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Companies? Lessons from a Historical Panel**

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WHAT WOULD A CASH FLOW TAX LOOK LIKE FOR U.S. COMPANIES? LESSONS FROM A HISTORICAL PANEL

January 2017

Elena Patel¹ and John McClelland²

In this article, Patel and McClelland present a prototype destination basis cash flow tax to replace the existing corporate income tax. To gain some insight into the potential consequences of the United States adopting a cash flow tax of this form the authors use a panel of tax returns over the 2004-2013 period to compare and contrast an income tax base and a cash flow tax base on a firm by firm basis. This simulation points out the similarity of the tax bases for most firms but that treatment of import and export activity is of disproportionate importance.

Keywords: National Taxation, Public Economics, Public Finance, Revenue, Tax Data, Business Tax, Tax System, Optimal Taxation, Consumption Tax.

JEL Codes: H20, H21, H25, H32

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Introduction

Policy makers continue to struggle with determining the best template for reform or replacement of the corporate/business tax system in the United States. Desirable characteristics include:

- Simplicity
- Improved incentives for investment and growth
- Minimal distortions on business location incentives

Numerous modifications to the current income tax system have been proposed but none have been sufficiently appealing as to be adopted as of yet. This lack of consensus regarding an “easy fix” opens the door to much more fundamental changes.

Reforms such as Toder and Viard (2016) or Grubert and Altshuler (2016) would maintain a corporate income tax at a significantly reduced rate of 15 percent and replace the lost revenue with increased tax revenue from firm owners. An alternative path would maintain a tax on businesses (as opposed to shifting the statutory incidence to firm owners) but move from the existing “income” tax base to a cash flow base. Discussion of the advantages of such a tax have a long history including in Treasury’s “Blueprints for Basic Tax Reform (1977)”, the 2005 President’s Advisory Panel on Federal Tax Reform in the form of its “Growth and Investment Tax Plan”, and more recently Auerbach’s “Modern Corporate Tax” (2010). In this paper, we attempt to extend that work by simulating the impact of replacing the current corporate tax system with a destination basis cash flow tax. To accomplish this goal we will specify many operational parameters; these choices are meant to be illustrative rather than declarative. The hope is that by more fully specifying how a cash flow tax would work, we can identify the pressure points of such a system and advance the discussion of the strengths and weaknesses for this type of reform relative to alternatives.

In the simplest sense, a cash flow tax is exactly what the title implies: a tax that is levied on the cash entering the business less the cash leaving the business. By providing consumption tax treatment to business income, the cash flow tax creates incentives typically attributed to consumption taxes, such as increased incentives for investment, reduced distortions across different types of investment, and no distortion across the financing of investment. In practice, this cash flow tax would look similar to the current corporate tax in that it would be administered by levying a tax liability on each business on an annual basis.

By choice this study contemplates a replacement of the corporate income tax while largely leaving in place the current individual income tax. This is in part to facilitate comparisons with other business-only reforms, such as the Administration’s Framework for Business Tax Reform, proposals for a patent box, or a move to territorial taxation. Secondly this study is motivated by tax reform proposals, such as the X-tax³ and congressional outlines for business tax reform, both of which rely on cash flow tax principles. There are reasons why a cash flow business tax paired with an individual income tax on wages and capital income might be sensible in the United States. For example, as reform options are considered in the current public discourse, there have been broad calls for reforms that would simultaneously spur growth and help address increasing

³ For additional information on the X tax, see Robert Carroll and Alan Viard, (2012), *Progressive Consumption Taxation: The X Tax Revisited*, AEI Press

income inequality. In this case, the classical income tax system is viewed as being insufficiently supportive of growth, and consumption tax based reforms are viewed as being incapable of being sufficiently progressive, so a simpler and broader income tax or a consumption tax faces strongly held resistance. The combination of a business tax on cash flow and a progressive individual income tax on wages and capital income might prove to be a path forward. The key insight is that consumption can be taxed based on how it is financed rather than how it is spent. Consumption financed from corporate profits, windfall gains, good luck, or existing shareholder wealth can be subject to the business cash flow tax while consumption financed from sources like wages, Social Security, or cash in the bank can be exempted from the business cash flow tax. Moreover, consumption financed by corporate profits, luck, and wealth is far more concentrated than income from other sources making it a very progressive source of tax revenues.

We pair this insight with the fact that the current business income tax base, which is based on business income, is increasingly comprised of income attributable to returns in excess of the risk-free return, such as returns from windfalls, monopolies, or rents (Power and Frerick 2016). Thus, consumption tax systems that provide expensing, relieving the burden of tax on investment, do not narrow the tax base as much as is typically feared. In addition, there is increasing evidence that in the current tax system, multinational firms are able to use paper transactions to move some of the “excess” returns to low tax jurisdictions, leading us to believe that a well-designed cash flow tax base, which would access these shifted profits, could be even larger than the current U.S. income tax base might suggest. Taken together, this suggests that increased incentives could be provided for investment and growth by relieving the business tax burden on the normal return while maintaining a revenue base similar to the current corporate income tax.

Finally, we believe that a switch to a domestic cash flow tax on businesses could bolster the ability of the tax system to address income inequality. Due to the relative immobility of labor in an open economy, a significant portion of the burden from a corporate income tax is believed to fall onto labor. Decomposing the corporate income tax base to the portions arising from the risk-free and “excess” returns helps to clarify the insight that a revenue neutral switch to a cash flow tax is likely to be a progressive change. This is due to the theoretical prediction that the tax on the normal return in part burdens labor since capital is more internationally mobile than labor, whereas the tax on supernormal return is borne by shareholders.⁴ Setting aside whether one system has less excess burden than another, a move from the current corporate tax to a cash flow tax should be a more progressive way to raise a dollar of government revenue.

This paper proceeds by describing the motivations for moving to a cash flow tax system. We then describe the specification of our prototype for a destination-based cash flow tax levied on C corporations in the United States. Given this specification, we describe the results and implications of a microsimulation based on a historical panel of C corporations from 2004 to

⁴ See William Gentry (2007), A Review of the Evidence on the Incidence of the Corporate Income Tax, Department of the Treasury, Office of Tax Analysis Working Paper 101 for a review of the literature on the incidence of the corporate tax and Julie-Anne Cronin, Emily Y. Lin, Laura Power, and Michael Cooper (2012), Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology, Department of the Treasury, Office of Tax Analysis Technical Paper 5 for details on Treasury assumptions regarding the incidence of the corporate income tax.

2013. Finally, we provide some concluding remarks on the relevance of this analysis in the broader context of corporate tax reform.

Motivations

How to simplify the business tax system?

The cash flow tax could provide significant simplification across two dimensions: first through the calculation of tax liability for each business, and second by reducing/eliminating the tax consequences of the choice of organizational form, providing greater uniformity across businesses.

The potential administrative simplifications to the firm can be motivated by thinking about what a business would need to track for a given transaction under an income tax versus a cash flow tax. For an input to production, the income tax relies on the business classifying what type of purchase was made. Was it an asset with a life sufficiently long that it would have to be capitalized? If so, how long of a life should be assigned to the asset? For a payment to a financial intermediary, was this a repayment of principal or interest?

Under a destination-based cash flow tax, the type of good or service purchased becomes irrelevant. The only determination that is needed is whether or not the purchase was from a domestic source. For a purely domestic firm, any accounting system that records the flow of receipts to the firm and the payments made by the firm would be sufficient to calculate the tax. In fact, by running transactions through a single bank account the vast majority of firms would be able to report net cash flow using the same information that would be reported on associated bank statements.

This simplification in the determination of the tax base also simplifies the task of the tax administrator, reducing the opportunities for many types of wasteful tax minimization strategies. For example, engaging in cross border transactions with related parties would no longer provide the opportunities to shift the tax base out of the United States.

What income/profit to target?

The shift to a business cash flow tax would be a tax on consumption as opposed to the current business tax, which is a hybrid of an income and a consumption tax. The cash flow tax would provide for the immediate deduction of the costs of capital investment (often referred to as expensing). This treatment of investment exempts the “normal” return on investment; in this way, the business cash flow tax can be thought of as a tax on “super-normal” returns. By removing the disincentive to invest, a cash flow tax is typically considered to be growth enhancing relative to our current business income tax system. This change, by theoretically narrowing the tax base by excluding “normal” returns, would require a higher tax rate than a full income tax in order to be considered revenue neutral. However, how much narrower the tax base would be with full expensing is an empirical question. Recent evidence shows that for nonfinancial C corporations, the fraction of the corporate income tax base attributable to the risk-free return has been gradually declining to approximately 25% (Power and Frerick 2016). Further, given the recent practice of providing “bonus” depreciation between 50% and 100% in

all but three of the last fifteen years, a move to full expensing of investment represents a less significant narrowing of the tax base compared to a current policy baseline.

What about financial flows?

The cash flow tax can, in theory, have two different flavors: the “R+F” base, which includes both “real” and “financial” transactions, or the “R” base, which excludes financial transactions. A move to the R+F base, which is more comprehensive, has the potential for greater simplicity. For example, in a single rate system, loan payment and remittance exactly offset one another over the life of the loan, negating the need to track these transactions. However, this simplicity comes at the cost of the unintuitive include/deduction of principle payments as they flow to and from a business and the additional difficulty of drawing international borders around financial services, which are, perhaps more than any other service, only loosely associated with a particular geographic location. For these and other reasons, most credit invoice value added taxes ignore financial transactions (and use the “R” base) ignoring the value added provided by financial services and taxing financial intermediaries under a separate system. This coupled with the fact that lending to foreigners should be ignored in a destination basis cash flow tax suggests that serious consideration should be given to only applying the “+F” treatment for transactions between financial intermediaries and consumers, as suggested by Auerbach (2016).

The tax treatment of multinational businesses?

Globalization and the rise of multinational corporations has made clear the difficulties of attempting to tax income differentially based on where it accrues.⁵ The current income tax system is susceptible to the stripping of income from high to low tax jurisdictions, particularly in the case of intangible assets that are hard to price and increasingly important to multinational businesses. Moreover, the necessity of transfer pricing under the income tax is costly to both businesses and the tax administrator. While efforts such as the OECD’s Base Erosion and Profit Shifting Framework may aid the functioning of the current tax system, it cannot solve the inherent tension caused when jurisdictions attempt to tax income at different rates. In this case, the difficulty arises from the need to attribute profits to a particular location when in fact the production of a final good or service arose from a worldwide production chain. Rather than trying to address this potentially unanswerable question, a destination-based cash flow tax functions by assessing tax where consumption occurs as opposed to where profit originates.

The cash flow tax will still confront administrative difficulties, most notably with regard to services. While it is relatively obvious where the consumption of tangible goods occurs, the location of services are more difficult. For example, providers may be in different countries than the customer in the case of virtual services. This is the same problem that the value added taxes employed by our trading partners continue to confront. While there is no easy solution to this problem, a cash flow tax can take advantage of the guidelines developed by the OECD to determine the appropriate jurisdiction to tax services.⁶

⁵ For a description of the failings of the current tax system see The President’s Framework for Business Tax Reform: An Update (2016), <https://www.treasury.gov/resource-center/tax-policy/Documents/The-Presidents-Framework-for-Business-Tax-Reform-An-Update-04-04-2016.pdf>

⁶ See the OECD’s International VAT/GST Guidelines (2015), <http://www.oecd.org/ctp/consumption/international-vat-gst-guidelines.pdf>

Specification of the Prototype Cash Flow Tax

As documented in a European Commission working paper (2015), there is relatively little real world experience with a comprehensive business cash flow tax. Most prior experiences have been with narrow taxes targeted to particular industries. While the theoretical appeal of a business cash flow tax is well established, we fear that the lack of practical experience has created a bit of chicken and egg problem: there has been little serious consideration of a cash flow tax because one can't look to an example of one, and without serious consideration we will never observe this form of tax in practice. As an incremental step, this paper will use detailed administrative tax data to simulate the impacts of a cash flow tax. The remainder of this paper first specifies an example of a business cash flow tax prototype for the United States and then describes the associated implications of this prototype for U.S. businesses and federal tax receipts.

In this prototype, we adopt an R base and treat financial intermediaries differently from other businesses.⁷ Most businesses would exclude interest income, would not get a deduction for interest paid, and would not include principle or repayment flows in the tax base. Financial firms, however, would be taxed on the net flows to domestic customers not subject to the cash flow tax. When a cash flow tax is applied to all businesses and individuals are subject to an income tax, this only results in special treatment for transactions between financial firms and consumers. Given the regulated nature of most financial services provided to consumers, the administration of the expanded tax base for financial firms should not be problematic.

While the greatest simplification gains would occur if a business cash flow tax replaced both the current corporate tax and the individual tax on active domestic business activity, we focus only on replacing the corporate income tax and ignore the question of the most appropriate treatment of pass-through businesses. Under a cash flow tax, the domestic activity for all non-financial C corporations would be subject to tax at a single rate on the difference between receipts from domestic activity less expenses from domestic activity. Receipts would be the sum of domestic sales, and revenue from the sale of financial assets. Deductible expenses would be the sum of purchases of domestic intermediate goods, capital asset purchases, inventory investment, payments for domestic services (such as rent, advertising, etc.), state and local taxes (foreign taxes would not be deductible), and wages/salaries/benefits. The tax base for financial firms would include interest and principle repayment received and would deduct interest paid and the principle repayment paid to the extent that the counter party is a domestic taxpayer not subject to the cash flow tax. If the choice is made to subject all business entities regardless of organizational form to the cash flow tax, it would be equivalent to limit the "+F" treatment to the consumer portion of the banking/lending operations and retain the R base cash flow tax for all other transactions.

Relative to the current tax base, we ignore the following flows when calculating the cash flow tax base: active foreign source income, passive foreign source income and royalties, equity

⁷ As we will later describe, for this microsimulation we exclude financial intermediaries from our analysis.

issuance, payments to equity holders, receipt of distributions as an equity holder, foreign sales, imports, charitable giving, and foreign taxes.

Since all foreign transactions are ignored, it should be clear that this tax is limited to consumption in the United States and thus does not have the distortionary location incentives of the current system. In contrast to a typical VAT, the border adjustments in this prototype are implicit by making all imports non-deductible and exports non-taxable. Income earned overseas could be brought back without domestic tax consequences thus eliminating the distortions from lockout that are created by the current system of a worldwide tax with deferral.

As will be clear when we discuss the simulation results below, we abstract away from the question of which (if any) business credits might be allowable against a cash flow tax liability and what the treatment of losses should be. Instead, we focus on characterizing the size and volatility of the tax base under the new regime. Since the cash flow tax would be administered in a fashion similar to the current corporate income tax, it would be possible to allow credits against this liability. In terms of designing a reformed tax, the major trade off is between the cash flow tax rate and the size of the credits in order to raise a given level of revenue. As for losses, the current income tax system departs from the theoretically ideal treatment of providing refunds for losses in order to treat economic profits and losses symmetrically. The existing asymmetric treatment of providing loss carrybacks and carryforwards is typically justified as being a compromise between administrative ease and minimizing the potential for abuse.⁸ The same trade-offs would also apply to a cash flow tax. In the results below, we describe how the losses under a cash flow tax compare to those under the current income tax when applying comparable treatment for losses.

The tax base described above is limited to domestic consumption by excluding from the tax base any transactions with a foreign party. Purchases of production inputs from a foreign party would not be deductible and sales to foreign purchasers would not be included in income. In practice, as long as the identity of the counterparty to each transaction is known, this approach to implementing a destination based tax is administratively straightforward. Alternatively, a destination-based tax system could be implemented with explicit adjustments at the border for imports and exports in a manner that is similar to the treatment under a credit-invoice value added tax. Under this alternative, the government would rebate the tax on the value of exported goods and impose an equivalent tax on imported goods. As many commentators have pointed out, the two methods of administering the system are theoretically economically equivalent. In our simulation, we have chosen the mechanism of implicit adjustments via excluding the foreign transactions.⁹ The analysis of losses under this system will provide some insight as to whether in practice netting the border adjustments is equivalent to explicit adjustments if the tax system does not provide full refundability for losses.

⁸ For an analysis of the consequences of the current treatment of losses under the corporate income tax see Michael Cooper and Matthew Knittel (2010), *The Implications of Tax Asymmetry for U.S. Corporations*, *National Tax Journal*, 63:1, pp. 33-61.

⁹ For a discussion of the implications of this form of territorial adjustment see Alan Auerbach and Douglas Holtz-Eakin (2016), *The Role of Border Adjustments in International Taxation* (<https://www.americanactionforum.org/research/14344/>)

In a consumption tax, like a cash flow tax, a border adjustment is necessary to apply the same tax treatment to domestic consumption of goods and services whether those goods are produced domestically or imported and likewise, to equalize the tax-treatment of foreign consumption, whether produced abroad or from U.S. exports. Hence, those countries with VATs or certain excise taxes have explicit border adjustments. In contrast, jurisdictions with retail sales taxes, such as U.S. states, include implicit border adjustments in the sense that this tax is applied to imported goods but not to exported goods. The experience around the world, as predicted by economic theory, has been that the border adjustment does not have trade effects. Instead, we've seen that the real exchange rates move—after-tax domestic prices rise relative to foreign prices by the amount of the tax. One implication of this is that while importers or retailers collect and remit the tax, they generally do not bear the economic incidence of the tax. That is important to keep in mind when examining how the base of the cash flow tax expands with the border adjustment.

Simulating a Cash Flow Tax

Recognizing that the costs of transitioning to a business cash flow tax may be large, we aim to compare the cash flow tax to the current income tax system in a steady-state, behaviorally static framework through a microsimulation. By abstracting away from the choices that must be made in order to administer the transition from one system to another, we are attempting to focus on the underlying fundamental differences between the two systems. In particular, this analysis provides insights into how the statutory burden of the cash flow tax may differ from the current income tax and the relative cyclicity of the two taxes. This analysis will also help to characterize the impact of a destination basis and the role of losses, both at a firm level and for the corporate sector overall.

The simulation that we construct is static in that we do not allow the firms to respond to the differing incentives provided under a cash flow tax. This approach is helpful in identifying the pressure points that need to be carefully considered when designing the tax. Some simply reflect the unwinding of current distortions of the existing income tax, such as the over reliance on debt financing of investment. Others are a direct result of the newly defined tax base, such as merger activity motivated by any asymmetric treatment of losses and/or the treatment of international transactions.

To motivate why the treatment of losses is important consider an elaboration on the Farmer/Miller/Baker example, which is often used to introduce credit invoice value added taxes. In this example the Farmer grows wheat from purchased seeds which is then sold to the Miller who uses labor to produce flour which is then sold to the Baker who makes bread for retail sale. In Table 1 this traditional example is enriched by having the seeds imported by the Farmer and some of the bread sold for export and some for domestic consumption. Since in this example there are no financial assets or capital, the income tax base and cash flow tax base before border adjustments are identical. In this simple example, each of the three businesses have a positive tax base under both systems. When we introduce border adjustments that are netted in the tax base the deduction for the imported seeds is not allowed and Farmer's tax base is made larger.

Meanwhile the exports by the Baker make the border adjusted tax base negative. If there is no mechanism to refund losses, we have a total tax base that is larger than domestic consumption. Further the Baker would have an incentive to merge with the Farmer and/or the Miller for purely tax driven reasons.

Table 1

	Farmer	Miller	Baker	Total
Domestic Purchases	\$0	\$400	\$700	
Foreign Purchases	\$200	\$0	\$0	
Purchases	\$200	\$400	\$700	
Labor	\$100	\$100	\$100	\$300
Domestic Sales	\$400	\$700	\$700	
Foreign Sales	\$0	\$0	\$300	
Total Sales	\$400	\$700	\$1000	
Income Tax Base	\$100	\$200	\$200	\$500
Cash Flow Before Border Adjustments	\$100	\$200	\$200	\$500
Border Adjusted Cash Flow	\$300	\$200	-\$100	\$400

This issue would be obscured by any aggregate analysis. In contrast, our microsimulation approach provides us the opportunity to identify how common this theoretical problem might be. By comparing the current law income tax base to a cash flow tax base on a firm-by-firm basis, we can identify firms that are placed into a loss position by the border adjustments and as a result have incentives to respond to a potential tax reform depending on the treatment of losses and the administration of the border adjustment.

Microsimulation Details

We create a ten-year unbalanced historic panel by merging together the SOI corporate sample for consolidated and unconsolidated subchapter C corporate tax returns from 2004 through 2013.¹⁰ The SOI corporate sample reflects the initial filing of a tax return before adjustments which include loss carrybacks. This panel includes 110,062 unique corporations with a median duration in the panel of 4 years. The sampling strategy for the SOI corporate sample includes the largest firms every year and any corporation that is selected into the sample in a given year will be selected in again in the following year if filing under the same Employer Identification Number. Given this, it comes as no surprise that 99% of assets are present for a singular spell. In addition, 19% of firms by counts and 84% of assets are present for the entirety of the 10 year period.

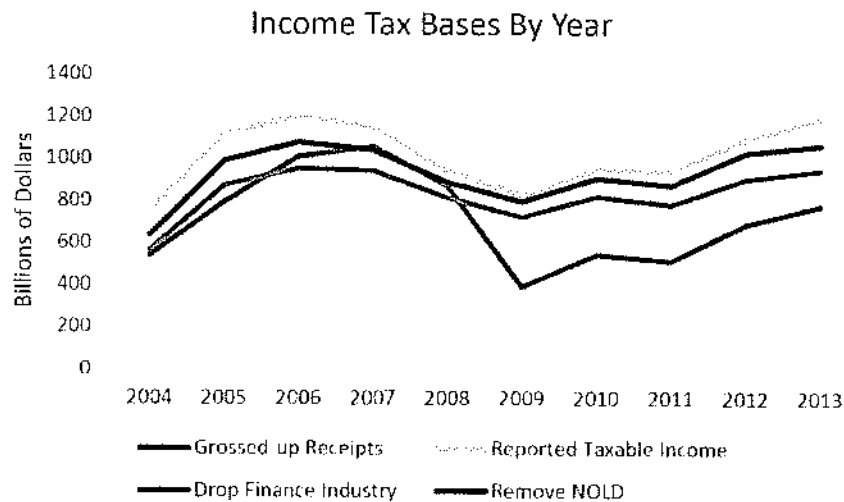
For reasons previously described, we exclude the financial sector firms from our analysis. In addition, there are empirical reasons to exclude the financial sector from this particular analysis. In particular, our historical panel spans the Great Recession, which was an unusual time period

¹⁰ In particular, we keep only rely on a subset of 1120 Returns, excluding all pass-through corporations, 1120-S, 1120-RIC, and 1120-REIT, which represent roughly 40% of the total sample, and those corporations that file an 1120-L, 1120-F, and 1120-PC, which represent roughly 5% of the total sample.

for all firms and particularly for financial institutions. Balance sheet items on the tax return that might be used to identify net financial transactions for these institutions are almost certainly impacted by the historically unique effects of quantitative easing and other countercyclical fiscal tools employed by the federal government and the Federal Reserve. We judged that the experience during this period was so anomalous for this subset of firms that including the financial sector might be misleading regarding the impacts of a cash flow tax.

Figure 1 illustrates the sample differences between the sample used for our simulation and all C corporations in the current tax system. Corporate tax receipts totaled \$2.5 trillion from 2004 – 2013. For a variety of reasons tax receipts received by Treasury differ from what one might expect from reported tax liability. Rather than detailing all the differences, we calculate a naïve gross up of corporate taxable income by dividing net corporate tax receipts for each fiscal year by the top marginal corporate tax rate of 35% and compare this to taxable income as reported on Form 1120 Line 30. In 2012, for example, grossed-up tax receipts were \$692 billion, which is only 63% of the \$1,095 billion in reported taxable income. The \$400 billion wedge between these two figures reflects a variety of tax credits, including general business credits and foreign tax credits, and post-filing adjustments such as refunds for loss carrybacks. Next, we remove the finance industry from our sample, which reduces aggregate taxable income by roughly 13%. Finally, taxable income includes a deduction for Net Operating Losses (NOLs) that were carried forward from prior periods. Because we would like to set prior losses aside as we consider a new steady-state business cash flow tax, we remove the loss deduction from our measure of tax base, increasing taxable income by roughly 15% in 2012. These steps bring us to our baseline measure of the corporate tax base under the current income tax system before tax credits and loss off-sets: \$1,031 billion in 2012, or \$9.3 trillion from 2004 to 2013. For the firms in our sample, we will compare our measure of the current income tax base to the tax base for a simulated cash flow tax. We will continue to ignore tax credits, as these are policy parameters of the current tax base and a new tax base that have yet to be specified. Further, we will defer the discussion of how the tax system treats losses until the end of our analysis.

Figure 1



In order to simulate a cash flow tax, we undertake the following incremental steps to transform the tax base under an income tax to that of a business cash flow tax in a behaviorally-static world. First, we remove equity payments from taxable income. Next, we repeal a set of deductions that are inconsistent with a broad-based tax, including the deduction for charitable contributions and the domestic production activities deduction. Finally, we impose immediate capital and inventory expensing and remove interest income and interest deductions from the tax base. Taken together, these adjustments allow us to move the tax base to a cash flow base for non-financial firms.

Figure 2 provides a comparison of the income tax base for our sample to a cash flow tax base before border-adjustments are drawn. From here, it can be seen that the tax bases are very similar in size in any particular year, with the total cash flow base amounting to just 1% more than the income tax base over our ten-year period. It is important to point out that bonus depreciation deductions of between 50 and 100% were available in all but 3 years (2005-2007) during this period, effectively narrowing the differences between the bases. Finally, we observe that the income tax base is slightly more cyclical in aggregate than the cash flow tax base.

Figure 2

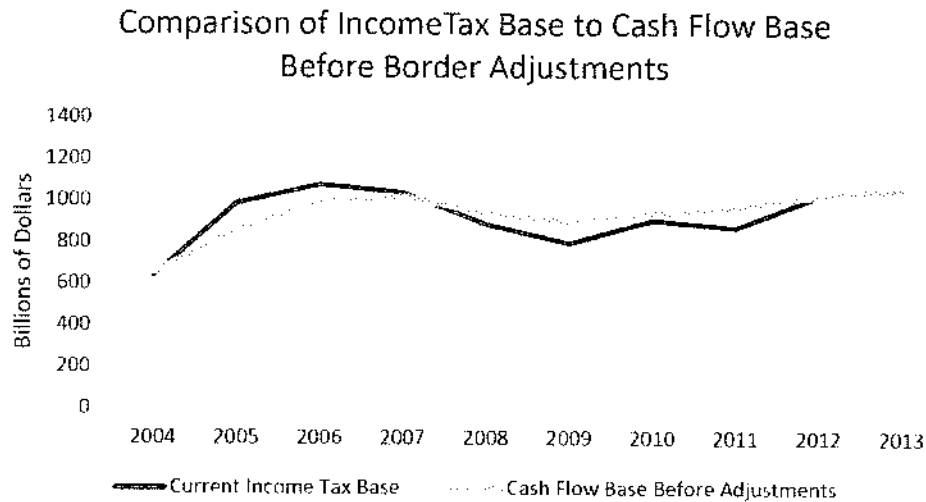


Table 2 and Figure 3 detail our final adjustment of limiting the cash flow tax base to domestic consumption, or a destination based cash flow. Unfortunately, the data provided by firms on the Form 1120 does not provide enough information to separate domestic income and production costs from foreign activities. To impute this detail, we combine information provided by the Bureau of the Census on the value of exports and imports with tax information on related party transactions. Specifically, we use Form 1118 and Form 5471 to identify likely exporters and importers from the tax data. This strategy allows us to identify roughly 25% of exporters by counts when compared to the target population based on data from the Bureau of the Census.¹¹ For the set of importing and exporting firms identified base on tax reporting, we measure the value of deductions from related party imports and the value of revenues from exports to related parties. Finally, we select additional firms on which to impute cross-border activity in order to target Census counts and dollars, controlling for industry and firm size.

Based on these imputations of foreign-source income and production costs, we consider the impact of border adjusting a cash flow tax in two steps. First, we remove from taxable income the value of exported goods. The effect of this is to reduce the cash flow tax base by 27% over the ten-year window. Next, we increase taxable income by disallowing deductions for the cost of imported intermediate goods. Because the U.S. was a net importer during our sample period, we

¹¹ We relied on the 2012 Profile of U.S. Importing and Exporting Companies produced annually by the U.S. Census. Exhibit 7a and 7b provides current year and past year exports by 3-digit NAICS codes for small and medium sized companies. In addition, we utilize Exhibit 1g, which details exports and imports by company type and employment size, Census information on firm size distribution organization form type and 2-digit NAICS code, and Census information on the concentration of exports by firm size. The analysis of the effects of the border adjustment could be substantially improved with more detailed tabulations from Census to better align with the tax reporting entities.

see a substantial impact of these adjustments: the border-adjusted cash flow tax base is 50% larger than the non-adjusted cash flow base and the income tax base on a static basis.¹²

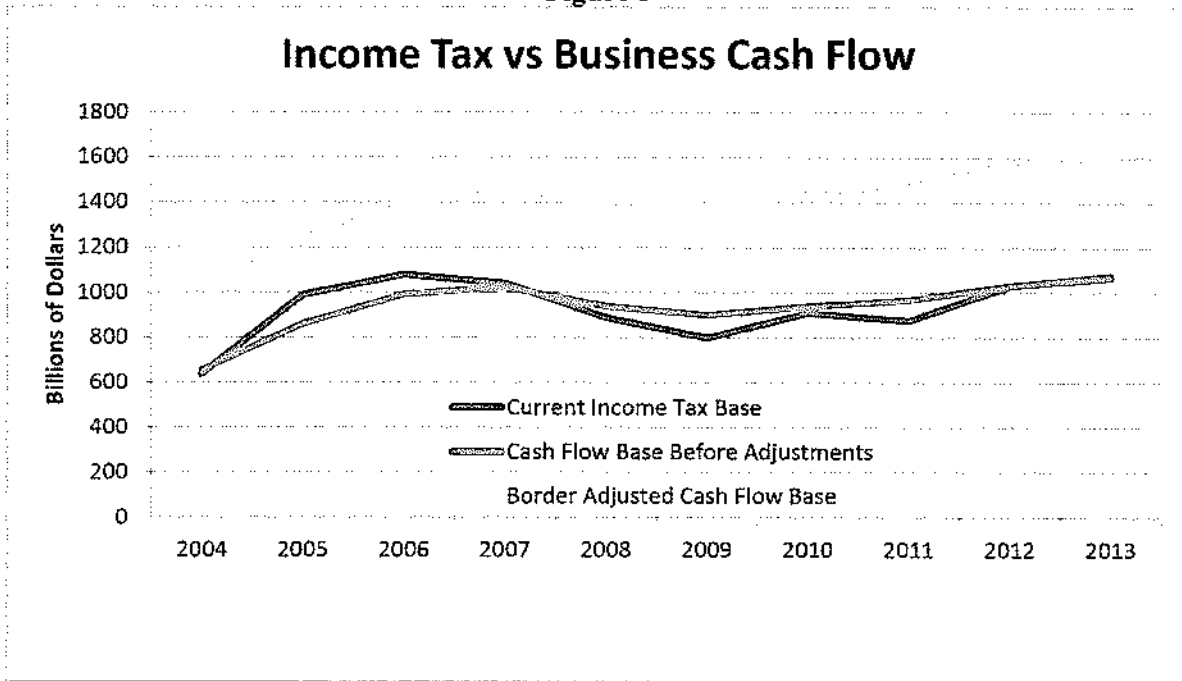
Table 2
Comparing Income Tax Base to Cash Flow Tax Bases

	<i>Billions of Dollars</i>		
	2006	2012	2004 - 2013
Income Tax Base	1,079	1031	9,320
Cash Flow Tax Base Before Adjustments	<u>992</u>	<u>1032</u>	<u>9,388</u>
Step 1: Remove Exports	-234	-321	-2,600
Step 2: Add Imports	<u>640</u>	<u>869</u>	<u>7,212</u>
Border Adjusted Cash Flow Tax Base	1,398	1,580	14,000

Readers should interpret the effects of the border adjustment cautiously. First, trade flows must eventually balance. If the United States is currently a net importer, then in the longer run it would be a net exporter. This implies that at some point in the future, the border adjustments reduce the tax base rather than increase it as shown for our sample period. Second, because the price of domestic consumption goods are after-tax whereas consumption of goods elsewhere are not included in the base of the consumption tax, the relative prices of these goods will change. Likewise, the statutory incidence of the tax differs from who actually bears the burden of the tax. While importers or retailers will remit the tax (as they do with a retail sales tax), the changes in prices and exchange rates insulate them from the burden of the tax.

¹² See Auerbach and Holtz-Eakin (2016) for a discussion of price and exchange rate adjustments with a destination base tax system.

Figure 3



Discussion of Microsimulation Results

An important advantage of this microsimulation is our ability to evaluate the nature of losses in a cash flow tax system relative to the current income tax system. Table 3 and Figure 4 provide some descriptive statistics of firms evaluated in the cross-section for each year throughout the panel. For example, in 2006, 45% of firms and 18% of firm-assets were in a loss position, or had negative taxable income, under an income tax base, and in 2012 45% of firms and 20% of firm-assets were in a loss position. In Figure 4, we see that the fraction of firms weighted by assets is comparable between the income tax and the cash flow tax, again highlighting the similarity between the income tax and the cash flow tax over this period. Conversely, the imposition of the destination-basis has the striking effect of increasing the fraction of asset-weighted firms in loss by more than 50%. However, these annual figures exaggerate the incidence of losses. Below we will show that over a longer horizon, many firms appear to move between profit and loss, so that with carrybacks and carryforwards, the share of firms in long-term loss are quite similar.

Table 3 also highlights the heterogeneous impact of the border adjustments: while the fraction of firms by count in loss is roughly 50% across all three tax bases, the fraction of assets in loss is roughly 20% until we impose a border adjustment after which the fraction of assets in loss increases to as much as 45%. This reflects the fact that firms that participate in cross-border transactions are overwhelmingly large firms. Given the magnitude of the border adjustment, we expect that in the absence of a means of using these losses these larger firms would have an

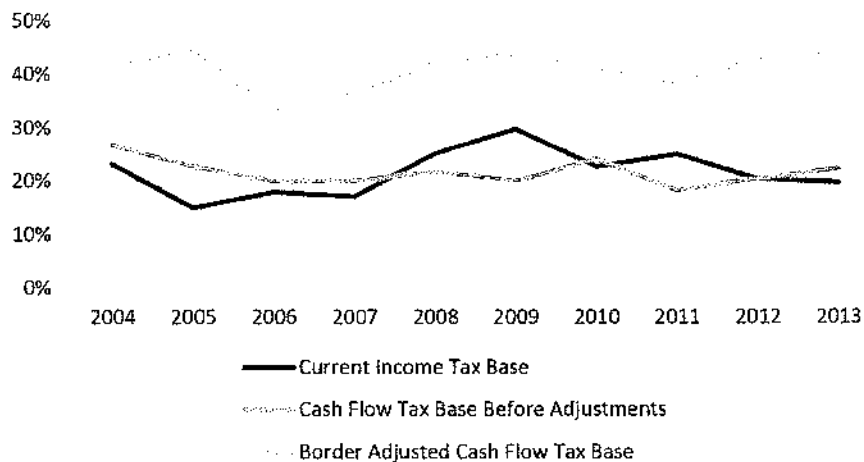
outsized incentive for behavioral adjustments such restructuring through mergers and acquisitions to minimize taxes.

Table 3
Fraction of Firms in Loss

	2006	2012
Current Income Tax Base		
<i>Fraction of Firms</i>	45%	45%
<i>Asset Weighted</i>	18%	20%
Cash Flow Tax Base Before Adjustments		
<i>Fraction of Firms</i>	46%	45%
<i>Asset Weighted</i>	20%	20%
Border Adjusted Cash Flow Tax Base		
<i>Fraction of Firms</i>	47%	47%
<i>Asset Weighted</i>	33%	42%

Figure 4

**Fraction of Firms in Loss Position
Weighted by Assets**



Under current policy, firms are able to carry losses forward and backward to offset taxable gains in other years. In order to examine this, net each firm's tax base over time and characterize the effects of alternative treatments of losses.

For each tax base we total up the tax base across the 2004-2013 panel.¹³ In this way, we allow firms to implicitly carry losses forward and back across the years to offset positive taxable income. From this, we identify which firms are in a net taxable position and which firms are in a net loss position; we characterize how this changes across the alternative tax bases in Table 4. For example, we see that 46% of all firms in the sample were taxable under the income tax base and remain taxable with a cash flow tax without border adjustments, and 45% remain taxable under the border-adjusted cash flow tax. Likewise, 37% of these firms were in a net loss position under an income tax and remain in loss under a cash flow tax before border adjustments and 36% remain in loss under a border-adjusted cash flow tax. So, in aggregate not many firms are moving from a taxable position to a loss position, or vice-versa.

Table 4
Movement Between Positive and Negative Tax Bases
With Carry Forwards and Carry Backs
Aggregate Net Income, 2004 - 2013

	Cash Flow Tax Base Before Adjustments			Cash Flow Tax Base Border Adjusted		
	Taxable	In Loss		Taxable	In Loss	
Income Tax	Taxable	46%	8%	Taxable	45%	10%
	In Loss	8%	37%	In Loss	9%	36%

Table 5 breaks this down for the smallest and largest firms as measured by maximum value of total income for the firm over the sample. Because cross-border activity is concentrated amongst the largest firms, we see some more off-diagonal movement in these tables for the largest firms. For example, for firms with more than \$1 billion in total income, 73% of large firms in the sample were taxable under the income tax system and remain taxable under a border-adjusted cash flow tax while 10% of those firms were taxable but move to a loss position with border-adjustments. While this movement shows that the move to a cash flow tax base could have a significant impact on some firms, it is still a relatively small subset of firms for whom the change is so large as to move from a positive position to a negative position or vice a versa.

¹³ This is done for those firms that are present for only one spell throughout our 10-year panel. This represents 90% of firm-assets. In contrast, 18% of firms by counts and 0.5% of firms by assets are present in the sample for only one year.

Table 5
Movement Between Positive and Negative Tax Bases With Carry Forwards and Carry Backs
By Firm Size
Aggregate Net Income, 2004 - 2013

		< \$1 Million		\$100 Million - \$1 Billion		> \$1 Billion					
		Cash Flow Tax Base Before Adjustments		Cash Flow Tax Base Before Adjustments		Cash Flow Tax Base Before Adjustments					
income tax		Taxable	In Loss	income tax		In	income tax		In		
					Taxable	Loss			Taxable	Loss	
	Taxable	35%	7%		Taxable	60%	7%		Taxable	78%	5%
	In Loss	8%	50%		In Loss	12%	21%		In Loss	9%	9%
		Border Adjusted Cash Flow Tax Base		Border Adjusted Cash Flow Tax Base		Border Adjusted Cash Flow Tax Base					
income tax		Taxable	In Loss	income tax		In	income tax		In		
					Taxable	Loss			Taxable	Loss	
	Taxable	35%	8%		Taxable	58%	10%		Taxable	73%	10%
	In Loss	9%	49%		In Loss	14%	18%		In Loss	10%	7%

Finally, in Table 6 we consider alternative treatments of losses for each of our tax bases. In this table we sum across all years for each firm. In the first column we report the net tax base if the government allowed full refunding loss, or more explicitly: we aggregate net income. In this case, a firm would receive a payment in the amount of its loss times the tax rate. Under this treatment the border adjusted cash flow tax base is 40% larger than the current income tax base for firms in our simulation. In the second column we provide unlimited carryforwards and carrybacks of losses; this treatment is closest to what is provided by the current corporate income tax. Under this measure the border adjusted cash flow tax base is more than 50% larger than the current income tax base. In the third column, there is no ability to use losses, including the ability to carrying them forward or back. This loss treatment increases the tax base for the cash flow tax more than for the income tax pointing out the relative importance of the treatment of losses for a cash flow tax. These results indicate that the revenue neutral tax rate for a border adjusted cash flow tax would have been significantly lower than that applied to the corporate income tax over the 2004-2013 period. As was previously explained, this should be considered a temporary rather than permanent phenomena given that the U.S. was a net importer during this period.

Table 6
Size of Tax Base with Alternative Treatments of Losses
Billions of Dollars, 2004 - 2013

	Refund Losses	Carry Losses Forward and Back	Disallow Losses
Income Tax Base	6,667	8,164	8,685
Cash Flow Tax Base	6,133	7,890	8,568
Border Adjusted Cash Flow Tax Base	9,443	12,501	13,082

The difference between the first and second columns in Table 6 is a measure of the losses not utilized with our proxy for an unlimited carry forward and carry back regime. For our sample, over a 2004-2013 period, the income tax has unused losses that total approximately 18% of the net taxable base while the border adjusted cash flow tax has unused losses that total approximately 24% of the net taxable base.¹⁴ While the atypical nature of our historical period may make the fraction of losses unusually high, the change in the magnitude of losses relative to the taxable base may be an indicator that allowing loss carry forwards and carry backs is insufficient to make border adjustments netted against taxes equivalent to an explicit border adjustment of imports and exports. The theoretically appropriate treatment is to provide a refund against the loss. This is equivalent to the treatment of VATs and reflects the fact that the deductible costs of producing the good have already subject to tax on the intermediary factors of production. A concern with this approach is noncompliance as non-legitimate businesses seek refunds for phantom losses.

One way to address the both concerns the about providing appropriate treatment of losses while limiting noncompliance is to allow the tax to be refunded against other taxes withheld at the business level. One mechanism to provide partial refundability of losses is to allow refunds against payroll tax liability as suggested by Auerbach and Holtz-Eakin (2016). This could be for losses due to any cause or losses due to the border adjustments faced by that firm. If we assume that the firm's payroll tax rate is half of the business cash flow tax rate (for example if the payroll tax rate was 15% and the cash flow tax rate was 30%) then allowing border adjusted cash flow tax losses to offset payroll taxes reduces the unused losses to 16% of the resulting tax base. If this this refundability is limited to those additional losses resulting from the border adjustment then unused losses are 22% of aggregate taxable cash flow losses. If one wanted to be more generous but were precluded from explicitly refunding losses, cash flow losses could be allowed to offset employer withholding of employee's income tax liability. This would further reduce unused losses, but we estimate that it would not eliminate them in our sample.

¹⁴ Example: Unused losses were $\$8,164 - \$6,667 = \$1,497$ billion under the Income Tax Base. This is $\$1,497 / \$8,164 = 18\%$ of the net taxable base.

Conclusions

Given limited experience with cash flow taxes, there is little to guide policy makers on design questions or to help them understand the possible dislocations caused by moving to this alternative base for business taxation. This study attempts to help bridge the gap between economic theory and practice by using a rich set of administrative data to simulate what a cash flow tax might look like for U.S. firms in a steady state. This simulation indicates that a border adjusted cash flow tax base would have been significantly larger than the tax base that was in place over the 2004 through 2013 period for our sample of firms before considering behavioral responses. This tax base is also slightly less cyclical in aggregate than the income tax base. The propensity of firms to be in loss under the cash flow tax looks to be very similar to the propensity under an income tax but the magnitude of losses is greater. An important caveat to all these findings is that this was simulated over the period that included the great recession, thus the underlying data has more firms in loss than is typical.

Our findings, coupled with the potential advantages that a cash flow tax provides in terms simplicity, incentives for growth, potential progressivity, and fewer distortions on firm location choices, lead us to conclude that this style of reform is promising. Further analysis is needed regarding the implications for financial firms and pass-throughs, both of which are excluded from our analysis. The method of analysis used in this study can be usefully applied to pass-throughs, however there are additional complications in this case. For one, partnerships do not explicitly compensate general partners for their labor contribution. Additionally, the wages paid to owners in S corporations may not accurately reflect their labor compensation.¹⁵ As demonstrated by our results, careful consideration needs to be given to the treatment of losses when designing a cash flow tax. This choice needs to balance the needs of the tax administrator with sufficient generosity so that the border adjustment operates in a manner consistent with placing the burden of taxation on domestic consumption. Finally, after resolving these issues regarding the core characteristics of a destination cash flow tax, the difficult issues of the appropriate transition rules must be specified. While this is daunting list of issues that remain to be resolved the findings of this paper should provide optimism to policy makers that tackling these issues is a worthwhile undertaking.

¹⁵ See Susan C. Nelson (2016) for a discussion of the incentives facing S corporation owners.

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