

## **Are Income Taxes Destined to Rise? The Fiscal Imbalance and Future Tax Policy**

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**ARE INCOME TAXES DESTINED TO RISE?  
THE FISCAL IMBALANCE AND FUTURE TAX POLICY**

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**Abstract:** We present a model of optimizing government behavior in which a need for increased revenue 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 has important implications for individual investment decisions.

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## 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, "third rails" that have weathered recent reform attempts. Federal revenue now stands near a 60-year low as a share of GDP and polls show a growing willingness on the part of the public to raise marginal income tax rates, at least for those earning more than they do.

Using a framework that incorporates other avenues through which revenue can be raised, we show that the need for additional revenue may prompt a policy response that, contrary to initial intuition, actually *reduces* the size of the income tax. The government faces variable costs that are convex in income tax and VAT revenue. We consider a case in which the government initially uses only income taxation and consider the effects of increases 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 at a discrete level that equates its marginal loss to the marginal loss from income taxation, not at an arbitrarily low level. The introduction of the VAT is accompanied by a discrete jump downward in income tax revenue. Due to the discontinuity arising from the fixed cost of introducing the VAT, income taxes are significantly lower just after revenue needs reach the switching point than they were just before revenue needs reached that point.

This possible income tax reduction in response to rising revenue needs reflects a fundamental feature of optimizing behavior. Although modest increases in needs or preferences

induce an agent to incur additional variable costs to meet those needs or preferences, a larger increase may induce the agent to incur a fixed cost, which then reduces variable costs. Modest increases in demand increase a firm's use of its existing factory, but a larger demand increase may prompt the construction of an additional factory and a cutback in the use of the existing one. Modest increases 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 and 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 in the distance may prompt the worker to buy and drive a car and dramatically reduce 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 monotonically increase, after all. 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 have a strikingly good fit to 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 I, we present a simple model of tax policy determination. In section II, we discuss the international and U.S. experience. We conclude in section III.

## **I. SIMPLE MODEL OF TAX POLICY DETERMINATION**

The basic model considered in this section examines the government's use of 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 II, 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, 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 newly available VAT to the revenue mix. This treatment is motivated by the historical sequence. As we explain in section II, below, the VAT was devised later than the income tax and is the tax to which countries have increasingly turned in the last half-century.

We assume that policymakers optimize. However, the government's benefit function for revenue and its cost function for taxation, as presented below, are intended to represent the

preferences of policy makers rather than conventional social welfare functions. 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 the amount of revenue raised. For simplicity, 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. The cost of raising revenue is given by a strictly increasing, strictly convex, continuously twice differentiable function  $H(Y, V)$ . We have  $H_Y > 0$ ,  $H_V > 0$ ,  $H_{YY} > 0$ ,  $H_{VV} > 0$ ,  $H_{YY}H_{VV} - H_{YV}^2 > 0$ .

We also assume that the income and consumption tax are substitutes rather than complements,  $H_{YV} > 0$ . 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 single stars and the optimum of the second problem with double stars.

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

$$(1) \quad F_R^* = H_Y^*$$

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

$$(2) \quad F_R^{**} = H_Y^{**}$$

$$(3) \quad H_Y^{**} = H_V^{**}$$

### A. Income Tax Revenue is Lower Under the Two-Tax Regime

At the two-tax equilibrium, denoted by double stars, 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.<sup>1</sup>

#### General Proof

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,  $R^{**} \equiv Y^{**} + V^{**} > Y^{**} \geq Y^* \equiv R^*$ . 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,  $F_R^{**} < F_R^*$ . 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,  $H_Y^{**} = F_R^{**} < F_R^* = H_Y^*$ . But, because the marginal cost of income taxation is strictly increasing in both  $Y$  and  $V$  ( $H_{YY} > 0$  and  $H_{YV} > 0$ ) and the two-tax regime has a strictly larger value of  $V$  ( $V^{**} > 0 \equiv V^*$ ), the marginal cost of income taxation can be strictly lower under the two-tax regime only if that regime

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<sup>1</sup> 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 because the income tax was the revenue source initially adopted by developed countries.

features a strictly lower level of income taxation,  $Y^{**} < Y^*$ , which contradicts the initial supposition.

### Illustrative Example

An example may help illustrate the general principle.

Let the benefit function  $F(R)$  be given by  $JR - \frac{K}{2}R^2$ , where  $J$  and  $K$  are both positive.

The marginal benefit of raising revenue  $F_R$  is then  $J - KR$  and the government is satiated when revenue reaches  $J/K$ . Let the cost function  $H(Y, V)$  be given by  $A Y^2 + BYV + CV^2 + D(Y + V)$ .

As required by strict convexity,  $A$  and  $C$  are strictly positive and  $B^2 < 4AC$ , implying  $B < A+C$ .

As required by substitutability,  $B$  is strictly positive. We also assume that  $D$  is non-negative,  $B < 2A$ , and  $B < 2C$ .

The cost of raising revenue from the income-tax-only regime is  $AR^2 + DR$ , so the marginal cost is  $2AR + D$ . Under the income-tax-only regime, the first-order condition (2) is satisfied, and the optimum is attained, by choosing the revenue level

$$(4) \quad R^* = Y^* = \frac{J-D}{2A+K}.$$

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

$$(5) \quad Y^{**} = \frac{2C - B}{2(A + C - B)} R^{**}, \quad V^{**} = \frac{2A - B}{2(A + C - B)} R^{**}$$

To confirm that (3) is satisfied, note that the marginal cost of income tax revenue,  $2AY^{**} + BV^{**} + D$ , is equated to the marginal cost of consumption tax revenue,  $2CV^{**} + BY^{**} + D$ , with both marginal costs equal to

$$(6) \quad \frac{4AC - B^2}{2(A + C - B)} R^{**} + D \equiv \theta R^{**} + D$$

For future reference, note that  $\theta \equiv \frac{4AC - B^2}{2(A + C - B)} = 2A - \frac{(2A - B)^2}{2(A + C - B)} < 2A$ .

So, the cost of raising revenue from the two-tax regime is  $\frac{\theta}{2} R^2 + DR$ , 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  $J - KR$  to the marginal cost of taxation  $\theta R + \omega$ , which occurs when

$$(7) \quad R^{**} = \frac{J - D}{\theta + K},$$

We note in passing that  $R^{**} > R^*$ ; more total revenue is raised under the two-tax regime.

Together, (5) and (8) imply that income tax revenue under the two-tax regime is

$$(8) \quad Y^{**} = \frac{2C - B}{2(A + C - B)} \frac{J - D}{\theta + K}$$

The income tax revenue under the two-tax regime  $Y^{**}$ , as given by (8), is lower than the income tax revenue under the two-tax regime  $Y^*$ , as given by (4),

$$(9) \quad Y^{**} = \frac{2C - B}{2(A + C - B)} \frac{2A + K}{\theta + K} Y^* < \frac{2C - B}{2(A + C - B)} \frac{2A}{\theta} Y^* = \left(1 - \frac{B(2A - B)}{4AC - B^2}\right) Y^* < Y^*.$$

## B. 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 the two-tax regime are sufficiently large. If a country's benefit of raising revenue rises monotonically, then the present value of the gain from switching also rises monotonically over time. If the gain is sufficiently large, a point will occur at which the country will adopt the VAT.

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. (As with the other costs and benefits, the fixed cost is a cost perceived by the policymaker; due to political resistance to a new tax or other factors, the fixed cost may well be high from a policymaker's point of view, even if it is relatively small from a social standpoint.<sup>2</sup>) 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,

$$(10) \quad \text{Max} \int_t^{\infty} \Delta_s e^{-rs} ds - Q e^{-rt}$$

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. But, any interior solution to the problem is characterized by the first-order condition,<sup>3</sup>

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

In other 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  $\frac{(J-D)^2}{2(2A+K)}$  over the no-tax outcome and the optimum of the two-tax regime yields a corresponding gain of  $\frac{(J-D)^2}{2(\theta+K)}$ , the net gain from the two-tax regime, relative to the income-tax-

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<sup>2</sup> See Slemrod (1990) for a discussion of the optimal choice between different tax systems.

<sup>3</sup> The assumption of a monotonic increase in  $\Delta_t$  ensures that the second-order condition is satisfied.

only regime, is  $\Delta = \frac{2A-\theta}{2(\theta+K)(2A+K)}(J-D)^2$ . 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  $J$  or a monotonic decline in  $K$ . If  $J$  rises deterministically 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  $J$

reaches  $J_t = D + \sqrt{(\theta + K)(2A + K) \frac{2rQ}{2A-\theta}}$ . Or, if  $K$  declines deterministically while the other

parameters remain constant, then any interior solution occurs when  $K$  reaches  $K_t =$

$$\frac{-(2A+\theta) + \sqrt{(2A-\theta)^2 + \frac{2(2A-\theta)(J-D)^2}{rQ}}}{2}.$$

The above analysis establishes the possibility that a rise in revenue needs will result in the introduction of a VAT, accompanied by a downward jump in income tax revenue. We now examine the applicability of this framework to the international experience and to the choices facing the United States.

## II. POLICY IMPLICATIONS

### A. The International Experience

Consumption taxation is exceptionally common throughout the world. At least 150 countries currently tax consumption, generally (though not exclusively) through a VAT or a general sales tax (GST). First proposed by a German businessman in 1918, the VAT was designed to be a more efficient and streamlined replacement for old-style “turnover” taxes and, in some cases, sector-specific taxes.

The first country to adopt the VAT was France in 1954, but it remained little-known in 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 its current level [Keen and Lockwood 2007]. The process was further facilitated by a European Union decision to make VAT obligatory, which impacted some states (prospective EU members) directly and other states (who wanted to follow the European model) indirectly<sup>4</sup>. And in virtually all of these countries, the VAT was implemented alongside a previously existing income tax.

Since the mid-1980s, however, a number of countries have adopted or increased these taxes alongside reductions in the income tax [Schenk 2011].<sup>5</sup> 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, 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 one-sixth upon introduction of the VAT and have since fallen somewhat further.

Compositional shifts in taxation have also extended to Europe. Germany and Sweden, for example, recently swapped lower labor income tax rates for a higher VAT on efficiency grounds [Eurostat 2010]. And a number of formerly communist states including Bulgaria, the Czech

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<sup>4</sup> It is for this reason that VAT adoption dates in Europe correspond closely to accession dates.

<sup>5</sup> VATs differ dramatically across countries in their rates, their tax bases, and numerous other respects, as discussed by Cnossen (1998).

Republic, Hungary, Lithuania, Romania, Slovakia, and Slovenia implemented proposals in the 1990s that exchanged higher VAT rates for reductions in personal and/or corporate income tax rates. 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].

## **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,<sup>6</sup> presented in Congressional Budget Office (2014), the federal government's non-interest spending 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 to 108 percent of annual GDP 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 issues. In the longer term, fiscal imbalances will primarily stem from an entitlement system whose promised benefits exceed the revenue streams allocated to pay for them.

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, its relatively dynamic business climate, and its status as both the world's largest economy and its largest debtor. Under the alternative fiscal scenario or any other plausible scenario, however, the debt-to-GDP ratio rises to ever higher levels over time,

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<sup>6</sup> 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.

guaranteeing that debt will eventually reach the threshold (whatever it may be) at which the U.S. 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/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.<sup>7</sup> And recent Reason-Rupe and AP-Gfk surveys find that 68 and 57 percent of Americans, respectively, believe that taxes *will* rise in the future to balance the budget.<sup>8</sup> 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/New York Times poll whether they would prefer tax increases to entitlement cuts, for example, two-thirds of Americans opt for higher taxes and only one-quarter for lower benefits, consistent with the notion that revenue will rise over the longer term.<sup>9</sup> 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.<sup>10</sup>

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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<sup>7</sup> November 2010 CNBC/AP poll, question BUD4a; July 2011 *Washington Post*/AP poll, question Q19.

<sup>8</sup> August 2011 Reason-Rupe poll, question Q11; January 2010 AP-Gfk survey, question BA7.

<sup>9</sup> January 2011 CBS/*New York Times* poll, questions Q39 and Q43.

<sup>10</sup> October 2013 poll conducted by Global Strategy Group for Peter G. Peterson Foundation, available at [pgpf.org/sites/default/files/Current\\_Events\\_poll\\_Oct2013\\_10282013\\_0.pdf](http://pgpf.org/sites/default/files/Current_Events_poll_Oct2013_10282013_0.pdf).

A number of recent fiscal proposals in the United States introduce a VAT while cutting income taxes. Graetz (2008) proposes a VAT with a rate of 10 to 14 percent, accompanied by a reduction in the top individual income tax rate from today's 35 percent to somewhere between 20 and 25 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 about 25 percent, accompanied by a reduction in the top individual income tax rate to about 25 percent. The Burman proposal served as the model for the plan proposed by the Bipartisan Policy Center (2010), which 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, but would also reduce the corporate income tax rate.

No fewer than four presidential administrations have also considered consumption taxation. President Nixon considered two distinct VAT proposals in 1969 and 1972 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. President Reagan's Treasury Department released a report in 1984 on "partial replacement," acknowledging efficiency benefits but expressing 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 Tax Reform 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 necessary supermajority to forward such a proposal to Congress.

### **C. Investor Implications**

The discussion so far illustrates that it is not atypical for countries to introduce consumption taxation alongside income-tax reductions and that deliberations along these 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 available. 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 the 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, the values of these income-tax-free assets would tend to decline. Of course, the value of the assets would also be affected by other features of the reform; the real value would be further diminished by the imposition of the VAT while transition arrangements might offset part of the decline. In any event, the values of these investments are likely to be sensitive to whether, or when, a reform of this kind occurs.

### **III. 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 have presented 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 increases 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 U.S. 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.

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 sometimes-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 continuation.

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