

## **Did the 2008 Tax Rebates Stimulate Spending?**

Matthew D. Shapiro and Joel Slemrod\*

University of Michigan and NBER

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corresponding author:  
Matthew D. Shapiro  
Department of Economics  
University of Michigan  
Ann Arbor MI 48109-1220  
tel. 734 764-5419  
shapiro@umich.edu

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by Matthew D. Shapiro and Joel Slemrod\*

In an effort to bolster economic performance in light of a looming downturn in economic activity, on February 13, 2008 President George W. Bush signed the Recovery Rebates and Economic Stimulus for the American People Act of 2008. The main part of the \$152 billion bill was a program of payments beginning in May that would go to more than 130 million people nationwide. To qualify, a recipient had to have a valid Social Security Number, an income tax liability or “qualifying income,” which includes earned income and some benefits from Social Security, Veterans Affairs or Railroad Retirement, of at least \$3000, and have filed a 2007 federal tax return. For the most part those who file as single individuals received between \$300 and \$600, while those who file jointly received between \$600 and \$1200. Additionally, parents with children under 17 who are eligible for a Child Tax Credit and have a Social Security number received an additional \$300 per child. The tax rebate phased out at higher levels of income, as the payment was reduced by 5% of the amount of adjusted gross income over \$75,000, or \$150,000 for married couples. Checks were sent either electronically, by direct deposit, from May 2 through May 16, or by mail, from May 16 through July 11.

The immediate impact of the stimulus payments depends on how much is spent. This paper reports new survey evidence on the spending propensity of consumers. It also relates the survey evidence to aggregate data and evidence about spending the 2001 tax rebates.

### **I. 2008 Rebate: Survey Evidence**

The survey evidence is based on 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. The survey's core content contains questions about expectations of economy-wide and family economic circumstances that are the basis of the University of Michigan Index of Consumer Sentiment. The Survey of Consumers is a random digit dial survey of approximately 500 households. Each month, it includes about 300 new respondents and 200 respondents re-interviewed from six months earlier.

The rider to the survey was included each month from February through June 2008. In the first three months the questions were asked before the rebate payments, while in the next two months the questions were asked while households were in the midst of receiving rebate checks. 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.<sup>1</sup> Specifically,

Under this year's economic stimulus program tax rebates will be mailed or directly deposited into a taxpayer's bank account. In most cases, the tax rebate will be six hundred dollars for individuals and twelve hundred dollars for married couples. Those with dependent children will receive an additional three hundred dollars per child.

Individuals earning more than seventy-five thousand dollars and married couples earning more than one hundred fifty thousand dollars will get smaller tax rebates or no rebate at all. 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?

Table 1 gives the basic results of the survey about spending from the 2008 rebates. Because there were no significant differences between the answers provided in anticipation of receiving a rebate (in February, March, and April) and those provided during the rebate remittance (in May and June) we aggregate the answers over all five surveys. The first column of numbers gives the

number of responses to the survey (unweighted). Of the 2,518 asked the rebate question, 61 respondents (2.4%) either responded that did not know what they planned to do with the rebate or refused to answer. This low level of item non-response suggests that individuals did not have difficulty with the question. Two hundred twelve respondents (8.4%) said they would not get the rebate—a fraction broadly consistent with the incidence of the policy. The last column of Table 1 gives the fraction of responses among households reporting that the rebate led them to mostly spend, save, or pay off debt. Of those households receiving the rebate, 19.9% percent report that they will spend the rebate, 31.9% report that they will mostly save the rebate, and 48.2% report that they will mostly pay debt with the rebate. Hence, the most common plan for the rebate is to use it to pay off debt, and only one-fifth plan to mostly spend the rebate.

Of course, households who will *mostly* save the rebate will do some spending, and vice versa. Hence, the fraction of households who mostly spend does not necessarily equal the marginal propensity to consume (MPC) in the population. Shapiro and Slemrod (2003b) infer the aggregate MPC from a reasonable parameterization of the distribution of the MPC and the presumption that individuals will, for example, respond to the survey that they will mostly spend if their individual MPC exceeds one-half. The finding that the one-fifth of the 2008 rebate recipients mostly spent the rebate translates into an aggregate MPC of approximately one-third. This MPC of one third should be used in comparing the survey evidence to econometric evidence based on the response of aggregate consumption to rebates, or for calibration of a macroeconomic model of the effects of the rebate.<sup>2</sup>

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<sup>1</sup> Matthew D. Shapiro and Joel Slemrod (1995, 2003a) use a similar survey instrument to examine the spending from two earlier policies meant to stimulate the economy by putting cash into the hands of consumers: the temporarily reduced income tax withholding in 1992 and the tax rebates in 2001.

<sup>2</sup> Survey answers might not reflect households' actual behavior. On this issue we are reassured by recent work by Christian Broda and Jonathan Parker that tracks cumulative purchases recorded by scanners made during the five weeks after household receipt of the 2008 rebate. In a follow-up survey of those who received a rebate, the amount of purchases was strongly related to their answer to a question worded similarly to ours. While overall spending on

The survey contains a number of covariates that provide further implications of the spending plans of households and can also serve to validate the survey responses. Table 2 shows how the fraction reporting mostly spending the rebate varies by age. There is a powerful correlation of the fraction spending the rebate with age. Those over 65 are more than 11 percentage points more likely to report mostly spending the rebate than those younger than 64. Overall there is a clear, monotonically increasing relationship between age and spending, precisely what a life-cycle model would predict for a temporary windfall.

The policy discussion prior to the passage of the 2008 rebates presumed that low-income households are particularly likely to increase their spending as a result of a rebate. The Congressional Budget Office (2008, p. 7), in its analysis in of the options for stimulus in early 2008, states, “Lower-income households are more likely to be credit constrained and more likely to be among those with the highest propensity to spend. Therefore, policies aimed at lower-income households tend to have greater stimulative effects.” A Hamilton Project paper on stimulus options (Douglas W. Elmendorf and Jason Furman, 2008, p. 20) reaches the same conclusion. Table 3 examines the spending rate from the 2008 rebate based on the survey responses. It shows that the spending rate is not strongly related to income; indeed, the point estimate of the spending rate for the lowest-income group is in fact smaller than the average. Because the spending rate bounces up and down as a function of income, the correct inference from these data is that there is no discernible difference in spending propensity by income. Instead, the survey paints a picture of low-income individuals who use a cash windfall to pay off debt. Of those earning less the \$20,000, 58% planned to use the rebate to mostly pay off debt. In contrast, 40% of those with income greater than \$75,000 planned to mostly pay off debt. This

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items covered by the scanner data increased by an average of \$40, it increased by \$77 among those who said they had mostly spent the rebate, compared to \$31 and \$28 for those who said they had mostly saved it or mostly paid

behavior is consistent with the CBO's suggestion that low-income consumers are liquidity constrained, but it suggests that low-income consumers face a liquidity constraint that will also be binding in the future. Hence, they place a premium on using the rebate to improve their balance sheet. Put differently, low-income individuals are needy today, but because they also are likely to be needy in the future, they do not necessarily use the windfall for current consumption.

## **II. 2008 Rebate: Aggregate Evidence**

Because of the electronic disbursement of a substantial fraction of the rebates, a very large amount of extra income reached households in a few months. Over 80% of the rebate was disbursed in May and June, so there was a sharp increment to disposable income, especially in the second quarter of 2008. According to calculations by the Bureau of Economic Analysis, the rebates added \$331.6 billion at an annual rate to income in the second quarter of 2008 and \$58.8 billion at an annual rate in the third quarter. These amounts are 2.2% and 0.4% of GDP in the second and third quarters of 2008, respectively.

The official aggregate data on personal saving are broadly consistent with most of the rebate being saved. Figure 1 shows the personal saving rate in the first nine months of 2008. The solid line shows the official data as published by the Bureau of Economic Analysis. After hovering just above zero for the first part of the year, the personal saving rate spiked sharply in May, when the rebate program began, and through July it remained much higher than in previous months. The magnitude of the rise in the saving rate is also consistent with the rebate being the triggering factor. To see this, we subtract from both saving and disposable income the amount estimated by the BEA that the rebate added to personal disposable income, and then recalculate the saving rate excluding the rebate. This saving rate excluding the rebate is plotted with the dashed line in Figure 1. That personal saving jumped by nearly as much as the increase in stimulus payments

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down debt, respectively. We are grateful to the authors for sharing these preliminary results.

suggests that most of the rebate checks were saved in the month they were received. Closer examination of Figure 1 does, however, suggest some spending of the rebate. The saving rate excluding the rebate does show a modest decline in the middle of 2008 when the rebates were being received. Rebate spending could account for the shift of ex-rebate saving rate to a slight negative in May and June.

Indeed, given the magnitude of the stimulus payments, spending of only one-third of them would noticeably affect the aggregates. Of course, quarter-to-quarter movements in time series have multiple causes. For example, in the second quarter of 2008 oil prices were skyrocketing, affecting both nondurable spending (including on gasoline) and depressing the demand for new automobiles. We pursue the survey evidence precisely because of the difficulty to use time-series analysis to understand one-time events. Yet, a back-of-the-envelope calculation suggests that spending a fraction of the stimulus payments had a noticeable effect on the timing of economic activity in mid-2008. In the second quarter of 2008, real GDP grew at an annual rate of 2.8% and real consumption grew at an annual rate of 1.2%. If GDP in the second quarter had been lower by just one-third of the rebate payments, the annual rate of real GDP growth would have been -0.1% rather than its actual value of 2.8%. In the third quarter, GDP growth turned negative and consumption fell sharply, at an annual rate of decline of 3.8%. While the credit crisis that began in the middle of the third quarter was an important factor in these declines, the removal of the stimulus to spending from the rebates also was a major factor in the weakness of consumption growth in the third quarter.

We have also examined aggregate data on consumer credit for evidence of using the rebate to pay debt. There were distinct slowdowns in the growth in credit in 2008, but the timing of the slowdown does not exactly match the timing of the rebate. Revolving credit outstanding slowed

in April; total credit fell in August. Given all the other significant events in financial and credit markets during the year, it is hard to distinguish the effect of the rebate from other shocks.

### **III. Looking Back at the 2001 Rebates**

As part of the ten-year tax cut bill passed by Congress in the spring of 2001, tax rebate checks were mailed of up to \$300 for single individuals and up to \$600 for households from late July and through late September 2001. Shapiro and Slemrod (2003a, 2003b) report on the results of a survey conducted in August, September, and October 2001. Only 21.8% of households reported that the tax rebate would lead them to mostly increase spending. As in the 2008 survey, there was no evidence that the spending rate was higher for low-income households.

The aggregate data in 2001 show a spike in the saving rate precisely at the same time the tax rebates were mailed in July, August, and September 2001. The situation becomes much more complex beginning in September 2001. The saving rate remained high in September due to a reduction in spending while the nation's attention was riveted on the terrorist attack. October saw a recovery in spending in all categories of consumption, but especially for automobiles in response to the zero-percent financing and other incentives offered by automotive companies.

Two studies of the 2001 tax rebate episode use the random liming of mailing the rebate to identify the response to the rebate in microdata. David Johnson, Parker, and Nicholas Souleles (2006) measure the change in consumption caused by the receipt of the rebate using a special module of questions added to the Consumer Expenditure Survey (CEX). A special CEX module asked households when they received the rebate checks and the amount of any rebate. The authors find that the responses of total expenditures, including durable expenditures such as auto and truck purchases, did not respond to the timing of the check receipt in a statistically significant way. When expenditures are restricted to exclude durable purchases, they do find a



significant effect. Their results show that, during the three-month period in which the rebate was received, expenditures on non-durable goods increased by 37% of the rebate check amount. They also investigate the longer-run responses of spending by looking at the effect in the second and third three-month periods after the receipt of the check. The two-quarter cumulative response to the rebate was estimated to be 69.1%. This estimate figured prominently in the policy discussion of prior to the 2001 rebate (see Elmendorf and Furman 2008 and Congressional Budget Office 2008). The standard error on this estimate is 26.0%, so the two standard deviation confidence interval on it runs from 17.1% to 121.1%.<sup>3</sup> Hence, the Johnson, Parker, Souleles estimate of the response of non-durable expenditures in the first quarter after the receipt of the checks is broadly consistent with what the survey responses in Shapiro and Slemrod (2003a, 2003b) suggest—an MPC of about one-third. What differs is the suggestion that consumption responses persisted into the second, and even third, quarter after the receipt of the checks. The point estimates of the total effect therefore suggest a much larger total, but not immediate, response, but the precision of the estimates that linger after the first quarter is not very high.

Sumit Agarwal, Chunlin Liu, and Souleles (2007) also make use of the timing of the receipt of the rebate checks to study payment of debt using a large sample of credit card accounts from a financial institution. They find that, on average, the consumers in their sample initially increased their saving on their credit card balances by increasing their payments and thereby paying down debt. The initial decline in debt is statistically significant. Debt stays lower for three months, after which the pattern shifts to an increase in debt, though not a statistically significant one.<sup>4</sup>

Thus, both the CEX and credit card studies find effects of the 2001 rebate on impact that are

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<sup>3</sup> Note that nondurables are less than 30% of consumer spending, so if there was even modest spending on services or durables, the point estimate of 69.1% might imply an MPC for total consumption close to, or more than, 100%.

<sup>4</sup> Translating the magnitude of the responses they find to an MPC is not feasible because the spending (and saving) they can measure—one credit card account—is only one component of total spending (and saving).

broadly consistent with the finding of our 2001 survey. Both the survey and the CEX evidence suggest that the MPC over the first quarter after receipt of the rebate is in the range of 30 to 40%. The credit card evidence on debt repayment supports the survey's finding that some of the rebate went to debt repayment, but it suggests that the debt repayment reversed after three months. Like the CEX findings, the credit card evidence suggests a lagged increase in spending following the rebate.

Our survey method also has evidence on lagged responses. Six months after the 2001 survey, we added follow-up questions to a rider of the Survey of Consumers. Those who initially said that the rebate led them to mostly save or pay off debt were asked whether they would use the additional savings to make a purchase later this year, or alternatively try to keep up the higher savings [or lower debt] for at least a year?" The response was overwhelmingly the latter, with 85.3% and 93.4% choosing that answer, respectively (Shapiro and Slemrod, 2003b). Similarly, the 2008 survey asks of those who said they would save the rebate, "Will you use the additional savings to make a purchase later this year, or will you try to keep up your higher savings for at least a year?" A parallel question was asked of those who would pay debt. Most respondents reported that they would stick to their plans to save or pay debt. Of those who initially reported mostly saving, only 18% said they would spend later. Of those who initially report mostly paying of debt, only 8% said they would spend later. Taking these departures from the initially reported intentions as spending, the ultimate "mostly spend" rate from the rebate increases to 29.5%. That would imply an MPC slightly above 40% using the Shapiro-Slemrod (2003b) methodology. Note that the survey gives respondents an opportunity to amend their answer from either saving or paying off debt to spending, but not vice versa. Given this asymmetry, the follow-up questions perhaps overstate the magnitude of the shift in the direction

of mostly spend.

In summary, the survey evidence and the evidence from microdata on actual spending and debt repayment tell very consistent stories for the contemporaneous, first-quarter, response to the 2001 rebate: the MPC was between 30 and 40 percent. The conflict between the analyses of microdata on actual spending and debt repayment and the survey evidence concerns only the lagged effects. While survey respondents report only modest incremental spending, the CEX and credit card data suggest otherwise. We note, though, that in both studies the point estimates for lagged spending come with substantial uncertainty. Thus, even with a large dataset such as the CEX and the credit card data and the innovative research design of Johnson, Parker, and Souleles and Agarwal, Liu, and Souleles, it is difficult to make inferences about the magnitude of the lagged effects of spending the rebate.

#### **IV. Conclusion**

Only one-fifth of survey respondents said that the 2008 tax rebates would lead them to mostly increase spending. Most respondents said they would either mostly save the rebate or mostly use it to pay debt. The most common plan for the rebate was debt repayment. The survey estimates imply that the marginal propensity to spend from the rebate was about one-third and that there would not be substantially more spending as a lagged effect of the rebates. Nonetheless, the aggregate amounts of the rebates were large enough that they had a noticeable effect on the timing of GDP and consumption growth in the second and third quarters of 2008 even though only one-third of the rebates were spent. Growth in the second quarter was stronger and growth in the third quarter was weaker than they would have been absent the rebate.

Because of the low spending propensity, the rebates in 2008 provided little “bang for the buck” as economic stimulus. Putting cash into the hands of the consumers who use it to save or

pay off debt boosts their well-being, but it does not necessarily make them spend. In particular, low-income individuals were particularly likely to use the rebate to pay off debt. We speculate that adverse shocks to housing and other wealth may have focused consumers on rebuilding their balance sheets. Given the further decline of wealth since the 2008 rebates were implemented, the impetus to save a windfall might be even stronger now. Hence, those designing the next economic stimulus package should take into account that much of a temporary tax rebates is likely not to be spent.

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Table 1. Responses to 2008 Rebate Survey

	Number of Responses	Percent
Mostly Spend	447	19.9%
Mostly Save	715	31.9%
Mostly Pay Debt	1,083	48.2%
Will Not Get Rebate	212	
Don't Know, Refused	61	
Total	2,518	100%

Source: Survey of Consumers, February 2008 through June 2008.

Table 2. Spending the 2008 Rebate, By Age

Age Group	Percent Mostly Spending
29 or less	11.7%
30-39	14.2%
40-49	16.9%
50-64	19.9%
Age 64 or less	17.0%
Age 65 or over	28.4%

Table 3. Spending the 2008 Rebate, By Income

Income Group	Percent Mostly Spending
\$20,000 and under	17.8%
\$20,001-\$35,000	21.0%
\$35,001-\$50,000	16.6%
\$50,001-\$75,000	18.7%
\$75,001 and over	21.4%
Refused to state income	24.9%
Total	19.9%

Figure 1. Personal Saving Rate

