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Reflections of the Holland Medal Recipient

PERILS OF TAX REFORM

James R. Hines Jr.

Tax reforms dangle possibilities of improving the tax system, but are fraught with perils that are evident from the 2017 U.S. experience and caution against frequent reforms of its ilk. The first peril is that reforms containing tax provisions selected simply on the basis of their projected revenue contributions will produce less tax revenue than anticipated, illustrative calculations suggesting shortfalls of roughly 8–16 percent. The second peril is that reforms will not advance the objectives of efficiency and tax equity to the extent that they include provisions intended to influence future tax legislation or government spending. The third peril is that reforms designed without sufficient appreciation of transitional gains and losses will offer inadequate and misdirected transition relief. And the fourth peril is that reforms stoke expectations of future tax changes, discouraging investment and encouraging costly tax avoidance. Tax reforms that apply sound principles will reduce or even avoid these perils.

Keywords: tax reform, revenue forecasting, transition relief, tax avoidance

JEL Codes: H21, K34

I. INTRODUCTION

The passage of major U.S. federal tax legislation in 2017 affords an opportunity to reflect on the good and bad to be had when a government significantly changes its country's taxes. The good is obvious: properly crafted, reform measures have the potential to remake a country's tax system into a more efficient and equitable method of financing government, thereby obtaining needed revenue at the lowest possible cost to society. The bad is not only obvious but alas evident: improperly crafted reform measures worsen economic performance by creating inefficient incentives, reduce the extent to which tax burdens correspond to ability to pay, and diminish the government's ability to finance its expenditures. While it is tempting to offer a critical normative assessment of specific components of the 2017 U.S. legislation, it is perhaps more useful to attempt

to rise ever so slightly above the fray by considering the widespread and consequential pathologies to which tax reform efforts, in 2017 and at other times, are subject, and how they might be avoided.

Tax reform efforts consistently fall short in four areas, of which the first is that post-reform tax collections fail to meet expectations, reflecting systematic positive bias in revenue forecasts. The second problem area is that reforms by design do not offer efficient and equitable methods of collecting taxes, because they are crafted with more than just these objectives in mind. The third problem area is that tax reforms inadequately treat the windfall gains and losses that accompany transitions from pre-reform tax systems. And the fourth problem area is that tax reforms enacted on a frequent basis create expectations of subsequent reforms, which discourage efficient investment and encourage inefficient tax avoidance.

Given the political reality that tax cuts spread more joy than do tax increases, mistakenly optimistic revenue forecasts enable the assembly of reform packages that include too little in the way of revenue-raising provisions and too much in the way of tax cuts. This happens when legislators choose portions of their reform provisions simply to meet revenue targets. Since new tax laws have uncertain effects on tax collections, it is necessary to estimate the revenue effects of potential tax changes, a job that is performed by skilled professional staff. Deployed properly, the estimates can be used to fine-tune tax rates and other provisions to meet budget goals; but if instead staff are tasked with producing revenue estimates for hundreds of possible revenue raisers, and legislators choose to include in tax legislation those provisions with unusually high revenue forecasts, then this method of selecting on forecast residuals introduces positive bias. This happens despite the unbiasedness of individual forecasts made by staff, and despite the volitional innocence of legislators, who are unaware (though perhaps in many cases would also be uncaring) of what their actions do to the statistical properties of the resulting budget estimates. Tax reforms designed in such an unprincipled way are unlikely to produce sufficient subsequent tax revenue, necessitating future tax increases or spending cuts.

The second problem area is that legislatures enact today's tax reform with more than just today's taxes in mind. Tax provisions have a way of persisting for long periods, even in the face of subsequent reforms. Consequently, tax cuts change the baselines for future tax policies, making it that much more difficult for governments to collect revenue in the future. Many believe that this dynamic depresses future government spending — which is why tax cuts are particularly popular among small-government advocates, whereas tax increases are relatively more popular among big-government advocates. Similarly, changes in the distribution of tax burdens between groups such as the rich and poor, individuals and businesses, and income earners and those who spend or bequeath, tend to persist and therefore affect tax policies well into the future. Forward-looking legislators, who anticipate that changing political tides will someday give power to others (including those in their own parties) who might not share their visions, typically try to craft reforms that position the tax system to mitigate and withstand the impacts of likely future changes. This commonly entails overshooting, such as cutting taxes more than would otherwise be desirable, and directing tax cuts too heavily toward favored groups, in the hope that future changes will offset only a portion of

these changes. Such provisions need bear little resemblance to those that would make the tax system truly efficient and equitable — and not surprisingly, since the laudable goals of efficiency and equity can be met only by those who seek them in the first place.

Significant unanticipated tax changes produce windfall gains for some taxpayers and windfall losses for others, thereby raising the third problem for tax reform, which is what, if anything, to do about these transitional gains and losses. Optimal tax theory, which focuses almost exclusively on the design of steady state tax policies, offers precious little practical guidance. Reform legislation occasionally acknowledges the problem of transitions by phasing in new provisions or grandfathering prior transactions, seemingly on ad hoc bases. But a starting place for transitional policy must be to understand its goals and what policies advance them, without which governments risk undermining the objectives that motivate tax reforms in the first place.

The fourth problem area is that expectations of future tax reforms affect incentives for current economic behavior, so to the extent that reform efforts change expectations over the frequency or likely directions of future tax reforms they will influence contemporaneous economic activities, often inefficiently. For example, reforms that impose heavy tax burdens on firms with extensive fixed investments are likely to discourage such investments, even if tax reforms are designed to burden only older investments — since today's and tomorrow's investments will be old when tax reform next happens. Tax reforms similarly change tax compliance and avoidance, commonly obtaining revenue by reducing or eliminating certain identified tax avoidance opportunities. These loophole-closing reform measures have the perverse effect of encouraging taxpayers to devote resources to developing new tax avoidance techniques to replace the ones lost in reform, and to rush to implement any new methods before they are disallowed in a subsequent reform. Consequently, a fast pace of tax reform need not enhance efficiency, despite the benefits of quickly removing avoidance opportunities, since the process of updating and improving tax rules gives taxpayers inefficient incentives.

One should not infer from this litany of woes that the tax system should never be reformed; the fact that something is expensive implies only that one should verify its worth before taking the plunge. Furthermore, knowledge of reform pitfalls affords the opportunity to avoid them or at least minimize their impact — and the way to do this is to enact reforms that flow from sound principles of tax design. There are many benefits to be had in improving the U.S. tax system, but in order to realize these benefits it is necessary to pass well-reasoned and carefully crafted legislation that raises revenue efficiently and equitably. Tax reforms occur infrequently because they are politically costly, so a major reform that does not deliver considerable social and economic value is properly deemed a failure. With adherence to good principles there can be far fewer failures in the future.

II. TAX REVENUE: THE SOFT UNDERBELLY OF TAX REFORM

Governments must finance their tax reforms, despite finding it distasteful and politically inconvenient to do so. This is not to say that tax reforms are universally, or even usually, revenue-neutral; but it is an inescapable truth that any revenue shortfalls that

accompany tax reforms must be compensated with subsequent tax increases or spending reductions. Consequently, even during a period of political dysfunction there can be considerable political pressure to limit any revenue losses produced by tax reforms, notwithstanding the reality that tax cuts are always more fun than tax increases. To the extent that tax reforms proceed on the basis of guiding principles, these principles typically dictate tax cuts, requiring revenue raisers to be attached as afterthoughts to tax reform legislation. And as is so often the case with afterthoughts, these revenue raising provisions need not embody sound principles or careful design — nor are they apt to live up to their promises.

In a typical reform scenario, the legislature seeks to implement tax measures projected to reduce tax collections, and finds it necessary to add revenue raisers to compensate for part or all of the lost revenue. There is usually considerable uncertainty over the true tax revenue consequences of various components of proposed tax legislation, since tax revenues depend on the performance of the economy and the behavior of taxpayers, both of which are difficult to forecast and will usually be influenced by the legislation itself. As a result, legislatures turn to specialists for revenue forecasts, or “scores,” associated with individual tax reform provisions, trusting that the inevitable forecast inaccuracies will roughly balance on the positive and negative sides, producing revenue projections that serve as reliable guides to policy formation.¹

Alas this confidence in accustomed methods of projecting tax collections is misplaced, as the methods run afoul of the practices of the legislators themselves, who often unwittingly bias the projections. This happens whenever revenue raising provisions are chosen in part or in whole on the basis of their estimated revenue contributions, since such a process effectively selects on the residuals of the revenue estimating equations. As a result of this selection, the relevant forecast errors are no longer unbiased, but instead have positive expected values, implying that reform packages are unlikely to produce the anticipated tax revenue.

To illustrate this process, consider a case in which legislators wish to cut certain taxes but are concerned that their desired cuts, taken together, would too severely reduce tax collections, making the reform appear to be fiscally irresponsible. Consequently they decide to include in the tax reform package various revenue raisers chosen not on the basis of their desirable properties but instead simply to provide offsetting projected tax revenues at tolerable political cost. Legislators do not know in advance the revenue consequences of possible alternatives, so they submit a large number of such provisions to the scoring agency for evaluation. For each provision the scoring agency provides a revenue forecast that is the sum of true expected revenue and a forecast error. Legislators then include in the tax reform package a limited number of these provisions, chosen on the basis of revenue forecasts.

It is useful first to consider a case in which a potential tax provision’s true expected tax revenue is either one or else a value far less than one, possibly including negative

¹ Auerbach (1994, 1999) analyzes the general properties of U.S. government tax revenue forecasts; Gentry (1989), Feenberg et al. (1989), Cassidy, Kamlet, and Nagin (1989), and Bretschneider and Gorr (1992) consider the properties of state government tax revenue forecasts, and Buettner and Kauder (2010) review the tax revenue forecasting experiences of other countries.

values. Forecast errors are unbiased, uncorrelated, and uniformly distributed over the range $[-\alpha, \alpha]$, so the distribution of forecasted revenues from potential tax reform provisions that in fact yield significant positive tax revenue is uniform in the range $[1-\alpha, 1+\alpha]$. Assume that upon learning their revenue scores the legislature loses interest in any of the genuinely low-yielding provisions, and that out of the remaining N high-yielding (true revenue of one) provisions for which it has scores it chooses to include a smaller number n for inclusion in the final tax reform, these n having received the highest scores from the revenue forecasting agency. It greatly simplifies the statistical properties of the outcome to treat the numbers n and N as being chosen without regard to the magnitude of revenue forecasts, as would be the case if the legislature feels that it can request only N scores, and should include exactly n revenue raisers, with government borrowing adjusting to absorb any resulting revenue surpluses or shortfalls.

Despite the unbiasedness of forecasts of individual revenue provisions, the legislature's method of choosing the composition of the tax reform package clearly biases the aggregate revenue forecast, since provisions are chosen on the basis of high forecast errors. In order statistics the "selection differential" is the difference between the mean of a selected sample and the mean of the distribution from which the sample is taken.² With this uniform distribution of forecast errors and an expected revenue of unity, the expected selection differential when choosing only the largest n elements out of a sample of N is:

$$(1) \quad \frac{\alpha(N-n)}{(N+1)}.$$

True average expected tax revenue is unity, so average forecasted revenue is $\left[1 + \frac{\alpha(N-n)}{(N+1)}\right]$. It follows that the ratio, ρ , of the expected selection differential to expected projected tax revenue is:

$$(2) \quad \rho = \frac{\frac{\alpha(N-n)}{(N+1)}}{\left[1 + \frac{\alpha(N-n)}{(N+1)}\right]} = \frac{\alpha}{\left\{ \alpha + \left[\frac{1}{1 + \frac{1}{N}} \right] \right\}}.$$

² See, for example, Burrows (1972) and Andrews (1996), both of which report variants of equation (1). The theory of order statistics has produced closed form expressions for the selection differential only for the uniform and exponential distributions, but several studies report the results of numerical simulations used to estimate selection differentials for normal distributions with selected values of n and N .

Equation (2) offers several lessons, the first of which is a reminder that if $n = N$ then $\rho = 0$, as tax provisions would then not be selected on the basis of tax revenue forecast residuals. For a given number n of enacted tax provisions, ρ increases with N , ultimately approaching the value $\frac{\alpha}{(1+\alpha)}$ as N increases without limit — reflecting the expectation that all n of the chosen tax provisions will then have maximal forecast errors. And it is noteworthy that ρ increases with N even if $\frac{n}{N}$ is held constant, as a larger sample size increases the opportunities for selection.

Equation (2) can be used to calculate the expected forecast errors for representative cases. It is instructive to consider the case of $\alpha = 0.25$, for which true expected revenue from a tax provision is unity, but forecasts are drawn from a uniform distribution over the range [0.75, 1.25]. If the legislature submits 20 high-yielding tax provisions for evaluation, and chooses to include in the tax reform package the ten with the highest forecasted revenues, then $n = 10$, $N = 20$, and $\rho = 0.106$, implying that expected actual tax revenues are 10.6 percent less than forecasted tax revenues. Keeping $\alpha = 0.25$ and $n = 10$, but increasing N to 50, raises the value of ρ to 16.4 percent, reflecting a greater degree of selection on forecasting residuals, and moving ρ a good deal of the way toward its theoretical upper bound (as N increases without limit) of 20 percent.

The example with uniform forecast errors is based on the assumptions that the distribution of true expected tax revenue is strongly bimodal, and that the legislature is therefore able to use forecasted tax revenue to distinguish tax provisions that are likely to generate significant tax revenue from those that are not, and then chooses among the genuinely effective revenue-generating provisions. Another possibility is that true expected tax revenue has the same distribution as the forecast errors, and that the legislature in selecting those provisions with the highest forecasted tax revenue effectively chooses a combination of provisions with high genuine revenue-producing potential and those with the greatest forecast errors.

It is valuable to consider cases in which the legislature cannot distinguish forecast errors from true differences in expected tax revenue potential, but in order to make this exercise tractable it is necessary to assume that true revenue potential and forecast errors are both normally distributed. If expected tax revenue and the forecast errors both have normal distributions with the same standard deviation as the forecast errors in the prior example,³ then from Burrows (1972) the resulting value of ρ when $n = 10$ and $N = 20$ is 15.7 percent — though this calculation treats all of the uncertainty as though it comes from forecast errors. In expectation half of the uncertainty is attributable to true expected tax revenue and only half to forecast errors, so the expected forecast error component is just 7.8 percent, implying that tax revenue is expected to be 7.8 percent

³ The uniform distribution [0.75, 1.25] has a standard deviation of 0.144338, and the sum of two normal distributions with this standard deviation is a normal distribution with a standard deviation of 0.20412. The product of this number and the values reported in Table 1 of Burrows (1972, p. 1096) produces the figures in the text.

less than the forecasted level. A similar calculation with $n = 10$ and $N = 50$ yields an implication that tax revenue is expected to be 14.0 percent less than the forecasted level.

It is clear that selecting tax reform provisions on the basis of revenue forecasts produces biased aggregate tax revenue projections. Furthermore, these calculations using forecast errors drawn from uniform and normal distributions take the values of n and N to be independent of the revenue forecasts, which will often not be the case, as legislators may have fixed revenue targets that they try to meet with as few revenue-raisers as possible, so will choose to increase N if early forecasts are disappointing, and reduce n upon receiving favorable revenue forecasts. Such practices only increase the bias in resulting aggregate revenue forecasts, as they have the effect of increasing the degree to which provisions are selected on forecasting errors. The reality that tax revenue forecasting is an imperfect science need not create upward bias in aggregate revenue forecasts, and indeed there are circumstances in which forecasts can be downward biased, such as when legislators adjust tax rates and other features to raise a fixed amount of tax revenue from each of several tax provisions, so effectively rely less on provisions with positive revenue forecast errors. But when the tax reform process includes a desperate search for revenue raisers largely without regard to their contributions to efficiency and tax equity, choices are distorted in the direction of including provisions that produce overly optimistic revenue forecasts.

Revenue collection is the primary function of the tax system, so there is reason to be concerned about shortfalls that accompany tax reforms. The government budget constraint, viewed merely as a constraint, is rather forgiving, making it perhaps too easily ignored in the short run. As a result, governments can and do run chronic budget deficits, although legislators quite correctly worry that there is something amiss when they collectively fail to pay their bills. Consequently the fiscal imbalances created by choosing tax provisions simply to satisfy budget targets rather than to advance tax policy objectives adds to the list of potentially unfortunate results of the tax reform process. With tax reform provisions instead chosen on the basis of their contributions to efficiency and tax equity rather than their apparent contributions to revenue, there is far less scope for upward bias in the resulting revenue forecasts, and more reason to be optimistic about the budgetary as well as economic effects of tax reform.

III. FUTURE GAMES

No single tax reform is the end of the line; any reform today will be supplanted by an unending sequence of future reforms. Wise politicians anticipate political moods change, others will someday take their places, and that when these newcomers are in charge they are apt to enact new legislation based on objectives that differ from those of current legislators. Politicians who care about the future, either because they have principles or because their supporters do, anticipate that everything they enact can be overturned by subsequent legislation, so will seek to influence the course of future events through the measures they put in place today.

This process can be analyzed by specifying that current legislators evaluate the welfare impact of a period t tax rate (τ_t) with a function $W(\tau_t)$, and that these legislators incur political costs $\phi(\tau_t, \tau_{t-1})$ in using the tax reform process to select a period t tax rate that differs from the tax rate in period $(t - 1)$. Furthermore, current legislators care about the discounted present value of future welfare created by tax rates in future periods, albeit without regard to any political costs incurred by future politicians. It follows that period t legislators seek to maximize

$$(3) \quad W(\tau_t) - \phi(\tau_t, \tau_{t-1}) + \sum_{s=1}^S \beta^s W(\tau_{t+s}),$$

in which $1 > \beta > 0$ is a discount factor and S is the number of future periods over which legislators have preferences. The first order condition characterizing the maximum of equation (3) over the choice of τ_t is

$$(4) \quad W'(\tau_t) - \frac{\partial \phi(\tau_t, \tau_{t-1})}{\partial \tau_t} + \sum_{s=1}^S \beta^s W'(\tau_{t+s}) \frac{\partial \tau_{t+s}}{\partial \tau_t} = 0.$$

Forward-looking governments choose tax reform provisions that satisfy equation (4). Consequently, if period t legislators use a function $W(\tau_t)$ that corresponds to true national welfare, then they will enact a tax reform that maximizes current period welfare (and thus sets $W'(\tau_t) = 0$) only if the second and third terms of equation (4) sum to zero. The second term is the political cost of changing today's tax rate, whereas the third term is the effect of today's tax rate on the discounted present value of future welfare through its impact on future tax rates. It is clear that political costs have the potential to impede welfare-improving tax policy development, as these costs will often discourage the refinement and adoption of reforms that otherwise would have made positive welfare contributions. And the desire to use today's tax rate to influence future taxes leads governments to adopt tax reform provisions that differ from those they would choose with today's welfare in mind.

There are two components to these future considerations as captured in the third term of equation (4), the first of which is $\frac{\partial \tau_{t+s}}{\partial \tau_t}$, the effect of today's tax rate on the tax rate s periods ahead. Clearly, if this term is zero for all values of s then the current tax rate has no effect on future rates, and legislators will choose tax policies today based on today's costs and benefits. The second component is $W'(\tau_{t+s})$, the effect of a tax change s periods ahead on welfare in that period. Here too zero is a critical value: If today's legislators anticipate that future tax policies are optimal (implying that $W'(\tau_{t+s}) = 0$ for all s) then the third term in equation (4) becomes zero, and future considerations should be unimportant to those who make today's tax policy choices. It is only to the extent that legislators expect future tax policies systematically to deviate from those that maximize welfare, as reflected in a value of $W'(\tau_{t+s})$ that differs significantly from zero, that governments will have incentives to use today's tax reform to influence future taxes.

Small-government advocates have long relied on a version of equation (4) to justify current tax cuts at the expense of greater government deficits, reflecting a belief that the resulting combination of higher government interest payments and lower future baseline taxes limits the ability of future legislatures to increase government size.⁴ The incentive to distort current taxes to influence future events reflects both the government's inability to commit to future tax policies and an expectation that future tax policies may differ from those which the current government deems desirable. Current tax policies can influence future taxes even without affecting government deficits, as there are several political channels through which policies once in place have a way of persisting despite the potential for Pareto-improving reforms.⁵ Current tax policy constitutes the baseline against which reform possibilities are judged, so one reason to change current taxes is that doing so indirectly affects future taxes.

It is difficult to enact sound tax reforms, and harder still when governments craft their tax policies in part as positioning for the future. The combination of intertemporal tax policy dependence and belief that future taxes will be systematically skewed in undesirable directions gives legislators incentives to create future tax baselines that are more to their liking. The resulting policy commonly overshoots its objectives: if current legislators worry that a future government will tax the wealthy too heavily they have incentives to cut top-bracket tax rates more than they otherwise would, relying on the costs of abruptly raising rates to dampen the magnitudes of future tax increases. If it were possible for current legislators to negotiate binding agreements with future governments, there would be no need for these tax policy distortions, and a semblance of efficiency could be restored even in the face of partisan policy disagreements — but alas no such agreements are possible. As a result each new tax reform, particularly one

⁴ Persson and Svensson (1989) provide a formal development of the point that a conservative government will use tax cuts and the resulting government deficit as instruments to exert partial control over future governments. Alesina and Tabellini (1990) and Tabellini and Alesina (1990) identify circumstances in which both liberal and conservative governments will expand government deficits to constrain the future actions of their political opponents. Poterba (1998) calls attention to the role of political considerations in tax determination, and Buchanan (1967) offers a behavioral interpretation of the effect of current tax policies on future taxes and spending, noting that governments are apt to spend funds that are available without taking explicit legislative action, so expenditure programs funded with previously-enacted taxes whose revenues increase disproportionately in economic expansions will then grow as a fraction of the economy. The evidence is mixed: Oates (1975) and Musgrave (1981) report that government expenditures of states with highly income-elastic taxes grew particularly rapidly during economic expansions, but Romer and Romer (2009) find no evidence that U.S. tax cuts depress subsequent U.S. government spending. It should be noted that, given the political costs of increasing taxes, small-government advocates may be better able to apply equation (4) to overshoot their objectives than are big-government advocates.

⁵ Besley and Coate (1998) note that a government's inability to commit to future policies restricts its ability to compensate those affected by policy changes and thereby limits the scope of potential reforms. Fernandez and Rodrik (1991) emphasize that uncertainty over the identities of potential beneficiaries reduces the likelihood that a welfare-enhancing reform would be supported by the median voter. And Coate and Morris (1999) call attention to cases such as tax credits that require private actors to invest in order to obtain benefits, after which investors are willing to devote additional political resources to preserving the policies, reducing the likelihood and scope of subsequent reforms.

enacted without bipartisan support, brings provisions designed not only to collect taxes but also to influence and constrain the future collection of taxes. Tax reforms enacted instead on the basis of shared principles, or better still bipartisan support, will have far fewer of these unattractive features, and therefore over the course of the political cycle contain provisions that enhance the welfares of all taxpayers.

IV. TRANSITION RELIEF IN STARK RELIEF

Tax reforms commonly produce not only winners but also losers, as despite their average tendency to improve welfare the resulting realignments of tax burdens and changes to market prices have broad and diverse consequences. Legislators naturally prefer to avoid adopting policies that negatively impact important groups in society, which is why they are inclined toward tax reforms that disfavor less politically powerful segments of the population such as future generations, and why tax reforms commonly include transition relief designed to mitigate certain negative impacts over the short to medium run. This form of transition relief includes one-time gestures such as phasing in new tax rules, “grandfathering” transactions entered into prior to reforms, and offering very specific temporary tax sweeteners. Transition relief is a valuable tool to use in crafting tax reforms, but its application is often haphazard in practice and there remains the important and unresolved question of exactly what purpose transition should serve.

The usual goal of transition relief is to reduce or reverse the negative consequences of tax reform for certain affected groups. If such relief were surgically designed and globally applied then in concept one could reform an inefficient tax system in a way that made nobody worse off and many people better off — though of course this is unrealistic. Practical design limitations make it impossible to tailor relief in this way, so transition relief typically is an effort to go part of the way toward reducing new burdens on affected taxpayers. In the process transition relief also dispenses benefits to some taxpayers who are winners from tax reform, and will typically undermine tax reform goals by watering down the impact of reform provisions and reducing tax collections.

It is important to recognize that there are two separate sources of loss that taxpayers may experience in a reform. The first is that the terms of the tax system turn against them: tax rates in their brackets increase; deductions or credits from which they previously benefitted are curtailed or eliminated; the reform changes prices in a way that reduces their real incomes. The second source of loss is failure to anticipate the reform, as when a reform unexpectedly depresses after-tax returns to prior investments. The first source of loss consists of changes that make taxpayers worse off than they would have been if the prior tax regime had continued, and even if they knew that the tax change was coming; whereas the second source of loss derives from the dashing of expectations. Individuals save for retirement, buy homes, invest in municipal bonds, and take new jobs on the basis of expectations over the after-tax returns to these actions, only to find the returns potentially greatly altered by a tax reform. Had they known the tax reform was coming they would not have made the same decisions.

These two sources of loss can be distinguished by denoting taxpayer i 's utility level as $V_i(p, p^e)$, in which p is a vector of tax provisions, and p^e represents the provisions

that had been expected. Let p_1 denote tax provisions prior to a reform, and p_2 the tax provisions introduced by the reform. If taxpayer i had fully anticipated the pre-reform provisions (possibly because they had been in place a long time), his or her utility prior to the reform was $V_i(p_1, p_1^e)$. If the government unexpectedly introduces the tax reform while everyone still expects tax provisions p_1 to prevail, then individual i 's utility becomes $V_i(p_2, p_1^e)$. The utility change introduced by the reform can be decomposed as:

$$(5) \quad V_i(p_2, p_1^e) - V_i(p_1, p_1^e) = [V_i(p_2, p_2^e) - V_i(p_1, p_1^e)] + [V_i(p_2, p_1^e) - V_i(p_2, p_2^e)],$$

the left side of which is the reform-induced change in individual i 's utility. The first bracketed term on the right side of equation (5) is the change in utility attributable to moving from a fully-anticipated tax regime with provisions p_1 to a fully-anticipated tax regime with provisions p_2 . And the second bracketed term is the change in utility due to the dashing of expectations: that the reform introduced provisions p_2 while the world expected p_1 .

The issue for transition relief is whether it is intended to compensate taxpayers for the change in their welfare due to the tax change, in which case the relevant measure is the sum of both terms on the right side of equation (5), or whether instead it is intended to compensate taxpayers only for the unanticipated nature of the reform, in which case the relevant measure is only the second bracketed term on the right side of equation (5).

There is an excellent case to be made for the latter — that governments should implement transition relief to compensate for the welfare effects that tax reform has in defying expectations, but not for changing the tax system per se. Gains and losses due to defiance of expectations are short term in nature and largely attributable to the operation of political machinery. Instead of offering the economy a plan for the future, the tax system is subject to shifting political forces and as a result cannot commit to future tax provisions. True, changing economic and social conditions will mandate tax changes even from an optimizing government capable of commitment — but such a government would at least be able to commit to tax principles, with implied contingencies upon which the market could rely. In compensating taxpayers in whole or in part for gains and losses due to expectations,⁶ the government adjusts tax obligations in acknowledgment that its own inability to offer statutory commitments should not form the basis of tax collections — and as a method of committing not to exploit the unexpected nature of future changes.

By contrast, much of the discussion of transition relief concentrates on both components of the right side of equation (5), the entire effect of tax reform on affected parties.⁷

⁶ It is noteworthy that taxpayers and the market may anticipate the possibility of tax changes even in what otherwise appears to be a stable environment. As a result, in equation (5) one might replace p_1^e with p_1^{e*} , where p_1^{e*} is the expectation of future tax policy while provisions p_1 are in place.

⁷ See, for example, those such as Graetz (1977, 1985), Kaplow (1986), and Levmore (1993), who argue against most forms of transition relief; and Feldstein (1976a, 1976b), Zodrow (1981), Ramsayer and Nakazato (1989), and Logue (1996), who offer arguments in favor of relief; Shaviro (2000) suggests that the government provide relief for some tax transitions and not others.

This appears to be motivated by a desire to craft reforms that would keep taxpayers whole. There are three possible motives for such compensation, the first of which is to reduce certain adverse economic effects of tax changes. Investors and others whose economic actions have lasting consequences are subject to the risk that tax policy may change before returns are fully realized. Transition relief mitigates or eliminates this risk, which reduces its effects on individual welfare and thereby encourages investment. But since transition relief is financed by taxpayers as a whole, its function in reducing the risks of parties potentially affected by tax reform really consists of shifting these risks onto others, with resulting implications for their welfares and investment decisions.

The second motivation for transition relief is that taxpayers are normatively entitled to whatever welfare they enjoyed prior to reform. It is difficult to understand the possible basis of this entitlement. Certainly theories of efficient and equitable taxation make no allowance for prior tax systems, and indeed if they did one could point to earlier eras in which governments were tiny and none had income taxes, suggesting that taxpayers would need to be compensated for having to pay taxes at all, which would mean the system raises no revenue.⁸ It is certainly undesirable to enact reforms that reduce welfare, and if the welfare reductions were widespread then obviously such reforms are unlikely to have favorable welfare properties. But it is quite another thing to say that having once favored a group in the population with relatively generous tax provisions the government must offer at least partial compensation for removing these provisions in the future. This grants far too much normative significance to past government actions.

The third motivation for compensating those who lose from a tax reform is political, consisting of concerns about future elections and the dynamics of enacting beneficial reforms that might be blocked by interests that oppose them. Such political motivations are entirely understandable, and they join other political considerations in motivating the composition not only of tax policies but also of any other policies produced by the democratic process. One should not let this political reality obscure an understanding of the substantive economic goals of tax reform, even though in practice both will contribute to the design of the final tax reform product. Tax reform works best when it starts from principles and proceeds to provisions.

A commitment to offering transition relief to compensate those adversely affected by the unexpected nature of tax reform has the benefit of reducing concerns about possible future reforms,⁹ though it should be noted that even such a policy would not remove taxpayer incentives to try to anticipate tax reforms, because relief inevitably is applied to groups of taxpayers and not conditioned on the beliefs of any individuals.

⁸ Taxes are used to finance government expenditures, so one could imagine trying to compensate taxpayers for their tax burdens net of benefits of government spending. But such a procedure leads directly to a system of taxing according to government benefits, with all of its limitations and difficulties of even defining how much someone benefits from government spending.

⁹ Transition relief presumably is symmetric, with taxpayers who benefit from the unanticipated aspects of reforms subject to transition provisions that claw back some or all of the gains they would otherwise enjoy from the surprise elements.

The primary reason to offer transition relief is to remove the government's temptation to enact unanticipated tax changes. There is a constant incentive to do so, because tax policies that rely on aspects of past behavior have otherwise-desirable incentive properties stemming from the fact that individuals and firms cannot respond to new tax rules by changing their past behavior. But anticipation of the possibility of such government action discourages investment and other beneficial economic activities even in the absence of rent-seeking tax reform.

It is difficult to design transition rules that would offer relief closely approximating any suggested by different theories of tax transitions.¹⁰ The difficulties lie first in determining the effects of tax reforms on different population groups, and second in crafting transitional rules that deliver commensurate compensation. Both are challenging; and in the case of evaluating tax reform effects there is a question of how to handle differences among taxpayers in the same treatment group in the extent to which they are affected by tax reforms. Practices such as phased-in application of new tax rules may dampen the effect of tax reforms on asset prices, but do so at the cost of perpetuating aspects of old tax law that reforms are designed to supplant. The reality is that no tax reform transition relief is perfect, which is why governments tend to offer such relief in piecemeal fashion.

Tax reforms create winners and losers, including those who win or lose because tax reforms were not perfectly anticipated. Transition relief addresses some aspects of these gains and losses, but there is considerable controversy over the appropriate objectives of transition relief, and acknowledgment that, whatever their objectives, transition rules deliver only very imperfect relief. Frequent tax reforms produce frequent transitions, and therefore frequent occasions for imperfect and costly transition relief. This is part of the cost of tax reform, and implies that a cost-minimizing strategy is one of infrequent reform with considerable attention to the objectives, design and details of accompanying transition relief. While recent practice may not be encouraging in this regard, there is ample scope for principles-based transition relief that improves tax reform outcomes and incentives. The critical element in designing such transition relief is to apply the same sound principles that adhere to tax policy generally, and that therefore can be properly anticipated by economic actors. Doing so holds forth the prospect of significantly easing transitions while also advancing longer-term tax reform objectives.

V. TAX REFORM FREQUENCY

It is forever tempting to reform the tax system because taxes are chronically in need of reform. Legislators in every era find that prior efforts to craft tax legislation have fallen short due to incomplete or misguided objectives, design that was compromised to meet political demands, and circumstances and needs that subsequently changed.

¹⁰ Zodrow (1981, 1985), Shaviro (2000), and Kaplow (2003, 2008) consider the properties of different methods of transition relief to accompany tax changes.

Every country's taxes could be improved, and should a government one day and against all odds adopt an ideal tax system, changing economic and social conditions would shortly make even it out of date and in need of further reform. So there are clear benefits to be had in implementing beneficial reforms, perhaps even on a regular basis. But in evaluating the proper frequency of reform it is necessary to balance the potential gains against the costs.

An important cost of new tax legislation is that it conveys the government's ability and willingness to change its tax system, raising the specter of additional reform in the near future. Tax reforms with insufficient transition relief can subject past investors to windfall losses in the form of reduced after-tax returns to existing investments, and anticipation of this possibility has a chilling effect on new investment. The investments that are potentially at risk include not only property, plant and equipment expenditures, but also resources devoted to forming business organizations; occupational, locational, and educational choices; and other economic decisions that are not easily reversed. Consequently governments that are unable to commit not to exploit sunk investments risk discouraging wide ranges of important economic activity.

Governments must balance these and other costs of frequent reforms, including the costs of using the political system to pass new legislation, against the benefits of sensibly updating their tax systems. One of the ways in which tax systems become stale is that taxpayers find previously-overlooked loopholes and develop other unanticipated methods of tax avoidance. Once these become widely used or at least widely publicized, the associated revenue erosion, resource diversion, and taxpayer inequity creates a desire to change the laws in a way that closes loopholes and otherwise reduces tax avoidance opportunities. Since this is a continuous process, it generates continual demand for tax reform. But the downside of closing loopholes is that the government thereby indirectly encourages taxpayers to devote resources to finding and developing new ones, with associated economic loss.¹¹

Tax avoidance can be costly in two senses, the first of which is that the government collects less tax revenue from tax avoiders. This type of self-help tax cut may represent an arbitrary and inefficient reallocation of tax burdens, particularly if it is not directed at marginal returns and therefore does not stimulate significant additional economic activity. The second cost is that taxpayers devote resources to avoiding taxes, both in the form of tax planning expenses and in the form of restructuring and in some cases foregoing otherwise-profitable business opportunities in order to maximize tax advantages. It is convenient to summarize government policy by a parameter c that is positively related to the cost of tax avoidance, with the cost of any given level of tax avoidance increasing

¹¹ Studies that consider appropriate balancing of the costs and benefits of government measures to prevent tax avoidance include Weisbach (2002a, 2002b, 2007), Hines (2004), Curry, Hill, and Parisi (2007, 2014), and Konrad (2017). The costs of reduced tax collections from avoidance can be inferred in part from the costs of collecting taxes in the first place, as estimated using the methods of Harberger (1964a, 1964b) and Slemrod and Sorum (1984).

in c ; more frequent loophole-closing tax reform has the effect of increasing c . A taxpayer chooses a tax avoidance level $a(c)$ corresponding to his or her under-declared income, with $a'(c) < 0$. A taxpayer's total resource cost of tax avoidance is given by $T(c)$, λ is the government's valuation of its loss per dollar of tax avoidance, and τ is the tax rate. Finally, the government incurs a cost kc associated with a tax reform frequency sufficient to sustain a tax avoidance cost parameter c .

From the standpoint of the government the total social cost of tax avoidance and enforcement, including resource costs incurred by taxpayers, is given by:

$$(6) \quad T(c) + \lambda\tau a(c) + kc.$$

Minimizing equation (6) over the choice of c implies:

$$(7) \quad T'(c) + \lambda\tau a'(c) + k = 0.$$

In interpreting equation (7) it is helpful to consider a simple example. If the total (tax-deductible) avoidance cost an individual faces is given by the quadratic function $T(c) = \gamma ca^2$, with $\gamma > 0$ a parameter related to the costliness of avoidance, then a rational individual who chooses a to maximize $\tau[a - \gamma ca^2]$ will select $a = \frac{1}{2\gamma c}$,

reflecting that avoidance declines as it becomes more costly. It follows that $a'(c) = \frac{-1}{2\gamma c^2}$, $T'(c) = \frac{-1}{4\gamma c^2}$, and equation (7) implies:

$$(8) \quad c = \left[\frac{1 + 2\lambda\tau}{4\gamma k} \right]^{\frac{1}{2}}.$$

Expression (8) indicates that the cost-minimizing value of the government-chosen tax parameter c is an increasing function of $\lambda\tau$, which is the welfare cost of reduced tax collections from an increment of under-declared income. While a higher welfare cost of tax avoidance increases the return to discouraging avoidance and thus prompts the government to choose a higher value of c , it is noteworthy that c is positive even if $\lambda = 0$, as part of the cost of tax avoidance consists of the resource costs that taxpayers incur in avoiding taxes, and these costs are unaffected by λ . Additionally, c is a decreasing function of both γ and k . The effect of γ reflects that c and γ are substitutes from the standpoint of discouraging tax avoidance, whereas the effect of k captures the welfare cost of the frequent tax reforms that would support a high value of c . As k shrinks toward zero, c increases without bound, since this example has the property that in the absence of costly policy the government would seek to raise the cost of tax avoidance sufficiently to drive out the practice. This outcome is not, however, intrinsic to those characterized by equation (7), as there are other cases in which even with

$k = 0$ the government will choose to permit significant tax avoidance rather than introduce measures that would require taxpayers to incur much higher costs to maintain portions of their prior avoidance levels.

The realization that taxpayers have discovered significant tax avoidance methods can serve as a powerful spur to tax reform, notwithstanding the reality that removing some tax avoidance opportunities immediately sets taxpayers in search of others. Expression (8) serves as a reminder that optimal policy strikes a balance between the costliness of tax reform and the benefits of limiting avoidance, so that prudent governments may need to condition themselves to living with a certain amount of tax base erosion rather than seeking new measures to block every effort as it appears. Tax reform is costly because it discourages desirable economic activity, encourages undesirable activity, and consumes political resources in the course of introducing new legislation with its own quirks and flaws. Properly modulated and directed, however, the desire to reform a country's taxes can be channeled into highly beneficial legislation that is periodically updated to capture new developments. Hence the benefits to adhering to sound principles appear in the timing as well as the substance of tax reform.

VI. CONCLUSION

The passage of new tax legislation is usually accompanied by grand claims for its salutary effects on the economy, its virtuous consequences for the distribution of income, and the revenue it will raise. Tax reform advocates and backers advance these claims not only to marshal popular support but also because they believe them. Time and again tax reforms have failed to achieve their stated goals and have fallen short of their potentials, often falling prey to the perils of overstating projected revenue, failing to focus on efficiency and equity objectives, offering insufficient and misdirected transition relief, and distorting incentives for investment and tax avoidance. And it is not only political actors who are disappointed; scholars and pundits regularly call for tax reform, only to express dismay at what subsequently emerges.

It need not be this way. Principled and thoughtful reform offers the opportunity to sidestep many of these perils while nonetheless achieving tax reform objectives. The solution to the tax reform challenge lies in enacting provisions based on sound and generally shared principles, with the understanding that details of implementation may change in the future but the principles, if they change, will evolve much more slowly. Tax reform enacted on a bipartisan basis and following a careful deliberative process is the most likely to provide revenue adequacy, appropriate transition relief, and properly designed tax provisions on a timetable that offers taxpayers efficient incentives. Unprincipled tax reform is perilous any time it is attempted, raising the question of why any government would want to seek such a reform, given the available and much more attractive alternative of applying shared principles to craft a better tax system.

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