Consumer Response to Tax Rebates

By MATTHEW D. SHAPIRO AND JOEL SLEMROD*

This paper uses survey techniques to study the extent to which households spend a tax rebate. In July through September 2001, many households received tax rebates of $300 or $600. During August, September, and October 2001 we conducted a survey of a representative sample of U.S. households to determine how the receipt of the rebate checks would change behavior. We find that only 21.8 percent of those receiving the rebate reported that it would lead them mostly to increase spending. This spending rate is remarkably low, both from a theoretical prospective and when compared to previous estimates.

This study is intended to extend our understanding of consumer response to fiscal interventions. One goal is to assess the extent to which the rebate induced consumers to spend more than they otherwise would have, on what kinds of goods, and over what time periods. An equally important objective is to test various hypotheses about what motivates the variation in behavioral response to the rebate, and to discriminate among reasonable alternative explanations. For example, a taxpayer who does not increase spending upon receiving the check may do so because of a Ricardian belief that it signals no increase in their well-being. Alternatively, someone who increases spending upon receiving the check may do so because he or she is liquidity constrained or because the new tax law, of which the rebate is a small part, implies a large increase in permanent after-tax income. In designing the survey, we included questions to shed light on these hypotheses and to elicit information to systematically account for heterogeneity in consumer behavior. A strength of the survey methodology is that it allows direct tests of hypotheses that might account for the behavior.

The plan of the remainder of the paper is as follows. Section I describes the change in tax policy in 2001. Section II gives details of the survey. Section III presents the results. Section IV surveys the literature on propensity to consume in the context of these results. Section V presents our conclusions.

I. The Policy

On May 25, 2001, the congressional conference committee approved the Economic Growth and Tax Relief Reconciliation Act of 2001. President George W. Bush signed the bill into law on June 7, 2001. Under the bill, taxpayers were entitled to a rebate in tax year 2001 up to $300 for single individuals and up to $600 in the case of a married couple filing a joint return. Most taxpayers received this payment in the form of a check issued by the Department of the Treasury. These checks were sent out beginning the week of July 23, 2001 and continuing until the week of September 24, 2001. Which week taxpayers received the check depended on the second-to-last digit of their Social Security number. Those taxpayers who as of these dates had not filed their 2000 tax return did not receive the check until the IRS had processed the 2000 return.

The tax rebate corresponds to a new 10-percent income tax bracket for a portion of taxable income that was previously taxed at 15 percent, effective for taxable years beginning January 1, 2001. The 10-percent bracket applied to the first $6,000 of taxable income for single individuals, $10,000 of taxable income for heads of household, and $12,000 for married couples filing joint returns. Thus, the maximum

* Department of Economics, University of Michigan, Ann Arbor, MI 48109, and National Bureau of Economic Research (e-mail: shapiro@umich.edu; jslemrod@umich.edu). The authors gratefully acknowledge comments on the survey design from Richard Curtin, participants at the University of Michigan summer workshop on behavioral economics, and members of the staffs of the Survey Research Center, the Federal Reserve Board, and the U.S. Department of the Treasury. They also acknowledge comments on earlier drafts from Jonathan Parker, N. Gregory Mankiw, Chang-Tai Hsieh, and two referees, as well as financial support for conducting the survey from the Survey Research Center and the Office of Tax Policy Research, University of Michigan.

rebate for a married couple filing jointly was 5 percent of $12,000, or $600. The rebates for taxpayers with other marital statuses were calculated in the same manner. The tax rebate scheme was designed to deliver the benefit of the new 10-percent income tax rate in a highly visible way during calendar year 2001.

Although the rebate was an advance credit for a reduction in tax year 2001 tax liability, its amount was calculated on the basis of taxable income in tax year 2000. In the case of taxpayers who would have received a lower credit based on actual taxable income in 2001, the difference was forgiven, and no reconciliation was required in calculating 2001 tax liability. Those taxpayers who were entitled to receive a larger rebate on the basis of actual 2001 taxable income could claim it when they filed their 2001 tax year return in calendar year 2002.

The tax rebates were substantial, both from the point of view of the representative household or in aggregate. The Treasury calculated that 92 million would get a rebate check, with 72 million receiving the full amount. They amounted to $38 billion, or approximately 0.4 percent of 2001 GDP. Median family income in 2000 was about $41,000, so a $600 rebate represents about 1.5 percent of median annual income and a greater share of disposable income for the typical household.

The rebates represented a small part of the overall 2001 tax bill, although it was the most significant part of the tax cuts implemented in 2001. In addition to the new 10-percent bracket, the bill has phased-in reductions of marginal rates for the 28-percent bracket and above. It also phases out the estate tax. Hence, high-income households and those with large estates have future taxes reduced by substantially more than the amount of the rebate.[1] The income tax rate reductions for the upper brackets were implemented with changes in withholding effective July 1, 2001. Except for very high-income households, the tax rebate was significantly larger than the change in withholding.[2]

II. Survey Methodology

Our survey instrument was a rider on the University of Michigan Survey Research Center's Monthly Survey, also known as the Survey of Consumers. The Monthly Survey provides a representative sample of households in the contiguous 48 U.S. states and the District of Columbia. It is conducted by telephone throughout the month. The survey's core content contains questions about expectations of economywide and family economic circumstances that are the basis of the Michigan Consumer Sentiment Index.

The survey was conducted in August, September, and October 2001. The first two months of data were collected while households were in the midst of receiving rebate checks. By October, most households entitled to checks should have received them.

The tax rebate survey module begins by briefly summarizing the tax policy change and the rebate, and then addresses the household response to the rebate. Specifically, the key question was as follows:

> Earlier this year a Federal law was passed cutting income tax rates and expanding certain credits and deductions. The tax cuts will be phased in over the next ten years. This year many households will receive a tax rebate check in the mail. In most cases, the tax rebate will be $300 for single individuals and $600 for married couples. Thinking about your (family's) financial situation this year, will the tax rebate lead you mostly to increase spending, mostly to increase saving, or mostly to pay off debt?

The question is designed to map responses

[1] All provisions of the 2001 bill sunset in ten years, so if there are no other changes in the law, the income tax and estate tax revert in 2011 to their rates and provisions prior to the 2001 legislation.

[2] The 28-, 31-, 36-, and 39.6-percent rates were cut by 0.5 percentage point retroactive to January 1, 2001. Withholding in these brackets was adjusted down 1.0 percentage point effective July 1, 2001. Only one-third of returns are subject to the 28-percent rate and above. See *Statistics of Income, Individual Tax* 1999, Table 3–4. For all but the highest-income households, the decrease in withholding in 2001 was low relative to the rebate. A married couple would have to have an annual payroll income of about $175,000 in order for the change in withholding over the last six months of 2001 to be $600, the usual size of the tax rebate check. Hence, the receipt of the rebates was confounded by a change in withholding, but this change was significant only for a small fraction of high-income households.

into well-defined economic concepts, though it is expressed in everyday language. From the point of the budget constraint, increasing saving and paying off debt enter analogously. Our view was the survey respondents might not think of debt repayment as saving, so we prompted for it separately.[3] Our aim was not to study the link between the physical receipt of the rebate and spending, but to study how the extra disposable income affected spending in the short run. We inserted the phrases, "Thinking about your financial situation this year" and "lead you" to this end. In particular, our interpretation of the question is that an individual who had already spent the rebate (perhaps upon news of the tax cut) or would spend it shortly would answer "spend." Therefore, we interpret the results as providing information about the propensity to spend tax rebates rather than particularly about the high-frequency relationship between receipt of income and timing of spending.

The Appendix gives the exact wording and ordering of the questions. After some questions concerning the timing of the receipt and spending of the rebate, we ask whether the household expects larger, similar, or smaller tax cuts in future years compared to the rebate. If future, credible tax cuts are at least the size of the rebate, then the permanent income model of consumption would warrant an increase in consumption that could be at least the size of the rebate. This question also allows us to compare the respondents' prediction about their future tax cuts to an estimate of the cuts based on their economic and demographic circumstances. Behavior could differ from the permanent income model because respondents perceive the tax cuts to be short-lived.

The Barro/Ricardo hypothesis is that households will integrate the governments' budget constraint into their own decision-making, and therefore treat a tax cut as an increase in lifetime resources only if it is matched by a cut in government spending. The next question asks whether respondents think that the tax legislation as a whole will increase or decrease government spending. The responses to this question can be used to examine whether the Barro/Ricardo hypothesis accounts for the decision to spend the rebate. We then ask whether the tax legislation would improve the family's personal financial situation over the next ten years. This question is designed to elicit the respondent's expectation about the permanent impact of the tax cut, potentially including the changes in government spending asked about in the previous question.[4]

The survey also includes questions to explore alternative theories of spending behavior. In particular, we were interested in testing for the importance of rule-of-thumb behavior in spending or saving the rebate. Richard H. Thaler (1990) argues that such rules of thumb, or mental accounts, are important for understanding specific decisions by consumers. N. Gregory Mankiw (2000) suggests that a behavioral dichotomy between spenders and savers is useful for understanding aggregate behavior and the effects of fiscal policy. Designing questions that elicited meaningful information about such behavioral considerations proved a challenge. One cannot ask "Into what mental account did you deposit your rebate?" or "Did you add the rebate to your buffer stock?" or "Do you have a spending or saving rule of thumb?" Our attempt to get at behavioral hypotheses was first to ask whether the family had a budget and then to ask whether the budget had a spending target, a saving target, or a debt repayment target. The specific aim of this question is to see if a budgetary rule of thumb could account for variations in consumer response to the rebate. One rule of thumb is to set expenditures and let blips in income add or subtract to cash balances or, more generally, savings. Another is to save a specific amount of periodic income (e.g., through a payroll savings plan) and spend the rest. The first rule of thumb leads to saving an infusion of income while the second leads to spending it. Neither involves high-frequency reoptimization of spending versus saving decisions.

[3] We limited the number of prompts to avoid leading suggestions. In particular, we decided not to prompt for "give to charity." Respondents who volunteered that they would not receive the rebate were coded as such. This response appeared on the survey taker's screen, but was not prompted for.

[4] These questions, together with the question that asks about the impact of the rebate on the economy, are grouped together at the end of the survey module. We grouped together the questions that bear on the overall impact of the policy.

TABLE 1—PLANS TO SPEND OR SAVE REBATE?

	(1) Total responses	(2) Spend rebate	(3) Save rebate	(4) Pay debt with rebate	(5) Will not get rebate	(6) Don't know/ refused	(7) Spend percentage	(8) Save percentage	(9) Pay debt percentage
Unweighted	1,506	267	423	563	204	49	21.3	33.8	44.9
Weighted	1,444	256	376	544	223	45	21.8	32.0	46.2

Notes: The first row gives unweighted responses. The second row gives weighted responses (rounded to nearest whole number). Columns (1)–(6) give number of responses. Columns (7), (8), and (9) give the number in columns (2), (3), and (4) divided by the sum of the numbers in columns (2)–(4), expressed as percentages. Percentages are based on unrounded responses.

Either could be near rational, depending on the process followed by shocks to income and consumption.

Finally, we asked how the respondent would finance a hypothetical shock to consumption needs, specifically whether he or she would finance a major, unexpected car repair by using savings, by cutting back other expenses, or by borrowing. Cutting back other spending could indicate liquidity constraints for individuals with little assets. For individuals with assets, cutting back spending might be interpreted as due to mental accounting or spending targets.

III. Results

Of those that had already received or expected to receive the rebate, only 21.3 percent of survey respondents said they had or would mostly spend more because of the rebate. When the responses are weighted, this figure rises slightly to 21.8 percent.[5] Of those receiving the rebate, 32.0 percent said it would lead them mostly to increase saving and 46.2 percent said it would lead them mostly to pay off debt. (See Table 1.)

The 21.8-percent figure is well below what most other research would suggest for the propensity to consume for increments to income (see Section IV). It is in line, though, with what some other commercial surveys had suggested prior to the rebate program. For example, in a Gallup Poll released on July 24, 2001, 17 percent of those surveyed said they would spend the tax rebate, 32 percent said they would save or invest it, and 47 percent said they would use it to pay off bills.

Table 2 begins our investigation of what explains differences in spending propensities across households by displaying the responses by the level of income and the value of stocks owned.[6] The spending fraction shows no trend within the bottom three income groups. It is higher for the top two income groups.[7] Hence, the commonly expressed view that lower-income individuals have a relatively high propensity to spend out of a rebate (see Paul Krugman, 2001) is not supported by our findings. Finally, not surprisingly, Table 2 reveals that low-income households were much more likely than higher-income households to expect not to receive the rebate. Since the rebate is the same size for all but very low-income individuals, the fraction of income represented by the rebate declines with income. It is not clear to us, however, what prediction for spending versus saving is entailed by this relative size of the rebate.

The relationship of the consumer response to the tax rebate and stock ownership is nonmono-

[5] All subsequent results in the paper refer to weighted responses. The counts of weighted responses in the tables are rounded to the nearest integer. The percentages are based on unrounded data. The Monthly Survey provides both a representative sample of adult individuals and of households. We use the weights that enable us to construct a representative sample of households. These weights correct, among other things, for the oversampling of households with more than one telephone line. They also exclude responses by adult children residing with their parents on the grounds that these respondents are uninformed about their families' finances (see Richard Curtin).

[6] Many high-wealth individuals do not hold stock. See Mankiw and Stephen P. Zeldes (1991). We focus on stock holdings simply because these are the only data on wealth in the survey. Note that these data on stockholding include stock in retirement plans. The stockholding data should therefore not be viewed as a proxy for liquidity.

[7] Over 7 percent of the respondents did not know or refused to report any information about income. Their spending fraction is intermediate between the low- and high-income groups.

TABLE 2—SPEND OR SAVE REBATE? RESPONSES BY INCOME AND WEALTH

Income and wealth	(1) Frequency (percentage)	(2) Spend rebate	(3) Save rebate	(4) Pay debt with rebate	(5) Will not get rebate	(6) Spend percentage	(7) *p*-value
Income ($)							
0 to 20,000	18.9	23	27	81	132	17.6	
20,001 to 35,000	18.6	42	74	109	35	18.8	
35,001 to 50,000	16.6	40	74	103	14	18.6	0.206
50,001 to 75,000	17.4	63	66	105	10	27.0	
More than 75,000	21.3	69	95	123	9	24.1	
Refused/Don't know income	7.2	18	39	22	22	22.2	
Stock							
No stock	42.8	84	110	235	171	19.5	
Refused/Don't know stock ownership	5.4	17	24	27	8	24.9	
Stock ownership	51.8	156	243	282	44	22.9	
Stock ($)							
1 to 15,000	9.1	15	33	67	11	13.1	0.023
15,001 to 50,000	9.9	23	39	66	10	18.1	
50,001 to 100,000	6.8	24	26	40	5	26.7	
100,000 to 250,000	6.2	28	31	24	3	33.6	
More than 250,000	5.1	16	36	16	3	22.9	
Refused/Don't know stock value	14.7	49	77	67	12	25.5	

Notes: Tabulations based on weighted responses with "don't know" and "refused" excluded. Column (1) gives the frequency of response by rows. Columns (2)–(5) give number of weighted responses (rounded to nearest whole number). Column (6) gives the number of responses in column (2) divided by the sum of responses in columns (2), (3), and (4). Column (7) gives the *p*-value for the hypothesis that the spend percentages in column (6) are equal. Percentages and *p*-values are based on unrounded responses.

tonic. Among the 42.8 percent of respondents that own no stock, 19.5 percent say they will spend it. Among those who do have a small amount of stock, the spending percentage is lower than for nonstockholders, but it is higher for those with more than $50,000 of stock. This pattern can be rationalized as follows: Nonstockholders tend not to be savers, while stockholders are savers. (See Mankiw, 2000, for the spender/saver dichotomy.) Those stockholders with low wealth are trying to build wealth and therefore have a powerful saving motive; those with higher wealth may already have adequate assets, and therefore are spenders on the margin.

Five percent of respondents did not know or refused to say whether they owned stocks either directly or through a pension plan or mutual fund. Fifteen percent of respondents said they did own stocks, but gave no information about their value. We suspect that those who refused to give a value are relatively affluent, but cannot confirm this because they also disproportionately refused to report income.

To the extent that income is an indicator of the presence of liquidity constraints, the results of Table 2 are counterindicative. Those households who are more likely to be constrained (i.e., have lower income) are those that are more likely mostly to save, rather than mostly to spend, the rebate. Table 3, Panel A, pursues this explanation by cross-tabulating the spend-or-save responses with the answers to three questions designed to pick up the presence of liquidity constraints. Arguably a household is more likely to be liquidity constrained if it is financially worse off compared to the previous year, is financially worse off compared to what is expected for next year, or expects higher income next year. There is, however, no relationship between the answer to any of these three questions and the answer to the spend-or-save question that would indicate the importance of liquidity constraints. In fact, to the extent that any patterns emerge, they run in the reverse direction. Households who are in worse financial condition than last year are *less* likely to spend more because of the rebate.

The most surprising pattern of results applies to the question about this year's financial condition compared to what is expected next year.

TABLE 3—PLANS TO SPEND OR SAVE REBATE

A. Responses by Financial Condition

Financial condition	(1) Frequency (percentage)	(2) Spend rebate	(3) Save rebate	(4) Pay debt with rebate	(5) Will not get rebate	(6) Spend percentage	(7) *p*-value
Financial condition compared to last year							
Better	41.3	119	180	220	56	23.0	
Same	28.9	82	110	129	81	25.6	0.015
Worse	29.8	55	85	189	85	16.6	
Financial condition expected next year							
Better	39.3	96	127	251	57	20.2	
Same	50.4	133	190	227	131	24.3	0.262
Worse	10.3	22	41	52	25	19.4	
Income expected next year							
Higher	59.2	151	212	358	100	20.9	
Same	28.6	79	105	116	96	26.4	0.075
Lower	12.1	25	56	63	24	17.2	

B. Responses by Retrospective Versus Expected Financial Condition

	Financial condition next year		
	(1) Better	(2) Same	(3) Worse
Financial condition this year			
Better	23.3	23.3	22.0
	231	246	32
Same	19.9	31.8	14.4
	85	179	42
Worse	16.0	15.7	22.4
	156	122	41

Notes: Rows are condition this year compared to last year. Columns are condition expected next year compared to this year. First number in the cells are percentages of respondents spending the rebate. The second number is the frequency. See also notes to Table 2.

Here the relationship to spend-save plans is nonmonotonic. The least likely to spend are those who expect to be worse off. That finding in and of itself is consistent with the liquidity constraint story. But the group second most likely to spend consists of those who expect to be better off next year, while the group most likely to spend consists of those who expect to be about as financially well off next year as this year. The liquidity constraint story suggests that the most likely to spend would be those who expect to be better off next year. The same pattern of results appears when the question asks about income next year rather than financial condition next year.

Table 3, Panel B, uses the joint distribution of retrospective and expected financial condition to provide a more powerful test of the liquidity constraint hypothesis. For example, if liquidity is a key determinant of spending behavior, households who are temporarily in bad financial condition (worse off than last year, but expecting to be better off next year) should have particularly high spending rates. In contrast, those who are in temporarily good financial condition (better off than last year, but expecting to be worse off next year) should have particularly low spending rates. Households in temporarily bad financial condition have a spending fraction of 16.0 percent, while those in temporarily good financial condition have a spending fraction of 22.0 percent. The liquidity constraint hypothesis predicts the opposite pattern. Under the liquidity constraint hypothesis,

TABLE 4—SPEND OR SAVE REBATE: RESPONSES BY BUDGETING

Family budgeting	(1) Frequency (percentage)	(2) Spend rebate	(3) Save rebate	(4) Pay debt with rebate	(5) Will not get rebate	(6) Spend percentage	(7) *p*-value
Have budget							
Yes	65.6	175	236	373	129	22.3	0.571
No	34.4	81	139	168	91	20.8	
If budget, target spending							
Yes	50.8	95	123	166	75	24.7	0.092
No	49.2	76	109	207	53	19.5	
If budget, target saving							
Yes	39.0	75	123	121	33	23.5	0.449
No	61.0	96	109	251	95	21.1	
If budget, target debt repayment							
Yes	43.6	64	70	208	51	18.7	0.052
No	56.4	107	162	164	77	24.8	
If budget, target saving or debt repayment							
Yes	68.2	111	155	273	77	20.6	0.159
No	31.8	60	77	100	50	25.5	
How to pay for unexpected expense							
Use savings	50.7	158	243	209	82	25.9	
Cut back spending	27.0	52	79	167	71	17.4	0.001
Use credit	22.4	39	49	159	59	15.7	

Notes: See notes to Table 2. Multiple mentions are allowed for the budget targets, so the responses are not mutually exclusive. The budget target question also allowed, though did not prompt for, budgeting other ways. Seven respondents (weighted) gave this reply.

one would expect higher spending rates as one reads down the columns of Panel B and lower rates as one reads across the rows. These patterns are not apparent in the results.

The questions detailed in Table 4 are designed to investigate rule-of-thumb hypotheses about consumer spending. Table 4 reveals that about two-thirds of households report having a budget. Those who have budgets are slightly more likely to spend the rebate, though not statistically significantly so. Among households who have a budget, those who target spending are more likely to spend the rebate, those who target debt repayment are less likely to spend, and those who target saving are intermediate. (The survey allowed multiple targets to be mentioned, so the target categories are not mutually exclusive.) These findings are different than what one might have expected from an economic model of targeting, in which a household that spends a routine amount would save residual income and vice versa. The survey evidence is the opposite: target spenders tend to spend on the margin and target debt payers tend to save on the margin. There is no substantial difference in spending rates for target savers.

The last set of results in Table 4 shows that those who would use saving to finance an unexpected, nonrecurring expense are more likely to spend the rebate than those who would cut other spending or use credit. Those who would cut back spending for the unexpected expense might be liquidity constrained. If so, then one would have expected a high spending rate from the rebate for this group. Again, the liquidity hypothesis is rejected. Both those who would use saving or use credit for the unexpected expense are smoothing consumption, yet they spend the rebate at different rates.

Table 5 provides information about the relationship between the consumer response to the rebate and the respondents' outlook for the economy and fiscal policy. Those who expect good times are substantially more likely to spend the rebate than those who expect bad times. (Those who have mixed assessments of the outlook have low spending rates, but there are only a few such households.) These results contrast with those concerning the outlook for the households' own financial condition, which showed no relationship with spending (Table 3).

The second set of results relates the expected

TABLE 5—SPEND OR SAVE REBATE? RESPONSE BY OUTLOOK FOR ECONOMY AND POLICY

Economic and policy outlook	(1) Frequency (percent)	(2) Spend rebate	(3) Save rebate	(4) Pay debt with rebate	(5) Will not get rebate	(6) Spend percentage	(7) *p*-value
Business conditions in the country as whole in the next 12 months							
Good times	37.3	107	135	172	73	25.9	
Good times with qualifications	2.2	8	7	10	4	31.7	
Pro-con	3.3	4	12	17	9	11.8	0.047
Bad times with qualifications	2.0	4	12	10	0	15.1	
Bad times	55.1	120	180	299	120	20.1	
Size of future tax cuts							
Larger	16.1	40	43	92	NA	22.9	
Same	47.1	103	167	241	NA	20.1	0.729
Smaller	36.8	86	131	182	NA	21.6	
Impact of tax cuts on personal finances over next 10 years							
Better off	23.1	78	94	122	22	26.5	
No change	72.0	156	261	385	182	19.5	0.042
Worse off	5.0	16	13	29	11	27.8	
Impact of tax cut on economy next year							
Improve economy	27.2	86	110	127	45	26.7	
Not much impact	62.9	132	228	357	134	18.5	0.008
Worsen economy	9.9	30	26	54	23	27.5	
Impact of tax cut on government spending							
Increased spending	26.1	68	89	137	49	23.0	
Spending not changed	54.7	126	185	294	114	20.9	0.726
Decreased spending	19.3	51	82	90	30	22.9	

Note: See notes to Table 2.

size of the tax cut to spending. Very few respondents expect to receive larger tax cuts, though those who do so do not have particularly high spending. As discussed in Section II, the tax rebate corresponds to the tax savings from the new 10-percent bracket, currently legislated to be in place for ten years. For most households, the only tax cut received from the 2001 legislation will be this rate cut. To get the benefit of the phased-in rate cuts on the higher brackets, taxable income will have to reach the level of the former 28-percent bracket. Hence, presuming the current legislation stays in place, the future benefit depends on expected future income. Since the higher tax brackets apply only to levels of income well above the median, most respondents should rationally expect to receive future tax cuts no larger than their rebate under the 2001 law. Moreover, there is uncertainty about whether the currently legislated rate reductions will be the future law.

The third set of results in Table 5 shows that most households expect the tax legislation to have no effect on their overall personal finances over the next decade. The fourth set of results shows that most households are equally pessimistic about the prospects for the tax cut improving short-run economic performance. There is also no monotonic relationship between these expectations and the spending rate.

The last set of results in Table 5 investigates the role of expectations of future government spending. Under the Barro/Ricardo hypothesis, households should not spend their rebate unless the tax cut is accompanied by a cut in government spending. Only 19 percent of households expect that a cut in government spending will accompany the tax cuts. This expectation could help explain the low average spending rate of the rebate. Yet, in the cross-section there is little support for the Barro/Ricardo hypothesis, because the spending rate has no relationship with expectations of future government spending.

Table 6 takes a closer look at the expected size of the tax cut and its relationship to spending. It shows the fraction mostly spending the rebate by two objective indicators of the size of expected future tax cuts: current income level

TABLE 6—EXPECTED FUTURE TAX CUT AND SPENDING OF REBATE: BY INCOME GROUP AND EXPECTED FINANCIAL CONDITION

		Financial condition next year		
Income ($)		(1) Better off	(2) Same	(3) Worse off
0 to 20,000	Fraction: Larger tax cut	0.20	0.02	0.18
	Fraction: Same tax cut	0.44	0.60	0.26
	Fraction: Smaller tax cut	0.37	0.38	0.56
	Spending fraction	13.5	15.8	50.0
	Frequency	52	63	12
20,001 to 35,000	Fraction: Larger tax cut	0.18	0.08	0.05
	Fraction: Same tax cut	0.60	0.45	0.42
	Fraction: Smaller tax cut	0.22	0.46	0.53
	Spending fraction	15.9	22.3	7.8
	Frequency	88	112	16
35,001 to 50,000	Fraction: Larger tax cut	0.25	0.14	0.15
	Fraction: Same tax cut	0.44	0.55	0.28
	Fraction: Smaller tax cut	0.31	0.30	0.57
	Spending fraction	13.4	26.3	10.8
	Frequency	89	94	28
50,001 to 75,000	Fraction: Larger tax cut	0.19	0.10	0.05
	Fraction: Same tax cut	0.54	0.50	0.63
	Fraction: Smaller tax cut	0.27	0.41	0.32
	Spending fraction	27.7	27.9	25.3
	Frequency	105	102	21
More than 75,000	Fraction: Larger tax cut	0.30	0.17	0.27
	Fraction: Same tax cut	0.39	0.43	0.33
	Fraction: Smaller tax cut	0.31	0.40	0.40
	Spending fraction	23.8	26.5	17.2
	Frequency	116	135	32

Notes: The table shows expected size of future tax cuts and fraction spending the rebate by income groups and expected financial condition. The first three rows of each cell show the fraction expecting a larger, same, or smaller tax cut. The fourth row shows the fraction spending the rebate, expressed as percentages. The fifth row in each cell gives the frequency of the cell. See also notes to Table 2.

and expectations of future financial condition.[8] The first three rows of each cell show the fraction of respondents expecting a larger, same, or smaller tax cut. We know from Table 5 that only a small fraction of respondents expects a larger tax cut in the future. Reading across columns of Table 6 shows that households that expect their financial condition to worsen generally expect smaller future tax cuts. Reading down by income level shows that households that have higher income generally expect larger future tax cuts. Both these findings accord with current law. Yet, even of those households with high and rising income that are very likely to see higher tax cuts in the future, only a fairly low fraction—at most 30 percent—say they expect a larger tax cut. Hence, either they misperceive the current law or expect it to be changed.

The terrorist attacks on New York and Washington of September 11, 2001 occurred during the data-collection period of the survey. We next examine whether the attack had an effect on consumer response to the tax rebate. For those who responded to the survey prior to September 11, 18.4 percent said they would spend the rebate. After September 11, the spending rate increased to 25.1 percent. Interpreting the effect of singular events, even ones as significant as the terrorist attacks, can be misleading because the change in the spending rate following the attack might, by coincidence,

[8] The expectation variable is for the next year. Though it does not capture fully the long-run outlook, it does control for whether current income is high or low relative to the future.

TABLE 7—REGRESSION ANALYSIS OF SPENDING REBATE: TIMING OF SURVEY AND TIMING OF RECEIPT OF REBATE

	(1)	(2)	(3)	(4)	(5)	(6)
Timing of survey:						
After attack	0.067**		0.019	0.012		
	(0.025)		(0.041)	(0.041)		
September		0.006	−0.003	−0.029	−0.025	
		(0.029)	(0.035)	(0.037)	(0.031)	
October		0.092**	0.073	0.036	0.045	
		(0.032)	(0.052)	(0.056)	(0.036)	
Received rebate:						
Last week				0.130*		
				(0.053)		
1–4 weeks ago				0.050		
				(0.035)		
More than 4 weeks ago				0.084*		
				(0.037)		
Received rebate					0.079**	0.093**
					(0.028)	(0.025)
Constant	0.184**	0.185**	0.185**	0.166**	0.166**	0.164**
	(0.017)	(0.021)	(0.021)	(0.022)	(0.022)	(0.018)
Observations	1,200	1,200	1,200	1,187	1,187	1,187
R^2	0.01	0.01	0.01	0.02	0.02	0.01

Notes: Estimates are linear probability regression with the dependent variable equal to one if the tax rebate is spent and zero if it is saved or used to repay debt. Estimates are based on weighted data. Heteroskedastic-consistent standard errors are in parentheses.

* Significance at the 5-percent level.

** Significance at the 1-percent level.

arise from some other factor. The timing of survey responses and timing of receipt of the rebate are confounded. During August, the first month of the survey, relatively few households had received the rebate. By September, the majority had received it. By October, the overwhelming majority reported having received it.

To sort out these effects, we report in Table 7 a linear probability model where the dependent variable is one for households that mostly spend the rebate and zero for those households where the rebate led them mostly to save or mostly to pay down debt. In column (1), the coefficient of the post-attack dummy is 6.7 percentage points and is statistically significant. Column (2) shows, however, that all of the incremental spending comes from households interviewed in October rather than from those interviewed in September. Distinguishing pre- and post-attack September in column (3) does not change the estimate that high spending is associated with being surveyed in October, though the increase in the standard error makes the coefficient statistically insignificant.

By October, most respondents had received the rebate. Column (4) includes controls for having received the rebate. The estimated coefficients of having received the rebate are sizeable and jointly significant. Moreover, including the dummies for receipt of the rebate shrinks the October coefficient. The September coefficient gets larger in absolute value, but is also insignificant. The post-attack variable has a small and insignificant estimated coefficient.

Although the pattern of coefficients on the three receipt dummy variables might suggest that spending declines as the receipt of the rebate grows more distant, the difference is not statistically significant ($p = 0.34$). Moreover, although the month dummies have small *t*-statistics, they are marginally significant jointly ($p = 0.10$). In column (5) we thus present results including the month dummies and including a single dummy for having received the rebate regardless of timing of receipt. This is our preferred specification, and it strongly suggests that having already received the check increases the probability of responding that it would be mostly spent by nearly 8

percentage points. The last column shows the estimated effect on spending of having received the rebate leaving out the month controls—more than 9 percentage points. Given the marginal significance of the month dummies, this probably overstates the effect of receipt of the rebate.

About 60 percent of respondents reported receiving the rebate by the time of the survey. According to column (5), receipt of the rebate adds 7.9 percentage points to the spending rate. Hence, one might add 3.2 percentage points (0.4×7.9) to the spending rate to correct for the effect of ultimate receipt of the rebate on those who had not received it at the time of the survey. This would increase the estimated spending rate from 21.8 percent to 25.0 percent.

There are a variety of reasons why a higher spending rate might be reported for those who have the rebate in hand. The rebate might be more salient if it is hand, though it is not clear why salience would favor spending over saving. Another possibility is that receiving the rebate confirms that the household is entitled to it and hence can add it to its lifetime resources available for spending.

This section presents mainly cross-tabulations of reported spending behavior with a number of characteristics of households. These two-way tabulations might be spurious, or might mask conditional relationships, because of omitted factors. We have also conducted a multiple regression analysis that includes controls for age, education, marital status, income, stock holding, presence of children, timing of the survey, and receipt of rebate. Because the conclusions based on these regression analyses are very similar to those reported here that are based on the tabulations, the regression results are omitted from this paper.[9] The age covariate does relate to spending rates in the direction the life-cycle theory would predict. Respondents 65 years and over report mostly spending the rebate 28.8 percent of the time versus 20.6 percent for respondents less than 65 years old. The difference is statistically significant and remains marginally significant ($p = 0.07$) controlling for the other covariates.

[9] These regressions are reported in the working paper version of this paper, Shapiro and Slemrod (2001).

We also have conducted a follow-up analysis based on a question added to the March and April 2002 Monthly Surveys that asks retrospectively about spending from the rebate.[10] In this survey, 24.9 percent of respondents reported spending the rebate. Given that virtually all of these respondents would have received the rebate by the time of this survey and the positive effect of receipt on spending, this result is very similar to the 21.8 percent rate we find in the 2001 survey.

In this follow-up survey, we also asked those who said they had mostly saved or paid off debt whether they would use that money to make a purchase within the year, or instead keep the increased saving or reduced debt for at least a year. The respondents overwhelming said they would not reverse the savings or debt reduction decisions within the year. Of those who said they would save, only 15 percent said they would use the savings to make a purchase within the year. Of those who repayed debt, only 7 percent said they would use the repaid amount to make a purchase within a year. Recall that in the 2001 survey, virtually all respondents who said they would spend said they would do so within the year. Hence, our survey respondents appear to be interpreting the main question in the way we expected: "spend" means spending over a horizon of months, while "save" or "repay debt" means using the rebate to increase wealth over a horizon of at least a year.

Finally, the survey has a partial panel structure, where 40 percent of respondents each month are reinterviewed six months later. In this panel sample, the correlation of the spend/not spend response across waves is 0.4, indicating that although there is substantial measurement error in the survey responses, there is a persistent signal in them as well.

[10] The question is, "Last year a Federal law was passed cutting income tax rates and expanding certain credits and deductions. Some tax cuts took effect last year and others will be phased in over the next nine years. Last year many households received a tax rebate check in the mail. In most cases, the tax rebate was 300 dollars for single individuals and 600 dollars for married couples. Did the tax rebate lead you mostly to increase spending, mostly to increase saving, or mostly to pay off debt?" See Shapiro and Slemrod (2003) for additional analysis of the results of this survey.

IV. Literature on Propensity to Consume

The standard methodological approach to this question has been to examine aggregate consumption data for signs of a break in behavior around the implementation date of tax policy changes. The Tax Reduction Act of 1975 provided for a 10-percent rebate of 1974 taxes up to a maximum of $200, and totaled $8.1 billion sent out from late April to mid-June of 1975.[11] Alan S. Blinder (1981) argues that each rebate dollar raised consumption by about 16 cents in the quarter it was received, and still had substantial effects five to eight quarters afterwards. Hence, the cumulative effect is larger than the impact effect and substantially larger than we find. Franco Modigliani and Charles Steindel (1977) find much smaller effects, however, and Blinder and Angus Deaton (1985) are unable to precisely estimate the response. James M. Poterba (1988), using monthly rather than quarterly consumption data, finds that consumption of nondurables increased by between 18 and 24 percent of the rebate in the month received, but finds that the change in service consumption was negligible. Hence, though the 1975 rebate was meant to be a temporary tax reduction, the time-series evidence suggest propensities to consume at least as great as we find, and substantially greater in the case of Blinder's study.

These aggregative studies focus on specific tax rebates as shocks to income. The literature on the excess sensitivity of consumption to predictable changes in income examines how consumption responds on average to predetermined movements in income.[12] According to the permanent income model of consumption, consumption should adjust only when income moves unexpectedly. These studies find, however, that consumption responds to predictable changes in income. The estimated aggregate propensity to consume from expected changes in income is between 40 and 50 percent.

Similarly, there is a large literature examining the excess reaction of consumption to income in data on households.[13] A series of recent studies have used data on individuals to examine how the receipt of payments affects spending. The common thread of these studies is that consumption responds to changes in the timing of payments not associated with changes in lifetime resources.[14] Jonathan Parker (1999) examines whether spending changes when take-home pay increases in months after wage earners hit the earnings ceiling for Social Security payroll taxes. He finds that there is a correlation between take-home pay and consumption, although the evidence points to myopia or rule-of-thumb behavior rather than liquidity constraints as the source of the consumption/income correlation. Melvin Stephens Jr. (2003) examined whether the receipt of Social Security checks affects the timing of spending within the month. He finds a significant burst in spending in the week following receipt of the check. Since the regularity of these payments provides ample opportunity for households to make adjustments to avoid the correlation of spending with the receipt of the check, Stephens's finding suggests that some behavior other than liquidity constraints explains spending patterns.

Nicholas N. Souleles (1999) examines spending from tax refunds. He concludes that almost two-thirds of every dollar of refund is spent within the quarter. Moreover, households that likely face liquidity constraints (those that are younger, have high debts, few liquid assets, and low income) quickly increase their spending on nondurables, while wealthier households quickly spend it on durable goods and may use part of the refund check later on summer vacations. Souleles (2002) finds significant evidence of excess sensitivity of consumption in the response to the Reagan tax cuts, with an overall MPC for nondurables in the range of 0.6 to 0.9;

[11] The 1975 tax bill also included a smaller, transitory income tax reduction that was subsequently made permanent, and a one-time Social Security bonus for retirees with no income taxes to rebate.

[12] This line of research was begun by Marjorie A. Flavin's (1981) extension of Robert E. Hall's (1978) seminal work. Though there are some econometric difficulties with Flavin's approach (see Mankiw and Shapiro, 1985), the finding of excess sensitivity has been confirmed. See John Y. Campbell and Mankiw (1989) and its successors.

[13] Hall and Frederic S. Mishkin (1982), Shapiro (1984), and Zeldes (1989) are early contributions. See Martin Browning and Annamaria Lusardi (1996) for a survey of this literature.

[14] David W. Wilcox (1989, 1990) pioneered such studies in aggregate time series.

in contrast to his earlier study, he concludes that liquidity constraints do not explain the excess sensitivity. Because the estimated MPC is larger than what he estimates for refunds, he suggests the conclusions are consistent with a behavioral view that a given increase in income is more likely to be spent if it is received in small amounts spread out over time, than if it received in a single large payment. This view would be consistent with the low MPC from the rebate.

Not all evidence from individual households suggests excess consumption from predictable changes in income. Chang-Tai Hsieh (2003) finds that there is no evidence against consumption smoothing from changes in income from the large and predictable payments received by Alaskans from oil royalties. Souleles (2000) finds that large and predictable tuition payments have little impact on parents' nontuition expenditures.

The most methodologically similar paper is Shapiro and Slemrod (1995), which used survey responses to estimate the consumption response to a policy of George W. Bush's father.[15] President George H. Bush in 1992 issued an executive order that changed the income tax withholding rates to increase after-tax income by about $29 per month per worker, or an aggregate increase of $25 billion in after-tax income. This study concluded that 43 percent of consumers spent the extra cash flow from the withholding change.[16] Consistent with the 2001 evidence, the study revealed no relationship between the response to the withholding change and indicators of liquidity constraint based on one's income and financial condition in the current year compared to the previous year and expectations about the next year. Although the 1992 and current surveys are similar in wording and design, the policy changes were different. The 1992 policy change affected only the timing of tax payments while the 2001 change, if taken at face value, had a substantial effect on their present value. The 2001 changes also might have been more salient. They were more heavily discussed in the press and also came in the form of a single check rather than a series of ten monthly increments to take-home pay. It is not obvious, however, that increased salience would generate a higher rate of saving.

[15] Our surveys measure the spending rate, that is, the fraction of households who mostly spend the rebate. In Shapiro and Slemrod (2003), we discuss the relationship of this spending rate to the aggregate marginal propensity to consume, which is what most econometric studies seek to measure.

[16] The 1992 question was as follows: "The federal government has recently changed the amount of income tax that is being withheld from paychecks. On average, the change in withholding should increase your take-home pay by about $25 per month, or by a total of about $250 for all of 1992. It also means that next year your tax refund will be about $250 less than otherwise, or you will have to pay about $250 more in taxes next year than otherwise. How do you think you will use the extra $25 per month—do you think you will spend most of it, save most of it, use most of it to repay debts, or what?"

V. Conclusions

Only 21.8 percent of households report that the income tax rebate of 2001 led them mostly to increase spending. This spending rate needs to be corrected upwards by as much as 3 percentage points to account for the effect on survey responses of when households received the rebate.

The tax legislation in place at the time of the survey provided ten years of tax cuts equal annually to at least the size of the rebate. Thus, the change in tax policy that led to the rebate corresponds to a substantial increment to lifetime resources. Hence, standard economic theory would suggest a spending rate close to one. It is therefore very surprising to find a spending rate much closer to zero, a surprise that is compounded by the likelihood that some households are liquidity constrained and would therefore have a high propensity to consume even out of a temporary tax cut.

The very low spending rate is even more surprising in the context of much previous empirical evidence—both from aggregate time series and from data on households—that the propensity to consume out of changes in income is substantial. Indeed, the propensity to spend in situations where an unconstrained, forward-looking consumer would save most of incremental income is generally found to be substantially larger than what we find.

Economists are, of course, generally skeptical of survey responses. We are supposed to be interested in what people do, not what they say they will do or have done. We have argued elsewhere (Shapiro and Slemrod, 1995) that this

view of the survey evidence is too limited. In any case, it is very difficult to use time-series to study events such as the tax rebate. It is a single event that affects most households by the same amount. In the time series, any other aggregate event could account for changes in spending associated with the timing of the rebate.

The lower spending rate we find cannot be attributed to our survey methodology. In 1992, we fielded a similar survey question to measure the spending rate of the 1992 changes in income tax withholding. Both the 1992 and 2001 survey questions were included as modules on the University of Michigan Survey Research Center's monthly Survey of Consumers, so the procedures for drawing the sample were the same in both surveys. For the 1992 withholding change, we find that over 40 percent of households would spend most of the extra current income from the reduction in withholding, despite the fact that the increase in take-home pay would be offset by either a lower tax refund or higher final payment (Shapiro and Slemrod, 1995). While that behavior is inconsistent with unconstrained optimization, it is quite consistent with the broad range of evidence that a high fraction of income goes to households who act myopically or liquidity constrained with respect to changes in income. Because the methodology used to study the 2001 rebate closely mirrors that of the 1992 study, the surprising results of the 2001 study appear to represent a genuine departure from past behavior and are not an artifact of our methodology or the specific details of the survey. We cannot, though, definitively rule out the possibility that subtle differences in wording between the surveys affected the responses.

What accounts for the very low spending rate from the 2001 tax rebate? The analysis of Section III provides a few clues. Respondents are quite pessimistic about the size of future tax rebates. Even among respondents with high and increasing income who should benefit substantially from the legislated reduction in marginal tax rates, no more than one-third expects to receive future tax cuts from the 2001 legislation greater than the size of the rebate. Many households who received the rebate expect to benefit in the future by less than the size of the rebate.

Wealth holding is one of the most powerful predictors of the spending rate in the cross section. Those with some stockholdings, but low levels of stock market wealth, are particularly likely to save the rebate. This is consistent with a spender/saver model. Those without stock portfolios may be spenders. Those with stock portfolios, but with a low value of stock, may be in saving mode as they try to build assets. Those with high asset values may already have adequate accumulated saving. Moreover, they tend to be high-income households for whom the size of the rebate is relatively small.

The cross-sectional results, however, fail to support some possible theories of the low spending rate. In particular, because we find that the spending rate of the tax rebate is not associated with expectations of lower government spending, the cross-sectional results do not support the Barro/Ricardo integration of the household and government budget constraints. Similarly, while we find on average that respondents appear to discount the long-run size of the tax cut, those who expected larger tax cuts in the future were not more likely to spend currently.

Regardless of the reasons for the low rate of spending, the findings of this paper have significant implications for the impact of fiscal policy on the economy. First, the rebate was added to the 2001 tax bill explicitly to provide a short-run stimulus. The low spending rate implies that the 2001 tax rebate had a small impact on aggregate demand. Shapiro and Slemrod (2003) discuss the aggregative implications of these findings in greater detail and relate them to the aggregate time series for saving.

Second, the finding that low-income households were not more likely to spend the rebate runs counter to the belief that a tax rebate would be more effective at stimulating aggregate demand were it targeted at low-income households. It is, though, conceivable that the spending rate would be higher among those households whose income was too low to qualify for the first round of rebates.

Third, our finding of a very low spending rate raises a cautionary note about the reliability of fiscal policy in general. It is possible that key parameters such as the propensity to consume are contingent on aggregate conditions in ways that are difficult to anticipate. One can speculate about why the spending rate might have shifted downward under the circumstances of mid-year

2001. Perhaps the negative wealth shocks of the previous two years placed consumers in an asset-rebuilding mode. Costs to cutting back consumption, such as force of habit, may cause households to allocate the incremental income from the rebate to saving even if they are otherwise saving a very low fraction of income. Future research may clarify the causes of the large apparent decline in the marginal propensity to consume. In the meantime, these findings illustrate the perils of extrapolating the impact of current policies from past behavior.

APPENDIX: SURVEY INSTRUMENT

1. Earlier this year a Federal law was passed cutting income tax rates and expanding certain credits and deductions. The tax cuts will be phased in over the next ten years. This year many households will receive a tax rebate check in the mail. In most cases, the tax rebate will be $300 for single individuals and $600 for married couples. Thinking about your (family's) financial situation this year, will the tax rebate lead you mostly to increase spending, mostly to increase saving, or mostly to pay off debt?

2. [If spend rebate] Will the increase in spending be for a particular item that you otherwise would not have purchased, or will it be spent mostly on day-to-day expenses?

3. (Have you/Has your family) already received your tax rebate?

4. [If received rebate] Was the tax rebate check received within the last week, more than a week ago but within the last four weeks, or more than four weeks ago?

5. [If spend rebate] When do you plan on spending most of your tax rebate—have you already spent most of it, will you spend most of it within a month, will you spend most of it within two months, will you spend most of it before the end of the year, or will you not spend most of it until next year?

6. Now thinking about the tax cuts you (and your family) expect in future years, do you think that your (family's) annual tax cut will be larger than this year's tax rebate, about the same size, or smaller than this year's tax rebate?

7. Do you have a (family) budget, or otherwise plan, your spending and saving?

8. [If have budget] People budget in different ways. Do you (and your family) generally try to keep your spending within a certain limit or do you focus more on trying to save regular amounts of money, or to pay off regular amounts of debt?

9. If (you/your family) had an unexpected expense, such as a one-time car repair, would you pay for it mostly by taking the money out of savings, mostly by cutting back on other spending, or mostly by using credit or borrowing?

10. Do you think the tax rebates will improve conditions in the national economy during the year ahead, will the tax rebates worsen conditions in the national economy during the year ahead, or will the tax rebates not have much impact on the national economy during the year ahead?

11. Now thinking about the federal tax cut legislation as a whole, not just this year's rebate, do you think the tax cuts will lead to increased future government spending, decreased future government spending, or will future government spending not change much as a result of the federal tax cut?

12. Thinking of your (family's) financial situation over the next ten years, do you think the tax cut legislation will make you better off financially, make you worse off financially, or will it not make much difference to your financial situation?

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