their statutory tax rate, 43% on their book tax rate, and 13% on their marginal tax rate, weighted by firm size, when making investment decisions.<sup>210</sup>

Applying these parameters to the framework laid out in Section III, the size-weighted relevant tax rate on new investment is 30.9% under economic cost recovery and 33.5% under expensing. However, this is both an underestimate and an overestimate of the relevant rate differential for several reasons, for which I attempt to correct.

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<sup>208</sup> The JCT estimate for making bonus depreciation permanent from 2014-2023 was \$280 billion. JCT estimate on file with author. This is identical to their estimate for 2016-2025. JOINT COMMITTEE ON TAXATION, [JCX-121-15](#) (Sept. 16, 2015). Corporations claim bonus depreciation for about 67% of new investments. Scott Greenberg, [Bonus Depreciation Covers 2/3rds of Corporate Investment](#) (Tax Foundation, Nov. 13, 2015).

<sup>209</sup> See *supra* notes 205 and 206.

<sup>210</sup> See Graham et al. (2017), *supra* note 20, at tbl. OA2. I assume survey respondents who answer “other” are distributed in proportion to the other three tax metrics.

First, it disregards the substantial amount of one-time revenue that would be raised under economic cost recovery (about \$233 billion) and lost under expensing (about \$197 billion). If one accounted for the present value of this one-time revenue, the rate differential would be larger. To adjust for this, I somewhat arbitrarily assume that the present value of the 10 year budgetary effects is about one-quarter of the long-run budget effects and adjust the rates accordingly.<sup>211</sup> The resulting statutory rates are then 30.5% and 38.8%, and the estimated relevant tax rates are then 30.5% and 33.8%, respectively.

Second, the JCT estimates assume that interest remains fully deductible. Section II.B explains why the marginal tax rate on normal returns to new investment is the statutory tax rate under a pure business income tax and 0% under a business cash-flow tax. But, if interest is deductible, this is only true for equity-financed investment. For debt-financed investments, the marginal tax rate is then 0% under economic cost recovery—and -38.8% under expensing because corporations owe no tax on the normal rate of return on investments, but can deduct interest at the statutory rate. In addition, the book tax rate is lower when interest is deductible because, unlike cost recovery deductions, interest deductions are treated as “permanent” tax benefits and reduce book tax expense. If all investment were debt-financed and only earned the “normal” rate of return, this would result in a zero book tax rate under both economic cost recovery and expensing. To adjust for this, I follow prior literature in assuming 35% of new investment is debt financed and 40% of the profits represent a “normal” rate of return.<sup>212</sup> This implies weighted marginal tax rates of 19.8% under economic cost recovery and -13.6% under expensing, and weighted book tax rates of 26.6% under economic cost recovery and 33.1% under expensing.<sup>213</sup> The estimated relevant tax rates under my preferred specification are then 27.3% under economic cost recovery and 29.6% under expensing. These estimates are summarized in Table 9.

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<sup>211</sup> This implies a roughly 3% discount rate if revenue effects are flat over time.

<sup>212</sup> See, e.g., James B. Mackie III, [Unfinished Business of the 1986 Reform Act: An Effective Tax Rate Analysis of Current Issues in the Taxation of Capital Income](#), 55 NAT'L TAX J. 293, 307 (2002) (citing Federal Reserve data that 35% of corporate investment is debt finance); Cronin, *supra* note 187 at 7 (estimating that 63% of the corporate tax base represents supernormal returns); Nunns, *supra* note 187 at 2-8 (estimating that 60% represents supernormal returns). The most recent estimates find that 75% of business profits represent rents. See Laura Power & Austin Frerick, [Have Excess Returns to Corporations Been Increasing Over Time?](#) (Treasury Dep't Office of Tax Analysis Working Paper 111, Nov., 2016). Adopting this assumption would increase the relevant tax rates and differential to 28.0% under economic cost recovery and 30.5% under expensing.

<sup>213</sup> Specifically, I assume that the book tax rate is 86% of the statutory tax rate because 35% of investment is debt-financed and 40% of its returns are “normal” and taxed at a zero rate, while 60% are rents and taxed at the statutory tax rate.

The reader may wonder how expensing would raise any revenue if the weighted marginal tax rate is negative. These calculations assume that all equity-financed investment faces a marginal tax rate of zero, when in fact this is only true for the normal return to new investments, not rents or returns to existing investments.

**Table 9: Estimates of Relevant Tax Rate for Public Corporations**

	Economic Cost Recovery	Expensing
<b><i>Initial Estimate</i></b>		
Statutory Tax Rate	30.9%	38.5%
Marginal Tax Rate	30.9%	0%
Relevant Tax Rate	30.9%	33.5%
<b><i>Adjusting for PV of One-Time Revenue</i></b>		
Statutory Tax Rate	30.5%	38.8%
Marginal Tax Rate	30.5%	0%
Relevant Tax Rate	30.5%	33.8%
<b><i>Also Adjusting for Interest Deductibility</i></b>		
Statutory Tax Rate	30.5%	38.8%
Marginal Tax Rate	19.8%	-13.6%
Book Tax Rate	26.6%	33.1%
<b>Relevant Tax Rate</b>	<b>27.3%</b>	<b>29.6%</b>

A potentially better way to address debt would have been to compare policy alternatives that eliminate the current preference in favor of debt financing, accounting for both corporate and investor-level taxes and holding constant the investor-level treatment of dividends, capital gains and interest. This way, both regimes would have the same level of debt bias (none) and the expensing estimates would more closely represent a business cash-flow tax for all investments, not just equity-financed investments as they do here. Unfortunately, there are no public estimates that allow this comparison. Theoretically, however, it should have little effect on the estimated *differential* in statutory and relevant tax rates. Both statutory rates would be lower because haircutting interest deductions would raise a large amount of revenue. (The book tax rates would not necessarily be lower because interest deductions are permanent tax benefits and therefore reduce the book tax rate.) But, if anything, eliminating the debt bias should slightly increase the differential in statutory rates under the two regimes because the debt bias is slightly larger under economic cost recovery than expensing when interest deductions are allowed and one accounts for corporate- and investor-level taxes together.<sup>214</sup>

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<sup>214</sup> Under economic cost recovery, the combined (corporate and individual) tax rate on debt-financed corporate investment is 3.6 percentage points lower than on equity-financed investment if one assumes the corporate rate is 30.5% for equity-financed investment and 0% for debt-financed investment, and individuals are in the top rate brackets (23.8% for equity and 43.4% for debt). This is 6.9% of the after-tax return on equity-financed investment. Under expensing, the comparable figures are 2.4 percentage points and 3.1% if one assumes the corporate rate is 0% for equity-financed investment and -38.5% for debt-financed investment. Many C corporation investors are not taxable, however, which implies that the debt biases under the two regimes are more comparable. See Steven M. Rosenthal & Lydia S. Austin, *The Dwindling Taxable Share of U.S. Corporate Stock*, TAX NOTES 923 (May 16, 2016). As throughout, this analysis focuses on C corporations. There is, if anything, a bias in favor of equity-financed investment in passthroughs. All income is taxed once and immediately at the investor level, but lenders are taxed

These estimates are conservative in four respects. First, the estimates for expensing do not include the cost of expensing land (which cannot be depreciated under current law) and intangibles that currently must be amortized. Including them would increase the cost of expensing and the revenue-equivalent statutory rate, thereby widening the relevant tax rate differential.

Second, the estimates for economic cost recovery assume that depreciation deductions on existing investments are recaptured and taxed to the extent that the investment depreciated more slowly than the depreciation schedule. But they are recaptured at the new, lower corporate rate even if they were taken against the old 35% rate. The proposal could (and probably should) have avoided this windfall to old investment by recapturing such excess depreciation deductions at the old corporate rate as President Reagan proposed.<sup>215</sup> This would raise revenue, permitting a lower revenue-equivalent corporate rate and again widening the relevant tax rate differential.

Third, I estimated the cost of permanent expensing by grossing up the cost of permanent bonus depreciation in a very conservative way. The estimates assume that allowing businesses to expense \$1 of bonus-eligible assets has the same cost as allowing them to expense \$1 of non-bonus-eligible assets. But in fact, the cost for non-bonus-eligible assets should be substantially higher because they are longer lived.<sup>216</sup> An alternative approach would be to gross up the cost of permanent bonus depreciation using the relative cost implied in estimates by the Tax Foundation.<sup>217</sup> This results in a much higher cost for expensing,<sup>218</sup> necessitating a rate of 41.1% to maintain revenue neutrality among C corporations in steady state. It would also substantially increase the relevant tax rate differential under my preferred specification to 27.3% for economic cost recovery and 31.9% for expensing.

Finally, more recent estimates from JCT imply that the cost of lowering the corporate rate (and the revenue raised from increasing it) is roughly \$100 billion per percentage point, rather than the \$150 billion implied in the estimates for the Baucus economic cost recovery proposal.<sup>219</sup> I have not adopted this assumption to maintain consistency in the estimates. But doing so would also substantially increase the relevant tax rate differential under my preferred specification, to 25.5% for economic cost recovery and 30.9% for expensing. If combined with the alternative approach to estimating the cost of permanent

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on all interest income at ordinary rates, while partners and other equity investors may pay tax on some passthrough income at the capital gains rates.

<sup>215</sup> See George R. Zodrow, [The Windfall Recapture Tax: Issues of Theory and Design](#), 16 PUB. FIN. Q. 387, 389-93 (1988) (describing President Reagan's proposal in his 1985 tax reform package, known as Treasury II).

<sup>216</sup> See *supra* note 29.

<sup>217</sup> TAX FOUNDATION, *supra* note 16, at 76, 77 (estimating that permanent expensing would cost \$2,166 billion over 10 years, and permanent bonus depreciation would cost \$266 billion).

<sup>218</sup> I first adjust Tax Foundation's estimates to assume (similar to JCT's estimates of economic cost recovery) that bonus depreciation is not in place until 2020. This results in permanent expensing costing roughly \$2,343 billion and permanent bonus depreciation costing \$443 billion. I then apply the ratio of the former cost over the latter cost to JCT's estimates of permanent bonus depreciation that is over the same budget window as their estimates for economic cost recovery. The estimated cost of full expensing for all assets under this approach is \$1,483 billion over 10 years, rather than \$835 billion.

<sup>219</sup> CONGRESSIONAL BUDGET OFFICE, [OPTIONS FOR REDUCING THE DEFICIT: 2015 TO 2024](#) 42 (Nov. 2014).

expensing just described, the relevant tax rates under my preferred specification would be 25.5% for economic cost recovery and 34.1% for expensing—a difference of 8.6 percentage points.

These last two points illustrate a broader issue that the estimates here are derived from other empirical estimates that themselves are subject to great uncertainty. As the empirical evidence continues to evolve, the tentative conclusions offered here could change dramatically, though it is unclear in which direction. The reader should therefore interpret this paper as providing some tentative conclusions based on the best empirical evidence to date, and offering a framework and methodology for adjusting these conclusions as the empirical evidence continues to evolve.