

THE CONSUMPTION TAX AND  
SUPPLY-SIDE ECONOMICS:  
Some Short-Term Revenue Effects

It is well known that supply-side marginal tax rate cuts have an ambiguous effect on government tax revenue.<sup>1</sup> Opponents of supply-side economics usually argue against such tax cuts on the basis of one or more of the following assertions:<sup>2</sup>

1. The Laffer effect is a long-term effect: In the short term, tax rate cuts will universally reduce government revenue;
2. The United States is not currently in the prohibitive zone of the Laffer curve;
3. Tax rate cuts will lead to revenue increases only if people save more of their income (i.e., do not spend it).<sup>3</sup>

In this paper we present a logical extension of the Laffer model that casts doubt on the above criticisms of supply-side economics. In particular, we show that (1) because of "dual taxations," Reagan's tax rate cuts will *unambiguously* lead to immediate (short-term) increases in government revenue; (2) the prohibitive zone is larger than Laffer originally hypothesized, thus increasing the probability that the United States is currently in the prohibitive zone; (3) the greater the tendency for people not to save because of the tax rate cuts, the *greater* the immediate increases in tax revenue.

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<sup>1</sup>Arthur B. Laffer, "Government Exactions and Revenue Deficiencies," *Cato Journal* 1, no. 1 (Spring 1981): 1-21.

<sup>2</sup>For further development of these arguments, see David Henderson, "Limitations of the Laffer Curve as a Justification for Tax Cuts," *Cato Journal* 1, no. 1 (Spring 1981): 45-52.

<sup>3</sup>This belief is so widespread that it has been naively popularized as an economic truism. For example, see the commentary by Lewis Beman, "What Supply-Siders Hope to Achieve," *Business Week*, November 17, 1980, p. 158.

To formalize the model above, we will use the following simplification of the present tax structure in the United States. Both income and consumption are taxed. Real income,  $Q$ , is taxed at a marginal tax rate,  $t$ . Under the standard assumptions of Laffer we have  $Q = Q(t)$ , where  $Q'(t) < 0$  and  $Q''(t) < 0$ . Thus government revenue from the income tax is given by

$$R_I \equiv t \cdot Q(t), \tag{1}$$

where  $R_I(0) \equiv R_I(1) \equiv 0$ . This is the basic formulation of the supply-siders.

We add to the existing theory another major source of government revenue: consumption tax revenue, which includes government income from state and local sales taxes, federal excise taxes, property taxes, tariffs, permits, etc. For simplicity, we denote all such consumption goods  $C$ , and assume they are taxed at the same rate,  $T$ . It is reasonable to assume that consumption directly depends on real income, which in turn is inversely dependent on the marginal tax rate. Thus we have  $C = C(t)$ , where  $C'(t) < 0$  and  $C''(t) < 0$ . Government revenue from consumption taxes are thus

$$R_C \equiv T \cdot C(t). \tag{2}$$

Adding (1) and (2) we obtain *total* government revenue:

$$R^* = t \cdot Q(t) + T \cdot C(t). \tag{3}$$

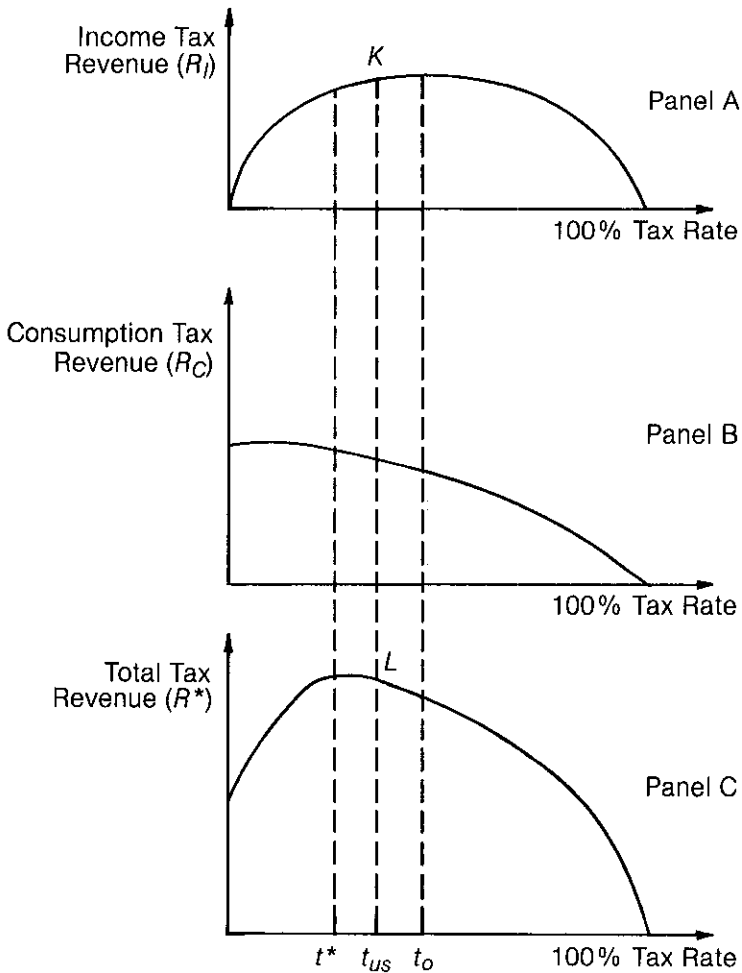
The revenue effects of a change in the personal income tax rate,  $t$ , are found by differentiating (3) with respect to  $t$ . Evidently,

$$\frac{dR^*}{dt} = \underbrace{t \cdot Q'(t) + Q(t)}_{\text{Output Effect}} + \underbrace{T \cdot C'(t)}_{\text{Consumption Effect}} \tag{4}$$

The output effect is nothing more than the classic effect emphasized by Laffer, which is known to be ambiguous. However, the consumption effect is unambiguously negative, which means that the output effect always underestimates the government's revenue gain from a reduction in personal income tax rates.

Figure 1 depicts the preceding results. In Panel A a typical Laffer curve is seen in which income tax revenue ( $R_I$ ) is graphed against the marginal tax rate ( $t$ ). The slope of the curve represents the output effect of equation (4). In Panel B the consumption tax revenue ( $R_C$ ) schedule is graphed. The slope of the curve is the consumption effect of equation (4). The curve in Panel B must be added to that in Panel A in order to obtain *total* government tax revenue ( $R^*$ ) as a function of  $t$ . Such a curve is presented in Panel C. Thus the tax rate  $t_0$  maximizes income tax revenue but *does not* maximize total tax

FIGURE 1



revenue. In fact, for a given tax rate on consumption, a lower income tax rate of  $t^*$  is seen to be the optimal revenue generating marginal tax rate. Even if the personal income tax rate in the United States is not in the prohibitive zone of the "ordinary" Laffer curve (point  $K$  in Panel A), it may well be in the prohibitive zone when consumption tax revenue is included (point  $L$  in Panel C).

The intuitive bases of these results are worth explication. As personal income tax rates are reduced, output increases. Depending on the tax elasticity of output, government revenue may rise or fall as

a result.<sup>4</sup> As output increases (or as income accumulates in the hands of the public), consumption tends to increase. If tariffs, sales tax rates, excise tax rates, etc., are held constant, then the government's consumption tax revenues will increase. Moreover, as is readily seen in figure 1, the "optimal" revenue-generating marginal tax rate for a given  $T$  is actually *less* than that proposed by Laffer and others.

In closing we feel compelled to emphasize that the consumption effect seen in equation (4) is a robust example of the potential demand-side government revenue benefits from supply-side economics. In particular, state and local governments that depend on sales taxes will receive unambiguous increases in tax revenue should the Reagan tax cuts become law. These increases will be an immediate side effect of increases in private consumption. Thus even those cuts within the range where federal tax revenues diminish may produce immediate increases in *aggregate* government revenues (combined state, local, and federal revenues).

The consumption effect *must* be considered in discussions of tax cuts. The result that the immediate benefits accrue primarily to the state and local coffers rather than the federal treasury is not a significant problem. With tax rates chosen to maximize aggregate government revenue, policy decisions involving intragovernmental transfers of either power or funding are of a political nature and not of direct concern to us as economists. We, at least, gladly leave such problems for the political philosophers.

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<sup>4</sup>There appears to be a consensus even among supply-siders that this effect may be longer-term. See for example Laffer, "Government Exactions," p. 21.