ARE INCOME TAXES DESTINED TO RISE?
FISCAL IMBALANCE AND FUTURE TAX POLICY
IN THE UNITED STATES

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We present a model of optimizing government behavior in which a need for increased revenue does not lead to increased income taxes, but instead leads to the introduction of a new revenue source, such as a VAT, accompanied by a reduction in income taxes. We argue that this is a plausible outcome for the United States in view of international experience and recent fiscal reform proposals, and that the prospect of such a tax reform may have important implications for individual investment decisions.

Keywords: fiscal imbalance, tax reform, consumption taxation
JEL Codes: H24, H68, D78

I. INTRODUCTION

Addressing the federal government’s fiscal imbalance will eventually require large spending cuts or tax increases, and large spending cuts will be difficult as federal spending is increasingly driven by Medicare, Medicaid, and Social Security, political “third rails” that have proved resistant to reform attempts. Those trends may suggest that income tax revenue is likely to grow as a share of the economy.

Using a framework that incorporates a choice of tax instruments, however, we show that the need for additional revenue may prompt a policy response that, contrary to intuition, actually reduces the size of the income tax. We present a model in which the government faces variable costs that are convex in income tax and VAT revenue and a fixed cost of introducing a new revenue source. We examine a case in which the government initially uses only income taxation and consider the effects of an ongoing increase in its revenue needs. We show that, when revenue needs reach a switching point, it can become optimal for the government to incur the fixed cost of introducing a VAT alongside the income tax. If such a switch occurs, then the VAT is introduced,
not at an arbitrarily low level, but at a discrete level that equates its marginal loss to the marginal loss from income taxation. The introduction of the VAT is accompanied by a discrete decline in income tax revenue. Due to the discontinuity arising from the fixed cost of introducing the VAT, income taxes are significantly lower immediately after revenue needs reach the switching point than they were immediately prior to that point.

This potential income tax reduction in response to rising revenue needs reflects a fundamental feature of optimizing behavior that applies in many contexts. For example, with production costs that are convex in each plant’s output level, a firm using only one plant will respond to a modest increase in demand by producing additional units using the existing plant and incurring higher variable costs to meet the increase in demand. By comparison, a larger increase in demand may induce the firm to incur the fixed cost of opening a second plant and scaling back operations in the first plant, which then reduces variable costs in both plants. In the same vein, a modest increase in a consumer’s taste for coffee increases the number of visits to a coffee shop, but a larger increase may prompt the purchase of a coffee maker, resulting in a reduction in visits to the coffee shop. Modest increases in the distance of a worker’s home from the place of employment increase the time spent walking to work, but a larger increase may prompt the worker to buy and drive a car, dramatically reducing walking time.

Such responses may occur, but they need not. If the additional factory, the coffeemaker, and the car are sufficiently unappealing, then they are never acquired and use of the existing factory, visits to the coffee shop, and walking time simply increases monotonically. So, too, if the introduction of a VAT is sufficiently unappealing to policymakers, then it is never introduced and income taxes monotonically increase as revenue needs rise. In our stylized model, we show under general conditions that income tax revenues decline if a VAT is introduced, but the introduction of a VAT occurs only if the VAT offers sufficient advantages to policymakers. Because policymakers’ response is ultimately a factual question, we turn to an examination of fiscal reforms proposed in the United States and those adopted in other countries. We note that such reforms often include the introduction of a VAT.

Many of the proposed and adopted reforms are strikingly consistent with the predictions of our model. These reforms do not leave income taxes unchanged and merely add a VAT, let alone add a VAT while also tapping the income tax for more revenue. Instead, even as they increase total revenue, they use part of the revenue from the new VAT to lower income taxes, precisely the type of reform that our model predicts. The future path of the income tax has potential implications for investment decisions today, including the choice between front-loaded and conventional IRAs or between taxable debt and tax-exempt municipal bonds.

The remainder of this paper is organized as follows. In Section II, we present a simple model of tax policy determination. In Section III, we discuss the international and U.S. experience, providing a calibration of the model and a discussion of the investment implications of the potential future revenue changes. We conclude in Section IV.
II. SIMPLE MODEL OF TAX POLICY DETERMINATION

The basic model considered in this section examines the government’s use of two taxes, which we label the income tax and the VAT. In this framework, “income tax” refers to the government’s initial revenue source and “VAT” refers to a supplementary revenue source to which the government may turn as revenue needs grow. In Section III, we motivate the terminology by reference to the actual experience of the United States and other countries. Policymakers are likely to perceive the VAT as sharply distinct from the income tax because the two taxes differ in several important respects, including the VAT’s relative regressivity, its lack of a marginal tax burden on new saving, its distinct administrative structure, and its likely effect on the consumer price level.

We treat the existence of an income-tax-only regime as the initial condition of the problem and examine whether or when the government chooses to add a VAT to the revenue mix after it becomes available. This treatment is motivated by historical experience. As we explain in Section III, below, the VAT drew consideration later than the income tax, but is the tax to which countries have increasingly turned in the last half-century.

A. Basic Framework

We assume that policymakers optimize an objective function that depends on the level of revenue. However, the objective function is intended to represent the preferences of policymakers rather than a conventional social welfare function. In addition to effects on output, distribution, and economic efficiency, policymakers may be influenced by political factors that need not match an economic conception of social welfare.

We initially describe a simple static problem, which illustrates the basic ideas, before considering a stylized dynamic framework. The government’s benefit from raising revenue is given by a strictly increasing and strictly concave function $F(R)$, where $R$ is revenue, expressed as a fraction of the economy’s potential output. The function is assumed to be continuously twice differentiable, $F_R > 0$, $F_{RR} < 0$. The government budget constraint requires $R = Y + V$, $Y \geq 0$, $V \geq 0$, where $Y$ denotes the revenue raised from the income tax and $V$ denotes the revenue raised from the VAT, both expressed as fractions of potential output. The cost of raising revenue is given by a strictly increasing, strictly convex, continuously twice differentiable function $H(Y, V)$. The following restrictions therefore hold; $H_Y > 0$, $H_V > 0$, $H_{YY} > 0$, $H_{VV} > 0$, $H_{YY}H_{VV} - H_{YV}^2 > 0$.

We also assume that the income and consumption tax are substitutes rather than complements $H_{VV} > 0$. In other words, the marginal cost of raising revenue from either tax rises when the other tax is increased. Because taxing either base more heavily is likely to shrink the base of the other tax, raising the same revenue will require a higher effective rate for the other tax. The higher effective rate is likely to increase all of the costs of the other tax, be they political costs, deadweight loss, or administrative and compliance costs.

We compare two regimes, one in which the government uses only the income tax and one in which it uses both the income tax and the VAT. We designate the optimum
of the first problem with a single asterisk and the optimum of the second problem with a double asterisk.

With a single tax instrument, the government’s only choice variable is the level of revenue. The government chooses a revenue level given by

(1) \( F_R^* = H_Y^* \).

In the two-tax problem, the government has two choice variables and two first-order conditions

(2) \( F_R^{**} = H_Y^{**} \),
(3) \( H_Y^{**} = H_Y^{**} \).

**B. Income Tax Revenue is Lower under the Two-Tax Regime**

At the two-tax equilibrium, denoted by a double asterisk, the marginal benefit of raising revenue is equated to the marginal cost of both tax instruments. We now show that these first-order conditions can be used to establish, through a proof by contradiction, that income tax revenue is lower under the two-tax regime at any given values of the \( F \) and \( H \) functions.

Suppose, contrary to the stated conclusion, that income tax revenue under the optimum of the two-tax regime was higher than, or equal to, the revenue raised under the optimum of the one-tax regime, \( Y^{**} \geq Y^* \). Then, total revenue under the two-tax regime would necessarily be strictly higher than revenue under the one-tax regime, \( R^{**} = Y^{**} + V^{**} \geq Y^* \equiv R^* \). Then, from the strict concavity of the \( F \) function, the marginal benefit of revenue would be strictly lower under the two-tax regime than under the one-tax regime, \( H_Y^{**} < H_Y^{*} \). The first-order conditions (1) and (2) would then require that the marginal cost of income taxation be strictly lower under the two-tax regime than under the one-tax regime, \( H_Y^{**} < H_Y^{*} \). Then, from the strict convexity of the \( H \) function, the marginal cost of income taxation can be strictly lower under the two-tax regime only if that regime features a strictly lower level of income taxation, \( Y^{**} < Y^* \), which contradicts the initial supposition.

A simple example with quadratic benefit and cost functions may help illustrate the general principle. Let the benefit function \( F(R) \) be given by \( \lambda R - (\kappa/2)R^2 \), where \( \lambda \) and \( \kappa \) are both strictly positive. The marginal benefit of raising revenue \( F_R \) is then \( \lambda - \kappa R \) and the government is satiated when revenue reaches \( \lambda/\kappa \). Let the cost function be given by \( H(Y, V) = \alpha Y^2 + \beta YV + \gamma V^2 + \delta(Y + V) \). As required by strict convexity, \( \alpha \) and \( \gamma \) are

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1 Because the analysis is symmetric, it is equally true that VAT revenue is lower under the two-tax regime than it would be under a VAT-only regime. That case is of little empirical relevance in the international context because the income tax was the revenue source initially adopted by developed countries. As we explain in Section III.A, however, the retail sales tax has preceded the individual income tax in some American states and the analysis applies symmetrically to that case.
strictly positive and \( \beta^2 < 4\alpha\gamma \), implying \( \beta < \alpha + \gamma \). As required by substitutability, \( \beta \) is strictly positive. We also assume that \( \delta \) is non-negative. To ensure that both taxes would be used in the absence of fixed costs, we further assume \( \beta < 2\alpha \) and \( \beta < 2\gamma \).

The cost of raising revenue from the income-tax-only regime is \( \alpha R^2 + \delta R \), so the marginal cost is \( 2\alpha R + \delta \). Under the income-tax-only regime, the first-order condition (1) is satisfied, and the optimum is attained, by choosing the revenue level

\[
R^* = \frac{\lambda - \delta}{2\alpha + \kappa}.
\]

The optimum under the two-tax regime is best approached in two stages, first describing the optimal tax mix conditional on the revenue level and then finding the optimal revenue level. The cost-minimizing tax allocation, conditional on revenue, that satisfies the first-order condition (3), is given by

\[
Y^{**} = \frac{2\gamma - \beta}{2(\alpha + \gamma - \alpha)} R^{**}, \quad V^{**} = \frac{2\alpha - \beta}{2(\alpha + \gamma - \beta)} R^{**}.
\]

To confirm that (3) is satisfied, note that the marginal cost of income tax revenue, \( 2\alpha Y^{**} + \beta V^{**} + \delta \), is equated to the marginal cost of consumption tax revenue, \( 2\gamma Y^{**} + \beta Y^{**} + \delta \), with both marginal costs equal to

\[
\frac{4\alpha\gamma - \beta^2}{2(\alpha + \gamma - \beta)} R^{**} + \delta = \theta R^{**} + \delta.
\]

For future reference, note that \( \theta = \frac{4\alpha\gamma - \beta^2}{2(\alpha + \gamma - \beta)} = 2\alpha - \frac{(2\alpha - \beta)^2}{2(\alpha + \gamma - \beta)} < 2\alpha \).

Thus, the cost of raising revenue from the two-tax regime is \( (\theta/2)R^2 + \delta R \), which implies lower marginal costs than the income-tax-only regime. In accord with the first-order condition (2), the government chooses the revenue level that equates the marginal benefit of revenue \( \lambda - \kappa R \) to the marginal cost of taxation \( \theta R + \delta \), which occurs when

\[
R^{**} = \frac{\lambda - \delta}{\theta + \kappa}.
\]

We note in passing that \( R^{**} = (2\alpha + \kappa)/(\theta + \kappa) R^* > R^* \); more total revenue is raised under the two-tax regime. Together, (5) and (7) imply that income tax revenue under the two-tax regime is

\[
Y^{**} = \frac{2\gamma - \beta}{2(\alpha + \gamma - \beta)} \frac{\lambda - \delta}{\theta + \kappa}.
\]

In accord with the general result previously demonstrated, the income tax revenue under the two-tax regime, as given by (8), is lower than the income tax revenue under the two-tax regime, as given by (4), or

\[
Y^{**} = \frac{2\gamma - \beta}{2(\alpha + \gamma - \beta)} \frac{2\alpha + \kappa}{\theta + \kappa} Y^* < \frac{2\gamma - \beta}{2(\alpha + \gamma - \beta)} \frac{2\alpha}{\theta} Y^* = \left[1 - \frac{\beta(2\alpha - \beta)}{4\alpha\gamma - \beta^2}\right] Y^* < Y^*.
\]
C. Revenue Needs and Adoption of the VAT

If there is no fixed cost of adopting the VAT, the country will introduce it as soon as it becomes available. If there is a fixed cost of adoption, however, the country will adopt it only if the benefits of having a two-tax regime are sufficiently large. If a country’s benefit from raising revenue rises monotonically, then the present value of the gain from switching also rises monotonically over time. If the gain becomes sufficiently large, a point will occur at which the country will adopt the VAT. Immediately after the VAT is adopted, income tax revenue is lower than immediately before its adoption. As revenue needs continue to rise, both income tax and VAT revenues increase. If revenue needs rise to a sufficiently high level, income tax revenue may ultimately exceed its value prior to the switch-over.

As with the other costs and benefits, the fixed cost is a cost perceived by the policy maker that may reflect efficiency considerations but may also incorporate other factors such as political resistance to a new tax, the need to educate the public about the tax, and the creation of a new administrative structure. As such, the fixed cost may well be high from a policymaker’s point of view, even if it is relatively small from a social standpoint.

Our assumption that the introduction of a new tax imposes a fixed cost is similar to the assumption of van Velthoven and van Winden (1991) that tax reform carries a one-time fixed cost for both the government and taxpayers. In their model, the policymaker incurs the fixed costs of reform whenever base erosion causes the tax system’s compliance and administrative costs to reach sufficiently high levels. They do not consider the introduction of a new tax or the implications of an ongoing increase in revenue needs. Yitzhaki (1979) and Wilson (1989) assume that the taxation of each additional commodity imposes a fixed cost. However, these authors assume that the number of commodities is sufficiently large that the number of taxed commodities can be treated as a continuous variable, thereby removing the discrete response that characterizes our model. Slemrod (1990) notes that the introduction of a VAT may involve fixed administrative costs and notes more generally that administrative costs are likely to be discontinuous with respect to changes in tax policy, but he does not draw out the implications for the government’s response to rising revenue needs.

More formally, suppose that \( \Delta_t \), the instantaneous gain from using the two-tax regime rather than the income-tax-only regime, rises monotonically and deterministically over time and that a constant one-time fixed cost \( Q \) is incurred when the VAT is added to the tax mix. Let \( r \) be the rate at which the government discounts future benefits and costs. Then, the problem for selecting the date \( t \) at which the VAT is introduced takes the form

\[
\max_{t} \int_{\Delta_t} \int e^{-rs} ds - Qe^{-rt}.
\]

\( ^2 \) One frequently mentioned concern, which cannot be readily incorporated into our framework featuring a unitary decision-maker, is the fear that a VAT would act as a “money machine” and enable the government to increase spending beyond what voters would prefer. Keen and Lockwood (2006) provide an empirical investigation of this hypothesis.
If $\Delta_0 > rQ$, then the VAT is introduced at date zero. Conversely, if $\Delta_t < rQ$ for all $t$, then the VAT is never introduced. Any interior solution to the problem is characterized by the first-order condition

$$ (11) \quad \Delta_t = rQ. $$

In words, the VAT is introduced when the instantaneous gain from doing so equals the flow-equivalent of the one-time fixed cost.

The instantaneous gain from the introduction of the VAT depends on the benefits of raising revenue and on the relative costs of the two taxes. Consider the illustrative example presented in the preceding subsection, interpreting the costs and benefits as instantaneous flows in a continuous-time dynamic framework. Because the optimum of the income-tax-only regime yields a gain of $(\lambda - \delta)^2/[2(2\alpha + \kappa)]$ over the no-tax outcome and the optimum of the two-tax regime yields a corresponding gain of $(\lambda - \delta)^2/[2(\theta + \kappa)]$, the net gain from the two-tax regime, relative to the income-tax-only regime, is $\Delta = (2\alpha - \theta)(\lambda - \delta)^2/[2(\theta + \kappa)(2\alpha + \kappa)]$. In general, then, the gain depends upon all of the parameters of the problem.

The above analysis is applicable to any trend that causes $\Delta$ to rise monotonically and deterministically over time, including a monotonic increase in $\lambda$, a monotonic decline in $\kappa$, or a combination of the two. As discussed below, population aging and increases in the cost of health care may cause such an increase in revenue needs in the United States. If $\lambda$ rises monotonically while the other parameters remain constant, then the first-order condition (11) for an interior solution calls for the VAT to be introduced at the date $t$ when $\lambda$ reaches

$$ (12) \quad \lambda_t = \delta + \sqrt{(\theta + \kappa)(2\alpha + \kappa)(2rQ)/(2\alpha - \theta)}. $$

Or, if $\kappa$ declines monotonically while the other parameters remain constant, then any interior solution calls for the VAT to be adopted when $\kappa$ reaches

$$ (13) \quad \kappa_t = -\frac{(2\alpha + \theta) + \sqrt{(2\alpha - \theta)^2 + 2(2\alpha - \theta)(\lambda - \delta)^2 / (rQ)}}{2}. $$

Immediately after the switch, income tax revenue is lower than its prior value, in accord with (9). As revenue needs continue to rise thereafter, both income tax revenue and VAT revenue grow.

The above analysis establishes the possibility that an increase in revenue needs will result in the introduction of a VAT, accompanied by a downward jump in income tax revenue.

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3 The assumption of a monotonic increase in $\Delta_t$ is sufficient, but not necessary, to ensure that the solution is a global optimum.
D. Calibration of the Model

Although the model is too stylized to permit anything approaching a precise calibration, we provide an illustrative calibration that offers some insight into the underlying mechanisms. Define $R$ to measure revenue as a fraction of the output that would be produced each year with the current tax structure in place. Treat the current individual and corporate income taxes, the payroll tax, and other federal revenue sources as the income tax referred to in the model. It is convenient to take the current value of $R$, and therefore of $Y$, to be 0.2, approximately the current ratio of federal revenue and spending to GDP.

Because the government’s benefit and cost functions are defined only in relative terms, there is one free degree of normalization. Without loss of generality, normalize the current value of $\lambda$ to unity. The parameter $\kappa$ determines the concavity of the government’s revenue benefit function; at any given point, the marginal benefit of revenue is $\lambda - \kappa R$ and the average benefit is $\lambda - (\kappa/2)R$. We set $\kappa$ equal to 2, which implies (with $\lambda$ equal to 1 and $R$ equal to 0.2) that the current marginal benefit of revenue, 0.6, is three-quarters of the current average benefit, 0.8.

For the cost function, it is convenient to assume that the linear cost term $d$, which plays little role in the analysis, equals zero; the marginal cost of raising the first dollar of revenue is then zero and costs are purely quadratic in revenue. In accord with the first-order condition (1), the current marginal cost of income tax revenue, $2\alpha Y$, must equal 0.6 (the current marginal benefit of revenue) with $Y$ equal to 0.2, implying that $\alpha$ is equal to 1.5.

In view of the longstanding and inconclusive debate about the relative merits of income and consumption taxation, it is unclear how the VAT cost parameter $\gamma$ should compare to the 1.5 value of the income tax cost parameter $\alpha$. We therefore consider three possible values, 1, 1.5, and 2, of $\gamma$. In each case, we set the cost-interaction term $b$ equal to $\alpha\gamma$, which is intermediate between the two polar cases; that in which the two taxes’ costs are independent, so that $b$ equals zero, and that in which they are perfect substitutes, so that $b$ equals $2\sqrt{\alpha\gamma}$. Below, we consider the implications of changing the degree of interaction between the costs of the two taxes.

If $\gamma = 1.5$ and $\beta = 1.5$, then $\theta = 2.25$ and raising revenue under the two-tax regime is three-quarters as costly as raising revenue under the income-tax regime. When the switch to the two-tax regime occurs, total revenue abruptly increases by a factor of 1.176 in accord with (4) and (7). Because the two taxes are equally costly, revenue is equally divided between the two taxes under the two-tax regime in accord with (5). At the time of the switch, income-tax revenue abruptly falls to 0.588 of its previous value.

If $\gamma = 2$, so that the VAT is more costly than the income tax, and $\beta = 1.732$, then $\theta = 2.545$ and raising revenue under the two-tax regime is 0.848 times as costly as raising revenue under the income-tax regime. The cost reduction from adding the VAT is smaller when the VAT is more costly. When the switch to the two-tax regime occurs, total revenue abruptly increases by a factor of 1.100 in accord with (4) and (7). The rise in total revenue is smaller when the two-tax regime has a smaller cost advantage. In accord with (5), the income tax comprises 0.641 of total revenue and the VAT comprises
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0.359 of total revenue under the two-tax regime. At the time of the switch, therefore, income-tax revenue abruptly falls to 0.706 of its previous value. The decline in income tax revenue is smaller when the VAT is a less attractive alternative.

The opposite pattern emerges when the VAT is less costly than the income tax. If \( \gamma = 1 \) and \( \beta = 1.225 \), then \( \theta = 1.764 \) and raising revenue under the two-tax regime is 0.588 times as costly as raising revenue under the income-tax regime. The cost reduction from adding the VAT is greater when the VAT is less costly. When the switch to the two-tax regime occurs, total revenue abruptly increases by a factor of 1.328 in accord with (4) and (7). The rise in total revenue is larger when the two-tax regime has a greater cost advantage. In accord with (5), the income tax comprises 0.304 of total revenue and the VAT comprises 0.696 of total revenue under the two-tax regime. At the time of the switch, therefore, income-tax revenue abruptly falls to 0.404 of its previous value. The decline in income tax revenue is greater when the VAT is a more attractive alternative.

The interaction between the costs of the two taxes is also relevant. If \( \alpha = \gamma = 1.5 \), so that the two taxes are equally costly, then \( \beta \) can vary between zero and 3. In each case, \( \theta \) is equal to \( (3 + \beta)/2 \), so that raising revenue under the two-tax regime is \( (3 + \beta)/6 \) times as costly as raising revenue from only the income tax. When the switch to the two-tax regime occurs, total revenue abruptly increases by a factor of \( 10/(7 + \beta) \). Because half of total revenue is raised through the income tax and half is raised through the VAT under the two-tax regime, income tax revenue falls abruptly to \( 5/(7 + \beta) \) times its prior value. When the taxes are closer to perfect substitutes, as reflected by a higher value of \( \beta \), then the two-tax regime has smaller cost savings relative to the income-tax regime, which causes total revenue to rise by less, and income tax revenue to fall by more, at the time of the switch.

III. POLICY IMPLICATIONS

A. The International Experience

Consumption taxation is common throughout the world, with Graetz (2014) reporting that over 160 countries currently impose a VAT. The first country to adopt the VAT was France in 1954, but it remained little-known into the early 1960s and was not embraced by even ten countries until 1971. But aided by a growing economic consensus on the efficiency properties of the tax — and the recognition that it could significantly reduce tax evasion — VAT adoptees ballooned to 50 in 1991 and 100 in 1997 before gradually reaching their current level (Keen and Lockwood, 2010).\(^4\) The process was further facilitated by a European Union (EU) decision to make adoption of a VAT obligatory, which impacted some states (prospective EU members) directly and other states (who wanted to follow the European model) indirectly.\(^5\) In virtually all of these countries, the VAT was implemented alongside a previously existing income tax.

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\(^4\) Keen (2013) provides a broader discussion of the relationship between taxation and economic development.

\(^5\) It is for this reason that VAT adoption dates in Europe correspond closely to accession dates.
Since the mid-1980s, however, a number of countries have adopted these taxes alongside reductions in the income tax (Schenk, 2011). In New Zealand’s 1986 tax reform, for example, the top marginal income tax rate was halved as the country’s GST was introduced (Charlet and Owens, 2010). This decision was partly motivated by the belief that marginal dollars of new revenue were becoming increasingly difficult to raise under the income tax, prompting policymakers to consider sweeping remedies (James and Alley, 2010). Singapore’s 1994 reform provides an even clearer example, with policymakers explicitly arguing the tax system could be made more efficient by combining personal and corporate income tax rate reductions with the introduction of a VAT (Jenkins and Khadka, 1998). Income tax rates fell by about 15 percent upon introduction of the VAT and have since fallen somewhat further.

Compositional shifts in taxation have also extended to Europe. A number of formerly communist states, including Bulgaria, the Czech Republic, Lithuania, Romania, and Slovakia, who found themselves in need of additional revenue after the fall of the Iron Curtain met this revenue need through the introduction of a VAT, generally coupled with reductions in personal and/or corporate income tax rates (Organisation for Economic Co-operation and Development, 1998). The common theme behind these Eastern European reforms was the belief that Soviet-era tax systems were highly inefficient and that efficiency gains would result from a rebalancing of tax effort toward the VAT (Stepanyan, 2003).

Some of the same trends are also apparent in U.S. states. Since 1970, five states — Connecticut, New Jersey, Ohio, Pennsylvania, and Rhode Island — have either introduced a personal income tax or broadened their income tax to include wages and salaries. In each case, policymakers cited increased revenue needs as a motivation for their decision to embrace a new type of tax, and in at least two cases, Connecticut, as reported by Johnson (1991), and New Jersey, as described by Norcross and Sautet (2009), simultaneously scaled back other taxes. Other states, such as Wisconsin in 1961, as discussed by Moran (2013), and Minnesota in 1967, as explained by Dahl (1971), have introduced a state sales tax coupled with reductions of property taxes that were deemed excessive. Other states, however, have introduced income taxes or sales taxes without reducing other taxes. Still, the evidence indicates that the model describes some states’ experiences.

**B. Choices Facing the United States**

We first address the government’s need for additional revenue and voters’ understanding of this situation. Under CBO’s extended alternative fiscal scenario, the federal government’s non-interest spending

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6 VATs differ dramatically across countries in their rates, their tax bases, and numerous other respects, as discussed by Cnossen (1998). Toder, Nunns, and Rosenberg (2012) provide an overview of the many design issues in codifying a given country’s VAT.

7 The alternative fiscal scenario assumes policymakers will extend various tax cuts and spending increases that are currently slated to expire but which most observers expect to continue. In contrast, the current-law baseline assumes that all fiscal developments slated to occur under current legislation will take place, no matter how politically unrealistic they may be.
will rise from a pre-recession norm of 18 percent of GDP to 22.1 percent in 2030 and 25.5 percent in 2050. The resulting massive deficits will drive debt held by the public from 74 percent of annual GDP in 2014 to 108 percent in 2030 and 245 percent in 2050. The recent decline in the deficit, from 10 percent of GDP in 2009 to 4 percent today, is largely attributable to cyclical factors and offers little encouragement about the fundamental fiscal problems facing the United States. The recent decline in health care cost growth is reflected in CBO’s projections, but has not, in their judgment, eliminated the long-run fiscal imbalance. The long-term fiscal imbalance primarily stems from an imbalance between promised entitlement benefits and revenues.

The United States may well be better able to sustain high debt-to-GDP ratios than other countries, due to its longstanding reputation as a “safe haven,” the use of the dollar as the world’s reserve currency, and its relatively dynamic business climate, which attracts significant amounts of foreign investment. Under the alternative fiscal scenario and other plausible scenarios, however, the debt-to-GDP ratio rises to ever higher levels over time, guaranteeing that debt will eventually reach the threshold (whatever it may be) at which the United States would be forced to adopt large revenue increases, spending reductions, or both. Curbing spending is unlikely to be more than a partial solution because long-run spending growth is primarily due to population aging and medical cost increases, for which there are no simple answers.

Public opinion polls indicate that voters have some understanding of these fiscal realities. Recent CNBC/AP and ABC/The Washington Post surveys find that 65 and 62 percent of Americans, respectively, believe that taxes must rise in the future to balance the federal budget. And recent Reason-Rupe and AP-GfK surveys find that 68 and 59 percent of Americans, respectively, believe that taxes will rise in the future to balance the budget. Importantly, while voters do not support higher taxes in the abstract, they are willing to support tax increases when asked to choose from a menu of mathematically feasible options. Asked in a recent CBS/The New York Times poll how they would prefer to address Social Security and Medicare imbalances, for example, nearly two-thirds of Americans opted for higher taxes and only one-quarter for lower benefits. Similar sentiments continue to be expressed after the January 2013 legislation raising taxes on high-income households; in an October 2013 Global Strategy Group poll, 81 percent agreed with the statement that, to solve the long-term debt problem, Republicans would have to agree to some tax increases and Democrats would have to agree to some spending cuts. Taken together, then, the evidence suggests that the public believes that the aggregate tax burden will rise in the future and would prefer this to other feasible options.

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Consistent with the model’s basic prediction, a number of recent fiscal proposals in the United States would introduce a VAT while cutting income taxes. Graetz (2014) proposes a 12.9 percent VAT, accompanied by a reduction in the top individual income tax rate from today’s 39.6 percent to 31 percent while also exempting the first $100,000 of each family’s income from income tax. Burman (2008) proposes a VAT with a rate of 18 percent or more, accompanied by a reduction in the top individual income tax rate to 25 percent. The Bipartisan Policy Center Debt Reduction Tax Force (2010) proposes a 6.5 percent VAT, accompanied by a reduction in the top individual income tax rate to 27 percent. These proposals would offset part of the income tax rate reduction with income tax base broadening and would also reduce the corporate income tax rate.

No fewer than four presidential administrations have also considered introducing consumption taxation at the national level. President Nixon considered two distinct VAT proposals in 1969 and 1972 (Price and Porcano, 1992) that would have been accompanied by reduced tax revenue elsewhere. President Ford released guidelines for tax reform in early 1977 that emphasized the efficiency gains from consumption taxation, though no formal proposal was ever released to the public or submitted to Congress (U.S. Department of the Treasury, 1977). President Reagan released a report that discussed partial replacement of the income tax with a VAT (U.S. Department of the Treasury, 1984). The report emphasized the efficiency benefits of such a reform, but expressed concern that administrative costs and the specter of an ever-larger government might be too large to overcome. And President George W. Bush’s Advisory Panel on Federal Tax Reform (2005) devoted substantial attention to several consumption-tax proposals including the partial replacement of the income tax with a VAT, though it did not receive the unanimous approval necessary to forward such a proposal to Congress.

A 2010 Senate vote has led some observers to conclude that the enactment of a VAT is unlikely. On April 15, 2010, the Senate voted 85-13 to adopt a nonbinding resolution stating, “It is the sense of the Senate that the Value Added Tax is a massive tax increase that will cripple families on fixed income and only further push back America’s economic recovery.”12 As Carroll and Viard (2012) note, however, history indicates that this vote may not offer a reliable guide to the VAT’s ultimate prospects. Although the Senate voted 98-0 on July 14, 1981, to adopt a nonbinding resolution stating that Social Security benefits should not be subject to income tax, partial income taxation of benefits was included in the bipartisan Social Security reform package adopted less than two years later. Overwhelming support for symbolic resolutions that condemn an unpopular measure in isolation does not always preclude subsequent enactment of the measure as part of a bipartisan response to a widely recognized problem. The possibility of a future enactment of a VAT should not be disregarded merely because of the Senate’s 2010 vote.

C. Investor Implications

The discussion thus far illustrates that it is not atypical for countries to introduce consumption taxation coupled with income-tax reductions, and that deliberations along these

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lines have progressed farther in the United States than some realize. While the analysis does not imply the near-term introduction of a VAT in the United States, the likelihood of its eventual introduction has very real relevance not only for policymakers but also for individual investors. In particular, the future path of the income tax is potentially relevant for taxpayer decisions today with respect to Roth IRAs and municipal bonds, whose value depends, in part, on future income tax rates.

Tax-advantaged vehicles for retirement savings have become increasingly popular in recent years, with traditional and Roth options collectively accounting for nearly $6.5 trillion in retirement savings, or 28 percent of U.S. retirement assets, according to Investment Company Institute (2014). Because Roth IRAs feature after-tax contributions and tax-free withdrawals while conventional IRAs feature the opposite arrangements, an evaluation of their relative merits depends crucially on where one expects statutory income tax rates to be in the future. In particular, Roth IRAs tend to be more valuable if statutory income tax rates are likely to rise in the future. Municipal bonds have the same feature because the interest income provided over the life of the bonds is exempt from federal income tax.

As our model shows, however, the likelihood that government revenue will rise over the long run need not imply higher income taxes because the income tax could be partially replaced by a VAT. Of course, the path of income tax revenue, which is the topic of our model, does not necessarily dictate the path of the statutory marginal income tax rates that are relevant to these asset values. But the revenue path is likely to be an important determinant of the path of statutory tax rates, and it is striking that the U.S. reform proposals discussed above have featured reductions in statutory income tax rates. If statutory income tax rates are reduced in a future reform that introduces a VAT, then the value of income-tax-free assets such as Roth IRAs and municipal bonds would decline.13

IV. CONCLUSION

It may initially appear that income tax revenue is likely to rise as federal revenue is increased to address the U.S. fiscal imbalance, but that need not occur. We present a model in which a need for increased revenue leads to the endogenous introduction of a new revenue source, such as a VAT, accompanied by a reduction in income tax revenue. This introduction occurs, not as a political “sweetener” to smooth passage of tax-reform legislation, but as a measure that is consistent with the objective function of a unitary policymaker. We have argued that the model provides a reasonable description of the experience in Europe and elsewhere as well as recent reform proposals in the United States. We have also briefly examined the potential implications for investment vehicles like Roth IRAs and municipal bonds, whose returns are affected by the future path of statutory income tax rates.

13 The conclusions would be altered if the new VAT’s transition rules treated withdrawals from existing Roth IRAs more favorably than withdrawals from existing conventional IRAs or if they treated interest on existing municipal bonds more favorably than returns on other existing assets. However, most VAT proposals, including Burman (2008) and Graetz (2014), do not include such transition rules.
Our analysis of a unitary policymaker is not the only way to model this question. One could also model conflict and cooperation between two or more policymakers who have different objective functions. In the United States, for example, the difficulty in resolving the fiscal imbalance may be due to an impasse between the two major political parties, who have significantly different views about the often-conflicting values of efficiency and equity. In that framework as well, however, as the marginal cost of revenue-raising rises, government may simultaneously find itself in a position where it is operating less efficiently and able to spend less than it could if it were to introduce a VAT and reduce the income tax. In such a scenario, it might well be in the interest of both parties to adopt such a reform, even if there were little else on which they could agree.

To be sure, our analysis cannot offer detailed or definite predictions about the path of U.S. tax policy. A number of unforeseeable economic shocks could affect the timing and magnitude of the tax changes discussed in this paper. But, our general point remains valid. The very forces that are driving the trends observed under the current policy regime may eventually trigger future regime changes in a predictable manner. As a result, analyses that predict future policy conditional on the continuation of the current policy regime, including but not limited to the notion that higher revenue needs imply more income taxation, are inherently incomplete, especially in situations where the long-term outlook is inconsistent with such a policy.

ACKNOWLEDGEMENTS AND DISCLAIMERS

The authors thank session participants at the Western and Southern Economic Associations for helpful comments and Regan Kuchan for research assistance and helpful comments. The authors are solely responsible for any errors or omissions. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Dallas, the Federal Reserve System, or any other person or institution.

DISCLOSURES

The authors have no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

REFERENCES


