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Source: *The American Economic Review*, May, 1988, Vol. 78, No. 2, Papers and Proceedings of the One-Hundredth Annual Meeting of the American Economic Association (May, 1988), pp. 413-418

Published by: American Economic Association

Stable URL: <https://www.jstor.org/stable/1818160>

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Are Consumers Forward Looking? Evidence from Fiscal Experiments

By JAMES M. POTERBA*

How changes in current and future income affect consumer spending is a perennial question in macroeconomics and public finance. Theoretical constructs such as the permanent income hypothesis are of limited assistance in resolving this issue, because they neglect borrowing constraints and other market imperfections that can significantly affect the marginal propensity to spend out of current income. Recent empirical work has also proven inconclusive, since whether consumption responds to income fluctuations by more or less than the permanent income hypothesis predicts turns critically upon whether disposable income follows a random walk or is stationary around a long-run trend (see John Campbell and Angus Deaton, 1987). This controversy is unlikely to be resolved conclusively, because it is notoriously difficult to distinguish a stationary but highly persistent time-series from one that is nonstationary. These difficulties suggest the importance of searching for "natural experiments," income shocks with predictable and well-understood effects on future income, to test models of consumer behavior. Changes in federal tax and transfer policy during the last two decades provide several episodes of this type.¹ Analyzing

the effects of these tax changes is also central to understanding the role of fiscal policy in affecting national saving.

This paper examines two aspects of consumer response to tax changes. Section I argues that consumption responds to temporary income tax shocks by more than the permanent income hypothesis would suggest. Results from the 1975 tax rebate in particular suggest that a \$1 increase in transitory income raises spending by about 20 cents. Section II examines consumption responses to tax announcements. Although the results are not conclusive, they suggest that some consumers do not adjust consumption in anticipation of tax changes. The final section sketches some implications for analyzing fiscal policy.

I. Consumption Changes Induced by Temporary Tax Policies

There have been two explicitly temporary federal income tax policies in the last two decades, the 1975 income tax rebate and the 1968 surtax.² The Tax Reduction Act of 1975 consisted of a 10 percent rebate of 1974 taxes up to a maximum of \$200. The House passed the bill in late February, the Senate approved it in March, and President Ford signed it in late March. The legislation transferred \$8.1 billion from the Treasury to households, mostly during the two months from late April to mid-June. Measured at an annual rate in 1987 prices, this corresponds to a disposable income increase of more than

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¹Tax changes are attractive fiscal experiments because of their simple stochastic structure, but they also have drawbacks. The neoclassical view of fiscal policy (see Robert Barro, 1987) holds that changes in taxation, unlike other changes in disposable income, should not affect consumption. Lawrence Summers and I (1987) describe the apparent failure of this view to account for the recent coincidence of high fiscal deficits and depressed personal saving.

²Alan Blinder and Deaton (1985) note that the income tax reductions in the Economic Recovery Tax Act of 1981 can also be viewed as a permanent tax reduction, accompanied by two years of temporary tax *increases*. Their results, however, suggest that consumers viewed the tax change as a sequence of permanent tax cuts.

\$100 billion. By comparison, the 1968 surtax raised taxes by \$16 billion and the pre-announced 10 percent income tax reduction of 1982 lowered taxes by \$31.6 billion (\$1987). The 1975 tax bill included the tax rebate as well as a smaller, transitory income tax reduction that was subsequently made permanent; see Blinder (1981). There was also a one-time Social Security bonus for retired individuals with no taxes to rebate. My analysis focuses on the rebate's consumption effects, since it is difficult to describe consumer expectations with respect to the other tax changes.

Studies of the 1975 rebate as well as earlier work on the 1968 surtax surveyed in Blinder yield conflicting evidence. While Blinder concluded that each rebate dollar raised consumption by about 16 cents in the quarter when it was received, he also found substantial effects between five and eight quarters after the rebate. These estimates are larger than the marginal propensity to consume out of windfalls under the permanent income hypothesis, but not as large as his estimates of the propensity to consume from a permanent tax reduction. Franco Modigliani and Charles Steindel (1977) found much smaller effects from the 1975 rebate. Blinder and Deaton estimated a more complex consumption specification, and in part because of their large standard errors, they could reject neither the view that consumers respond only to current income nor the view that they ignored the rebate completely.

My analysis differs from previous studies in using monthly consumption data to exploit the pronounced intraquarter pattern of the 1975 rebate. (More than three-quarters of the rebate checks were received in May.) This higher frequency data is also attractive because finding that spending rises in the month when tax payments change is strong evidence of a link between current income and consumption.

I estimate the effect of the rebate and surtax following recent econometric studies of the stochastic permanent income hypothesis (see Robert Hall, 1987). These studies demonstrate that in the presence of rational expectations and perfect credit markets, the change in the logarithm of real per capita

consumption (c_t) should not be predictable from lagged information. Since both the rebate and surtax were announced at least a month before the change in tax payments, they should have been incorporated into consumption before they affected cash flow. The tax changes therefore should not help forecast the change in consumption between one month and the next. I test this by estimating

$$(1) \quad c_t = \alpha_0 + \alpha_1 c_{t-1} + \gamma [\Delta tax_t / c_{t-1}] + \varepsilon_t$$

where Δtax_t denotes the change in the real per capita rebate level in month t .³ After scaling Δtax_t by lagged per capita consumption, the coefficient γ measures the amount of additional consumption that results from a \$1 rebate.

Equation (1) omits the possibility that other news, coincident with the changes in tax policy, might explain shocks to consumption. I therefore also estimate an expanded version of (1), including both current and lagged values of several other variables—real per capita wage and salary income, short-term nominal interest rates, and stock market returns—to control for these factors. I estimate both specifications for the 1959:6–1987:9 sample period (339 observations) using three different measures of consumption: nondurables, services, and the consumption measure developed by Blinder-Deaton. The latter adds nontax payments for government services to consumption of services and nondurables other than shoes and clothing. Analyzing consumption components individually requires that the utility function be additively separable between components, a strong assumption that has been made in many earlier studies.

Table 1 presents estimates of the γ coefficient, with separate estimates for the transitory tax events in 1968 and 1975. Positive

³Data for the 1975 surtax are drawn from monthly Treasury data on personal tax payments. The *Survey of Current Business* for May 1978 reports the impact of the 1968 surtax on withheld tax payments; I distribute the quarterly values equally across months.

TABLE 1—CONSUMPTION EFFECTS OF 1975
TAX REBATE AND 1968 SURTAX

Consumption Measure	Consumption Effect of \$1 Rebate (γ)			
	Basic Specification		Augmented Specification	
	1968	1975	1968	1975
Nondurables	0.045 (0.259)	0.246 (0.102)	0.049 (0.233)	0.182 (0.092)
Services	0.065 (0.129)	0.014 (0.055)	0.087 (0.123)	0.011 (0.052)
Nondurables + Services- Shoes-Clothes + Nontaxes	0.227 (0.278)	0.167 (0.118)	0.275 (0.252)	0.134 (0.107)

Note: Standard errors are shown in parentheses. Specifications are described in the text.

coefficients indicate that consumption moved in the same direction as the tax-induced change in disposable income. The results differ somewhat across specifications, but suggest that consumption spending rises by between 12 and 24 cents per dollar of temporary tax rebate. The specification constrains a temporary tax change to have equal and opposite signed effects on consumption outlays in two consecutive months, and does not allow for additional effects in later months. Some experimentation with additional lagged values of Δtax did not yield any clear results.

Outlays on nondurables appear more sensitive to disposable income fluctuations than do outlays on services. The standard errors for most of the estimates are nevertheless large, and only the results for the increased spending on nondurables associated with the 1975 tax rebate is statistically significant at standard levels. The point estimates are nevertheless quite close to those that Campbell and N. Gregory Mankiw (1987) obtain from structural estimates of a consumption-income system, and those from Blinder's study of quarterly consumption data. These studies together constitute evidence against the view that changes in the timing of taxes do not affect real activity.⁴

⁴Not all tax-induced transitory income appears to affect consumption. David Wilcox (1987a) shows that the 1985 delay in income tax refunds did not affect consumer spending.

II. Does Consumption Respond to Tax Announcements?

Monthly consumption data can also be used to investigate whether consumers respond to announced, but not yet implemented, tax policies. In addition to the temporary tax changes of Section I, I examine announcements of the permanent personal tax reductions of 1964, 1981, and 1986 as well. The 1964 tax reform reduced personal income taxes by approximately 15 percent. Although President Kennedy first proposed a tax reduction in 1962, Congress passed and President Johnson signed the Act in February 1964. The law's first adjustments to withholding occurred in late March. The 1981 Economic Recovery Tax Act, proposed by President Reagan in February, received congressional approval in July and became law in August. It phased in personal tax reductions totalling 25 percent over the next three years. The 1981 changes were not reflected in tax withholding until mid-October. The 1986 Tax Reform Act received congressional approval in August. It had only minor effects on personal tax liability for 1986, but reduced personal taxes by \$19.2 and \$29.6 billion in 1987 and 1988.

It is extremely difficult to determine when consumers changed their beliefs about the likelihood of various legislative outcomes. George Katona and Eva Mueller (1968) report that one month prior to passage of the 1964 tax bill, 40 percent of individuals did not expect a tax reform to become law. In late 1963, less than one-third expected tax reform. While somewhat arbitrary, my analysis takes the month of congressional passage as focal for expectational changes. For most of the revenue bills considered here, any uncertainty about presidential approval once the bill cleared Congress was resolved quickly. Undoubtedly expectations also evolved in earlier months. The substantive conclusions presented below are not altered, however, by considering consumption changes for several months up to and including congressional passage of the tax laws.

Table 2 reports the residuals for the tax passage months from the expanded version of equation (1), including news about wages

TABLE 2—CONSUMPTION RESPONSE TO
PASSAGE OF TAX BILLS

Date	Consumption Measure ^a		
	(1)	(2)	(3)
February 1964	-0.329 (0.711)	0.080 (0.366)	-0.115 (0.383)
June 1968	0.857 (0.702)	0.627 (0.359)	0.692 (0.380)
March 1975	-0.369 (0.706)	0.232 (0.360)	0.154 (0.379)
August 1981	-0.691 (0.712)	-0.408 (0.363)	-0.407 (0.385)
August 1986	0.450 (0.712)	0.098 (0.363)	0.201 (0.384)

Note: Standard errors are shown in parentheses. Estimates are based on the augmented version of equation (1), including current and lagged values of wages, stock returns, and interest rates. Each entry denotes the given month's residual from the augmented consumption model.

^aCol. 1 denotes Nondurables; Col. 2 denotes Services; Col. 3 denotes Nondurables + Services + Nontaxes-Shoes-Clothing.

and rates of return as well as lagged consumption. If important news about the present value of future tax liabilities was released in these months, without accompanying information about the future course of spending, then we should observe consumption revisions. The results provide little support for the view that consumers react to the announcement of tax policies. The month in 1968 when the Vietnam War surtax was enacted coincides with a significant increase in consumption. The month when passage of the dramatic 1981 tax cut was finally assured shows a downturn in consumption by all three measures. Parallel findings emerge for the 1964 tax reform. Passage of the 1975 and 1986 bills had the expected effect on consumption, but the point estimates are too small to reject the null hypothesis of no effect.⁵

⁵Albert Jaeger and Klaus Neusser (1987) corroborate these findings with Austrian data on tax changes and consumption, finding virtually no effect for tax announcements.

These results suggest that news of policy changes does not significantly affect consumer spending, even though enactment of the policies does matter. The findings in Table 2 must be viewed as tentative, since the standard error on the monthly consumption change is large. In addition, my "event-study" approach is likely to have relatively low power especially against the alternative hypothesis that consumers gradually revise their expectations of future tax policy and adjust consumption accordingly. Nevertheless, the results may warrant further attempts to measure the real effects of pre-announced fiscal policies.

One related source of evidence on how spending responds to policy announcement and implementation is Wilcox' (1987b) study of Social Security benefit increases between 1965 and 1985. These increases were often substantial: 20 percent in 1972, and more than 10 percent in five other years. After analyzing the effect of Social Security benefit increases on both personal consumption spending and on retail sales, Wilcox rejects the view that these changes in transfers do not affect consumer behavior. He finds that when a \$1 benefit increase takes effect, retail sales increase by approximately \$1.30. About 85 cents of the increased expenditure is on consumer durables, while the remainder is divided between nondurables and services. Spending in excess of the transfer increment may reflect one-time purchases of durables. Even though benefit changes were all announced at least six weeks prior to enactment, there is no evidence that consumption rose when benefit increases were legislated. This supports the earlier analysis of the temporary tax changes, although it is weak support since Social Security recipients may be especially prone to facing binding liquidity constraints.

III. Conclusions

Two lessons can be drawn from the "fiscal experiments" of the last two decades. First, a transitory tax-induced income increase raises consumer spending by roughly one-fifth as much. This exceeds the amount of consump-

tion that a life cycle or permanent income model would suggest, but it also implies a marginal propensity to consume that is well below the average propensity. Contrary to the Ricardian equivalence view, the timing of taxes appears to affect the level of real activity.

Second, while implementation of tax policies has a detectable effect on consumption, spending responds by relatively little to policy announcements. This may be explicable by some feature of the consumption technology that induces lags between news of future income movements and actual spending. For example, consumers may need to engage in time-consuming search before purchasing some goods. Habits may also be important in consumption choices. Perhaps the simplest explanation, however, is that a significant fraction of consumers are either myopic or face liquidity constraints that prevent them from adjusting consumption in response to news about future disposable income. Myopia, if part of the explanation, is clearly not universal. There are obvious cases such as retiming income realizations across calendar years with different tax rates that suggest substantial numbers of taxpayers are responsive to preannounced changes in policy. The existence of such taxpayers, however, does not disprove the existence of others who fail to look ahead.

The existence of myopic consumers has important implications for fiscal policy. First, theoretical and simulation studies of dynamic tax policy invariably assume that anticipated policies alter current spending patterns. A nontrivial group of myopic individuals necessarily blunts this adjustment, and implies different trajectories for the capital stock and consumption. This issue is of more than academic interest. The Social Security reforms enacted in 1983 but scheduled to take effect between 1997 and 2009 substantially reduce the present value of benefits that today's young workers can expect to receive. The incidence of myopia is a central determinant of these policies' impact on saving. While some have described recent fiscal policy as contractionary on account of these changes, there is little evidence that

these changes have affected consumer behavior.

Second, myopia raises hard questions about the meaning of horizontal equity. Pre-announced tax policies are often promoted because they cause less dramatic changes in the relative well-being of otherwise identical individuals who have historically made different choices. If some consumers fail to recognize the future changes that have been enacted, for example, by failing to save more for their retirement, implementing the preannounced policy will exacerbate inequalities between myopic and farsighted individuals. Whether the presence of some myopic individuals affects the government's ability to commit now to enact substantial policy reforms at some future date is an intriguing question for future work.

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