6 TEMPORARY TAX REDUCTIONS AS RESPONSES TO OIL SHOCKS

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The economic damage caused by the oil supply interruptions of the past decade has received considerable attention from both economists and policymakers. Arguments for government policy intervention center on the divergence between the private and social costs of imported oil and on the fluctuations in real national income and output that have accompanied the shocks. How best to mitigate the economic costs of a disruption remains an important, as yet unresolved, problem for policymakers.

This chapter focuses on the potential for temporary reductions in personal income taxes, or for the use of rebates, in mitigating short-run declines in aggregate demand associated with the oil shocks. Unfortunately, many analyses have referred to such a policy initiative under the name of "revenue recycling." Despite the fears of "fiscal drag" during an oil supply disruption—because the federal tax system is not neutral with respect to inflation and because of increased revenue from oil excise and profits taxes—sudden oil price increases are far more likely to raise the federal deficit, because of the reduction in tax collections occasioned by the decline in national income and the "automatic stabilizers" in government spending. Tax reductions for the purpose of reversing some upward impetus to the budget surplus are not warranted.

Below, a brief review of the issues surrounding the effectiveness of income tax reduction as a policy response is presented. Results of studies using econometric models are presented to quantify the benefits of temporary and long-run tax reduction proposals.

EFFECTIVENESS OF TEMPORARY TAX CUTS

One must be precise in qualifying and quantifying the potential benefits and tradeoffs implicit in "accommodating" temporary policy changes. Two principal questions underlie this discussion. First, to what extent can temporary fiscal policy changes bring about the desired effects on aggregate demand? Second, how can a fiscal stimulus be structured to avoid "overheating" the economy? Any justification of a plan to reduce personal taxes during a shock (or use rebates) must therefore rely not on the need to "recycle" increased federal revenue, but rather on the desirability of bolstering consumer spending and thereby recovering some of the loss in aggregate demand. Given this analytical approach to the problem, the effectiveness of a tax cut or rebate depends on the extent to and speed at which it is spent. Two issues immediately surface: (1) whether the rebate is temporary or permanent and (2) whether households internalize the government's intertemporal budget constraint.

The first dimension evolves from the considerations of the "life cycle hypothesis" of saving and consumption, according to which households have expectations of their permanent (wage and nonwage) income and smooth their consumption path over time. Temporary fluctuations in income are much more likely to lead to fluctuations in saving, as the consumption path has already been "set" as the solution to the household's lifetime optimization problem. At the very least, temporary changes in disposable income should have a smaller effect on consumption than permanent changes. In the context of a tax rebate program, rebates that are explicitly temporary are likely to be saved.

On another level, the effectiveness of a rebate program in stimulating consumer spending depends on the extent to which households view the government's budget process as part of their own. In the most extreme version of this view, tax rebates—increases in the government budget deficit—will have no impact on consumption, as households will perceive the expected *future* tax liability and increase their saving to offset it.

One factor that is likely to work against these two potential criticisms of a temporary rebate program to stimulate consumer spending is the existence of "liquidity constraints." Intertemporal optimizing models of the consumption-saving decision rely on perfect capital markets and the ability of individuals to borrow funds in an elastic supply at the "market" interest rate. In reality, there are institutional restrictions on borrowing (collateral requirements, required debt-service ratios, etc.), so that at least part of the population consumes all of its disposable income and would consume still more on the margin, given an increase in disposable income. Thus, a rebate program will be more effective in bolstering aggregate demand if it is targeted at liquidity-constrained consumers. This provides a macroeconomic rationale for rebate programs aimed at assisting the poor, who are most likely to be liquidity constrained, in meeting higher energy costs.

Most empirical work focuses on consumer spending to analyze the effectiveness of a temporary rebate program in stimulating aggregate demand. Consider the following simple consumption function:

$$C_t = a + b Y_t^* + d W_{t-1} \quad , \tag{6-1}$$

where C, Y^*, and W are real (per capita) consumption, permanent disposable income, and nonhuman wealth, respectively. Conceptually, it is easy to think of a distributed lag on disposable income (Y) as being a proxy for permanent income, so that:

$$C_t = a + \sum_{i=1}^{n} b_i Y_{t-i} + d W_{t-1} \quad . \tag{6-2}$$

If all of a temporary tax rebate were considered by individuals to be an addition to permanent disposable income, than a one-quarter rebate of amount R would raise consumer spending by $b_o R$, since $\partial C_t / \partial Y_t = b_o$. Suppose, however, that only part of the rebate is considered an addition to permanent income. Then the impact of a temporary rebate on consumption is:

$$\frac{\partial C_t}{\partial R_{t-i}} = \lambda b_i + (1 - \lambda)\gamma_i \,, \quad i = 1, \ldots, n \quad , \tag{6-3}$$

where λ is the fraction of the rebate counted as an addition to permanent income, b_i is the structural coefficient on disposable income

(i periods ago) and γ_i is the marginal propensity to consume out of transitory income (received i periods ago).[1] The consumption function (6–2) may be rewritten as:

$$C_t = a + \sum_{i=1}^{n} b_i (Y_{t-i} + \lambda R_{t-i}) + (1 - \lambda) \sum_{i=1}^{n} \gamma_i R_{t-i} + d W_{t-1} \quad . \quad (6-4)$$

For simulation purposes, then, the next step is to put forth reasonable values of central parameters λ and the γ_i's. The empirical evidence in Blinder (1981) on the effectiveness of the 1975 rebate program found that temporary taxes still on the books are treated roughly as fifty-fifty combinations of transitory and permanent changes.[2] Within this framework, I selected two cases: (1) a rebate that is fully perceived as an addition to permanent income, and (2) a rebate of which 50 percent is considered an addition to permanent income.[3]

MODELING THE EFFECTIVENESS OF TEMPORARY TAX CUTS

To quantify the potential benefits of income tax reductions in offsetting some of the economic costs of oil supply shocks, I will refer to some results of econometric modeling efforts. A small econometric model of the U.S. economy was used to simulate the effectiveness of an explicitly temporary personal income tax reduction. Evidence on the benefits of longer term reductions comes from the preliminary results of the Stanford Energy Modeling Forum model comparison project, "Energy Price Shocks, Inflation, and Economic Activity" (Hickman and Huntington 1982).

The model is designed to quantify the short-term economic costs of oil supply disruptions and to pinpoint the general equilibrium impacts of policy responses. A core macroeconomic model with real and financial sectors is linked to a model of the world oil market. Solution of the models is fully simultaneous and is accomplished through iteration. The government has at its disposal a set of fiscal and monetary policy instruments, with which it can influence aggregate demand and supply. The basic output of the model consists of a set of relevant oil prices accompanied by endogenous OPEC output projections and a set of macroeconomic variables dealing primarily with inflation, unemployment, financial variables, and income.[4]

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The econometric model was used to simulate the costs of an oil supply disruption and the extent to which temporary tax reductions are an effective means of increasing demand. The simulations are done on a quarterly basis from 1982 through 1986 using information available through the end of 1981. To provide a basis for measuring the effects of an oil shock and to gauge the effectiveness of policy responses, I first constructed a control scenario: a state of the world without further oil supply disruptions or significant changes in policy.

In the control scenario, real GNP grows slowly (2.6%) in 1983, rather rapidly in 1984 and 1985 (4.9% and 4.5%, respectively); and moderately (3.6%) in 1986. The unemployment rate peaks in 1983 and falls gradually to 8 percent by 1986. Inflation remains between 6.3 percent and 7.6 percent. (This scenario is a basis for comparison and not a projection.) Oil prices continue to fall slightly until 1985, when they begin to rise gradually.

The disruption scenario represents a reduction in OPEC capacity of 7 million barrels per day during 1983. A disruption of this magnitude raises oil spot prices by as much as $35 per barrel and refiners' acquisition costs by as much as $24 per barrel. As expected, the disruption reduces economic growth and increases inflation and unemployment. The rate of GNP growth is reduced by about six-tenths of a percentage point in 1983 and 1984, and in 1985, GNP is reduced by about $20 billion by the disruption.

The next two scenarios represent the use of temporary personal tax cuts to reduce the costs of the disruption. I simulated the effects of a $30 billion personal income tax cut in 1983 under two different assumptions.[5] In the first case, "fully perceived," the temporary tax cut is assumed to have the same impact as a permanent tax cut of equal magnitude. As discussed earlier, agents in the economy do not behave according to the strict life cycle hypothesis and therefore do not simply save most of the tax cut they receive. In the second case, "50 percent perceived," the tax cut is perceived as being different from a permanent tax cut of the same magnitude. More specifically, the temporary tax cut is assumed to have the same effects as a permanent tax cut half its size, since many agents behave according to the life cycle hypothesis and save much of their tax cuts.

The fully perceived and 50 percent perceived tax cuts both diminish the costs of the disruption, particularly during the year of the disruption (and tax cut) without significantly affecting the price level. The tax cuts work primarily through their stimulus to consumption.

In fact, investment is ultimately reduced because of the tax cut. By the end of the simulation interval, the stimulative effects of the tax cut essentially fade away, and real GNP is only slightly higher than in the disruption scenario with no policy response.

As one would expect, the fully perceived tax cut is more effective in reducing the costs of the disruption than is the 50 percent perceived tax cut. In the final quarter of the disruption, the fully perceived tax cut reduces the GNP loss from $9.8 billion to $4.6 billion, while the 50 percent perceived tax cut only succeeds in reducing the loss to $7.7 billion. The stimulative effects of the tax cut are diminished by the upward pressure it exerts on interest rates through the budget deficit. In the final quarter of the tax cut, the long-term interest rate is 0.5 percent higher because of the tax cut. This accounts for the slight reduction in investment.

The ongoing study by the Stanford Energy Modeling Forum of the macroeconomic impacts of energy price shocks has examined the effects of a reduction in personal income taxes on income, unemployment, and inflation. Specifically, as a policy response to their "shock case" of a permanent 50 percent increase in the real price of oil, the participating modelers analyzed a permanent reduction in income tax rates of 10 percent (designed to provide a stimulus of approximately $30 billion).[6]

Results of the various models were mixed. Almost all models showed gains in the growth rate of real income and short-run reduction in the unemployment rate. In the long run, the tax reduction left the economic growth rate unchanged, but the composition of private spending shifted toward more consumption and less business fixed investment—principally because of the increase in interest rates associated with the widening public sector borrowing requirement. Because the model simulations of the impact of an oil shock in the absence of policy showed that the effects of an oil price increase—even a permanent oil price increase—on the growth rate of real GNP are likely to be transitory, temporary policy changes would be the more logical choice, provided that they can, in fact, achieve the desired effect on spending.

CONCLUSION

The short-run reductions in aggregate demand that have accompanied the sharp increase in the price of imported oil have led many

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economists and policymakers to advocate tax reductions as a countercyclical measure. Tax rebate or reduction schemes can certainly be constructed to increase the potential for consumer spending and to address certain equity goals. The effectiveness of temporary tax cuts in stimulating demand depends on the way in which agents determine their consumption decisions and on the extent to which they can attain their desired level of spending—as opposed to being rationed by liquidity constraints. The empirical results presented here indicate that those differences in behavior can produce very different results for the effectiveness of the policy. Under plausible parameter values, though, substantial benefits can be obtained from using temporary tax cuts at the onset of an oil shock. In reality, policy changes do not occur in isolation, and the ultimate test of the effectiveness of the temporary tax cut proposals depends on the total stance of fiscal and monetary policy.[7]

NOTES TO CHAPTER 6

1. Note that this approach is also consistent with a model of life cycle consumption behavior in the presence of liquidity constraints. In such a world, an explicitly temporary rebate would be saved, but the fraction of the population that is liquidity constrained would consume all, or at least a large part, of the increase in disposable income.
2. The empirical work in this area has by no means produced a clear consensus on the effectiveness of temporary tax changes in influencing consumer spending. For other studies of the problem, see Okun (1970), Hall and Mishkin (1981); and Hayashi (1981).
3. In terms of (6–4), assume that the propensity to consume out of transitory income is zero. Then, in case (1), $\lambda = 1$, and in case (2), $\lambda = 0$.
4. See Appendix A for more detail.
5. A program of this size can probably address the equity concerns highlighted by the oil shock. The program was fashioned as follows:

   First, the *Statistics of Income* of the Internal Revenue Service were used to determine the number of returns filed and taxes paid by tax bracket in 1978. Adjusting for inflation yielded a set of income brackets and corresponding average taxes in 1982 dollars.

   The rebate structure is based loosely on the 1975 rebate of a portion of 1974 income taxes—a rebate system that helped to end the 1974–75 recession. Everyone who filed a tax return in the year before the disruption begins would receive a rebate equal to 10 percent of the income tax paid in that year, unless taxes paid were more than $2,000 (in which case they would receive $200) or more than $5,000 (in which case they would receive

a maximum payment of $500). Heads of poor households may "enroll" in the rebate system simply by filing a tax return, even if they owed no taxes. That would allow our simple tax rebate system to substitute for complicated changes in Aid to Families with Dependent Children and other welfare programs in reducing the costs to the poor of oil shocks.

The rationale for allowing rebates as high as $500—as opposed to restricting them to $200 lump sum rebates—is a desire to alleviate the effects of the oil shock on the automobile and housing industries. Reasonably high rebates to middle-income households may help to prevent a large drop in the demand for consumer durables.

6. For a description of the scenarios and the models involved, see Hickman and Huntington (1982).
7. For example, consider the combination of a temporary reduction in personal income tax rates with a temporary increase in the rate of growth of the money supply. The temporary tax cut is likely to provide a short-term stimulus to aggregate demand but is likely to have little long-term benefit. On the other hand, the benefits of monetary accomodation operate with relatively long lags, mitigating long-run reductions in capital spending.

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