

THE SHAKY CASE FOR A BUSINESS CASH-FLOW TAX OVER A BUSINESS INCOME TAX

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Traditional economic theory holds that a business cash-flow tax is superior to a business income tax because it is more efficient and progressive. But much of the literature espousing this view does not explicitly specify the full range of assumptions underlying these claims, let alone explore and empirically justify them. This paper summarizes 11 assumptions underlying the traditional view and considers how well supported they are empirically and as a matter of political economy. It concludes that when each assumption is examined closely, the case for a cash-flow tax over a business income tax becomes considerably shakier and may well collapse.

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I. INTRODUCTION AND MOTIVATION

Traditional economic theory holds that a business cash-flow tax is clearly superior to a business income tax on both efficiency and equity grounds (e.g., U.S. Department of the Treasury, 1977; President’s Advisory Panel, 2005; Patel and McClelland, 2017).

From an efficiency perspective, so the theory goes, a cash-flow tax lowers the marginal tax rate on normal returns to new investments to zero. Because marginal investments only earn normal returns, businesses respond to this zero rate by increasing U.S. investment, which in turn accelerates economic growth. While a cash-flow tax does, all else equal, necessitate a higher statutory rate than a revenue-equivalent business income tax, this higher statutory rate only burdens returns to pre-existing investments and rents (supernormal returns), which are defined as inframarginal. Thus, the higher statutory rate has no impact on the amount of investment whatsoever. Furthermore, by disallowing interest deductions, a cash-flow tax eliminates the bias in favor of debt-financing by corporations, magnifying its efficiency gains.

From a fairness perspective, traditional economic theory holds that a cash-flow tax is more progressive than a revenue-equivalent business income tax. By generating higher domestic investment, it boosts labor productivity, so the share of business taxes borne by

labor declines. In addition, a cash-flow tax taxes rents more heavily, and normal returns less heavily, than a business income tax. Because the very wealthy derive a larger share of their capital income from rents than the merely wealthy, a cash-flow tax therefore distributes tax burdens among the owners of capital more progressively as well.

But much of the literature espousing this traditional view does not explicitly specify the full range of assumptions underlying these claims, let alone explore and empirically justify them. This paper summarizes 11 assumptions underlying the traditional view and considers how well supported they are empirically and as a matter of political economy. It concludes that when each assumption is examined closely, the case for a cash-flow tax over a business income tax becomes considerably weaker and may well collapse.

This paper proceeds as follows. Section II defines a business income tax and a business cash-flow tax and note limits on the paper's scope. Section III summarizes and examines five assumptions underlying the traditional view that a business cash-flow tax is more efficient. Section IV summarizes and evaluates five assumptions underlying the traditional view's fairness claims. Section V explores the efficiency and equity implications of relaxing the assumption that the two approaches would raise the same amount of revenue. Section VI considers issues unique to pass-through businesses. Section VII concludes.

II. DEFINITIONS AND SCOPE OF ANALYSIS

To compare apples-to-apples, this paper focuses on two idealized reform options: a pure business cash-flow tax (cash-flow tax) and a type of pure business income tax (business income tax), neither of which exist in the real world. In both cases, it focuses on entity-level and not investor-level taxes. In focusing on taxes on business profits, it also assumes no changes to the direct taxation of labor income as would occur, for example, if an income tax were replaced with a value-added tax.

Under the hypothesized cash-flow tax, businesses can expense all of their investments, including intangibles and land. All corporate interest deductions are disallowed in order to ensure that debt- and equity-financed investment face the same tax rate at the entity level. This also prevents debt-financed investment from facing a negative tax rate at the entity level.

Under the hypothesized business income tax, businesses may only deduct or amortize the cost of tangible and intangible assets to the extent that the asset is expected to have declined in value on an inflation-adjusted basis, referred to as economic cost recovery. All corporate interest deductions are also disallowed. While real-world business income taxes generally entail a bias in favor of debt-financed corporate investment, idealized approaches often do not.¹ For example, a comprehensive business income tax (CBIT) and other business income taxes involving corporate integration generally eliminate this

¹ The same could be said of real-world business cash-flow taxes because our current system is a hybrid of the two, combining substantially accelerated cost recovery rules with full deductions for corporate interest payments.

bias. This paper therefore initially assumes that both reforms equalize the tax rates on debt- and equity-financed investment at the entity level by repealing corporate interest deductions, in order to focus on other important advantages and disadvantages of each approach.² However, it relaxes this assumption in Section IIID, considering whether one approach is more likely than the other to reduce or eliminate the debt-equity distortion in practice.

This paper further assumes both approaches raise the same amount of revenue on a present value basis, which is accomplished by adjusting the statutory tax rate. Later it relaxes this assumption as well. It also focuses on C corporations in order to simplify the analysis. Generally, the analysis applies equally to pass-through businesses, but the paper notes where it does not at the end.

The scope of this paper is limited in several respects. First, it focuses on efficiency and fairness arguments for a cash-flow tax over a business income tax, setting aside other potential rationales for adopting such reforms. For example, this paper does not focus on simplification. Expensing would substantially simplify the cost recovery rules by allowing businesses to write off all of their investment immediately, rather than tracking depreciation and amortization deductions and adjusting them for inflation. Economic cost recovery (to the extent achievable) would also substantially simplify the cost recovery rules. It would reduce incentives to recharacterize assets into classes with more favorable cost recovery schedules. And it could further reduce compliance costs if implemented through pooling, which would only require firms to track basis and cost recovery deductions for a small number of pools of assets, not separately for each asset they own (Starky, 2006; Baucus, 2013; Wyden, 2016). But despite these improvements, economic cost recovery could not simplify the cost recovery rules by quite as much as expensing would.

As another example, the press often refers to a destination-based cash-flow tax as a cash-flow tax. But moving to a cash-flow tax and changing the international tax rules to be destination-based with a border adjustment are two separate reforms, which may or may not be combined together. It is true that adopting a cash-flow tax may facilitate such international reforms, though a business income tax could in principle be destination-based. For example, a cash-flow base is probably a necessary but not sufficient condition for a border adjustment to comply with World Trade Organization (WTO) rules (Grinberg, 2010; Avi-Yonah and Clausing, 2017). Likewise, a cash-flow tax could in principle be origin-based, though doing so would create substantial administrability

² The analysis would generally be the same if one assumed a different approach to reducing or eliminating the debt-equity distortion for both taxes. For example, if the goal is to fully eliminate the debt-equity distortion after taking into account both entity- and investor-level taxes, then debt and equity should be taxed at the same rate at the investor level once corporate interest deductions are disallowed under both tax regimes. Alternatively, one could reduce but not eliminate corporate interest deductions to compensate for the fact that interest is currently taxed more heavily than dividends or capital gains at the investor level. Yet another option is to continue to allow corporate interest deductions under both taxes, but to permit dividend paid deductions, and then tax dividends, interest and capital gains at the same rates at the investor level, while potentially applying a withholding tax.

challenges and avoidance opportunities (Weisbach, 2000). But these potential interactions with our international tax rules are not the focus here.

Second, this paper focuses on the efficiency and fairness benefits of an idealized cash-flow tax relative to an idealized business income tax, not on the benefits of either relative to current law, which is in many respects a tortured hybrid of the two. Doing so would substantially change the analysis. Under current law, debt-financed investment faces a negative effective marginal tax rate on average because of the combination of accelerated cost recovery schedules and interest deductibility (White House and U.S. Department of the Treasury, 2016, p. 9). Even after accounting for the mix of financing, effective marginal tax rates on different assets and industries vary widely (White House and U.S. Department of the Treasury, 2016, p. 7) and some investments, such as those expensed under Section 179, face negative tax rates. Absent externalities, this range of tax rates inefficiently distorts investment choices among different assets and financing options, and impedes economic growth. As a result, either reform option may be more efficient and fair than current law if implemented on a revenue-neutral basis. But determining whether this is actually the case is not the subject of this paper.

Finally, current proposals for a business cash-flow tax by Congress and the President differ substantially, and in undesirable ways, from the idealized cash-flow tax presented here.³ These differences have grown over time and, for reasons explained later, are likely to grow even further if the proposals advance through the political process. Thus, while the analysis here is not of current cash-flow tax proposals, they are unlikely to compare favorably to either a business income tax or current law.

III. CHALLENGES TO THE EFFICIENCY BENEFITS OF A CASH-FLOW TAX

A. Firms May Not Focus Exclusively on Their Marginal Tax Rate When Making Investment Decisions

The first assumption underlying the traditional view that a cash-flow tax is more efficient is that firms incorporate taxes into their investment decisions by focusing on their marginal tax rate on new investments. Put differently, the traditional view assumes firms do not focus on other measures of their tax rate (like their statutory tax rate) that

³ The initial Congressional Republican proposal permitted expensing for all assets other than land and disallowed net interest deductions (House Republicans, 2016). Its principal authors reportedly then considered continuing partial interest deductions for all firms and full interest deductions for small businesses, farmers, and utilities (Ota, 2017; Morgan, 2017). The Administration also indicated that it wanted to preserve all interest deductions or, at a minimum, allow firms to elect to continue claiming interest deductions and depreciating under current rules (Ota, 2017; Nunns et al., 2016). As of the time of writing, the main proposal by the President and Congressional Republican leaders permits expensing for depreciable assets other than structures for at least 5 years and partially limits interest deductions in an unspecified way (White House, House Committee on Ways and Means, and Senate Committee on Finance, 2017). All of these plans would increase deficits substantially, which is projected to reduce economic growth (Nunns et al., 2016; Page, 2017; TPC Staff, 2017).

affect their discounted after-tax future cash flows only indirectly, if at all. I define the marginal tax rate here as the present value of current and future taxes due on a firm's marginal investments, divided by the investment's pre-tax returns. As will become apparent later, this differs from the concept in the economics literature of a firm's effective marginal tax rate (EMTR), which is the marginal tax rate on a hypothetical investment that earns the normal rate of return and nothing more.

Despite the pervasiveness of this assumption, there is extensive evidence that firms rely heavily on their statutory tax rate and book tax rate when incorporating taxes into their investment decisions.⁴ Indeed, they appear to rely much more heavily on these other tax metrics than on their marginal tax rate. For example, Scholes (1992), Erickson, Hanlon, and Maydew (2004), and Dyreng (2009) all find that managers of publicly-traded firms will incur real tax costs in order to increase or smooth their book earnings. In addition, in a survey of tax executives at large public and private firms, 44 percent said they primarily rely on their statutory tax rate, 41 percent on their book tax rate, and only 13 percent on their marginal tax rate when incorporating taxes into their investment decisions (Graham et al., 2017).⁵

Firms' reliance on non-economic tax metrics like their statutory and book tax rate does not necessarily mean that their managers are behaving irrationally, as discussed further in Batchelder (2017). Firm managers may be boundedly rational, just like individual consumers. For example, they may rely on heuristics like their statutory tax rate because it is easier to calculate than their marginal tax rate, which requires projecting expected tax liabilities far into the future.

But firm managers' focus on these other tax metrics may also be a fully rational response to other market actors. In particular, investors and analysts appear to focus disproportionately on firms' statutory and book tax rates in pricing stock and structuring debt contracts because of their own biases and heuristics, as well as insufficient public information to actually calculate firms' marginal tax rates (Plumlee, 2003; Hanlon, 2003). 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. 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 and could request the firm's tax returns as a condition of lending. Powers, Seidman, and Stomberg (2017) find that the less precise statutory tax rate better explains equity valuations than either the estimated marginal tax rate or various book tax rate measures. This remains true when the authors examine sub-samples of firms for which the statutory rate is likely to be an especially poor proxy for the marginal tax

⁴ A firm's book tax rate is its financial statement tax expense, divided by its pre-tax earnings on its financial statement.

⁵ For excellent summaries of the literature on how firms incorporate taxes into their investment decisions, see Shackelford and Shevlin (2001), Hanlon and Heitzman (2010), and Shackelford, Slemrod, and Sallee (2011).

rate, though the relative advantage of the statutory rate in explaining equity valuations then becomes smaller.

Thus, by focusing on the same non-economic tax metrics relied upon by investors and analysts, firm managers may actually be maximizing their discounted, after-tax cash flows by reducing their costs of raising capital through equity and debt. Alternatively or in addition, firm managers may be maximizing their own compensation. Executive compensation is often tied to metrics of firm performance that diverge from fundamental value, like short-term share price or book earnings (Armstrong, Blouin, and Larcker, 2012; Sloan, 2016).

Regardless of the reason why firms focus heavily on their statutory tax rate and book tax rate when making investment decisions, it has important implications for the efficiency benefits of a cash-flow tax. A cash-flow tax necessitates a higher statutory rate than a revenue-equivalent business income tax. While there are not precise estimates of the differential, in other work I estimate that the statutory tax rate under a cash-flow tax must be 8 to 16 percentage points higher in order to raise the same amount of revenue on a present value basis (Batchelder, 2017).⁶ This implies that a cash-flow tax would also entail a higher book tax rate for firms than a business income tax, because the financial accounting rules ignore the value of any tax deferral benefits — including expensing — while they do account for the cost of a higher statutory tax rate (Hanlon, 2003; Neubig, 2006; Hanna, 2009; Batchelder, 2017).

In this other work, I argue that if firms do not act according to a simple, rational model where they focus exclusively on their marginal tax rate, the tax reform approach that will maximize domestic investment is the one that minimizes firms' "relevant tax rate." The relevant tax rate is the capital-weighted mix of tax metrics upon which firms rely when making investment decisions, adjusted for differences in the statutory, book, and marginal tax rates under revenue-equivalent reforms. After developing this framework, I attempt to parameterize it and roughly estimate that — for public or very large firms — the relevant tax rate is 2 percentage points lower under a business income tax than under a cash-flow tax under conservative assumptions, and 8 percentage points lower based on more reasonable assumptions. Thus, under plausible parameters, a business income tax would generate more, not less, domestic investment than a cash-flow tax among such firms.

⁶ These estimates are based on extrapolations of estimates from the Joint Committee on Taxation (JCT) and assume the same debt-equity distortion under a cash-flow tax and a business income tax, though by continuing to allow nominal interest deductions rather than disallowing interest deductions as under the idealized versions of these taxes that are generally posited here. The estimates for a business income tax assume economic cost recovery rules that are adjusted for inflation. For other estimates of a cash-flow tax, see Patel and McClelland (2017), Page (2017), and Pomerleau (2016). These other sources do not estimate the revenue effects of a business income tax. De Mooij and Devereux (2011) estimate slightly different versions of a cash-flow tax and business income tax where both eliminate the debt-equity distortion and find that a much larger statutory rate differential — 28 percentage points — is necessary for both proposals to raise the same amount of revenue among European Union countries.

These results are consistent with Edgerton (2012), which finds that an investment tax credit (ITC) has twice as large an investment effect as accelerated depreciation per dollar of discounted revenue cost, which he attributes to managers focusing on after-tax book earnings impacts.⁷ (An ITC lowers the book tax rate while accelerated depreciation and expensing do not.)⁸

Several caveats to this conclusion are in order. First, it is possible that firms that focus disproportionately on their marginal tax rate are more responsive to taxes in general. If so, these estimates would be overstated, though it is unclear whether this would reverse the tentative conclusion that a business income tax would generate more domestic investment.

Second, a cash-flow tax would result in a larger differential between a firm's marginal tax rate and its statutory and book tax rate than a business income tax would. Firms could therefore respond to such a fundamental reform by focusing more heavily on their marginal tax rate. However, many of the studies finding that firms focus heavily on the statutory and book tax rate covered years when firms could already expense a large share of their investments through bonus depreciation, expensing for research and development costs, and other provisions. In addition, analysts and investors cannot calculate firms' marginal tax rate based on public information (Hanlon, 2003), so the pressure for managers to conform to analysts' and investors' reliance on non-economic tax metrics would remain. Furthermore, Graham et al. (2017) find a weakly significant relationship between managers relying on the marginal tax rate and the marginal-statutory tax rate gap, and no significant relationship with respect to the marginal-book tax rate gap. This casts further doubt on the possibility that managers will substantially change the tax metrics upon which they rely in response to a cash-flow tax.

Third, there could be an additional dynamic response to a cash-flow tax. Under such a reform, firms that focus more heavily on their marginal tax rate should have higher pre-tax earnings over time because they invest in positive net-present-value projects in cases where other firms do not. Theoretically, these firms should thrive and the others should fail over time, resulting in more firms and larger firms disproportionately focusing on their marginal tax rate. But if this hypothesis were true, we should already

⁷ Edgerton does not focus on the effect of statutory rate cuts, which, unlike ITCs, reduce both the book tax rate and the statutory tax rate.

⁸ This paper does not focus on two policy alternatives that currently are not under active consideration in the United States: an ITC and an allowance for corporate equity (ACE). Unlike expensing, an ITC would reduce firms' book tax rates because it would be considered a permanent tax benefit under the financial accounting rules. This is probably true of an ACE as well. As a result, Batchelder (2017) and Edgerton (2012) imply that both reforms would generate more investment than a cash-flow tax. Whether they would generate more investment than a business income tax depends in part on how heavily firms focus on their marginal tax rate (which is lower under an ITC and an ACE) versus their statutory tax rate (which is lower under a revenue-equivalent business income tax). As discussed in the next section, de Mooij and Devereux (2011) estimate that an ACE would generate less investment than a business income tax that is similar to the one hypothesized here.

see managers of larger firms focusing more on their marginal tax rate, given that a large share of investment is already eligible for accelerated cost recovery or expensing. Instead, there is no evidence to date that this is the case.⁹ This may be because the biases, heuristics, limited information, and agency costs that drive firms to focus on non-economic tax metrics persist indefinitely. Or it may be because firms seeking to maximize their discounted, after-tax future cash flows *should* focus on these other tax metrics, for reasons discussed in the next section.

A further caveat is that the financial accounting treatment of tax deferral benefits might be different under a cash-flow tax in ways that eliminate the differential between the book tax rate under a business income tax and a cash-flow tax, or even make the book tax rate lower under a cash-flow tax.¹⁰ This might reduce or reverse the estimated efficiency advantage of business income tax. But, as discussed in Batchelder (2017) and Kissinger (2006), it is unlikely that financial accounting regulators would interpret the existing rules differently in the context of a cash-flow tax or would change the underlying rules governing tax deferral benefits.

Finally, the estimates described in this section are only for public or very large firms. Zwick and Mahon (2017) find a much larger response to bonus depreciation among smaller firms (the bottom 90 percent, which account for about 55 percent of domestic investment)¹¹ than among the largest firms. This greater responsiveness could arise because smaller firms focus more heavily on their marginal tax rate, perhaps because they 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. But it also could arise because smaller firms are more cash constrained and face high external financing costs.¹² Zwick and Mahon argue that this latter possibility is more consistent with their finding that non-taxable firms of any size do not respond to bonus depreciation. If they are correct, then a cash-flow tax should engender a stronger investment response among smaller firms than a business income tax because it frees up cash.¹³ But this would only hold for the 28 to 33 percent of corporations with positive taxable liability (Government Accountability Office, 2016).

⁹ For example, Graham et al. (2017) find that 11 percent firms below the median in their sample primarily focus on their marginal tax rate, while only 13 percent of firms above the median do, and that the difference is statistically insignificant.

¹⁰ The former could be accomplished by changing the financial accounting rules to incorporate the time value of money, and the latter by applying an infinite discount rate (rather than zero) to tax deferral benefits, as is the practice for value-added taxes (VATs).

¹¹ The 55% figure is my extrapolation from the data in Zwick and Mahon (2017) and assumes that no sole proprietorships or corporations claiming Section 179 are in the top 10 percent, while the same proportion of partnerships are in the top 10 percent as C and S corporations combined.

¹² It could also be because smaller firms are more likely to be pass-throughs, which may benefit more from expensing because they can often deduct business losses against non-business (e.g., labor) income.

¹³ It is worth noting that, as a matter of political economy, any reform moving towards a pure business income tax is likely to preserve expensing for the vast majority of firms (but not the vast majority of investment). Under current law, 70 percent of firms are already eligible for Section 179 expensing (Kitchen and Knittel, 2016).

Instead, other policies, like small business loans or a refundable investment tax credit for smaller businesses, could potentially spur investment more effectively by improving access to capital for all smaller firms, not just those with positive tax liability.

In sum, if firms focus heavily enough on their statutory tax rate and/or book tax rate when making investment decisions, this can reverse the positive investment effects of a cash-flow tax altogether. Because a business income tax permits a lower statutory rate and therefore a lower book tax rate, it could generate more investment, not less. Indeed, under plausible parameters, this appears to be the case among very large or public firms.

To be sure, these estimates are sensitive to the underlying empirical parameters, which are largely based on survey data and could easily change in either direction. But the survey data is supported by econometric evidence, and the overall conclusion that a cash-flow tax could generate less investment is consistent with the econometrics findings in Edgerton (2012). Moreover, even if these estimates are overstated, the extensive evidence that firms focus on tax metrics other than their marginal tax rate substantially weakens the case for the traditional view.

B. Discrete Choices about Where to Locate Investments May Involve Substantial Rents

A second assumption underlying the efficiency claims of the traditional view is that all marginal investment choices only entail normal returns and not rents. But some investments may be inframarginal from a firm investment perspective because the return is well above its cost of capital (so the firm will undertake the investment even if its tax rate increases), while being marginal from a U.S. investment perspective because the firm may or may not locate the investment in the United States depending on how our tax rate compares to that of other countries. In this sense, a marginal investment choice may involve substantial rents.

This scenario is a challenge to the traditional view because a business income tax applies the statutory tax rate to both normal returns and rents (assuming no tax expenditures), while a revenue-equivalent cash-flow tax applies a zero tax rate to normal returns and a higher statutory tax rate to rents. Thus, if rents comprise a large enough share of the returns on such discrete investments, a cash-flow tax may apply a higher tax rate to them than a business income tax does.

For example, suppose a firm is deciding where to locate a large, lumpy investment, like a semiconductor fabrication plant, which can cost upwards of \$1 billion. The firm's cost of capital (and the normal return) is 5 percent and it expects the plant to earn a 20 percent return regardless of whether it is located in the United States or abroad, so it is clearly going to build the plant. The U.S. statutory tax rate is 40 percent under a cash-flow tax and 26 percent under a business income tax. Then the U.S. tax rate on this investment is 30 percent under the cash-flow tax (because one-quarter of the return is normal and untaxed) and 26 percent under the business income tax (because that rate applies to both normal returns and rents). If the other country's tax rate on the invest-

ment is 28 percent, a business income tax could tip the balance in favor of locating the plant in the United States.¹⁴

Such scenarios are not unusual. For example, consider a firm whose marginal projects all generate rents because it has market power in its traditional lines of business (e.g., a powerful brand name), and the market penalizes it for expanding beyond these lines of business, viewing it as lacking sufficient expertise. Then the relative tax rate on rents in the United States versus another country might tip the balance. As another example, consider firms-specific rents associated with intangible assets, like patents and copyrights. Firms may decide where to locate their intangibles based on taxes. Real economic activity may follow this choice, whether because of non-tax business considerations or because of tax rules that require some amount of real economic activity in order to justify locating intangibles in a low-tax country. As further example, consider a firm that would like to acquire and expand a business with which it has synergies that will generate rents. Because of fixed costs associated with the merger, declining returns to scale, or antitrust laws, it may be forced to choose between two potential targets: one with operations primarily in the United States and another with operations primarily abroad. Once again, the relative tax rate on rents may be an important factor in its decision.

Theoretically, if such discrete locational choices are large enough, entail sufficiently large rents, and are more elastic than other marginal investment choices, this could upend the traditional view that a cash-flow tax will generate more U.S. investment and growth than a business income tax.¹⁵ While it is hard to say whether this is true in reality, the empirical evidence to date suggests that it is plausible.

A significant and growing share of investment is potentially movable overseas. Spence and Hlatshwayo (2012) estimate that about one-third of the U.S. economy is in the tradable sector, meaning investments and jobs in that sector could move abroad over time. Blinder (2009) uses a different methodology and estimates that 26 to 29 percent of U.S. jobs are potentially offshoreable.

Rents are clearly a major component of all business income, and are probably increasing. Historically, estimates of rents as a share of corporate equity returns ranged from 60 to 68 percent (Gentry and Hubbard, 1997; Toder and Reuben, 2005; Cronin et al., 2012). But more recent estimates find that this share has been increasing and rents represent three-quarters of corporate equity returns in the most recent period (Power and Frerick, 2016). Moreover, they appear to be a much larger component of cross-border

¹⁴ This example does not of course imply that all U.S. investment would migrate to the other country because, among other issues, much U.S. investment is in the non-tradeable sector, the EATR on investments in the tradeable sector will vary by the share of the return that is attributable to rents, and taxes are just one of many factors in locational decisions.

¹⁵ This section is not strictly a challenge to the efficiency claims of the traditional view, but rather to its related claims that a cash-flow tax would increase domestic investment and growth. More specifically, if firms make discrete locational choices based in part on the tax rate on rents, this does not necessarily affect the efficiency benefits of a cash-flow tax on a global basis. Global efficiency may be enhanced by policies that reduce U.S. investment and growth if those effects are more than offset by higher investment and growth in other countries.

locational choices. Power and Frerick (2016) estimate that rents comprise 85 percent of corporate equity returns among multinationals.

In addition, discrete locational choices appear to respond more to firms' statutory tax rate than their marginal tax rate. There is an extensive literature on how much different tax metrics influence the location of foreign direct investment (FDI), which is well summarized in a meta-analysis by de Mooij and Ederveen (2008). They conclude, as hypothesized by Devereux and Griffith (2003), that FDI is more responsive to the effective average tax rate (EATR) than to the statutory tax rate or the EMTR (the marginal tax rate on normal returns) alone.¹⁶ The EATR is the weighted average of a firm's statutory tax rate and EMTR, with the weights based on the relative share of an investment's returns attributable to rents versus normal returns.¹⁷ Because the vast majority of multinational corporate income is derived from rents rather than normal returns, this implies that the statutory tax rate exerts a stronger direct influence on cross-border investment decisions than the marginal tax rate, contrary to the traditional view that only the marginal tax rate has any direct impact.¹⁸

Furthermore, the corporate tax base as a whole appears to respond more to the statutory tax rate than the marginal tax rate on normal returns. De Mooij and Ederveen's initial estimates are for the responsiveness of FDI to different tax metrics, but they then adjust their estimates to apply to the entire corporate tax base in the EU. They find that the semi-elasticity of the corporate tax base with respect to the EATR (via the channel of discrete locational investment choices) is roughly -0.65 , while it is only -0.4 with respect to the EMTR (via the channel of intensive margin investment). Moreover, the difference is probably larger in the United States. Applying parameters based on U.S. data, I obtain a semi-elasticity of roughly -0.8 for the EATR and -0.37 for the EMTR.¹⁹ This implies that the total amount of corporate income is more responsive to the EATR than the EMTR.

To be sure, these estimates do not necessarily imply that the traditional view is wrong. For one, EATRs across the economy should, on average, be the same under revenue-equivalent reforms, as posited here. In addition, a larger corporate tax base does not necessarily imply more investment and growth. But if two reasonable assumptions hold, these estimates do support the hypothesis that a business income tax may generate more investment. First, rents appear to comprise a larger share of returns in the tradable sector than the non-tradable sector (Power and Frerick, 2016), implying that EATRs would be higher under a cash-flow tax than under a business income tax in the sector in which they matter. Second, the tradable sector appears to be more responsive to taxes than

¹⁶ One caveat to this study is that it includes FDI involving pure profit shifting without any change in real economic activity. As a result, it may overestimate the response of real FDI to taxes in general.

¹⁷ The EATR in the earlier example of a semiconductor fabrication plant is 30 percent under a cash-flow tax.

¹⁸ Even under the traditional view, the statutory rate should have a smaller, indirect impact because it is part of calculating the marginal tax rate.

¹⁹ This assumes, following Cronin et al. (2012), that rents account for 63 percent of corporate profits and, following Burman, Clausing, and Austin (2017), that 25 percent of U.S. corporate equity is held by foreigners. If one assumes, following Power and Frerick (2016), that rents account for 75 percent of corporate profits, then the semi-elasticity for the EMTR is even smaller at -0.25 .

the purely domestic sector, implying that the investment reduction generated by higher EATRs under a cash-flow tax in the tradable sector is not fully offset by an investment increase generated by lower EATRs in the non-tradable sector.

Indeed, de Mooij and Devereux (2011) build on de Mooij and Ederveen (2008) to estimate the effects of two reforms in Europe: an allowance for corporate equity or ACE (which is similar but not identical to a cash-flow tax), and a comprehensive business income tax or CBIT (which is similar but not identical to the idealized business income tax posited here). As here, they adjust the statutory tax rate so that the two reforms raise the same amount of revenue. They estimate that a CBIT would generate higher growth than an ACE in an average European country.²⁰ Moreover, they find that the welfare benefits and, by implication, the growth benefits are larger in countries — like the United States — with larger multinational sectors and relatively high statutory rates.

In short, as global economic integration deepens, it is increasingly possible that many firms rationally should focus more heavily on their tax rate on rents than on normal returns — even if their sole goal is to maximize their discounted after-tax future cash flows as assumed by the traditional model. This may partially explain why many firms focus more heavily on their statutory tax rate than their marginal tax rate. Furthermore, the empirical evidence to date implies that, under reasonable parameters, a business income tax is likely to generate higher growth than a cash-flow tax because of the stronger responsiveness of discrete locational choices to the statutory tax rate — directly contradicting the traditional view. This is especially likely to be true in the United States.

C. A Cash-Flow Tax May Not Distinguish Accurately between Normal Returns and Rents in Practice

The previous two issues raised threaten to upend the traditional view that a cash-flow tax would generate more investment and growth than a business income tax. But even if both challenges had no support, contrary to the evidence to date, the efficiency benefits of a cash-flow tax may still differ from those typically assumed. This is for three practical reasons discussed in the remainder of this section. Each of these considerations relax the assumption that a cash-flow tax and business income tax would be implemented in the idealized forms generally hypothesized here.

²⁰ These are probably underestimates of the relative growth benefits of a CBIT because they assume that any revenue lost from behavioral responses to a higher statutory tax rate under an ACE, for example through profit shifting, is offset by raising broad-based consumption taxes rather than by raising the corporate tax rate further, which the authors estimate would have an even more adverse effect on investment and growth (de Mooij and Devereux (2011, p. 110). Similarly, they assume any revenue raised from behavioral responses to a CBIT is used to lower consumption taxes, not the corporate tax rate. On the other hand, they do estimate that an ACE can generate more growth if multiple countries enact the same reform in tandem because then the differential in statutory rates between countries is not as large. It is unclear whether they account for the possibility that high-rent investments will migrate to countries with a CBIT and low-rent investments to countries with an ACE.

The first practical issue is that most literature espousing the traditional view notes that a cash-flow tax only exempts normal returns if there are full loss offsets. But this is highly unlikely to hold in the real world. No prominent proposals for expensing permit refundable loss offsets. There is strong political opposition to refundable credits for businesses in the United States. And no OECD country permits refundable losses, or even pays interest on loss carryovers (Knittel and Cooper, 2010).

If firms cannot immediately and fully use losses, then a cash-flow tax *will* tax normal returns — and therefore marginal investments — especially among risky firms that are more likely to have losses. The tax on normal returns can be quite heavy at times. For instance, Neubig (2007) provides an example where the EMTR rises from 0 to 28 percent under a cash-flow tax if a firm has to carry forward its losses for four years. To be sure, business income taxes also do not allow refundable losses in practice, which can further increase the tax rate they apply to normal returns. But the problem is magnified under a cash-flow tax because it permits upfront deduction of lumpy investment costs and therefore should produce more losses, especially in transition.

The most common proposed alternative to loss refundability is carryforwards with interest, as under the House Republican Blueprint (House Republicans, 2016). But in order to make such carryforwards equivalent to loss refundability, firms would need to eventually be able to use their losses. Currently about 40 percent of losses are never used in the United States despite generous carryforward and carryback periods (Knittel and Cooper, 2010).

In addition, the interest rate would have to precisely equal the cost of capital for each firm for their marginal investments financed (Reynolds and Neubig, 2016, pp. 12–13). If the interest rate were higher, the system would exempt normal returns and some rents. If it were lower, it would tax some normal returns in addition to some rents. But in practice, the cost of capital varies widely by industry and asset type. For example, the cost of capital for biotechnology companies (9.3 percent) is more than three times the cost of capital for financial services companies (2.4 percent) (Damodaran, 2017).²¹ In addition, firms use a surprisingly wide variety of methods for calculating their cost of capital (Jacobs and Shivdasani, 2012), implying that even if lawmakers assigned the “right” interest rate to them, they might not perceive and respond to it in the same manner as loss refundability. As a result, it would be difficult, if not impossible, for a cash-flow tax to accurately distinguish between normal returns and rents if losses were not refundable.

To the extent that a cash-flow tax does end up partially taxing normal returns in practice because of incomplete loss offsets, this weakens the efficiency case for a cash-flow tax under the traditional view, even if all the other assumptions of that model were correct.

²¹ Reasonable people can disagree about whether the weighted average cost of capital is the appropriate measure in this context or, for example, the cost of debt. But regardless, the interest rate necessary to replicate loss refundability will vary widely across firms.

D. A Cash-Flow Tax Could Increase the Bias in Favor of Debt-Financing in Practice

A second practical issue is whether cash-flow tax proponents are right in frequently arguing that a cash-flow tax would eliminate the tax bias in favor of debt-financing, while a business income tax would not. If true, this would be an important efficiency advantage of a cash-flow tax.²²

But from a theoretical perspective, this is only an advantage of a cash-flow tax relative to current law. Policymakers could just as easily reduce or eliminate the bias in favor of debt-financing as part of moving towards an idealized business income tax, whether in the form of corporate integration or a CBIT, which disallows corporate interest deductions. That is why, as discussed earlier, this paper generally assumes idealized versions of each tax that reduce or eliminate the debt-equity distortion to the same extent.

Instead, what matters is whether either approach is more likely to reduce or eliminate the debt-equity distortion in the real world. Unfortunately, there is little reason to believe that either a cash-flow tax or a business income tax would substantially reduce the debt bias once the reform made its way through the political process. While the House Republican leadership initially (and laudably) proposed repealing interest deductions as part of moving to a cash-flow tax (House Republicans, 2016), they have softened their support for interest disallowance over time, and the President and Senate Republicans have never been particularly supportive (Rubin, 2016; Trump for President, 2016; Morgan, 2017; Ota, 2017).²³ Lawmakers have not limited corporate interest deductions as the tax code has moved in the direction of expensing through accelerated depreciation, expensing for intangibles, Section 179, and bonus depreciation. Similarly, the prior Administration proposed limiting interest deductions as part of moving towards a business income tax with economic cost recovery (White House and U.S. Department of the Treasury, 2012), but this proposal did not gain traction politically either.

Looking at other countries, I have been unable to identify a single country that applies a broad disallowance or haircut to interest deductions as part of its business income tax or cash-flow tax.²⁴ Many other countries have thin capitalization rules, but these rules are limited to high-leveraged companies and are usually limited to multinationals or related party debt as well (Blouin et al., 2014). To be sure, most other countries have VATs, which do disallow interest deductions. But VATs are not the subject of this paper. Unlike the two reforms posited here, VATs are not taxes on business profits alone; they tax wages, which represent about two-thirds of the income tax base (Avi-Yonah and Clausing, 2017). As a result, replacing the income tax with a VAT would represent a far more sweeping reform than replacing the current business income tax with an idealized business income tax or business cash-flow tax, as discussed here.

²² For further discussion of the negative economic consequences of the debt bias, see Auerbach (2010).

²³ As of the time of writing, the latest proposal would partially limit net interest expense but provides no details on how it would do so. White House, House Committee on Ways and Means, and Senate Committee on Finance (2017).

²⁴ Like the United States, other countries' business income taxes generally permit accelerated cost recovery and are thus hybrids between a business income tax and a cash-flow tax.

If corporate interest deductions continue to be allowed as part of both a cash-flow tax and a business income tax (which seems likely even if unfortunate), this weakens the efficiency case for a cash-flow tax. The value of interest deductions rises with the statutory tax rate, and therefore the magnitude of the debt bias rises with the statutory tax rate as well.²⁵ Because a cash-flow tax entails a higher statutory rate than a revenue-equivalent business income tax, its bias in favor of debt-financed corporate investment would be larger. Thus, in practice, concern about the debt-equity distortion may counsel in favor of business income tax, contrary to the traditional view.

E. A Cash-Flow Tax Would Eliminate Inter-Asset Distortions More Effectively in Practice

A final practical issue is what effect each tax would have on inter-asset investment choices. In theory, a cash-flow tax inherently eliminates distortions to such choices by taxing all normal returns at a zero rate (if there are full loss offsets) and all rents at the statutory rate. Likewise, a business income tax taxes all asset returns at the same statutory rate.

But in practice, economic cost recovery will always be imperfect because it is impossible to track the precise decline in the value of every business asset in the economy. The cost recovery rules could certainly be revised to much more closely mirror economic cost recovery, as some have proposed (e.g., Baucus, 2013). This could substantially reduce the wide variance in effective marginal tax rates on different assets and industries under current law (White House and U.S. Department of the Treasury, 2016, p. 7). But some inter-asset investment distortions will undoubtedly remain.

Thus, contrary to the issues discussed previously in this section, concern about inter-asset investment distortions strengthens the efficiency case for a cash-flow tax at the margin.

F. Summary

To sum up, there are at least five frequently unarticulated assumptions underlying the traditional view that a cash-flow tax is more efficient than a revenue-equivalent business income tax. The failure of the first two — that firms focus exclusively on their marginal tax rate when making investment decisions, and that all investment choices influenced by taxes only earn normal returns — would potentially upend the traditional view. Further research on these issues is certainly needed. But the evidence to date tentatively suggests that these assumptions are so wrong (at least with respect to large or publicly-traded firms) that domestic investment and growth would actually be *higher* under a business income tax than under a cash-flow tax.

The second two assumptions — that a cash-flow tax will provide full loss offsets and more effectively reduce the debt-equity distortion — seem doubtful as a matter of

²⁵ It also depends on the degree to which debt and equity are taxed at different rates at the investor level. Here I assume that any such differential is the same under a cash-flow tax and a business income tax.

Table 1
Questionable Assumptions Underlying Traditional Efficiency View

Assumption	Effect of Failure of Assumption on Traditional View
1. Firms exclusively focus on their marginal tax rate when making investment decisions.	Potentially reverses
2. All investment choices that are responsive to taxes only earn normal returns.	Potentially reverses
3. A cash-flow tax would permit full loss offsets in practice.	Potentially weakens
4. A cash-flow tax is more likely to reduce or eliminate the bias in favor of corporate debt financing in practice.	Potentially weakens
5. A business income tax is equally likely to eliminate inter-asset distortions in practice.	Potentially strengthens

political economy. If these assumptions do not hold, the efficiency benefits of a cash-flow tax are smaller than assumed under the traditional view, but still potentially larger than under a business income tax. The final assumption — that business income tax is equally likely to eliminate inter-asset distortions — is also unlikely to hold in practice because perfect economic cost recovery is inadministrable. This strengthens the efficiency benefits of cash-flow tax, though the difference is probably not that large. These conclusions are summarized in Table 1.

There are certainly other assumptions underlying the traditional view that are plausible and could strengthen its case on the margin. For example, a cash-flow tax eliminates the need to adjust depreciation and amortization for inflation. While a business income tax can index the cost recovery rules for inflation and some proposals attempt to do so (e.g., Baucus, 2013), such inflation adjustments are complex and likely to be imperfect in practice (Bradford, 1986).

Official estimates of the growth effects of business tax reforms, which are based on models adopting the traditional view, also rely on debatable empirical assumptions whose resolution could cut either way. For example, Gravelle has argued that rents are a much smaller share of capital income than official estimators typically assume (Gravelle, 2015). If so, a cash-flow tax may have a more positive effect on investment than those estimators project. On the other hand, recent work by U.S. Treasury Department economists finds that rents are a larger share of capital income than Treasury and other estimators assume (Power and Frerick, 2016).

But the evidence laid out here does cast doubt on the argument that a cash-flow tax would clearly increase U.S. investment and growth. It especially calls into question

estimates and arguments by cash-flow tax supporters that a cash-flow tax would be a panacea for growth — and to such a large extent that its costs would be substantially lower after accounting for its macroeconomic effects.²⁶

IV. CHALLENGES TO THE FAIRNESS BENEFITS OF A CASH-FLOW TAX

Proponents of a cash-flow tax typically focus on its efficiency and growth advantages. But often they assert that it would be more progressive as a secondary benefit. This fairness claim also rests on a number of questionable assumptions that are rarely articulated, five of which are examined in this section.

A. A Cash-Flow Tax May Reduce U.S. Investment, Increasing the Burden on Labor

Traditionally the burden of the corporate income tax is considered to fall partially on labor because it reduces domestic investment, and therefore labor productivity. Following this traditional view, most distributional models hold that a cash-flow tax would be more progressive than a revenue-equivalent business income tax because it would increase domestic investment.

For example, the U.S. Treasury Department assumes that the current corporate income tax falls entirely on corporate equity to the extent that corporate profits represent rents, because the firm does not shift part of the burden to other owners of capital or labor by reducing investment in response (Cronin et al., 2012). But it assumes that in the long run the tax falls half on capital and half on labor to the extent that corporate profits instead represent normal returns. Given that Treasury assumes 63 percent of corporate profits are rents, it therefore estimates that 63 percent of the burden of the corporate income tax falls on corporate equity, 18 percent on all owners of capital, and 18 percent on labor.

Under the Treasury model, which several other estimators have largely adopted (e.g., Nunns, 2012; Pomerleau, 2017), a cash-flow tax would eliminate the burdens on labor and all owners of capital, so that the entire burden of the corporate tax would fall on corporate equity owners earning rents.²⁷ Thus, as illustrated in Table 2, a cash-flow tax would be substantially more progressive.

But the first and second challenges to the traditional view discussed earlier imply that a business income tax may instead have a more positive effect on domestic investment than a cash-flow tax. This might be because firms partially focus on their statutory tax

²⁶ For example, the Tax Foundation estimates that expensing would increase gross domestic product (GDP) by more than 5 percent in 10 years, and that these growth effects would pay for 60 percent of its cost within the first decade (Tax Foundation, 2016, pp. 6, 77).

²⁷ The JCT is less clear on the theoretical framework underpinning their incidence analysis, but assumes that 75 percent of the burden of the corporate income tax falls on capital and 25 percent on labor in steady state (Joint Committee on Taxation, 2013). They have not publicly indicated whether they would change this incidence assumption if the current corporate income tax were replaced with the idealized corporate income tax or corporate cash-flow tax posited here.

Table 2
Incidence of Corporate Income Tax and Corporate Cash-Flow Tax

	Corporate Income Tax (Percent)	Corporate Cash-Flow Tax (Percent)
Corporate equity	63	100
All capital	18	0
Labor	18	0

Source: Cronin et al. (2012)

rate or book tax rate for the reasons described in Section IIIA, even if all of their marginal investment choices only involve normal returns. Then both multinationals and purely domestic businesses might invest less in the United States under a cash-flow tax because, all else equal, it entails a higher statutory and book tax rate. Alternatively or in addition, a business income tax might have a more positive effect on domestic investment because discrete locational choices involve rents, so firms maximizing their discounted after-tax cash flows rationally focus on their statutory tax rate to some degree. Then investment in tradable sectors might migrate to other countries over time under a cash-flow tax because it necessitates a higher statutory rate.²⁸

In either case, if domestic investment is lower under a cash-flow tax than under a revenue-equivalent business income tax, the fairness claims of the traditional view are reversed. A cash-flow tax should burden labor more heavily — and should be less progressive — because the capital-labor ratio will fall, reducing wages in the process.

It is unclear how much less progressive a cash-flow tax would be if it results in less domestic investment than a business income tax. Generally, the distributional models of official estimators rely on general equilibrium models to which they apply empirically-grounded parameters.²⁹ They are not based on direct estimates of the incidence of the corporate income tax because such studies are beset with identification issues or their results seem inapplicable to the United States.³⁰ And these general equilibrium models

²⁸ It should be noted that what matters for growth and labor productivity is real investment, not profit shifting. If a cash-flow tax induces more profit shifting because it necessitates a higher statutory rate, this may indirectly reduce real investment by requiring an even higher statutory rate to maintain revenue equivalence, but it does not imply a direct reduction in real investment.

²⁹ These general equilibrium models originate from Harberger (1962), which he and others extended over time to open economies.

³⁰ For example, Clausing (2012) employs a variety of empirical approaches to directly estimate the impact of the corporate income tax on labor and finds that the preponderance of evidence does not suggest any empirical relationship. Serrato and Zidar (2016) estimate that 30 to 35 percent of corporate income taxes in U.S. states fall on labor. However, capital is probably much more mobile across states than across countries, which should increase the share of state corporate income taxes borne by labor in their estimates. Desai, Foley, and Hines (2007) focus solely on the foreign affiliates of U.S. multinationals and estimate that 40 to 75 percent of the burden of the corporate income tax on both normal returns and rents falls on labor. But such foreign subsidiaries may not be representative of the economy as a whole. For further

reach a wide range of results. For example, using a numerical example, Randolph (2006) estimates that 70 percent of the burden of the corporate income tax on normal returns falls on domestic labor. Gravelle and Smetters (2006) illustrate that domestic labor's share of the burden on normal returns could range from -3 to 73 percent, although they conclude that labor bears about 20 percent of the tax on normal returns under reasonable, empirically-grounded parameters. Gravelle (2013) estimates that about 40 percent of the burden on normal returns falls on labor under the most plausible parameters.³¹ While frequently overlooked, all of these models only estimate the burden on normal returns because they assume perfect competition and constant returns to scale, and therefore no rents. There is relatively widespread agreement that taxes on corporate rents do not burden labor (e.g., Auerbach, 2006; Cronin et al., 2012; Nunns, 2012; Pomerleau, 2017).

The possibility that a cash-flow tax would generate less investment undercuts the entire theory of these general equilibrium models. It implies that taxing rents actually affects investments and partially burdens labor, contrary to one of the foundational assumptions of these models.³² At the same time, it implies that taxing normal returns affects investment less, and therefore burdens labor less, than these models assume.

If these models were revised to account for such effects, it is unclear how exactly they would allocate the burden of a business income tax and a cash-flow tax. But three things are clear. Contrary to these models, the burden on labor and all capital would be greater than zero under a cash-flow tax because some of the burden is shifted to labor through the investment response. The share of the burden falling on labor would not be 18 percentage points higher under a business income tax than under a cash-flow tax. And if investment is indeed lower under a cash-flow tax, then its burden on labor should actually be higher than under a business income tax, directly contradicting the traditional view.

B. Taxing Rents May Burden Labor Directly

A second channel through which the burden of the corporate income tax might fall on labor is directly: by reducing rents over which labor bargains with management. If this hypothesis held, it is another reason why a cash-flow tax might burden labor more heavily because it entails a higher tax rate on rents (and a lower rate on normal returns) than does a revenue-equivalent business income tax.

discussion of the identification and applicability issues in these and related empirical studies, see Gravelle (2017), Gravelle (2013) and Clausing (2012).

³¹ For further discussion of the problems with relying on such general equilibrium models, see Auerbach (2006), Clausing (2012), and Gravelle (2013).

³² This raises a further question of whether both a cash-flow tax and a business income tax could be less progressive than currently estimated because taxes on rents burden labor. This does not follow for two reasons. First, the points made here imply that taxes on normal returns burden labor less heavily than currently assumed, which could entirely offset any higher burden that taxing rents imposes on labor. Second, as well summarized in Clausing (2012), the empirical evidence supporting the notion that the corporate income tax meaningfully burdens labor is fairly weak, making it difficult to extrapolate from existing empirical work.

While this channel is not included in the distributional models of official estimators, it has been explored to some extent empirically. In a study of European firms, Arulampalam, Devereux, and Maffini (2012) find that about 50 percent of the corporate income tax falls on labor due to workers and firms bargaining over rents. Fuest, Peichl, and Sioegloch (2017) examine the effect of changes in local German business tax rates and estimate that 47 percent of the burden falls on labor for this reason. Azémar and Hubbard (2015) estimate that 60 percent of the burden falls on labor among Organisation for Economic Co-operation and Development (OECD) countries due to wage bargaining. But there are a number of methodological issues with these and related studies, and their baseline results generally do not apply to the United States. For example, Fuest et al. and Arulampalam et al. only study firms in Europe, where unionization rates are much higher, implying that labor has more leverage in bargaining over the firm's rents.³³ Azémar and Hubbard (2015) find that labor's estimated burden is higher in countries that are more open to trade, but that it essentially disappears in countries — like the United States — that are larger or have average or below-average union density. In addition, these estimates only apply to taxes on rents, not all corporate profits. Further, as explained by Riedel (2011), wage bargaining may actually result in the corporate income tax increasing wages under some plausible parameters because it increases the value of payroll tax deductions.

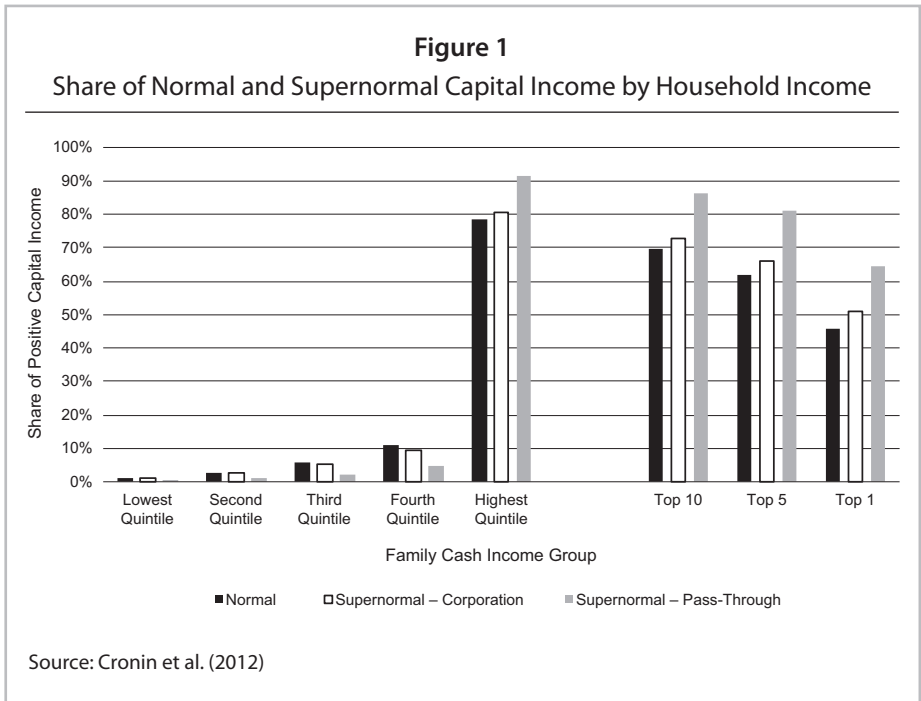
In short, the evidence for this channel is weak, and it is especially unlikely to be a meaningful dynamic in the United States. But it could contribute to a cash-flow tax being less progressive than a business income tax in other countries where, for example, collective bargaining is more prevalent.

C. Differences in the Distribution of Rents and Normal Returns May Be Smaller Than Expected

A third argument sometimes advanced by cash-flow tax advocates is that it would be more progressive than a business income tax because it taxes rents more heavily, and the wealthy earn more rents as a share of their capital income (e.g., Gentry and Hubbard, 1997). Overall, this seems like a reasonable assumption. After all, most of the Fortune 400 appear to be founders of businesses or heirs of such founders, who presumably derived most of their wealth from rents (Fleischer, 2011). Nevertheless, the correlation between wealth and the likelihood of earning rents rather than normal returns may be weaker than many assume.

As illustrated in Figure 1, the U.S. Treasury Department estimates that the top 1 percent earn 46 percent of all normal returns, 51 percent of all rents from corporations, and 64 percent of all rents from pass-throughs (Cronin et al., 2012). But while these

³³ Arulampalam, Devereux, and Maffini (2012) also do not control for firm-specific attributes, which may result in firms simultaneously paying more tax (because they are profitable) and paying higher wages (because they are well run). For further discussion of methodological issues in such studies, see Gravelle (2017), Clausen (2012) and Gravelle and Hungerford (2008).



differences are meaningful, they are not eye-popping and may be overstated or overly precise for several reasons.

First, the authors assume that interest income is comprised solely of normal returns, which seems unlikely. The line between debt and equity is notoriously difficult to draw, and firms frequently treat payments that exhibit many equity-like characteristics as debt for tax purposes. Second, they assume that all passive income from closely-held businesses represents normal returns and none represents rents. This seems implausible and may overstate the share of rents earned by the top 1 percent if they are less likely to passively invest in closely-held businesses than other businesses.

Third, Cronin et al. (2012) assume that only 25 percent of the capital income earned on defined contribution retirement accounts represents rents (versus 63 percent of capital income in general). This probably underestimates the share of rents earned in retirement plans. More than half of defined contribution plan and IRA assets are invested in equities (Investment Company Institute, 2017). To the extent that the authors are underestimating the share of rents in retirement plans, this may skew their overall estimates of the distribution of rents towards the wealthiest. About 37 percent of corporate equity is held by owners of pensions and retirement accounts (Burman, Clausing, and Austin, 2017) and these assets are much less concentrated among the very wealthy than other assets (Devlin-Foltz, Henriques, and Sabelhaus, 2016).

In addition, Cronin et al. (2012) disregard nonprofit tax-exempts (like endowments) and foreign investors even though they own about 29 percent of corporate equity (Burman, Clausing, and Austin, 2017). It is unclear whether these investors are more or less likely to earn rents, and whether we should consider taxing them to be more or less progressive. But excluding them does obscure the degree to which rents are actually distributed more unequally than normal returns.

Finally, it is worth emphasizing that capital income overall is heavily concentrated among the relatively wealthy. Cronin et al. (2012) estimate that the top 1 percent earn half of all capital income, while the bottom three quintiles only earn about 8 percent. In contrast, the top 1 percent earn 12 percent of labor income, while the bottom three quintiles earn 21 percent.³⁴ As a result, the most important determinant of how progressive business taxes are is how much they burden capital versus labor as discussed earlier, not rents versus normal returns as discussed here.

In sum, the fact that a cash-flow tax taxes rents more heavily probably does mean that it taxes capital income slightly more progressively than a business income tax does. But the degree to which this affects the relative progressivity of the two taxes among owners of capital appears to be relatively modest. Moreover, this mainly means that a cash-flow tax is slightly more progressive among the wealthy, and says nothing about the extent to which it burdens labor, which is the more important factor for low- and middle-income households.

D. A Cash-Flow Tax May Not Distinguish Accurately between Normal Returns and Rents in Practice

To the extent that rents are distributed more unequally than normal returns, a further challenge to the traditional view is that a cash-flow tax may not distinguish accurately between normal returns and rents in practice. As explained in Section III C, if a cash-flow tax does not permit refundable loss offsets, it will continue to tax some normal returns and it will exempt some rents. This means it will be less effective at targeting rents.

Whether this implies that a cash-flow tax would be less progressive than traditionally assumed is unclear. Losses are more likely to arise on risky investments, and there is some evidence that the wealthier individuals tend to invest in riskier ventures (e.g., Badarizna, Campbell, and Ramadorai, 2016).³⁵ If so, less-than-full loss offsets would tend to burden wealthier investors. On the other hand, a cash-flow tax might be implemented with rules (such as providing interest on losses) that are equivalent to full loss offsets on average, but very imprecise in individual cases. Then imperfect loss offsets would not burden the wealthier investors on average, but would muddy the distributional effects among them.

³⁴ These estimates are subject to some dispute. Piketty, Saez and Zucman (2018) also estimate that capital income is distributed more regressively than labor income, but find that the difference is less dramatic, with the top 1 percent earning 12 percent of pre-tax capital income and 8 percent of pre-tax labor income.

³⁵ Losses also of course arise because of other factors, like recessions and a business undertaking a large expansion.

E. A Cash-Flow Tax May Not Just Burden Rents, But Also Old Capital

A fifth potential complication with the fairness claims of the traditional view is that its proponents and many estimators often focus only on steady-state distributional effects (e.g., Cronin et al., 2012). Depending on what transition rules are adopted, incorporating transition effects into the analysis may strengthen the argument that a cash-flow tax is more progressive than a revenue-equivalent business income tax, though it complicates the analysis further.

Under some transition rules, moving from a business income tax to a cash-flow tax can essentially impose a lump-sum tax on owners of pre-existing assets (old capital). If owners of old capital cannot expense their remaining basis and must pay tax on returns from their old investments at the new, higher statutory rate, then the tax rate on their old investments has essentially increased. Owners of old capital should bear this burden relatively quickly as the tax increase is capitalized into prices for their assets. On the other hand, if owners of old capital can expense their remaining basis, or can pay tax on future returns on their old assets at the old, lower statutory rate, then their asset prices should not fall in response.³⁶

Assuming the transition rules do generate a lump-sum tax on old capital, this should reduce the tax burden on labor on a present value basis, thereby strengthening the relative progressivity of a cash-flow tax (Gravelle and Smetters, 2006). It also has important intergenerational effects, essentially redistributing from older to younger owners of capital (Auerbach, 2006). Whether the latter effect is progressive raises thorny normative questions. On the one hand, owners of old capital may disproportionately be recipients of large inheritances, whom we might view as better-off because they did not need to work to obtain their wealth (Batchelder, 2009). On the other hand, we might view owners of old capital as worse-off because they are older and should therefore, on average, have lower lifetime income than younger generations, assuming continued economic growth.

In short, if the transition to a cash-flow tax is designed in a certain way, more of the burden will fall on old capital and less on labor on a present value basis. Likewise, if analogous transition rules were adopted in moving to a business income tax, it would generate a windfall for old capital and burden labor more heavily. Whether this actually happens depends of course on the choices of policymakers, but it may strengthen the fairness case for a cash-flow tax at the margin.

F. Summary

In sum, there are at least five frequently unarticulated assumptions underlying the traditional view that a cash-flow tax is more progressive than a revenue-equivalent business income tax, as illustrated in Table 3. The first — that a cash-flow tax would

³⁶ President Reagan proposed a mirror image of this approach in Treasury II. His proposal would have required taxpayers to pay tax on future returns to old capital at the old, higher statutory rate in order to prevent windfalls to old capital as a result of slowing down depreciation deductions and cutting the statutory rate (Zodrow, 1988).

Table 3
Questionable Assumptions Underlying Traditional Fairness View

Assumption	Effect of Failure of Assumption on Traditional View
1. Domestic investment would be higher under a revenue-equivalent cash-flow tax.	Reverses
2. Taxing rents does not burden labor.	Potentially reverses
3. Rents are distributed much more unequally than normal returns.	Potentially weakens
4. A cash-flow tax would permit full loss offsets in practice.	Complicates and may strengthen
5. A cash-flow tax would not burden old capital or this transition effect can be ignored.	Complicates and may strengthen

increase domestic investment by more than a business income tax — would upend the traditional view on its own terms if it were wrong. While further research is certainly needed, the evidence to date tentatively contradicts this assumption, implying that a cash-flow tax would actually be less progressive.

The second assumption — that taxing rents does not burden labor directly — could also reverse the traditional view if it were wrong. But the evidence to date against this assumption is relatively weak, and especially in the United States. The third assumption — that rents are distributed much more unequally than normal returns — may be overstated, further weakening the case for the traditional view.

In contrast, the fourth and fifth assumptions — that, in practice, a cash-flow tax would permit full loss offsets and would not increase the share of the tax burden falling on old capital — complicate and potentially strengthen the case for the traditional view if they were incorrect. The fourth is unlikely to hold in practice, but this would either have no effect on the relative progressivity of a cash-flow tax or would only slightly increase it. It is much less clear whether policymakers would adopt transition rules that increase the relative burden on old capital as part of a cash-flow tax (or benefit old capital as part of a business income tax). But if they do, this could more substantially strengthen the case for the traditional view.

V. EFFICIENCY AND FAIRNESS IMPLICATIONS OF RELAXING THE ASSUMPTION OF REVENUE-EQUIVALENCY

Thus far, this paper has assumed that a cash-flow tax and business income tax would raise the same amount of revenue on a present value basis. This section relaxes that assumption. In the current U.S. political context, a cash-flow tax is likely to raise less revenue, though the reverse could be true in other political configurations. If a cash-flow

tax does raise less revenue, this complicates the analysis of whether it would be more or less efficient, and substantially weakens the argument that it would be more progressive.

A cash-flow tax generally raises less revenue in the near term than it raises in steady state. The revenue raised is back-loaded because businesses can immediately deduct the cost of new investments, but initially there is no corresponding decrease in deductions for old investments.³⁷ For the same reason, the revenue raised by moving to a business income tax is front-loaded.

Theoretically both approaches could be structured to raise the same amount of revenue on a present value basis. But the real world result could be very different. If Congress enacts business tax reform in the current U.S. political context where the House, Senate, and Presidency are all controlled by the GOP, it is likely to do so on a partisan basis. But the only way it can avoid a filibuster in the Senate is through the reconciliation process. Under the Senate Byrd rule, reconciliation legislation cannot increase budget deficits in any year outside the budget window, but can increase deficits within the budget window by as much as lawmakers desire (provided that the revenue reduction is authorized in the budget resolution, which also is not subject to a filibuster). This provides a relatively easy path for the GOP to cut business tax revenue on a present value basis if it enacts a cash-flow tax: They can structure the tax to lose revenue within the budget window and be revenue-neutral outside it, thereby complying with the Byrd rule and avoiding a filibuster. The revenue-losing path would be considerably more difficult if they proposed a business income tax because the revenue raised is front-loaded rather than back-loaded, making it much more difficult to comply with the Byrd rule. Thus, a cash-flow tax is more likely to lose revenue overall.

If a cash-flow tax does entail less revenue than a business income tax, this complicates the efficiency analysis. On the one hand, it means that the difference between the statutory rate under a cash-flow tax and a business income tax would not be as large as assumed throughout this article. This would reduce the force of the arguments in Sections IIIA and IIIB that a business income tax may result in more domestic investment and growth because firms rely to a large degree on their statutory and book tax rates when making investment choices, and not just on their marginal tax rate. On the other hand, it means that national debt would grow as a share of GDP. Higher debt would increase private borrowing costs, thereby crowding out private domestic investment and depressing economic growth. It is unclear which factor would outweigh the other. For example, the JCT has found that the long-term effects of debt-financing permanent bonus depreciation on the capital stock and growth are sufficiently unclear that they cannot estimate the sign in the second and third decades after enactment (Joint Committee on Taxation, 2015). But most analyses find that deficit-financed tax cuts eventually have negative impacts on growth, though when that occurs is typically highly uncertain (e.g., Elmendorf, 2015; Page, 2017).

However, a cash-flow tax would clearly be a sharply regressive change if it entailed less business tax revenue overall. For the reasons discussed in Section IV, it is unclear whether a cash-flow tax would be more or less progressive than a business income tax

³⁷ This depends on the transition rules. Theoretically, a cash-flow tax may also allow businesses to immediately deduct their remaining basis in all old investments.

if revenues were held constant. But taxes on business profits are highly progressive, and would continue to be so under either approach (Tax Policy Center, 2016; Pomerleau, 2017). Thus cutting revenues under either a cash-flow tax or a business income tax would reduce tax progressivity.

To be sure, a cash-flow tax might raise more revenue in other political contexts. For example, if business tax reform were enacted on a bipartisan basis, policymakers would probably compromise by agreeing to a principle of revenue neutrality, as they did in the Tax Reform Act of 1986. And, if history is a guide, they would tend to focus on the ten-year budget window in defining revenue neutrality. In this case, a cash-flow tax is more likely to raise revenue on a present value basis because it raises less revenue within the budget window than it does in the long term.

Another consideration is that Congress has frequently enacted partial expensing on a temporary basis during recessions, which creates a risk that it will be made permanent without being paid for. If expensing was already permanent, this would obviously be less of a risk. But if expensing was enacted permanently as part of a cash-flow tax, Congress would almost certainly identify other temporary business tax cuts to take its place in a recession, thereby recreating the risk of reducing revenue by making temporary tax cuts permanent without offsets, but just in another form.

As Neils Bohr said, “It is very difficult to predict — especially the future.” But on balance, it appears more likely than not that if a cash-flow tax were enacted in the near term, it would result in less revenues and higher deficits than a business income tax would. In this case, a cash-flow tax would probably depress efficiency and growth in the long run, and would clearly decrease the progressivity of the tax system overall.

VI. DIFFERENCES FOR PASS-THROUGHS

The analysis in this paper so far has generally focused on C corporations. But pass-throughs are a large component of the U.S. business sector, accounting for about 60 percent of net business income and 94 percent of business entities (White House and U.S. Department of the Treasury, 2016; Prisinzano et al., 2016). Their importance has grown over time for at least two reasons. First, the United States permits companies with limited liability to pay tax on a pass-through basis. This began with the advent of limited liability companies (LLCs) in the 1980s and accelerated with the check-the-box regulations in 1997. Second, when one accounts for entity- and investor-level taxes, there has generally been a tax preference for business adopting the pass-through form since the Tax Reform Act of 1986 (Plesko and Toder, 2013). Currently, pass-throughs pay tax at a substantially lower rate, with estimates of the effective tax rate differential ranging from 4 to 12 percentage points (Congressional Budget Office, 2014; Cooper et al., 2015; White House and U.S. Department of the Treasury, 2016). While the analysis presented so far generally applies equally to pass-throughs, there are some exceptions, three of which are discussed in this final section.

First, official estimators adopt very different incidence assumptions for taxes on pass-through businesses versus C corporations. For example, the JCT assumes that 95 percent of the burden of taxes on pass-throughs falls on domestic capital in steady state (versus 75 percent for C corporations) and only 5 percent on domestic labor

(versus 25 percent for C corporations) (Joint Committee on Taxation, 2013).³⁸ While they acknowledge that there is very little direct research on the incidence of taxes on pass-throughs, the JCT's rationale is that pass-throughs are less integrated in the global economy and therefore have less ability to shift capital abroad. This means that taxes on pass-throughs generate less investment response and thereby burden labor less. If this view is correct, it weakens the traditional view. Because a large share of business income is earned by pass-throughs, whose investment is by hypothesis less responsive to taxes, a cash-flow tax would generate fewer efficiency and progressivity gains even if all the other assumptions of the traditional view held.

Cutting somewhat against the JCT's assumption, a second issue is emerging evidence that smaller businesses are potentially more responsive to accelerated cost recovery rules than large businesses. As discussed in Section IIIA, Zwick and Mahon (2017) find a much larger response to bonus depreciation among smaller firms (the bottom 90 percent) than among the largest firms. This appears to be driven by the greater likelihood that smaller firms are cash constrained. While many of the largest U.S. firms are pass-throughs and many small firms are C corporations, pass-throughs are, on average, smaller than C corporations (Prisinzano et al., 2016). Thus, expensing may generate more investment among pass-throughs than it does among C corporations. This would strengthen the case for the traditional view given the importance of pass-throughs in the U.S. economy. However, as discussed in Section IIIA, this research suggests that other policy approaches, such as improving access to small business loans or a refundable investment tax credit, might stimulate even more investment by relaxing cash-constraints among all small firms, not just those with positive tax liability.

Finally, this paper has generally compared a cash-flow tax and business income tax that are structured to raise the same amount of revenue by adjusting the corporate income tax rate. But, compared to current law, this means that pass-throughs would benefit from expensing under a cash-flow tax without having to pay a higher rate, and would have to deduct the cost of investments more slowly under a business income tax without receiving any rate reduction to compensate.³⁹

In general, raising the relative rate on pass-throughs would reduce distortions to entity choice because they are tax-preferred under current law, thereby strengthening the efficiency case for a business income tax over a cash-flow tax. Indeed, pass-throughs would probably remain tax-preferred under a business income tax that raises the same amount of revenue as current law (Batchelder, 2017). However, it is possible that in

³⁸ The Tax Policy Center assumes that all of the burden of taxes on pass-throughs falls on their owners.

³⁹ If interest deductions were also disallowed for pass-throughs, they might face a tax increase under both reform options and not just under a business income tax, but they still would probably remain tax-preferred. Although it is not entirely clear, interest deductions probably should be disallowed for pass-throughs under the idealized cash-flow tax and business income tax hypothesized here. On the one hand, disallowing interest deductions could in theory create a bias in favor of equity financing for pass-throughs. On the other hand, this bias could be small or non-existent in practice given that the tax rate on interest paid by pass-throughs tends to be lower than the rate at which such interest is deducted (CBO, 2014). Moreover, allowing interest deductions for pass-throughs but not for C corporations would exacerbate the existing tax bias in favor of the pass-through form and could create gaming opportunities.

other states of the world or in other countries, a business income tax could create a tax bias against the pass-through form, which would need to be incorporated into the efficiency analysis.

Another possibility is that Congress could create a special, lower tax rate on pass-through income to compensate for any real or perceived advantage to C corporations under a business income tax. This would create large, new incentives to recharacterize labor income as pass-through business income, and could further distort entity choice decisions. Because pass-through business income is relatively concentrated among the wealthy, it would also reduce tax progressivity. But Congress is currently advancing this proposal in the context of moving towards a cash-flow tax (House Republicans, 2016), so its serious efficiency and fairness drawbacks do not appear to be confined to one reform option and not the other.

VII. CONCLUSION

Traditional economic theory holds that a business cash-flow tax is superior to a business income tax because it is more efficient and progressive. But much of the literature espousing this view does not explicitly specify the full range of assumptions underlying these claims, let alone explore and empirically justify them. This paper summarizes 11 assumptions underlying the traditional view and considers how well supported they are empirically and as a matter of political economy.

One critical assumption is that firms focus exclusively on their marginal tax rate on normal returns when making investment decisions, and not on other tax metrics like the statutory tax rate. But the evidence to date tentatively suggests that this assumption is so far from true that domestic investment — and therefore growth and tax progressivity — would actually be higher under a business income tax than under a revenue-equivalent cash-flow tax. Another critical assumption is that both approaches would raise the same amount of revenue. But at least in the current political context, a cash-flow tax is likely to raise less revenue, which complicates the efficiency analysis and implies that it would be less progressive than a business income tax. Still other assumptions are unlikely to hold, some of which strengthen and others of which weaken the case for the traditional view on the margin.

Taken as a whole, however, the case for a cash-flow tax over a business income tax becomes considerably murkier when each assumption is examined closely, and may well collapse.

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