

THREE ESSAYS ON TAX EFFICIENCIES, POLITICAL INCENTIVES, AND  
DEADWEIGHT LOSS

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Three Essays on Tax Efficiencies, Political Incentives, and Deadweight Loss

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Doctor of Philosophy at George Mason University

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## **ABSTRACT**

### **THREE ESSAYS ON TAX EFFICIENCIES, POLITICAL INCENTIVES, AND DEADWEIGHT LOSS**

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Traditional public finance tax theory focuses almost exclusively on minimizing the deadweight loss of a tax system. The resulting models for tax analysis rarely consider the tax system's impact on political incentives and the various efficiencies and inefficiencies that exist in political institutions.

The first chapter explores the tension between economic efficiency and institutional efficiency through their corresponding literatures in public finance. By reviewing the two literatures, I show where the economic efficiency lens of traditional public finance can be improved by the insights of scholars who value economically inefficient tax systems characterized by a narrow tax base and institutional restrictions on expanding what is subject to tax. While these two schools of thought may never be completely integrated, traditional public finance would benefit from incorporating public choice and institutional insights into the analysis.

The second chapter presents a history of the Japanese Value Added Tax (VAT) as an important case study of how the political incentives of a tax system can ultimately change the size of government. Governments tend to grow over time, punctuated by crisis.

Adding new taxes, or even considering them as a politically viable future option, can remove important constraints on the growth of the size of government.

The third chapter tests the hypothesis that harmonization of disparate sovereign tax systems can remove competitive pressures which otherwise constrain government growth. I use historical data from the U.S. states as they first implemented a uniform system of corporate income tax apportionment and then moved toward a more varied system with less coordination. Consistent with theory, I show that competition and diversity between tax systems is associated with lower tax rates and slower growth of government expenditures.

## COGNITIVE DISSONANCE IN “PRO-GROWTH” TAX POLICY

The terms of the 2017 tax reform debate in the U.S. were largely constrained by structural budget deficits and the resulting need to not significantly reduce revenue. The revenue constraint ultimately animated two of the most politically controversial decisions: limiting the state and local tax deduction (SALT) and the proposed destination-based cash-flow tax (DBCFT) both included in the 2016 House Republican Tax Reform Blueprint (Office of the Speaker, 2016). These two tax-base broadeners were met with very different political receptions within the tax reform coalition. Disagreements on the merits of these two tax tools illustrate an important compromise between advocates for broad-based taxes and narrow-based taxes in the American center-right tax reform coalition – or as they like to call themselves, advocates for “pro-growth tax reform.”

In the tax policy discourse analysts generally rely heavily on assertions about economic efficiency, which are fundamentally rooted in an ideology; some normative ideal state. Advice for policymakers on how to design tax systems, thus, vary significantly across the economics and public finance literature. Even simple tax models do not settle the debate on whether broad-based taxes on consumption or narrower-base taxes on income are preferable. The normative question about what conditions the model should maximize (i.e., the ideology assumptions are based on) determine whether income, consumption, or some other tax base is preferred.

Traditional public finance tax models simply minimize the deadweight loss of the tax to maximize economic growth without any explicit concern for equity or income distribution (Chamley, 1986; Judd, 1985). The DBCFT, for example, proposed expanding the corporate income tax base to foreign producers and moving it toward a cash flow tax, thus raising additional tax revenue to allow for a corresponding reduction in the corporate tax rate for domestic producers. This shift in the tax base attempts to improve economic efficiency (based on the traditional tax models). Limiting the SALT deduction expanded the personal income tax base to allow for an economic efficiency enhancing rate reduction. In traditional deadweight loss tax models, these two reforms are categorized similarly; both are efficiency enhancing. The primary goal of the three largest tax reforms in recent U.S. history has been economic growth, through efficiency gains, by lowering tax rates in exchange for a broader tax base.

The pro-growth tax reform coalition also includes policymakers and analysts who believe that a lot of government activity restricts private growth and innovation and that the size of these government intrusions tends to grow over time, if not properly constrained. One such constraint is limiting the ability to raise revenue, by keeping pre-existing limits (or creating new limitations) on what can be taxed and at what level of government it can be taxed. Policymakers with this sort of small government ideology sometimes favor economically inefficient loopholes or tax credits because they constrain the scope of activity that is taxed. Said another way, these proponents of small government favor inefficiencies in the tax system in order to constrain the inefficient government. This view is founded in the public choice and institutional literature on

institutional efficiency and the role of constraints in tax policy (Brennan & Buchanan, 1980; Ostrom, 1990). From this alternative viewpoint, the DBCFT and limiting the SALT deduction decrease inefficiencies and loopholes that would otherwise constrain the state and thus expand government's access to taxable income and lead to a larger, more inefficient state (Citi, 2017; de Rugy, 2017; Drenkard, 2017; "Americans Against Double Taxation," n.d.).

These two approaches—economic efficiency versus institutional efficiency—and their corresponding literatures in public finance highlight the tension between differing ideologies within the pro-growth tax reform coalition. The lessons learned from the debate in the literature will be useful in plotting a path toward the next tax reform consensus, which will likely face similar constraints. By reviewing the two literatures, I show where the economic efficiency lens may have the most to gain from the insights of scholars who value economically inefficient tax systems characterized by a narrow tax base and institutional restrictions on expanding what is subject to tax. While these two schools of thought may never be completely integrated, traditional public finance could benefit from incorporating public choice and institutional insights into the analysis.

The following sections provide a summary of the traditional public finance literature as well as the literature from public choice and institutional economics to better discuss the tradeoffs between economic efficiency and institutional efficiency in tax reform. A higher efficiency results from balancing economic and institutional components. The existing literatures offer no practical advice for policymakers attempting to balance the two approaches. Incorporating the literature on institutional

efficiency into traditional tax analysis based only on economic efficiency can give policymakers a usable policy toolbox to weigh the cost and benefits of seemingly similar tax reforms. For example, as deficit reduction continues to drive policymakers to consider raising revenue, my analysis that takes into account a higher level of efficiency helps distinguish a U.S. value-added tax (VAT) or carbon tax from raising revenue by limiting large tax expenditures in existing taxes, such as the employer-provided insurance exclusion. This analysis will be useful during the next debate on tax reform when lawmakers need to distinguish between these different types of policy that seem similar at first glance.

### **Ideologies of Taxation**

The literature on taxation has three overarching ideologies: one broad-based and two different formulations of narrow-based taxation. Prescriptions for broad-based taxation generally emerge from models with the sole objective of minimizing the deadweight loss of the tax system (Chamley, 1986; Judd, 1985). A broadly applied tax is less likely to distort consumer or producer decisions, thus minimizing the interference of the tax system in the economy. In the traditional formulation, narrow-based taxes are corrective tools used to remediate a market or consumer failure. Narrow-based, progressive income taxes, for example, help correct uneven distributions of income; narrow-based excise taxes – on tobacco products or sugary beverages – correct perceived consumer behavioral failures (Diamond & Saez, 2011; Pigou, 1929). The third ideology, often left out of the mainstream analysis, views narrow-based taxes as a corrective tool

for government failures. Narrow taxes can work as an institutional constraint, limiting governments' tendency to expand beyond a given size (Brennan & Buchanan, 1980).

The traditional construction of the first two mainstream ideologies are explored in-depth in the 1999 volume, *Public Choice and Public Finance*, where the two eminent fiscal scholars James M. Buchanan and Richard A. Musgrave debate their “two contrasting visions of the state.” For Musgrave, the benevolent state maximizes citizen welfare, and broad-based taxes miss an opportunity to correct for underlying economic and behavioral inefficiencies. For Buchanan, the state needs constitutional constraints – rules to limit majority rule political action – to hold it to a generality principle, and the broad-based tax is the only system that treats all citizens equally.

The positive, scientific language used by tax most economists, obscures the pervasive normative foundation of each tax program. In Louis Eisenstein's (1961) formulation, the divide between broad versus narrow tax bases boils down to a normative, ideological distinction, rather than a positive economic debate. Despite both subscribing to the same positive analytical principles and methodological individualism, the ideological differences between Buchanan and Musgrave are ultimately irreconcilable. Musgrave has a “consistently favorable view of...government,” whereas Buchanan is “consistent in his suspicious views of the government” (Buchanan & Musgrave 1999, p. 6). To the modern non-economist reader, this may not seem like such a profound observation, but most tax policy is still presented as though it is purely positive analysis, devoid of normative underpinnings.

Mainstream public finance has concerned itself primarily with theories of optimal taxation, using models which are abstractions (devices intended to simplify the world), to answer a specific question. In the case of taxes, the first part of the question is usually, “How can we minimize (or maximize) ...?” What is minimized or maximized determines the answer. Is the goal to maximize economic output? Or minimize income inequality? Minimize the growth of government? Or some other objective?

The optimal tax framework provides little guidance for the macro-level public policy question of what should be maximized. Corrective, narrow-based and broad-based taxes are regularly advanced within the same analytical framework of maximization. Francis Edgeworth (1897) set forth the utilitarian foundation of progressive income taxes by modeling diminishing marginal utility of income and then arguing that “the marginal disutility incurred by each taxpayer should be the same” (p. 553). Building on the tradition of Edgeworth, progressive income tax models also build in concerns about unequal income distributions (Diamond & Saez, 2011; Saez, 2002). In one specification favorable to progressive income taxes, Anthony Atkinson and Agnar Sandmo (1980) explain, “The optimum tax on capital depends on the response of savings and on the nature of government objectives” (p. 557). The government’s objectives are often included as an equity-efficiency tradeoff, whereby there are benefits from more equal income distributions. Following from Edgeworth’s assumption of diminishing marginal utility of income, negative effects of high marginal tax rates are mitigated by assuming high-income taxpayers place a lower value on each additional dollar they earn. The



modeler's assumptions implicitly build in the prescriptive result of narrow-based corrective taxes.

Similarly, other scholars place exclusive weight on the importance of saving and the long-run level of output, which leads to recommendations for broad-based taxes with low rates on capital income. The mainstream public finance tax literature regularly shows that broad-based taxes on consumed income are best as they minimize the deadweight loss – lost economic activity – due to the tax. These models leave out the equity-efficiency tradeoffs and rely on classical rational agents. In this framework, taxes on consumption – the lack of taxes on saving – are consistently found to be more efficient than income taxes in both empirical and theoretical research (Zodrow, 2007). However, the assumptions in the model still do the heavy lifting. The foundational Chamley (1986) and Judd (1985) result – that the optimal tax rate on capital is zero – can be shown to be reversed by simply adding in equity and redistributive constraints (Diamond & Saez, 2011).

The traditional construction of narrow-based corrective taxes versus broad-based consumption taxes is thoroughly examined in the public finance literature, but a more subtle divide, often within the same U.S. political coalition, has not received the same attention. Narrow-based taxes can work as institutional constraints that limit government's tendency to expand beyond efficient levels. The third tax ideology conceptualizes narrow-based taxes as a corrective tool for government failures. Minimizing economic distortions from narrow-based taxes and constraining the growth of the state are policy goals often shared by normatively similar scholars as both

ideologies view state intervention as inefficient. However, when designing a tax reform, the two goals of broad tax bases and constrained government are often in conflict, as was illustrated in the tax reform debate of 2017. The remainder of this chapter will incorporate the insights from the literature on institutionally efficient narrow-based taxes into the more widely used traditional public finance literature that stresses economic efficiency above all else.

### **Tax Policy Forgets the State**

Tax reform is often predicated on the reasonable claim that the existing tax system negatively distorts something important, such as investment, individual's work-leisure tradeoff, or income distributions. However, the incentives of government actors are most often left out of the analysis. The economic models used in classical tax analysis rarely consider the tax system's impact on political incentives of government actors or as the various efficiencies and inefficiencies that exist in political institutions and government action. Narrowly-defined optimization models exclude any consideration of a higher level of efficiency, which incorporates the institutional incentives for policymakers.

Tax codes and tax administration emerge through a political process carried out by government actors. When implementation or administration of tax systems is considered in mainstream tax analysis, politics is analyzed as an inefficiency that technocrats need to overcome, rather than a central and permanent component of policymaking. Omission of the political process leaves most tax analysis devoid of any relevant advice for lawmakers. In their seminal critique of this type of modern public

finance, Geoffrey Brennan and James M. Buchanan (1980) observe, “No attention is paid to possible feedback effects that specific tax instruments may exert on government itself in determining how much revenue it seeks to raise” (p. 42).

This account breathed new life into an older tradition of political-economy among Italian scholars. Early public finance economists in the Italian tradition, such as Antonio De Viti de Marco, Vilfredo Pareto, and M. Pantaleoni writing between 1880 and 1940, offer the foundations for the contemporary reconstitution of public finance which includes political incentives. Instead of modeling government and private market activity sequentially, the two must be analyzed simultaneously (Eusepi & Wagner, 2013). By integrating the political process as a theory of exchange, politics and government expenditure are incorporated into fiscal analysis.

In market models, two-party exchange implicitly includes costs and benefits for both parties, for which both parties come out ahead (i.e., mutually beneficial gains from trade). In political exchange, there is the introduction of a third party – such as taxpayers, benefit recipients, and government actors (Wagner, 2016). In this formulation, one party can bear the costs while not receiving the benefits, and another party can receive the benefits without paying the costs, altering the incentives of exchange. In this form of exchange, everyone is not better off, creating winners and losers in ways that two-way exchange in the market does not. In other words, three-way exchange allows for non-welfare enhancing trades (Wagner, 2016). While markets allocate scarce resources through the mechanisms of price and profit and loss, political exchange has no relevant mechanisms for policymakers to determine the best scale and scope of taxes and

services.<sup>1</sup> Questions of public finance are thus decided on the basis of political trades (by politicians, voters, and special interests), which tend to exclude one or more parties for the benefit of others. Introducing politics into the analysis muddies the analytical waters, disallowing, for example, the clean applications of deadweight loss as a decision rule between tax systems (Wagner, 1997).

Broad-based tax models often reduce the interaction between economic and political factors by minimizing deadweight loss under a revenue-neutral constraint. The revenue-neutral constraint in such models assumes that government revenue does not change before or after the tax reform. Thus, the tax that distorts the tradeoff between consumption and saving the least while raising some set amount of revenue, for example, is most efficient.

Brennan and Buchanan (1980) detail how this revenue-neutral assumption necessitates an electoral governance process that maintains an efficient level of revenue.<sup>2</sup> However, they argue, governments are inefficient and tend to grow over time if not constrained by something other than the electoral process. Robert Higgs (1987) pointed out, the periods of greatest state expansion are punctuated by crisis. Once the powers of taxation (and corresponding government spending) are expanded to fund a war or address an economic crisis, they never fully return to pre-crisis levels. Even in peace times, electoral constraints are highly inefficient because voters have built-in biases that

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<sup>1</sup> Central planners are not able to make the economic calculations necessary to efficiently allocate society's economic resources as explored in the socialist calculation debate (Von Mises, 1935; Buchanan, 1969; Lavoie, 1985).

<sup>2</sup> Some scholars have formalized this orientation and argue that political processes themselves are efficient, producing the most desirable outcomes (Whitman, 1995). Bryan Caplan (2008) offers a critique of Whitman.

systematically grow the size and scope of governments (Caplan 2008). The empirical literature also consistently finds new revenue sources are causally associated with state growth (Becker & Mulligan, 2003; Dusek, 2006; Finkelstein, 2009; Keen & Lockwood 2006, 2010). By ignoring the incentives of government to grow over time, deadweight loss models drop a key, and perhaps *the* key, variable from tax analysis by assuming revenue neutrality.

### **The Higher-Level Efficiencies of a Narrow Tax Base**

Using an assumption of government revenue maximization instead of the traditional revenue-neutral constraint can turn the prescriptions of optimal tax models upside-down.<sup>3</sup> Rather than favoring a broad tax base with a low rate, it might be desirable to place constraints on policymakers that narrow the available tax base and thus limit their power to tax. The pro-growth tax policy coalition generally agrees that a smaller, less intrusive government is best. This shared goal takes two forms: 1) minimizing tax distortions to the economy and 2) not expanding the size or scope of non-tax government action. Without relying on the revenue-neutral assumption, analysts must explicitly contend with the incentives of lawmakers. The goals of minimizing economic distortion of the tax system and simultaneously constraining state capacity can conflict, resulting in intractable policy disagreements. In the 2017 tax reform debate, the conflicting ideologies leading to prescriptions for narrow and broad-based taxes animated a fundamental disagreement over the inclusion of the DBCFT.

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<sup>3</sup> It should be noted that condensing public sector exchange to a simple revenue maximand “portrays inadequately the problem of governance” (Wagner, 1997, p. 160). However, the central insight that government tends to grow is often “a suitable simplification of government behavior” (Brennan & Buchanan, 1980, p. 34).

If there is some desirable tax and spending level, which governments tend to overshoot because, as noted above, government tends to expand over time, it may be politically efficient to constrain policymakers from collecting taxes on certain types of economic activity. For example, a narrow tax base can allow people to shift to non-taxed options, “and in the knowledge that they will do so, government necessarily curbs its revenue extraction” (Brennan & Buchanan, 1980, p. 59). The deadweight loss of a tax rises exponentially with the rate, so a narrow tax base will more quickly reach an unacceptable level of economic disturbance for a given revenue level (Creedy, 2003). A broader tax base allows governments to raise more revenue while incurring smaller direct economic losses from behavior changes due to the tax since there are fewer non-taxed options to shift to.

From the viewpoint of Brennan and Buchanan (1980), narrow-based taxes can be used to correct a government failure, not just consumer failures or market failures.<sup>4</sup> Among scholars who approach tax analysis with a concern for the size of government, tax exemptions and loopholes that narrow the tax base are often encouraged. At a University of Chicago Law School conference in 1951, Ludwig von Mises spoke in favor of tax exemptions. “Let us be grateful for the fact that there are still such things as those the honorable gentleman calls loopholes. Thanks to these loopholes this country is still a free country,” Mises said (p. 116). Murray Rothbard (1985) shares a similar sentiment in

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<sup>4</sup> In Buchanan’s exposition with Musgrave, he discusses the desirability of a constitutional constraint that enforces a generality principle, including a single broad-based tax. This context of the ideal governance structure is different than the premise of *The Power to Tax*, which still stresses the importance of constraints, but is situated in an existing system of taxes, so the two analyses are different in their purpose.

an essay on tax reform, in which he cautions against any tax reform that repeals tax credits, eliminates deductions, or closes other loopholes.

Further, Gary Becker and Casey Mulligan (2003) model the conditions under which a narrow-based tax might be an efficient constraint on an inefficient political entity. Using empirical evidence from oil revenue shocks, they show that “greater tax efficiency would actually increase aggregate” deadweight loss by growing the size of inefficient government (2003, p. 330). Thus, those taxes traditionally thought to be most economically efficient may be politically *inefficient*, and thus at a higher level of analysis economically inefficient too. In practice, efficient taxes that simply minimize deadweight loss as measured in traditional models may be inefficient when considering a higher level of efficiency that simultaneously considers the deadweight loss of government revenue collection, regulatory activities, direct outlays, and the tendency of those public activities to expand over time.

Fiscal analysts who value a government that is limited *and* efficient in those areas in which it engages must balance two competing goals: 1) constrain the state by limiting the available tax base, and 2) remove economic distortions caused by narrowly applied taxes. The mainstream public finance and economics of taxation literatures offer little guidance to policymakers trying to design a tax reform while weighing both economic and political incentives. Different types of reforms have different costs and benefits when the higher-level efficiency of the tax system is considered. The insights of competitive federalism can help delineate between otherwise indistinguishable tax reform proposals.

### **Taxes Need Not Be National Or Global In Reach**

Limiting the available tax base is just one way to constrain state growth. Charles Tiebout (1956) famously showed that migration between political jurisdictions (specifically, municipalities within the U.S.) can be a natural check on government revenue maximization. If taxes are too high or government services do not comport with residents' preferences, they may move to another, more favorable jurisdiction. This exit option forces governments to compete for residents, offering more desirable levels of taxes and services and a more robust check than the electoral process alone. Some scholars have gone as far as to claim that this mechanism may be too successful at limiting the size of government, resulting in the under-provision of fiscal authority (Razin & Sadka, 2011). In the real world, the costs of physically exiting can limit the effectiveness of competition between political jurisdictions. Further, the cost of exiting increases steeply as rules are set at ever-higher levels of government. The design of tax systems can help amplify or limit these competitive jurisdictional pressures.

The federal system in the United States facilitates jurisdictional competition to the extent that it consists of different sized political units. The federal government protects free trade and movement across states (and has other authorities as outlined in the U.S. Constitution) while other governmental authorities are delegated to the states or localities (Buchanan, 1995). Ostrom (1990, 2010) highlights the benefits of polycentric – multiple, overlapping – political units, where the scope of political power comports to the efficient level of the public service being provided. A national public service, like defense, may be



best provisioned by the federal government; but local fairgrounds or utilities, with specifically local costs and benefits, may be better provided by a municipal government.

The various levels of government are rarely considered in traditional tax models. In most tax models, differently implemented taxes can have equivalent economic results. A consumption tax can be levied as a direct sales tax, like those in most U.S. states, a value-added tax (VAT), like the taxes in European countries, or the two-part VAT, consisting of the DBCFT and a wage tax as proposed in the 2016 House Republican Tax Reform Blueprint (Office of the Speaker, 2016; Viard, 2018).<sup>5</sup> Curtis Dubay likened the many variations of consumption taxes to different software programs, each used to accomplish the same task. Each tax executes the same “function equally well, but they interact with their users (i.e., taxpayers) differently” (Dubay, 2014, p. 3). On paper, the various consumption taxes appear to have the same tax base (Auerbach 2006). However, the simple accounting identities obscure equally important design considerations. The way the tax interacts with the “user” can be just as important as the economic efficiency of the tax base itself.

Thus, traditional tax models omit not only political incentives but also the importance of polycentric and federalist institutions. As outlined by Brennan and Buchanan (1983), standard principles of tax policy tell policymakers *what* to tax, but they shed little light on the question of *where* the tax should be levied or *who* should do the taxing. The standard tax policy principles that work to minimize deadweight loss or

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<sup>5</sup> The proposal was not exactly a two-part VAT, but the DBCFT and existing wage taxes would approximate the archetypal result.

maximize equity carried to their theoretical ideal result in uniform tax rules at the national and, ultimately, international level. The focus on minimizing deadweight loss from tax systems, for example, tends to manifest as a strong bias toward uniform and centrally-coordinated tax systems. Optimal tax theory, taken to its theoretical ideal, posits that jurisdictional diversity and the resulting gaps between tax regimes create inefficient incentives to change production and consumption decisions based on tax parameters. Thus, the least distortionary tax system would be coordinated and harmonized by one international entity, which could tax all people and firms equally.

At a conference on how to more completely tax global corporate profits in 2018, Pierre Moscovici, the European Commissioner for Economic and Financial Affairs, explained that “The European Commission strongly believes that the approach to the taxation of the digital economy must ultimately be a global one...The future of corporate taxation cannot be a unilateral, national or regional one” (2018). Toward the aim of a global tax system, most tax administrators are primarily concerned with uniformly treating all activity the same and devising systems that eliminate the incentive for people or their business to locate elsewhere. These policymakers, informed by traditional, simple tax models, abstract away from the interesting and important location-based questions, favoring ever-higher levels of tax harmonization.

The pressures of political competition for residents, businesses, and investment, are often undermined by political actions beyond the local level. Through a process of political exchange, local leaders can protect themselves from elements of competitive pressures by coordinating with neighboring jurisdictions. By using higher levels of

government to enforce a more unified tax code, governments can undermine the ease of exit and the resulting pressure of competition. For instance, Andrew Morriss and Lotta Moberg (2013) describe in great detail how the OECD acts as a tax cartel, enforcing rules to limit tax competition among member and non-member states. Considering jurisdictional competition without also understanding the political dynamics still misses the point. A more robust theory of tax systems must incorporate political incentives and allow for the exploration of jurisdictional competition, and other chiefly political aspects of tax policy.

Conveniently, the policymakers' incentive to protect their budgets and tax base from competition dovetails with the economist's desire to stamp out the economic inefficiencies between tax systems highlighted by traditional tax models, resulting in both policymakers and analysts promoting the consolidation of tax policy. The process of tax competition can influence investment locations and constrains policymakers' actions. By centralizing and harmonizing inter-jurisdictional tax codes, politicians gain power over greater economic resources and economists increase their stature as economic engineers, directing and fixing the economy. The messy business of thinking through longer-term incentives of tax changes often has fewer constituencies.

### **Toward A Practical Yet Higher Level of Efficiency**

Most every tax reform proposal includes some type of base broadener or new tax to help raise revenue in order to reduce rates or alter taxes elsewhere in the system. The political tractability of major tax reform (based on either major constitutional constraints or radical decentralization to lower levels of political jurisdictions) is low, given the

current, complex tax code and desire to maintain or increase revenue in the face of systemic budget deficits (Niskanen, 2006; Romer & Romer, 2009). In an ideal world, government could be limited through binding constitutional constraints, and then the tax base could be set to increase economic efficiency. However, in the messy real-world of tax policy, no constraint on government is perfect and thus setting an optimal tax base (as defined by minimizing deadweight loss) can have tradeoffs that are outweighed by a loss of political constraints. When examining the current tax code, the question then arises: Is it possible to undertake a tax reform that will increase the higher-level efficiency of the system by shrinking deadweight loss while not losing important political constraints? For example, lowering certain taxes on saving may improve the allocation of resources, but the lost revenue must then be made up with other revenue-raising tax changes, usually base-broadeners.

Any successful reforms will need to be palatable to various ideological positions within a reform coalition; compromises need to be made. In this political reality, incorporating the insights of institutional efficiency into the dominant economic efficiency model can help analysts begin to narrow the feasibility set of true “pro-growth tax reform” as viewed from a higher level of efficiency. Because the ideologies and literatures presented above shed little light on the question of when each lens may be most important, the following section attempts to delineate between different types of reforms. Learning from historical tax reforms in the U.S., Europe, and Japan, there appears to be an observable difference in the long-run political incentives when reforms are carried out within existing taxes and those which add new taxes.

The benefits of a constrained tax base, the lessons of political exchange, and literature on efficient institutions are most clearly relevant when 1) a new tax is implemented or 2) the reforms undercut competitive pressures from other tax jurisdictions. Taking the traditional economic efficiency model as the ideological starting point for most of the pro-growth tax coalition, it seems clear that the non-traditional insights from the Leviathan model are most important when analyzing new sources of revenue and competitive pressures. Reforms that broaden existing tax bases have similar theoretical problems as new sources of revenue, but the tradeoffs between economic efficiency and political efficiency are less clear cut when they are undertaken within an existing tax, under a quasi-revenue-neutral constraint.

For example, the Tax Reform Act of 1986 eliminated the general sales taxes deduction, expanding the federal tax base. Along with other base-broadeners, the 1981 and 1986 tax reforms were able to lower marginal tax rates and reduce the deadweight loss of the system as a whole. A future U.S. tax reform could eliminate the current income tax exclusion on employer-provided health insurance, using the two-three trillion dollars of increased tax revenue from the broader base for lower tax rates on earned income and savings. Such reforms risk removing previous constraints on government's ability to tax the healthcare sector, but also eliminates the incentives to compensate workers with tax-free healthcare services rather than taxable wages – a distortion that has contributed to high and rising healthcare costs (Helms, 1999).

Given U.S. tax history, a workable tax reform coalition that appropriately weighs the costs of expanding the tax base with the benefits of lower tax rates might succeed at

increasing a higher level of efficiency if tax reforms are limited to existing tax bases and protect jurisdictional competition. Three brief case studies follow to provide additional historical context and elaboration.

### **U.S. Income Tax, A More Comprehensive Base**

The history of the U.S. income tax from the 1930s through the 1980s illustrates how broadening an existing tax base, while simultaneously lowering tax rates may not have the same effect on political incentives as entirely new revenue streams or limits to jurisdictional competition. This historical fact helps explain the observed tradeoffs made between the two competing tax ideologies within the pro-growth tax coalition.

Top marginal income tax rates were lowered in 1964 by 20 percentage points, in the 1980s rates dropped again by more than 40 percentage points between two tax reforms, and more recently in 2018, top rates were lowered by a more modest three percentage points. During each of these episodes, the tax rate was reduced, but the tax base was expanded without significantly increased reliance on the income tax.

The U.S. Revenue Act of 1964 included over 40 structural changes, many limiting personal deductions which were previously used for aggressive tax planning (Caplin, 1964). The top tax rate fell from 91 percent to 70 percent (Figure 1). Total individual tax receipts as a percent of GDP fell by one percentage point, from 17 percent to 16 percent in 1965, but rebounded the following year and climbed to 18 percent in 1967. The average effective tax rate paid by the top one percent of income earners also remained relatively stable, climbing from 37.8 percent in 1964 to 40.2 percent in 1967. Lowering

marginal tax rates in 1964 was a significant reform for economic efficiency, and was accomplished under a revenue-neutral constraint (Joint Economic Committee, 1982).

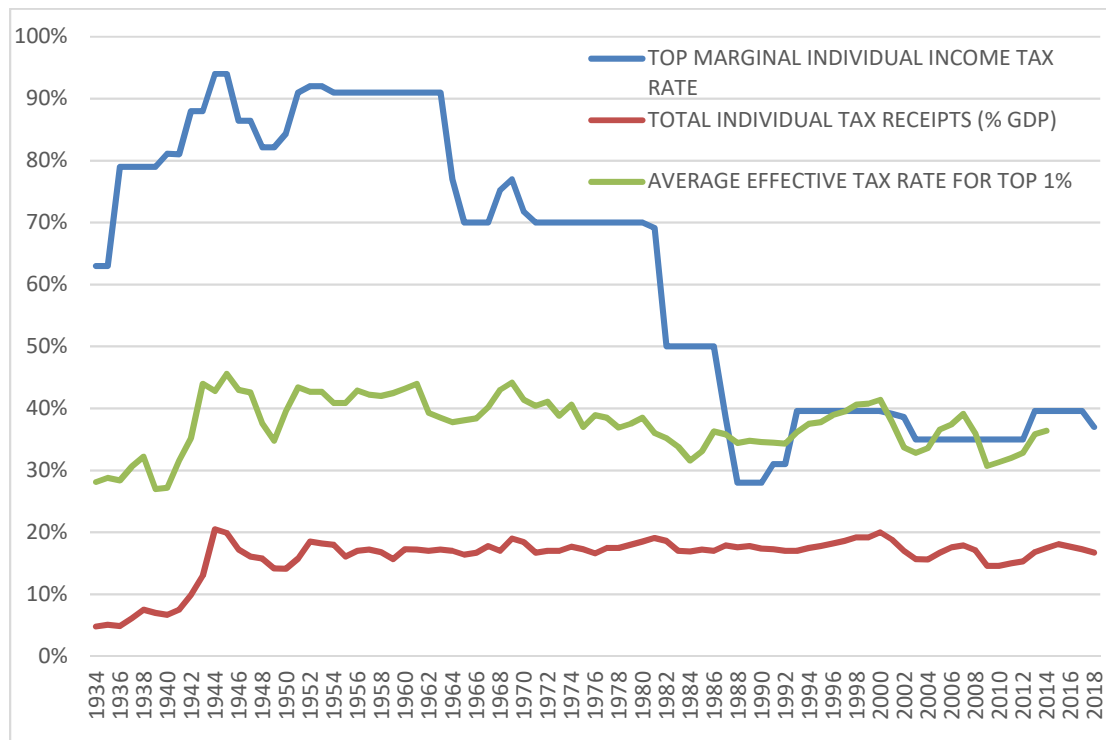


Figure 1: Federal individual income tax rates and receipts, United States (1934-2018)<sup>6</sup>

Figure 1 shows a similar trend across the two tax reforms in 1981 and 1986. The Economic Recovery Tax Act of 1981, was a modest individual income tax cut, with large reductions in marginal rates. Top marginal rates were cut from 70 percent to 50 percent,

<sup>6</sup> Sources for Figure 1: “Table 23. U.S. Individual Income Tax: Personal Exemptions and Lowest and Highest Bracket Tax Rates, and Tax Base for Regular Tax, Tax Years 1913–2015,” Internal Revenue Service, Statistics of Income, <https://www.irs.gov/pub/irs-soi/histab23.xls>; “Table 2.3 - Receipts By Source As Percentages Of GDP: 1934 – 2023,” Historical Tables, Office of Management and Budget, <https://www.whitehouse.gov/wp-content/uploads/2018/02/hist02z3-fy2019.xlsx>; Gabriel Zucman, Thomas Piketty, and Emmanuel Saez, “Distributional National Accounts: Methods and Estimates for the United States,” <http://gabriel-zucman.eu/usdina/>.

with few base broadeners. The rapidly growing economy and cuts to offset inflation-induced bracket creep meant that total receipts and average tax rates on the top one percent only fell slightly. Following on the heels of the 1981 tax cuts, the Tax Reform Act of 1986 took the more traditional steps of lower rates and a broader base.

In 1986, top marginal income tax rates were cut again from 50 percent to 28 percent, and the reform included offsetting base-broadening reforms so that the bill was designed to be revenue-neutral. Total tax expenditures – one measure of how incomplete the tax base is – fell from just shy of 10 percent of GDP in 1986 to about 5.5 percent in 1989 (Hungerford, 2011). Not all the base broadening tax expenditure eliminations were strictly economic efficiency-enhancing, but most of the non-pro-growth changes were to the business tax code (Greenberg, Olson, & Entin, 2016). From 1985 to 1989, total individual income tax revenue increased slightly, as did the average tax rate paid by the top one percent (Figure 1).

The Tax Cuts and Jobs Act of 2017, followed the same trend of cutting top tax rates while simultaneously expanding the tax base. The law included a \$10,000 cap on the previously unlimited state and local tax deduction and several other smaller individual base broadeners (Joint Committee on Taxation, 2018). The top rate was cut from 39.6 percent to 37 percent. Early analysis shows that the reforms will be a tax cut for all income groups, but has increased the share of income taxes paid with the top income tax brackets (TPC, 2017). Based on the history of the U.S. income tax, the expansion of the federal tax base alone will likely not dramatically increase the tax as a source of revenue over time. This is not to say that past and current changes have not resulted in net tax



increases, but that past increases in revenue from new base broadeners has primarily translated into lower rates, rather than larger government.

Following the 1986 reforms, the new more comprehensive tax base was slowly eroded by the introduction of new tax expenditures. Jason Fichtner and Jacob Feldman (2011) describe how no reform is permanent and that by 2008, tax expenditures had risen from their low of 5.5 percent to eight percent of GDP. Following the 2017 reforms, a similar trend is emerging again; these include, the Low-Income Housing Tax Credit that was expanded in early 2018, persistent calls to roll back the SALT deduction cap, and a popular bill to extend 26 expired tax subsidies, including expanding two tax expenditures for biofuels and railroad track maintenance (H.R.1625, 2018; Hutchins, 2019). This analysis suggests one reason why increasing revenues by expanding an existing tax base may have a built-in constraint; special interests are vested in eroding the tax base, placing opposing pressures on government actors who may want to use the more efficient tax base to raise more revenue.

The U.S. experience is one of consecutive revenue-neutral or revenue-reducing income tax reforms that partially funded lower rates by increasing taxes on previously tax-exempt activities. These reforms show that even without strict constraints on the tax base, expanding what is subject to tax within the confines of existing taxes does not necessarily fuel a larger reliance on the tax as a source of revenue if the additional revenue is used to lower tax rates.

## **The VAT, A New Sources of Revenue**

Unlike reforms within existing taxes, the adoption of new taxes in the form of VATs across the European Union, Japan, and China, beginning in 1968, is highly correlated with growth in the size of the state (Keen & Lockwood, 2006, 2010; Mitchell, 2005; Wang & Fan, 2014). Chapter 2 of this dissertation explores the case of the Japanese VAT, showing how the tax was a causal factor in allowing the state to grow. The few empirical studies on the adoption of VATs primarily focus on the issue of causality; did the VAT cause the government to increase in size or did additional demand for government services lead to the VAT? On the question of causality, the empirical results are mixed (Keen & Lockwood, 2006, 2010; Lee, Kim, & Borcharding, 2013; President's Advisory Panel, 2005). Within the normative tradition of trying to constrain the size and scope of government, however, the question of causality is largely a semantic issue. Whether the new source of revenue causes larger government or is the mechanism which allows demanded government services to increase in supply is of secondary importance. Either way, without the entirely new source of revenue, the state would be constrained.<sup>7</sup>

## **Corporate Income Taxes, Benefits of Competition**

Only drawing a line between existing tax bases and new taxes misses one additional dimension of analysis added by the competitive federalism literature. Reforms within existing tax systems should be careful to maintain ease of exit from tax systems to

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<sup>7</sup> Although not explicitly investigating VATs, Gary Becker and Casey Mulligan's (2003) results support this view.

facilitate jurisdictional and tax competition. The global decline in corporate income tax rates over the last two decades illustrates the power of global competition for business activity as a constraint on the corporate income tax as a source of revenue.

While VAT rates and revenues have increased steadily since the 1960s, corporate tax rates have declined precipitously (OECD, 2019). Across countries, VAT rules tend to be closely harmonized with neighboring systems and have become more similar over time. The taxes are also designed with a border adjustment, making the tax “destination-based” (Becker & Elsayyad, 2009; OECD, 2018b).<sup>8</sup> Using U.S. state-level variation in corporate income tax codes, Chapter three of this dissertation tests the effects of closely coordinated corporate income taxes on tax rates, finding that tax rates decrease as inter-jurisdictional tax coordination decreases. Although the dynamics of global tax competition are complex and hard to model, it is clear that key differences between the VAT and the corporate income tax make the VAT an increasingly easy way to raise more revenue and the corporate income tax a stable yet not easily over-exploited revenue source.

In some models, destination-based taxes are less susceptible to the competitive pressures of capital mobility and business location decisions. Destination-based taxes allow states to set their tax “rates in accordance with their own preferences, without concern about the rates set by other states” (Auerbach et al., 2017, p. 38). In a model of tax competition, Ben Lockwood (2001) also shows that homogenous tax systems – those

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<sup>8</sup> Tax system rules are distinct from the tax rate. The rules govern how income is defined and how to attribute that income to a specific location.

systems with similar rules – are less susceptible to competitive forces. The coordination of tax rules protects local governments from competitive pressures that would otherwise keep tax rates low for fear of losing businesses or people to another jurisdiction. In a favorable account of tax harmonization Jeremy Edwards and Michael Keen develop a model that shows tax coordination is desirable if and only if the efficiency gain is “sufficient to outweigh the policymakers’ tendency to waste” (1996, p. 131) the new tax revenue. There is, thus, a tradeoff between centralized tax rules (minimizing frictions in revenue collection and associated deadweight loss) and jurisdictional autonomy (maximizing responsive government).

The current origin-based design and arm’s length transfer pricing standards in corporate income taxes have likely helped corporate tax rates decrease over time, while tax rates for the closely coordinated VATs have followed the opposite trend (OECD, 2018b). In the 2017 tax reform debate, the proposal to add a border adjustment (making it a DBCFT) to the U.S. corporate income tax was met with strong political resistance (de Rugy, 2017). Opponents were concerned that the proposal was explicitly intended to protect the U.S. corporate tax base from the pressures of tax competition and thus turn the tax into something more closely resembling a VAT. The DBCFT would have expanded one measure of narrowly defined economic efficiency at the cost of higher-level efficiency (Citi, 2017; Fichtner, de Rugy, Michel, 2017). From both the broad-based and narrow-based lenses, the DBCFT and the SALT deduction cap are similar reforms as they both expand the tax base. However, an institutional analysis of the DBCFT and how it

may limit tax competition can separate it and other similar reforms from more straightforward base-broadeners.

### **Conclusion: A Grand Bargain?**

The historical compromise within the pro-growth tax community represents a political middle ground for reformers who wish to balance increased economic efficiency while also constraining political power. While the academic literatures are less compromising, incorporating the insights of efficient institutions into traditional tax analysis helps ground some of the practical tradeoffs in theory. The Tax Cuts and Jobs Act of 2017 illustrated this tradeoff between the two competing ideologies. The income tax reforms expanded the tax base by limiting the SALT deduction and lowered rates. The proposals to expand the international tax base and limit tax competition through the DBCFT were ultimately left out of the reform package.

Empirically, governments tend to grow over time, with few identifiable limiting mechanisms (other than constraints on financing). Without making any claims about the correct size of government, it is clear that once a level of spending is established, it is necessary to have institutional constraints, lest growth continues beyond the ideal. Given a desired size of government, constraints on continued government growth become necessary institutional features even if they are inefficient under a traditional tax model.

Of the three broad categories of reforms to the tax system, new taxes and limits on inter-jurisdictional capital flows can remove important constraints on state expansion. Taxes on highly mobile factors, such as capital and intellectual property, will inevitably require extraterritorial enforcement and international cartelization to stop competition

between jurisdictions. Successive OECD projects to coordinate international corporate income taxes, the recent elimination of the physical presence rule for U.S. state sales taxes, and the proposed DBCFT in the U.S. each work to isolate politicians from competitive pressures. Constraints on extraterritorial tax enforcement can promote a higher level of efficiency.

The opposite may be true for expansions of existing tax bases. Broadening an existing tax base could have economic benefits that outweigh the potential new political and institutional inefficiencies. Using the standard revenue-neutral reform constraint, repealing tax credits, or eliminating exclusions and deductions could increase economic efficiency more than it decreases political efficiency. Tax credits, for example, that subsidize wind energy production over hydroelectric sources, and the income tax exclusion for employer-provided health care, create measurable distortions in their respective markets which have real economic costs.

Starting with the traditional tax models and incorporating the insights of efficient institutions and political constraints shows how 1) entirely new streams of tax revenue and 2) reforms to undercut competitive pressures from other tax jurisdictions are the most likely to fuel leviathan.

The large structural U.S. federal budget deficit and ever-growing social insurance costs will continue to put pressures on policymakers to raise revenue. The growing popularity of novel revenue streams, such as VATs, carbon taxes, and wealth taxes will continue as reducing the growth rate of spending remains politically unpopular among U.S. voters. The pressure to raise revenue will become even more necessary as proposals

for new and expanded social welfare programs (such as paid family leave or child care for all) become a reality. As policymakers look for revenue to extend the 2017 tax cuts or simply pay for currently unfunded liabilities, the insights of two divergent public finance literatures point policymakers toward expanding current tax bases rather than creating entirely new revenue systems. A reform like eliminating the exclusion for employer-provided health care could raise significant revenue without the introduction and long-term political and economic costs of a VAT or a carbon tax.

## **POLITICAL INCENTIVES OF THE TAX STATE: THE CASE OF THE JAPANESE VAT**

Tax systems are imbued with political and economic incentives. Economists, lawyers, and accountants most often focus on the economic incentives, the definitions of terms, and the ease of administration. Each of these fields is focused on the taxpayer; how does the tax system change the incentives for consumption versus savings, how does it affect the distribution of wealth, how will the tax system affect economic activity, or how the new definition of taxable income will change compliance. Tax reforms are most often carried out by politicians with the aim of changing economic incentives and the level of revenue. Rarely is the tax system's impact on the politicians' incentives considered. This lack of consideration has allowed most tax reform debates to ignore the issue of political incentives and how they might confound the ultimate level of revenue raised by a given tax system over time.

Though the primary purpose of taxation is to raise revenue, tax reform is often predicated on the reasonable claim that the existing tax system negatively distorts important market activities and outcomes, such as investment, individual's work-leisure tradeoff, or income distributions (Report on Japanese Taxation, 1949). Because traditional public finance tax models take the level of revenue as exogenous, the prescription is often to minimize the inefficient tax and raise new revenue through some other means, either by expanding an existing tax base, adding a new tax or raising rates



elsewhere (Aurenus, 2016). Tax reforms completed in the name of economic efficiency often have costs that are not considered in traditional tax models. A higher level of analysis must also consider the costs of less efficient government.

The history of tax reform in Japan is an important case study of how the political incentives of a tax system can ultimately change the size of government. Governments tend to grow over time, punctuated by crisis. Adding new taxes, or even considering them as a politically viable option in the future, can remove important constraints on the growth in the size of the government.

The Japanese Value Added Tax (VAT) illustrates how political incentives change between different tax systems. Japan's VAT is often used to show that opponents of a U.S. VAT have unfounded concerns that the VAT's political incentives will lead to larger government (Previtera, 2011). However, I argue that a more careful historical analysis shows that Japan's VAT was an important reason that deficits were allowed to grow, and levels of government expenditures increased. Japan's VAT enabled and was likely a causal factor in Japan's history of fiscal crisis. The following sections develop a theory of leviathan government to help interpret the fiscal history of Japan. The history of the Japanese VAT begins in 1950 with the U.S.-led Shoup Mission, but the tax is not implemented until 1989 under Prime Minister Takeshita Noboru's administration. Japan's pre-VAT history shows that a lack of easily available new sources of revenue can constrain the growth of government spending. When the political consensus against the VAT broke down, deficits grew, and the new tax has been unable to meet its stated goals

of closing budget shortfalls and making the tax system more economically efficient (Reynolds, 1998).

### **A Model of Leviathan**

Traditional public finance tax models prioritize economic efficiency as the primary margin of analysis, reducing the interaction between economic and political factors to isolate the impact on taxpayers' economic incentives. By minimizing deadweight loss at a set level of revenue, political exchange is assumed away. For example, in one form of popular tax models the tax that distorts the tradeoff between consumption and saving the least, while raising some set amount of revenue, is most efficient (Chamley, 1986; Judd, 1985).

Assuming the revenue level is fixed over time and set externally to the model, necessitates an electoral governance process that maintains an efficient level of revenue as Geoffrey Brennan and James M. Buchanan (1980) discuss in their book *The Power to Tax*. When tax models assume that revenue will remain constant before and after the policy change they are implicitly assuming revenue levels will be efficiently set by public-minded policymakers.<sup>9</sup> However, if the electoral constraint is imperfect and government expenditures tend to grow over time, an external constraint on state power may be efficiency enhancing once government grows beyond its optimal level (Becker & Mulligan, 2003; Besley & Smart, 2007). Restricting what politicians are able to tax can constrain the growth of the state compared to an idealized apolitical tax system. The

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<sup>9</sup> Some scholars have formalized this orientation and argue that political processes themselves are efficient, producing the most desirable outcomes (Whitman, 1995). Bryan Caplan (2008) offers a critique of Whitman.

Brennan-Buchanan model of tax analysis that weighs the benefits of constraining the growth of government may result in economically inefficient tax arrangements that represent a higher level of efficiency by incorporating political and economic incentives.

When electoral constraints are imperfect, new sources of revenue are causally associated with state growth. Bryan Caplan (2008) shows that voters have built-in biases that systematically grow governments, and Robert Higgs (1987) shows that governments grow following crises and never return to previous levels. Gary Becker and Casey Mulligan use a model and empirical analysis to “show that more efficient tax and spending policies generally promote the growth of government” (2003, p. 330). Libor Dusek exploits variations in the adoption of automatic income tax withholding across the U.S. states to show that as much as half of the increase in income tax revenue from 1940 to 1970 was caused by withholding (Dusek, 2006). Amy Finkelstein shows that following the adoption of more efficient automatic road toll payment systems, “tolls are 20 to 40 percent higher than they would be without” electronic toll collections (Finkelstein, 2009, p. 969). In each of these cases, a more efficient tax or tax collection mechanism caused government expansion.

The adoption of VAT taxes across the European Union and in Japan, beginning in 1968, is highly correlated with growth in the size of the state. On the question of causality, the empirical results are mixed but do tend to support the view that the VAT causes governments to grow (Keen & Lockwood, 2006, 2010; Lee, Kim, & Borchering, 2013; Wang and Fan 2014; President’s Advisory Panel, 2005). In the literature, the notion that VATs cause larger government is often called the “Leviathan” or “money

machine” hypothesis. Summarizing his own work, Michael Keen writes, “For the OECD, Keen and Lockwood find that controlling for other influences on tax revenues, the revenue raised by the VAT has been partly offset by reduced revenue from other taxes. Perhaps surprisingly, the money machine thus emerges with some support” (2009: 168). More recent evidence from the VAT in China finds that “the VAT is a significant factor that leads to the expansion of the government,” (Wang & Fan, 2014, p. 56) between 1985 and 2011.

If voters or policymakers want to constrain the size and scope of government, the question of causality is largely a semantic issue. Whether the new source of revenue causes larger government or is the mechanism which allows supplied government services to increase to meet demand for government is of secondary importance. Either way, withholding new sources of funding would have constrained the state, and introducing new sources of funding allows for the continued expansion of the state.

The adoption of VATs across the world is the most notable example of tax reforms that were sold politically as a way to increase one measure of economic efficiency by substituting taxes on capital for a tax on consumption. While narrowly defined economic efficiency of the tax system could have increased, the lost political constraints allowed overall levels of taxes and spending to grow, ultimately making the efficiency gains ambiguous. This trend is confirmed by the empirical literature, which shows that more economically efficient taxes are closely associated with larger and faster-growing governments (Becker & Mulligan, 2003). The historical example of tax reform in Japan provides additional nuance to the empirical story.

## **The Value Added Tax in Japan**

To further investigate how new sources of revenue can fuel the growth of government, Japan's history with the VAT – or the national consumption tax as it is known in Japan – offers an informative and challenging case study.<sup>10</sup>

VATs are considered by the majority of economists to be the most efficient way to implement a tax on a consumption base, which is considered to be one of the most economically efficient tax bases (Gale & Harris, 2011; Zodrow, 2007). The VAT is a consumption tax because it taxes the added value each business contributes to the product at each stage of production. The tax is ostensibly passed on to the consumer in the form of a higher price. Each business is taxed on the difference between the original input price (raw materials) and the sales price (refined materials). At each stage of production, tax is collected, so that the sum of tax collected at each stage is equivalent to a tax on the final sales price. There are two standard administrative ways to implement a VAT, the European credit-invoice method and the Japanese subtraction method.

The subtraction method calculates the tax owed once per reporting cycle, per business. Each firm simply reports “the total value of sales minus the total value of purchases multiplied by the tax rate” (GAO, 1989, p. 13). The tax can be calculated based on existing accounting books and income tax reports (Freiman, 1991). The credit-invoice method requires a new reporting system that tracks each transaction. The tax rate is applied to the sales price that each firm charges and the tax amount is printed on the

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<sup>10</sup> In the Japanese, “Value Added Tax” translates to something closer to gross receipts tax or turnover tax, so they use the term “national consumption tax” to avoid confusion. This paper uses the term VAT as that is what this form of consumption tax is known as across the majority of other countries.

transaction invoice. “At the end of the reporting period, the firm determines its tax liability by adding up the tax collected on its sales and subtracting from it the total tax paid on its purchases from other firms” (GAO, 1989, p. 13). There are many features and drawbacks of each system of accounting. Perhaps the most important difference, other than administrative burden on businesses, is that the credit-invoice method allows for different tax rates for different products. The subtraction method requires one tax rate on all consumption.

France first implemented a narrowly applied VAT to limited products in 1954, and the first modern broad-based VAT was introduced in Denmark in 1967. The VAT spread across Europe in the 1970s and then to Australia, Canada, Switzerland, and Japan, as well as developing economies across Asia and Africa in the 1980s (James, 2001).<sup>11</sup> The administrative design of Japan’s subtraction method VAT is unique to other VATs found around the world. The tax is specifically designed for simplicity by minimizing the impact on the businesses required to collect the tax (Beyer 2000; Freiman, 1991).

Early assessments of Japan’s experience presented a direct challenge to the hypothesis that new, more efficient sources of revenue can grow the size of government (Previtera, 2011). Following the implementation of the Japanese VAT in 1989, total revenue and total government expenditures decreased as a share of the economy in the three years following the reform. The original passage and first rate-hike were accompanied by offsetting reductions in other, more economically distorting taxes, and

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<sup>11</sup> Western technical assistance increased the uptake of VATs, especially in developing countries, led by the IMF. Keen and Lockwood (2010) find that countries participating in an IMF non-crisis program are 25 times more likely to implement a VAT.

for the first 20 years of the tax, the rate only increased by two percentage points.

However, upon closer examination, it appears the Japanese VAT has contributed to the growth of government expenditures.

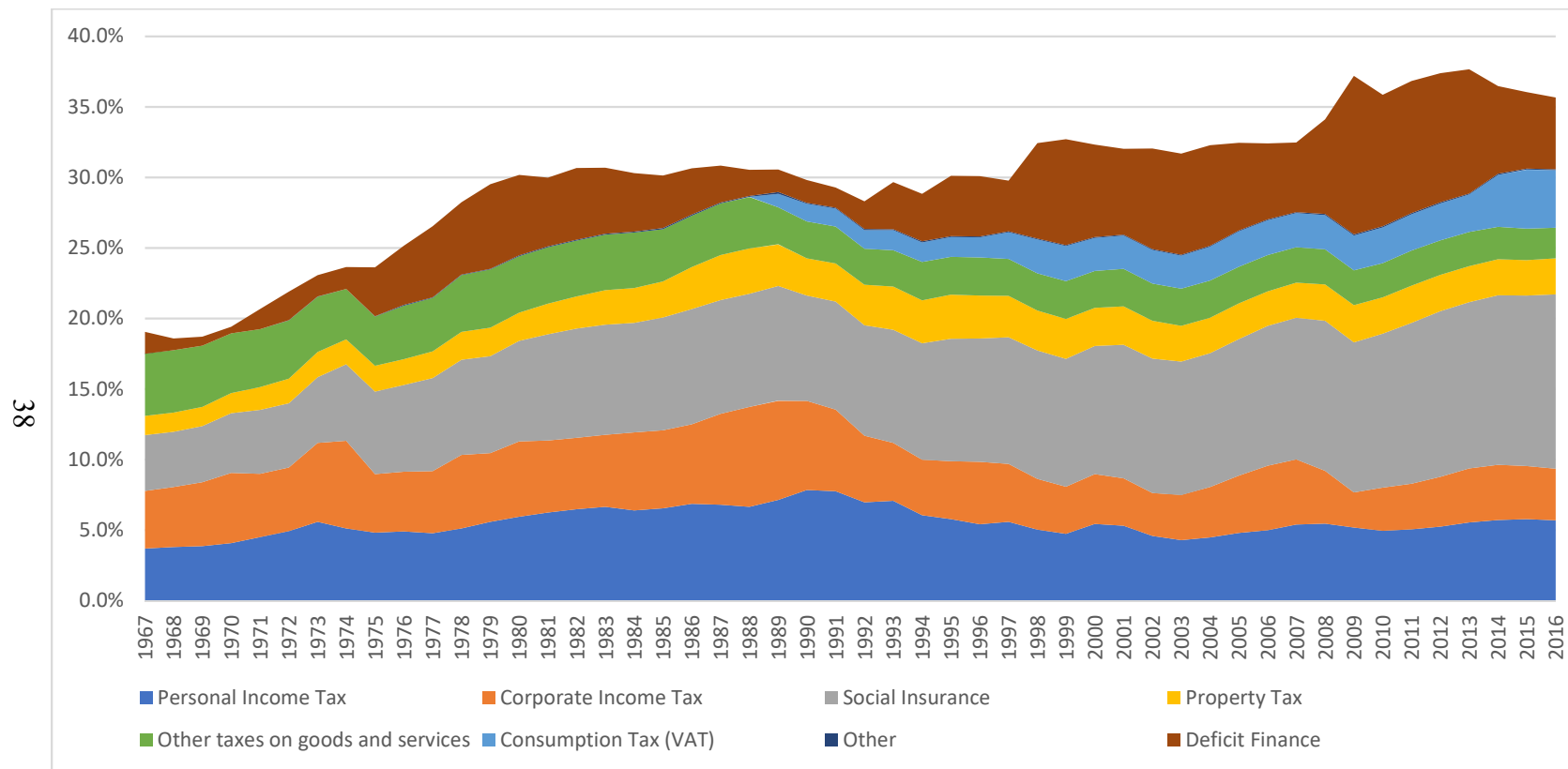
### **Early History, the Pre-VAT Era**

In 1949 the U.S.-led Shoup Mission, as part of the post-war reconstruction efforts, issued a report on recommendations for Japanese tax reform (Report on Japanese Taxation, 1949). The recommendations included broad reforms to the entire tax code, including what would have been the first VAT in the world. The proposal was almost wholesale adopted by the reconstruction government, but the VAT was repealed before it went into effect due to a public backlash. The tax was so unpopular that the early Japanese VAT experiment stunted later efforts to propose VATs, including attempts to pass various forms of VAT-like broad-based indirect taxes between 1979 and 1987 (Beyer, 2000).

The slowly looming fiscal crisis as a result of an aging population and Japan's narrow income tax base – which exempted many forms of non-employee wages – was highlighted by the 1974 recession which resulted in a steep decline in revenues. Figure **2Error! Reference source not found.** shows that following the recession, total expenditures grew at a faster rate than tax revenue, increasing the deficit even as the economy grew at an average rate of about five percent per year between 1976 and 1990 (see Figure 3). Prime Minister Ohira Masayoshi's administration proposed a new VAT in 1979, a year before the structural budget deficit peaked in 1980. Like the 1950s VAT

proposal, the plan was quickly abandoned following a public backlash and ousting of the Ohira's party (Burgess, 1986).





**Figure 2: Revenue sources as percent of GDP, Japan (1967-2016)<sup>12</sup>**

<sup>12</sup> Note: Legend reads top left to bottom right; Personal Income Tax is the bottom of the stack and Deficit Finance is on the top. Sources: “Details of Tax Revenue – Japan,” OECD.Stat, OECD, <https://stats.oecd.org/>; “Summary of Revenues and Expenditures in General Account as percentages of GDP,” Ministry of Finance, Japan, <https://www.mof.go.jp/english/budget/statistics/201006/index.html>.

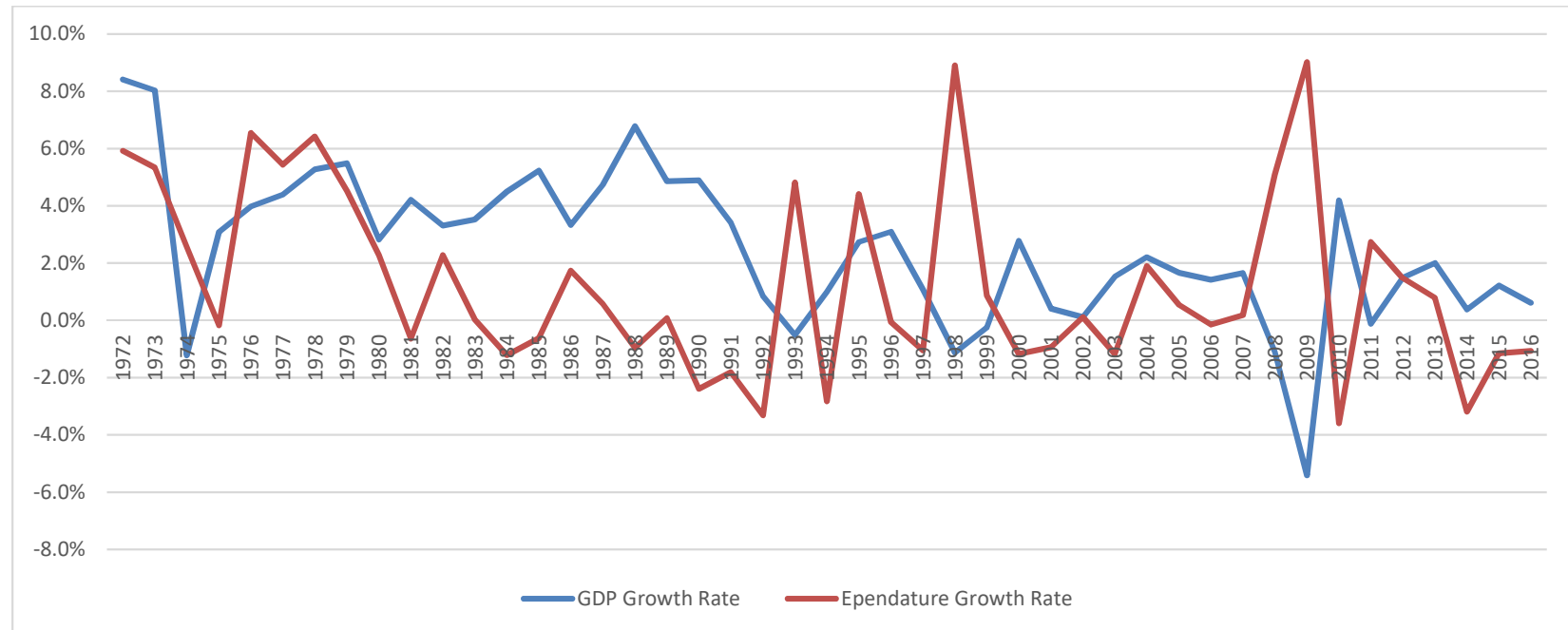


Figure 3: GDP and government expenditure growth rates, Japan (1972-2016)<sup>13</sup>

<sup>13</sup> Sources: “Details of Tax Revenue – Japan,” and “Gross domestic product (output approach),” OECD.Stat, OECD, <https://stats.oecd.org/>; “Summary of Revenues and Expenditures in General Account as percentages of GDP,” Ministry of Finance, Japan, <https://www.mof.go.jp/english/budget/statistics/201006/index.html>.

In an analysis of the Japanese deficit during this period, Kazumi Asako, Takatoshi Ito and Kazunori Sakamoto (1991) explain that the deficits were predominantly planned, with the exception of the one-year downturn in 1974. “For the expenditure side, social security (welfare) programs and other items were not checked enough,” because the government had planned on the future 1979 introduction of the proposed VAT, which “made the government lax about expenditure increases” (Asako, Ito, & Sakamoto, 1991, p. 469). The budget shortfall was covered by deficit bonds, “which were issued as an emergency measure in 1975, but fully planned, and increased in the revenue share from 1976 to 1980” (Asako, Ito, & Sakamoto, 1991, p. 469).

Between 1979 and 1989, total expenditures as a percentage of the economy leveled out and deficit bonds began to shrink in the revenue share beginning in 1983 when a “zero-ceiling” policy was introduced. Under the zero-ceiling policy, ministry budgets were frozen in nominal terms, with softer caps on salaries, debt service, and some local government transfers. Revenue also increased during this time as economic growth was strong and income tax brackets were not adjusted down for inflation or real income growth. Not adjusting tax thresholds for inflation leads to “bracket creep,” whereby taxpayers move into higher income tax brackets over time as inflation pushes incomes higher, but bracket levels stay unchanged. Asako, Ito, and Sakamoto suggest that following the failed attempt to introduce a VAT in 1979, “the government became serious about dealing with the budget deficits” (1991, p. 470). They conclude that “The ‘zero-ceiling’ policy from 1983 to 1987 was a freeze on the expenditure and revenue rate

schedules, but it was essentially a tax increase combined with an expenditure cut in real terms. This policy was really effective” (Asako, Ito, & Sakamoto, 1991, p. 470)

### **The VAT Era**

Prime Minister Takeshita Noboru’s administration voted on and passed the VAT tax in December 1988. The three percent levy went into effect in April 1989. Before the adoption of the VAT, Japan relied on indirect consumption taxes less than any other country in the OECD, a title now occupied by the U.S. (OECD, 2018a). Although Japan did have a commodity tax, which was repealed and replaced by the VAT. Barry Freiman described the commodity tax as “an ineffective, inefficient, and confused system of multiple rate taxes” (1991, p. 1272). “While the government had established that it needed to revamp its disjointed indirect taxes,” as a way to increase revenue, Vicki Beyer explains that among the public, “the introduction of the consumption tax [VAT] was highly controversial and extremely unpopular” (2000, p. 98). Indeed, the Noboru government was voted out of office in the next election for supporting the VAT.

The consumption tax reform had four major components and was designed to be an initial 2,400-billion-yen tax cut, or about a four percent cut in revenues (Homma, 1992). To alleviate the increased consumption tax burdens on middle-class workers, the reform included modest income tax cuts for middle-income workers. To further promote fairness, the plan included a new 26 percent capital gains tax to increase taxes on the wealthy.<sup>14</sup> To enhance global business competitiveness, the corporate income tax was cut from 42 percent to 37.5 percent, and the dividend rate increased from 32 percent to 37.5

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<sup>14</sup> Taxpayers could elect instead to pay a one percent transaction tax.

percent. Taken together, these three reforms were effective tax cuts but included a large marginal tax increase on many important forms of capital income (Homma, 1992).

The centerpiece of the reform was the new three percent VAT levied on domestic transfers of goods and services, exempting exports. The subtraction method design meant that fewer exemptions could be made compared to European systems. Many European VATs include low or zero taxes on food items, children's clothes, and newspapers, for example. However, the Japanese VAT included some limited tax-free purchases, which included land, rent, medical services, and a few other small miscellaneous items (OECD, 2018b). Many small businesses were also made exempt. In 1992, about 60 percent of businesses were exempt but they only accounted for two-three percent of taxable sales (Beyer, 2000). Since then, inflation lowered the real exemption threshold and other reforms have resulted in an even larger share of sales captured by the tax. In 2016, Japan's VAT had the fourth most inclusive tax base among the 35 OECD nations. The Japanese VAT taxes 71 percent of all consumption, the OECD average is 56 percent (OECD, 2018b). Beyer (2000), summarizes the history of the Japanese VAT by explaining that initially the VAT included generous small-business exemptions and a simplification procedure but over time, "the noose has been gently tightened, with the threshold for special treatment falling" (p. 105).

Japan's growth slowly decelerated from its peak in 1988 of 6.8 percent; the growth rate fell almost every year, turning negative in 1993 (Figure 3). Following the zero-ceiling policy of the 1980s, the deficit continually shrunk and then stabilized following an economic expansion and prudent short-term expenditure policy. Following

the introduction of the VAT, deficits increased to new highs, compounded by rapid economic deceleration and increases in government expenditures as a percent of GDP and in nominal terms.<sup>15</sup> Interestingly, in the initial four years after the consumption tax reform package, between 1988 and 1991, deficits remained small, even as tax revenues dropped. Figure 2 **Error! Reference source not found.** shows that corporate and personal taxes fell steadily over this period while the bond-financed deficit and overall expenditures began to widen after 1991.

In 1994, widening deficits and a small rebound in the economy proceeded Prime Minister Murayama Tomiichi's bill to increase the VAT rate from three percent to five percent. The five-percent rate hike was postponed several times, finally going into effect in April of 1997 as part of the "fiscal reconstruction movement," which included a budget that planned to cut expenditures by 1.3 percent. Growth had gradually picked back up to an annual rate of 3.1 percent in 1996. On the heels of the 1997 budget, the economy slowed to 1.1 percent growth in 1997 and negative GDP growth in 1998 and 1999 (Figure 3). While the consumption tax increase remained, the 1997 budget was revised to cut income taxes and increase, rather than decrease, spending (Ihori, Nakazato, & Kawade, 2006).

The first VAT rate increase in the 1997 budget of Japan was not originally packaged with other tax cuts, but following the economic slowdown, the fiscal stimulus in 1998 included four trillion yen in tax cuts and seven trillion in new spending (Powell,

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<sup>15</sup> There is a large literature on how VATs interact with economic growth rates. It is likely the VAT caused slower growth, which would add another channel to how VATs grow the state: slow growth leads to more state intervention and deficit spending. The VAT's impact on growth is outside the scope of this paper (see, Carroll et al 2010; Liu, & Lockwood 2015).

2002). In 1998 the deficit grew to 6.8 percent of GDP and then 7.5 percent the following year, new debt covered more than 40 percent of expenditures, not falling below 35 percent until 2006. Figure 2 shows that income tax revenues did decline during this period (1994-2001), although payroll taxes increased gradually in almost every year beginning in 1990 and the VAT revenue increased from 1.4 percent to 2.5 percent of GDP between 1994 and 2001. The overall tax burden between 1994 and 2001 was relatively stable, consistently raising revenue at a level of about 25 percent of GDP. Deficit finance expenditures, however, grew significantly and never fell back to pre-1997 levels.

Income taxes and corporate tax revenue as a percent of GDP bottomed out between 2002 and 2003, falling to their lowest levels since the mid-1980s, and have since increased as a percentage of GDP and nominal levels. Even with rising tax revenues and the new, more stable, economically efficient VAT, deficits have consistently hovered between 30 percent and 40 percent of the budget every year since 1997, rising to 52 percent in 2009 at the height of the global financial crisis. The VAT does not seem to have kept the deficit level in check.

Since the end of the economic expansion in the early 1990s, corporate tax revenue as a share of the economy and in nominal yen has remained relatively stable, declining slightly as a share of all tax revenue as total revenue increased over time. While revenues are stable, the corporate tax rate has fallen 20 percentage points since its high of 43.3 percent in 1987. Following the 1989 cuts, the rate dropped again in 1999 and 2000, falling to 30 percent. In 2012, the rate was cut to 25.5 percent and has since been

incrementally stepped down to the current rate of 23.2 percent. As is true around the world, cutting the corporate rate in half has had little negative impact on the corporate income tax as a revenue source because previously high taxes had incentivized aggressive tax planning, lessened corporate profits, and generally slowed economic growth (Fichtner & Michel, 2016).

Consistent calls to raise the VAT rate above five percent began in earnest in the early 2000s. In 2003, the appointed Government Tax Commission advised raising the rate, along with reforms to other taxes and expenditure cuts (Ishi, 2003). In 2009, the Democratic Party of Japan (DPJ) ran and won on a platform of not raising the still broadly unpopular VAT rate for four years. Putting a time limit on the pledge not to raise the rate implicitly accepted that the rate would have to increase in the future if other politically difficult reforms were not made. Under new leadership the following year, the DPJ announced that the rate would indeed have to increase to 10 percent. However, the VAT was still very unpopular, and the party lost in the following election and the rate increase was scrapped (Nippon, 2018).

Continued fiscal pressures finally motivated the 2012 passage of a bill to increase the VAT rate from five percent to eight percent in 2014 and then to 10 percent the following year (Tabuchi, 2012). Although still unpopular, political support for the VAT increased over time as politicians earmarked the revenue for social security solvency, framing the tax as a necessary way to secure the rapidly aging population's retirement. The VAT rate increased to eight percent in April of 2014. The additional two percentage point increase originally scheduled for 2015 has been continually delayed due to



economic and political concerns, first delayed by 18 months and then further delayed until October of 2019 (Kyodo, 2019; Nippon, 2018). In 2018, Prime Minister Abe Shinzo announced that the rate will still rise to 10 percent in October 2019, but for the first time, there will be a second lower rate on food products to address concerns about raising taxes on low-income taxpayers (Kyodo, 2018). This dual rate will require the Japanese to transition their VAT from the subtraction method to the European credit-invoice system (Ministry of Finance, n.d.).

### **Analysis**

Japan's VAT is, at first look, a refutation of the Brennan-Buchanan and "money machine" hypothesis. Many have argued that the tax has not fueled leviathan and that when VAT rates have increased, reductions to more economically destructive taxes on capital and labor followed suit (Guttman, 1988; Previtera, & Boyle, 2011; Pomerleau, 2015). The Japanese VAT also shows that a VAT can be implemented without the large new compliance costs that are typically associated with credit-invoice systems (Freiman, 1991). Parts of these narratives may be true for short periods, but the comprehensive history shows the opposite. The Japanese VAT has likely allowed state expenditures to grow larger than they would have been otherwise, has removed political pressure to reform expenditure growth, and the overall tax system has not been made significantly more efficient.<sup>16</sup> The zero-ceiling policy following the failed attempt to introduce a VAT in 1979, illustrates how incentives change when the political prospect of a future revenue

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<sup>16</sup> Japan's ability to borrow also keep them from continuing to rely on bonds for increased spending during this time. The state's borrowing constraint is just as important as the revenue constraint for the growth of expenditures.

stream decrease. Even with the unchanged ability to borrow and increasing revenue from the personal income tax, the temporary lack of new tax options halted expenditure growth almost immediately (Asako, Ito, & Sakamoto, 1991).

In the first 20 years of the Japanese VAT, the rate only increased once, by two percentage points, a much smaller increase than the average 4.5-point increase across the OECD in a similar time period (Dubay, 2009; Previtera, & Boyle, 2011). Just looking at the legal tax rate obscured the ongoing political pressure to increase the rate, with politicians repeatedly proposing a higher rate and voters rebelling. In the last five years, budget pressures, changing politics and better messaging have allowed the tax rate to increase a second time, with a third revision on the way in 2019. Outside economic consulting groups, like the International Monetary Fund, continue to advocate a rate as high as 18 percent to address budget shortfalls and bring Japan into line with VAT rates in similar developed countries (Keen, Pradhan, Kang, & Mooij, 2011).

The original subtraction method VAT also has different political economy incentives than the credit-invoice method. Unlike all other VATs, Japan's politicians were not able to levy different tax rates on different types of goods. Across Europe, VATs most often have four or five different tax rates, including a zero rate (OECD, 2018b). Variable rates allow for lower rates on politically sensitive purchases, like food, and expensive purchases, like cars. The credit-invoice design makes it easier to increase the tax on subparts of the tax base, which reduces the political pressure against the tax increase and allows revenue to grow over time. Without the ability to exempt politically sensitive purchases, the subtraction-method VAT makes the economic and subsequent

political pain of a rate hike more acute. Prime Minister Abe’s 2018 announcement that the new 10 percent VAT rate will be accompanied by a switch to the European style credit-invoice administration and a dual rate acknowledges this previous constraint (Ministry of Finance, undated). The government has also considered pairing the dual rate with other tax relief measures, like rebates and reward points, targeted at low-income taxpayers through Japan’s “My Number” system for consolidated banking, tax, and public benefits programs (Mizuho, 2018). By adopting a dual tax rate and the accompanying credit-invoice method, future rate increase will be easier to implement compared to having to raise a single tax rate on all consumer spending.

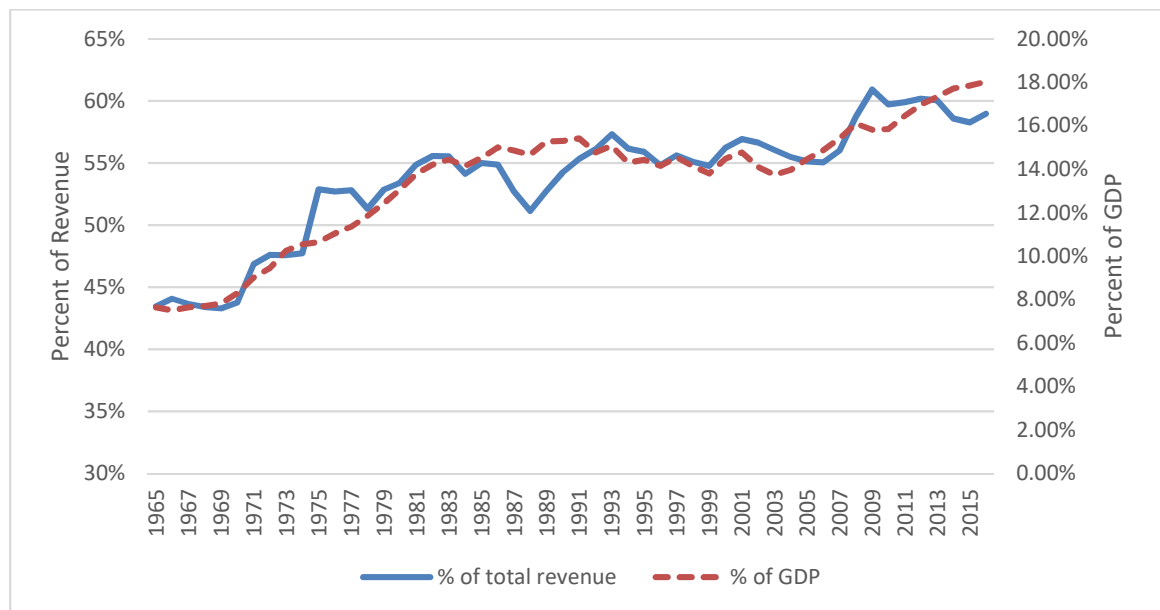
Most economists who advocate for the VAT in the U.S., and those who pushed for the implementation and subsequent rate increases in Japan, frame the VAT as a substitute for some other, more destructive tax – usually the corporate income tax (Guttman, 1988; Aurenus, 2016). In Japan, the corporate income tax rate did decrease simultaneously to the introduction of the VAT and subsequent rate increases, although only the initial VAT implementation was explicitly paired with other rate reductions – other political forces drove corporate income taxes down. However, over 30 years of Japanese corporate tax cuts, the revenue raised from the tax declined very little in absolute dollar value or percent of GDP. The lower corporate tax rates did not materially change the total revenue level (OECD, 2018a). Thus, the corporate tax rate could have been cut without any offsets. If the VAT has any economic cost to it—which most economists believe it does—then in the absence of the VAT, corporate tax revenues

could have been even higher under a reduced corporate tax rate (Carroll et al., 2010; Liu, & Lockwood, 2015).

The corporate tax is just one piece of the larger tax burden on capital income. In the early 1980s, personal savings in Japan was entirely tax-free (both deductible for income taxes and untaxed when spent during retirement). While this tax preference still existed, after 1989, Japan added multiple levels of new or higher taxes on other nonretirement forms of saving—capital gains, dividends, and interest income (Reynolds, 1998). One contemporary analysis found that average effective tax rates on capital actually increased over the periods before and after the VAT was implemented (Leibfritz, Thornton, & Bibbee, 1997). By several other measures, average effective taxes on capital investments either stayed relatively constant or declined slightly. Even if average taxes for some forms of capital fell, marginal tax rates on many other forms of savings increased dramatically; for non-retirement capital gains, marginal rates increased from zero to 20 percent or more (Reynolds, 1998). Increasing marginal tax rates have a large impact on economic decision-making as the deadweight loss of the tax approximately quadruples each time the tax rate doubles (Creedy, 2003). It is certainly not clear that Japan's taxes on capital are more economically efficient today than they were before the VAT, and the system as a whole could very well be less efficient.

Personal income taxes were also cut with the implementation of the VAT and were cut again shortly after the second rate increase. However, the total tax burden on wages has consistently increased since 1989. Combined, income tax and social security taxes have steadily increased as a percent of all tax revenue and as a percent of GDP.

Figure 4 shows that the combined tax rate on wage income increased from 15 percent in 1989 to 18 percent in 2016. The short moderation in the 1990s is deceiving, because the income tax cuts were fairly dramatic and immediate, while social insurance taxes increased in small, steady increments. Between 1986 and 1990, social insurance taxes alone increased from 12.4 percent to 14.3 percent. Unlike in the U.S., social insurance taxes in Japan do not have a maximum contribution, so the taxes have large marginal effects.



**Figure 4: Combined income and social security taxes on wage income, Japan (1965-2016)<sup>17</sup>**

<sup>17</sup> Sources: “Details of Tax Revenue – Japan,” OECD.Stat, OECD, <https://stats.oecd.org/>; “Summary of Revenues and Expenditures in General Account as percentages of GDP,” Ministry of Finance, Japan, <https://www.mof.go.jp/english/budget/statistics/201006/index.html>

In the short-term, the top marginal income tax rates did fall between 1988 and 1989 (from 70 percent to 50 percent), which likely increased economic efficiency. However, in 1995, the thresholds were lowered, capturing more income at higher rates. Rates were lowered again in 1999 but have subsequently increased back to a top rate of 45 percent. Like the corporate income tax, lower marginal wage tax rates are a consistent global trend. Paired with a significant increase in social insurance taxes, average effective tax rates on labor increased steadily from 1980 through the 1990s (Carey, & Tchilinguirian, 2000). Overall, the economic efficiency of capital taxes likely has not changed in the aggregate, even if some forms of investment income saw large marginal tax increases. Taxes on labor income have indisputably increased since the 1989 implementation of the VAT, rising from 14.8 percent of GDP in 1988 to 18 percent in 2016. Taxes can conceptually be levied on labor income, capital income, or consumption. Since Japan's introduction of the value-added consumption tax, taxes on capital have not fallen dramatically, and wage taxes have increased. VATs have significant economic costs of their own by decreasing incentives to work and invest (Carroll et al., 2010; Liu, & Lockwood, 2015). Paired with the additional economic drag from the VAT, larger tax revenues and government expenditures, it is likely that the overall economic efficiency of the Japanese tax system decreased following the tax's implementation in 1989.

Higher levels of revenue will always have economic costs, but those costs have been sold politically as the cost of shrinking budget deficits and bringing revenue into line with expenditures (and a smaller deficit could have economic benefits). In Japan, the VAT is most often promoted as an easy way to close budget deficits (Asahina, 2018).

However, Japan's deficit has only expanded since the VAT was enacted. Japan's experience is consistent with evidence from the U.S. that each dollar of new tax revenue raised is associated with \$1.59 in new spending (Vedder, Gallaway, & Frenze, 1991). Adding to this evidence is Japan's pre-VAT era when expenditure growth flattened after it became clear that an immediate new source of revenue was not politically feasible (Asako, Ito, & Sakamoto, 1991). Following the implementation of the VAT, the binding fiscal constraint disappeared, and deficits began to climb again, expanding to their highest levels following the 1997 VAT rate increase. Ballooning deficits after the 2008 recession also show how politicians resort to VAT rate increases first, when the tool is available, over other fiscal reforms. The switch to a credit-invoice method will only make raising the VAT rate more politically feasible.

### **Conclusion**

Tax reforms are most often about two things, changing economic incentives and changing the level of revenue. Many modern tax reforms are, at least in their rhetoric, about increasing economic efficiency at some desired revenue level. Economists usually recommend expanding the tax base or adding new revenue sources to help raise revenue to cut or reform inefficient taxes elsewhere in the system. Further, economists often focus on economic incentives of tax systems, while ignoring the system's political incentives.

Empirical, theoretical, and case study evidence all support the Brennan-Buchanan hypothesis that new taxes can act as a money machine, fueling the growth of government. In Japan, early political constraints that effectively prohibited the implementation of the VAT forced spending reforms as part of a broader fiscal package. Once the political

barriers to new taxes were overcome, deficits and aggregate spending levels increased. It is clear there was not a dramatic efficiency gain from adding a new tax base to the revenue system.

There is a growing consensus that a VAT or carbon tax is an inevitable development in the United States. Keen (2009) notes that “The United States is the final frontier for the VAT all other OECD countries now have one” (p. 168). As deficits continue to grow, and an aging population increases the fiscal pressures further, the U.S. could find itself living Japanese history. Without a VAT or other significant new source of revenue, the U.S. cannot fund the growing fiscal obligations. Without a new source of revenue, a general political aversion of higher existing taxes or the resulting economic distortions could place increased pressures on federal fiscal reform. Most of U.S. tax revenue comes from direct forms of taxation, like income taxes. New sources of revenue, like the VAT, will tend to be indirect or hidden taxes that are less visible to taxpayers. If the existing political consensus against a new broad-based tax breaks down and the VAT comes to America, there will likely be little incentive to reform any of the largest spending programs.



## **UNIFORMITY IN U.S. STATE CORPORATE INCOME TAX POLICY**

Large technology companies are at the center of a global discussion about whether multinational firms are paying their “fair share” of taxes. In response, a number of projects have spawned to address the perceived problem of some corporate profits escaping taxation. The most prominent of these initiatives is a joint project between the OECD and G-20, the Base Erosion and Profit Shifting Project (BEPS, 2015). The European Commission’s Common Corporate Tax Base (CCTB, 2016) and a coalition of U.S. states through the Streamlined Sales and Use Tax Agreement (SSUTA, 2018) are two other prominent initiatives directed at combatting the patchwork of laws that exist between different taxing jurisdictions.

Each of these initiatives’ ultimate goal is greater harmonization of taxing rules across jurisdictions (BEPS, 2015). Many current tax regimes are porous. The differences in the rules between states and countries allow businesses to move profits, both on paper and physically in the form of new investments, between jurisdictions to minimize their tax liability (Zucman, 2015). In the traditional public finance literature, tax planning is an inefficient deadweight loss. It is commonly argued that given some invariant revenue threshold, efficient tax systems should tax the given tax base as completely as possible (Clausing, & Avi-Yonah, 2007). Driven by theory, proposals to consolidate or harmonize

tax systems across jurisdictions are heavily favored and promoted by tax professionals around the world (Avi-Yonah, Clausing, & Durst, 2009; Becker & Elsayyad, 2009).

Insights from Geoffrey Brennan and James M. Buchanan (1980) in their book, *The Power to Tax*, cast doubt on the traditional public finance literature. To introduce the incentives of the public sector into tax analysis, they present a theory of government as Leviathan. Instead of assuming an invariant level of revenue, Brennan and Buchanan assume that given no constraints, governments will tend to maximize revenue collection. This shift of paradigm requires public finance economists to reexamine the need for complete and neutral taxation of the given tax base. Instead, the gaps between tax systems could provide an important source of constraint on the leviathan tendencies of government tax systems (Becker & Mulligan, 2003).

The current international tax system is imperfect; it allows for tax planning and does not tax 100 percent of corporate profits. In the government as Leviathan model, this imperfection can be a feature, not a bug. Relying largely on anecdotal evidence, the public policy space is full of those who proclaim the virtues of so-called tax competition – the uncooperative setting of tax rules and rates. For instance, Chris Edwards and Daniel Mitchell (2008), defend tax competition in their book *Global Tax Revolution*. They explain how the existence of tax havens and a generally porous international tax system have fostered international pressures that keep business taxes relatively low – a boon for economic growth and investment. It is commonly claimed that tax competition has forced corporate tax rates among OECD countries to fall from above 45 percent to below 25 percent over the last three decades (BEPS, 2015; Stein, 2018). The pressures of tax

competition have not resulted in lower levels of tax revenue. Corporate tax revenue as a percentage of GDP has increased across the same countries over the same period, primarily due to the increases in economic efficiency and less aggressive tax planning that follow from lower tax rates (Fichtner & Michel, 2016).

The tax competition literature is generally unfocused and points to a myriad number of factors that facilitate the benefits of state competition (see Edwards, & Keen, 1996; Lockwood, 2001). This paper attempts to focus on just one channel – the degree of cooperation in setting tax rules – that is likely an important factor in constraining leviathan government. The U.S. states' use of corporate income tax apportionment formulas for the corporate income tax presents an important case study to test the power of coordination to fuel leviathan.

In this paper, I present a theory for and testable hypothesis that harmonization of disparate sovereign tax systems can remove competitive pressures which otherwise constrain governments. I use historical data from the U.S. states as they first implemented and then moved away from a uniform system of corporate income tax apportionment towards a more varied system with less coordination. My testable hypothesis is that a state's corporate tax rate and reliance on the corporate income tax as a source of revenue is decreasing in the divergence from the standard three-factor formula.

### **Formulary Apportionment**

There are two broad literatures on formulary apportionment. The first is a theoretical literature which relies on models of inter-jurisdictional tax competition. However, this literature focuses on the incentive effects of moving to formulary

apportionment from the current international corporate income tax system of separate accounting. The literature is largely inconclusive because the models are so sensitive to the assumptions used (see Edwards, & Keen, 1996; Lockwood, 2001; Nielsen, Raimondos-Møller, & Guttorm Schjelderup, 2010; Sørensen, 2004; Gresik, 2010).

The second broad bucket of research is the empirical research on formulary apportionment. As summarized by Joann Weiner (2006) in her book, *Company Tax Reform in the European Union*, empirical work has investigated four different questions: Do variations in apportionment formulas and other rules affect firm 1) relative factor choices, 2) state investment and employment, 3) tax planning, and 4) income shifting. To all four questions, the empirical research answers yes, variation in state apportionment formulae do change firm decisions on factors, investment, employment, tax planning, and income shifting.

There is a robust literature that investigates the impact of tax rates and apportionment formulae on economic variables. However, there are no empirical investigations into how variations in apportionment rules change the behavior of the state itself. Roger Gordon and John Wilson model how state tax policies are affected by “apportionment formula: states choose inefficiently low tax rate” (1986, p. 1357). It can be shown that when states have the same apportionment formulas, they are able to sustain higher tax rates and that more homogenous tax systems – those systems with similar rules – are less susceptible to competitive forces (Anand and Sansing, 2000; Lockwood, 2001). Additionally, anecdotal evidence from state revenue collectors indicates that increased uniformity of apportionment rules results in greater ability to fully tax corporate profits

(Willis Commission, 1965). As states began to defect away from the uniform system, the Brennan and Buchanan model of government as leviathan predicts that corporate tax rates will not increase and may fall in the absence of uniform taxation. The impact on revenue levels is ambiguous, as state rates that are set too high could result in increased revenue from lower rates.

In the early 1960s, every state but one with a corporate income tax used an equally weighted three-factor apportionment formula to divide multijurisdictional corporate profits among the states. Formulary apportionment accounts for all corporate income across jurisdictions and then assigns the income to each taxing authority using a formula. The standard equally-weighted three-factor formula assigns income based on a business's property, payroll, and sales in each state as a fraction of total activity.<sup>18</sup>

Algebraically, the equal weights three-factor formula is as follows:

$$\begin{aligned} & \textit{State A's share of corporation X's income} = \\ & \left[ \frac{1}{3} \left( \frac{\textit{Property in state A}}{\textit{Total property}} \right) + \frac{1}{3} \left( \frac{\textit{Payroll in state A}}{\textit{Total payroll}} \right) + \frac{1}{3} \left( \frac{\textit{Sales in state A}}{\textit{Total sales}} \right) \right] \times \\ & \textit{Corporation X's tax base across all states.} \end{aligned}$$

**Equation 1: Three-factor formula**

In 1957, draft legislation was first circulated by the Uniform Law Commission among the states for unifying state corporate income tax systems, called the Uniform

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<sup>18</sup> Similar formulas are used among Canadian provinces, and between most Swiss cantons.

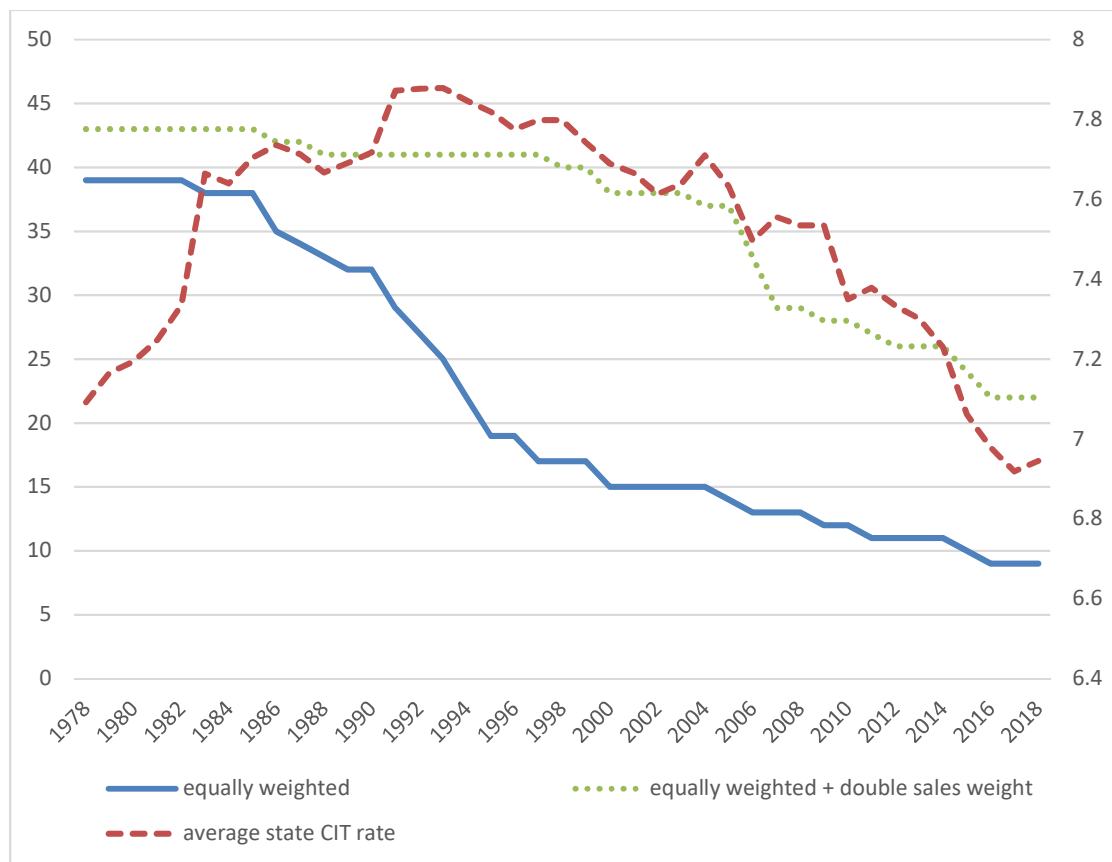
Division of Income for Tax Purposes Act (UDITPA, 1957). It was not immediately adopted by most states. The various state systems for corporate taxation created problems of double taxation, administrative burdens, and other complexities. Congress studied the issue, and in 1964 and 1965 released a series of reports recommending the imposition of one uniform system (Willis Commission, 1965). Conceptually, this would be something like a federally imposed UDITPA. Fearing federal intervention in the early 1960s, states rushed to adopt UDITPA, created the Multistate Tax Compact, and chartered the Multistate Tax Commission to address the problems of disparate tax systems (MTC, 1966).

However, in 1968, Iowa was the first state to differentiate and use a sales-only apportionment formula, apportioning corporate income based on the sales factor alone (giving a zero weight to property and payroll). The single sales factor was challenged in *Moorman Manufacturing Co. v. Bair* (1978). The Court allowed Iowa to deviate from a multi-factor formula, giving license to other states to do the same.

By 1978, 43 of 44 states used relatively consistent three-factor formulas. Following Iowa and the *Moorman* decision, additional states slowly began to move away from three-factor apportionment. However, relative uniformity persisted through 1985, where five states used a double weighted sales three-factor formula (with the exception of Iowa, this was the only variation). The use of the double-weighted sales formula grew in popularity through the 1990s with only a few states moving to more than 50 percent weighted sales formulas. In 1997, 41 states still used relatively consistent three-factor formulas. By 2000, the three-factor formula was used by 38 states and fell to 22 states in

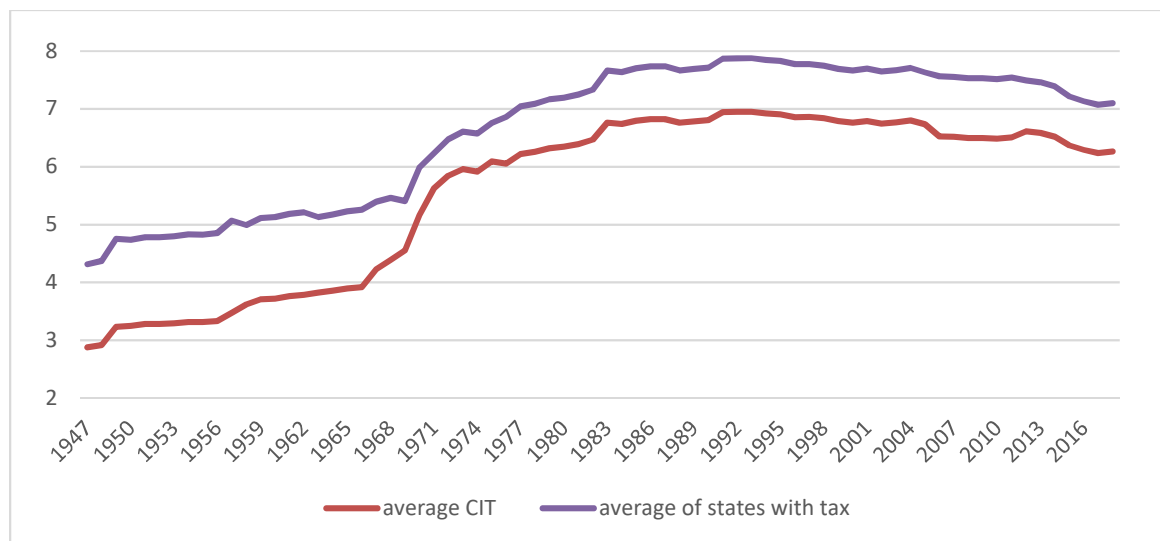
2008. Figure 5 shows the number of equally weighted and double sales weighted formulas over time and the average state corporate income tax rate.

Over the same 1978 to 2016 period, the corporate income tax also diminished as an important source of revenue as a percent of total revenue. Figure 7 shows that in 1978, the corporate tax made up 4.8 percent of state revenues, falling to 2.2 percent in 2016. Over the same period, corporate tax collections increased in real dollars, but decrease as a share of gross domestic product, indicating that corporate tax revenues were growing slower than the economy (TPC, n.d.).



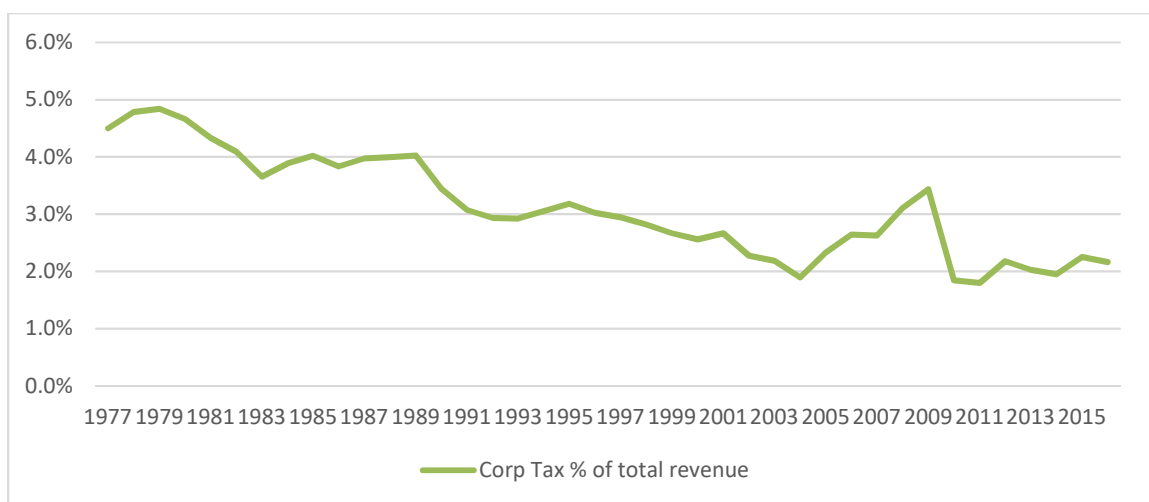
**Figure 5: Tax rates fall with fewer equally weighted apportionment formulas**

Data on apportionment formulas could not reliably be collected beyond 1978; however, state corporate income tax rates have been collected back to 1947. Figure 6 shows average state corporate income tax rates among all states and the average among states that had an income tax (i.e., excluding rates of zero). Although we do not have state by state data, we know that states did not use a uniform system in 1964 and 1965 during the time of the congressional Willis Commission. Over the subsequent five years, between 1966 and 1971, average state tax rates increased by 1.7 percentage points from 3.9 percent to 5.6 percent and continued to climb after that.



**Figure 6: Average state corporate income tax rates (1947-2018)**





**Figure 7: Average state corporate income tax as percent of total revenue**

The relative harmonization of corporate tax systems across the states was never mandated but was supported by a fear that the federal government would intercede if the states did not independently address their varying tax systems. The Multistate Tax Compact and UDITPA allowed states to coordinate their tax systems, undermining tax competition. I hypothesize that this collusion allowed state tax rates to climb through the 1980s and 1990s. As the collusive agreement broke down, competitive forces again put downward pressure on tax rates. Staggered state defection from the three-factor formula creates variation to investigate how the relatively uniform formula affects state corporate tax rates. You can visually see the correlation in Figure 5.

### **Data, Hypothesis, and Results**

I compiled a primary panel data set on apportionment formulae and corporate tax rates for states from 1978 to 2014. 35 of the 44 states with corporate income taxes changed their formulae over this time period, and 21 states moved from the three-factor formula to a predominantly sales weighted formula.

The apportionment formulae for each state are compiled from various sources. Recent years come from Commerce Clearing House *State Tax Handbook*; earlier years are filled in using issues of *Significant Features of Fiscal Federalism*, a report for the Wisconsin Department of Revenue by Jamie Bernthal et al. (2012), state revenue websites, and various other sources. State tax rates are compiled from Tax Foundation, issues of *Significant Features of Fiscal Federalism*, and state revenue websites.

Following Austan Goolsbee and Edward Maydew (2000), I match apportionment formulae and tax rates with state employment and earnings data compiled by the Bureau of Economic Analysis. These data include total private employment and inflation-adjusted average state personal income from the *State Personal Income* database. I also match inflation-adjusted per capita state data on tax revenue and expenditures compiled by the State and Local Finance Initiative from the U.S. Census Bureau's *State and Local Government Finances* Survey.

My testable hypothesis is that a state's corporate tax rate and reliance on the corporate income tax as a source of revenue is decreasing in the divergence from the standard three-factor formula. I test this in several ways.

I create three variables. First, a dummy variable (*HasStandardFormula*) is one for a year when the state has a standard formula and zero everywhere else. Second, a continuous variable (*StandardFormulaCount*) that counts the number of states in a given year with a standard formula. For example, 1978 returns a value of 43. Third, a continuous variable of the sales apportionment weight (*SalesWeight*). If a state has an

equally-weighted three-factor formula, the value would return 0.33 and if the state switched to a sales-only formula the value would be 1.

Table 1 describes each of the variables used in the analysis, and Table 2 includes summary statistics.

**Table 1: Summary statistics**

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>StandardFormulaCount</i>	1,776	37.73	5.86	26	43
<i>HasStandardFormula</i>	1,776	0.74	0.44	0	1
<i>SalesWeight</i>	1,776	0.44	0.25	0	1
<i>ExpendituresPctChange</i>	1,776	0.02	0.04	-0.15	0.29
<i>Employment</i>	1,776	3078068	3273282	249813	2.20E+07
<i>IncomePctChange</i>	1,776	0.06	0.04	-0.09	0.31
<i>CITrate</i>	1,776	6.57	3.03	0	12.25
<i>CITpctTotal</i>	1,776	0.03	0.03	0	0.10

**Table 2: Variable descriptions**

Variable Name	Description
<i>StandardFormulaCount</i>	Continuous variable: counts number of states with standard formula by year
<i>HasStandardFormula</i>	Dummy variable: 1 if standard formula, 0 if otherwise
<i>SalesWeight</i>	Continuous variable: sales apportion weight
<i>ExpendituresPctChange</i>	Per capita state expenditures, inflation adjusted, % change from previous year
<i>Employment</i>	Total state private employment
<i>IncomePctChange</i>	Average state income, inflation adjusted, % change from previous year
<i>CITrate</i>	State corporate income tax rate, in percent
<i>CITpctTotalTax</i>	State corporate income tax revenue as percent of total revenue

The data tell a compelling visual story in Figure 5; declining state corporate tax rates appear to be strongly correlated with the decline of the standard three-factor formula. In Figure 7, reliance on corporate income tax revenue also appears to be correlated with changes in the apportionment formula. To further test this relationship, I run a series of regressions included in the tables below.

The results displayed in Table 3 show outputs using a continuous measure of states with a standard formula (*StandardFormulaCount*), fitting a linear regression and absorbing state effects. The second regression adds two new control to my model; the last two columns re-run regressions 1 & 2 with clustered standard errors by state.<sup>19</sup> The results show that when one less state uses the standard formula, the corporate tax rate falls by about 0.02 percentage points. However, the estimates are not statistically significant when clustering by states. Almost identical results were reported using a two-way random-effects model.<sup>20</sup>

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<sup>19</sup> I do not include year dummies in regression where the *StandardFormulaCount* is the choice variable because *StandardFormulaCount* is continuous and does not vary across the states.

<sup>20</sup> All results report estimates without Alaska and Hawaii as is standard. Including all 50 states does not significantly change the results.

**Table 3: When fewer states use the same apportionment formula, do tax rates fall?**

VARIABLES:	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
<i>CITrate</i>				
<i>StandardFormulaCount</i>	0.0123*** (0.00377)	0.0152*** (0.00475)	0.0123 (0.0172)	0.0152 (0.0195)
<i>IncomePctChange</i>		-2.801*** (0.735)		-2.801*** (0.991)
<i>Employment</i>		-6.70e-08* (3.47e-08)		-6.70e-08 (6.48e-08)
Constant	6.109*** (0.144)	6.373*** (0.244)	6.109*** (0.650)	6.373*** (0.808)
Observations	1,776	1,776	1,776	1,776
R-squared	0.908	0.909	0.908	0.909
Std. Err. Clustered by state	No	No	Yes	Yes
Year Dummies	No	No	No	No

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Notes: This table describes the results from a linear regression absorbing state effects. See Table 2 for variable descriptions.

The results displayed in Table 4 show outputs using a dichotomous measure of states with a standard formula (*HasStandardFormula*), fitting a linear regression, with year dummies and absorbing state effects. Similar to Table 3, the second regressions adds controls, and the last two columns re-run regressions 1 & 2 with clustered standard errors by state. The results show that independently moving away from a standard formula is associated with a 0.54 percentage point decrease in the state's corporate tax rate. Again, the estimates are not statistically significant when clustered by state, and similar results were reported using a two-way random-effects model. The last column (5) estimates the

same model on the median of the state corporate income tax rates (*MedianCITrate*). The results show that when one state independently moves away from a standard formula mediana state corporate tax rates decline by 0.2 percentage points.

In Table 5, I estimate the impact of *StandardFormulaCount*, *HasStandardFormula*, and *SalesWeight* on the percentage change in state per capita expenditures (*ExpendituresPctChange*). The model is fitted using a linear regression, absorbing state effects, with clustered errors by state for all regressions. The results show that when one less state uses the standard formula (*StandardFormulaCount*), the growth rate of per capita state expenditures decreases by 0.14 percentage points. When a state moves away from a standard formula, as measured by *HasStandardFormula*, the change is associated with a 1.2 percentage point decrease in the growth rate of per capita state expenditures. Lastly, when a state increases its sales factor (moves away from the standard formula), expenditure growth decreases. The output values translate to a shift from 1/3 sales to 1/2 sales factor weight is associated with a 0.4 percentage point decrease in the sales tax rate. When year dummies are added, the results are no longer significant.

Table 4: When an individual state stops using the standard apportionment formula, do tax rates fall?

VARIABLES:	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) <i>MedianCITrate</i>
<i>CITrate</i>					
<i>HasStandardFormula</i>	0.565*** (0.0986)	0.538*** (0.0985)	0.565 (0.463)	0.538 (0.462)	0.199** (0.079)
<i>IncomePctChange</i>		-0.959 (1.066)		-0.959 (1.838)	-3.327*** (0.408)
<i>Employment</i>		-1.30e-07*** (3.70e-08)		-1.30e-07* (7.38e-08)	8.47e-08* (2.94e-08)
Constant	5.649*** (0.156)	6.078*** (0.224)	5.649*** (0.341)	6.078*** (0.423)	6.864*** (0.132)
Observations	1,776	1,776	1,776	1,776	1,776
R-squared	0.914	0.914	0.914	0.914	0.11
Std. Err Clustered by state	No	No	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	No

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Notes: This table describes the results from a linear regression absorbing state effects, including year dummies. See Table 2 for variable descriptions.

**Table 5: How do apportionment formulae effect per capita state expenditures?**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES:	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<i>ExpendituresPctChange</i>								
<i>StandardFormulaCount</i>	0.000717*** (0.000130)	0.00144*** (0.000248)						
<i>HasStandardFormula</i>			0.00928*** (0.00334)	0.00151 (0.00294)	0.0121*** (0.00362)			
<i>SalesWeight</i>						-0.0192*** (0.00625)	-0.00361 (0.00689)	-0.0281*** (0.00769)
<i>IncomePctChange</i>		-0.217*** (0.0443)			-0.152*** (0.0298)			-0.161*** (0.0314)
<i>Employment</i>		1.77e-09* (1.05e-09)			-1.89e-09 (1.34e-09)			-1.20e-09 (1.49e-09)
69 Constant	-0.00664 (0.00489)	-0.0264*** (0.00909)	0.0135*** (0.00248)	-0.0174*** (0.00572)	0.0263*** (0.00649)	0.0288*** (0.00272)	-0.0149** (0.00593)	0.0460*** (0.00566)
Observations	1,776	1,776	1,776	1,776	1,776	1,776	1,776	1,776
R-squared	0.018	0.044	0.012	0.303	0.025	0.013	0.303	0.027
Std. Err Clustered by state	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	No	Yes	No	No	Yes	No

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: This table describes the results from a linear regression absorbing state effects, including year dummies. See Table 2 for variable descriptions.



Table 6 estimates the impact of *StandardFormulaCount* and *HasStandardFormula* on the percentage change in state corporate income tax revenue as a percent of total revenue (*CITpctTotal*). In both cases the impact is small, but the results show that both measures of corporate tax apportionment are significant in their correlation with diminishing reliance on the corporate income tax as a source of revenue when clustered by state. Significance is lost when year dummies are added.

**Table 6: Do fewer standard apportionment formulae mean less reliance on corporate taxes?**

VARIABLES:	(1) Model 1	(2) Model 2	(3) Model 3
<i>CITpctTotal</i>			
<i>StandardFormulaCount</i>	0.000458*** (0.000116)		
<i>HasStandardFormula</i>		0.00519*** (0.00184)	0.00248 (0.00204)
<i>IncomePctChange</i>	0.0271*** (0.00970)	0.0465*** (0.0140)	0.0246** (0.0121)
<i>Employment</i>	-2.55e-09** (1.25e-09)	-3.59e-09*** (1.23e-09)	-4.82e-10 (1.24e-09)
Constant	0.0163** (0.00738)	0.0317*** (0.00491)	0.0351*** (0.00411)
Observations	1,776	1,776	1,776
R-squared	0.722	0.712	0.796
Std. Err Clustered by state	Yes	Yes	Yes
Year Dummies	No	No	Yes

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: This table describes the results from a linear regression absorbing state effects, including year dummies. See Table 2 for variable descriptions.

Table 7 further corroborates my findings by extending the analysis back to 1947. I estimate the impact of my two variables, (*StandardFormulaCount*, *HasStandardFormula*) on corporate tax rates. Because data on apportionment formulae, state tax revenue, employment, and income data from before 1978 are not available, my extended data set only includes yearly state by state corporate tax rates. However, we do know from historical accounts that states did not use a uniform system of apportionment in 1964 and 1965 during the congressional Willis Commission. We also know that fear of congressional action ultimately forced the creation of the Multistate Tax Commission, wider adoption of UDITPA, and uniformity in all 44 states by 1977. Using this information, I construct a synthetic historical version of apportionment formulae before 1977. Variables *StandardFormulaCount1976* and *HasStandardFormula1976* assume that before 1977 there was no coordination between states (*StandardFormulaCount* and *HasStandardFormula* equal 0).

Because there are no controls and the apportionment data are inadequate, we cannot read too much into the data, but the results from my synthetic account confirm the hypothesis although they lose significance when year dummies are added.

**Table 7: When states adopted similar apportionment formulae in 1976, tax rates increased**

VARIABLES:	(1) Model 1	(2) Model 2	(3) Model 3
<i>CITrate</i>			
<i>StandardFormulaCount1976</i>	0.0650*** (0.00847)		
<i>HasStandardFormula1976</i>		2.593*** (0.297)	0.932 (0.623)
Constant	4.083*** (0.174)	4.369*** (0.120)	2.839*** (0.304)
Observations	3,311	3,311	3,311
R-squared	0.334	0.294	0.478
Std. Err Clustered by state	Yes	Yes	Yes
Year Dummies	No	No	Yes

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: This table describes the results from a linear regression absorbing state effects, including year dummies. See Table 2 for variable descriptions.

Table 7 shows the coefficients on six dummies, lagged by plus or minus one, two or three years from the year the state switched away from a standard three-factor apportionment formula on state tax rates. The variables are zero before the reform and 1 after the reform, plus or minus one, two or three days. The *Plus3* variable, for example, is zero in every year up to three years from the reform and then 1 every year after. The coefficients in Table 7 are not significant but do show a clear break in trend before and after the apportionment formula changes, lending support to my hypothesis.

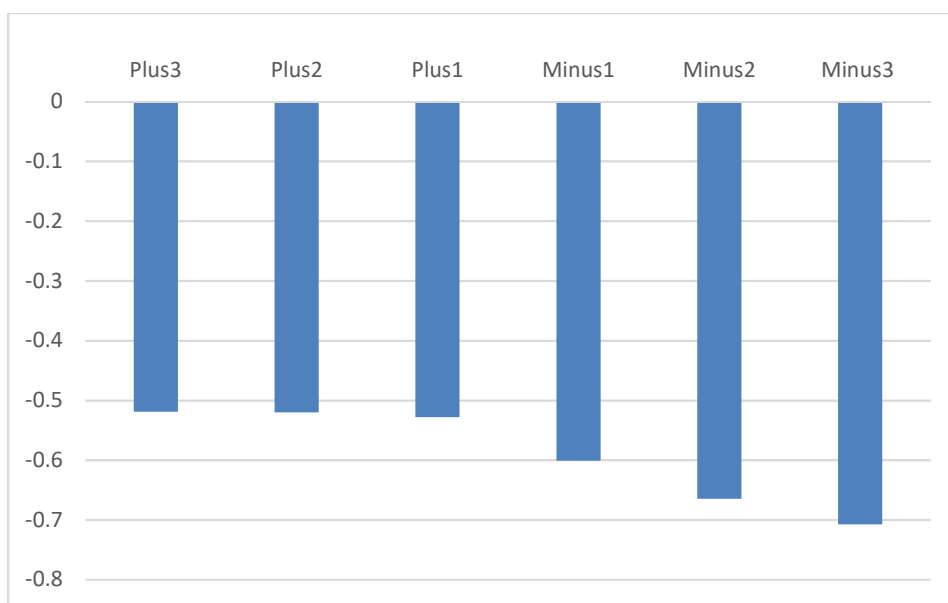


Figure 8: Effect of new apportionment formula only apparent after the reform<sup>21</sup>

### **Discussion and Conclusion**

The theory, as presented by Brennan and Buchanan predicts that without other constraints, governments tend to increase revenue and expenditures. However, the question is still open as to what might be effective constraints on Leviathan. The work in this paper investigates uniformity in corporate income tax apportionment rules as one possible source of pressure to keep corporate tax rates down. I test the hypothesis that a state's corporate tax rate and reliance on the corporate income tax as a source of revenue is decreasing in the divergence from the standard three-factor formula.

I test this in several ways. I investigate the effects of individual states defecting from the standard formula and the effect of a decreasing total number of states using the

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<sup>21</sup> This table describes the results from a linear regression absorbing state effects, including year dummies on six dummies with lagged start times, before and after the policy change. None of the results are significant. The regression's standard errors in order from left to right are, (0.167), (0.19), (0.213), (0.25), (0.26), and (0.284).

standard formula on corporate tax rates and on corporate tax revenue as a percent of the budget. I also test the related claim that a breakdown in the use of the standard three-factor formula will also constrain the growth rate of government expenditures by limiting their revenue sources.

The econometric results lend weak support to my hypothesis. My first two regressions (Table 5 & Table 6) have the correct sign, showing that by two different measures standardized apportionment formula breakdown is associated with reductions in the corporate tax rate. The magnitude of the decreases is economically small. A small or no effect is consistent with the theory because the corporate income tax rate was increasing in the early years of the data set (Figure 5), simply keeping the tax rate from rising further would show support for the hypothesis. However, when clustering standard errors by state and adding year dummies, the results are statistically insignificant. This weakens support for the hypothesis.

A more indirect test of my hypothesis lends more support to the theory that constraints on revenue sources can also constrain the growth of government as measured by expenditures. Per capita expenditures increase by about 2 percent a year in the data set. When a state independently moves away from a standard formula, the average growth rate in expenditures is about cut in half. As one would expect, smaller but similar effects are associated with the other two measures of state's use of apportionment formula. Similar tests show that less harmonization of apportionment formulas is associated with states relying less on the corporate income tax as a source of revenue.

Consistent with theory, it seems that competition and diversity between tax systems can lower tax rates. The data also show that increased measures of competition and diversity between tax systems constrains the overall growth rate of government as measured by per capita expenditures. However, because governments are still growing, states shifted to other tax sources and away from the corporate income tax, measured as a share of total taxes. States tend to shift reliance to revenue sources that are less susceptible to competitive pressures, like individual income taxes and fees (TPC, n.d.). Even if states switch to more sure tax bases, all else equal, the state is still constrained as competition has undercut one of the limited sources of revenue.

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