

The Impact of the 2008 Rebate¹

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Summary

Between May and July of this year, the U.S. Federal Government has distributed over 90 billion dollars of economic stimulus payments, or tax rebates, to American households. Despite much recent concern that households would save the money, we find that households are doing a significant amount of extra spending because of the stimulus payments. The typical family increased their spending on food, mass-merchandise and drug products by 3.5 percent when their rebate arrived, relative to a family yet to receive its rebate. This implies that the average recipient spent around 20 percent of its rebate in the first month of receipt only on non-durable goods. Based on these estimates and on results from previous analysis, we estimate that overall nondurable consumption in the second quarter of 2008 has been boosted by 2.4% directly due to the stimulus payments, and will be held up by around 4.1% in the third quarter of 2008.

We also study who spent the rebate and on what. We find that low income and low asset households raised their spending at nearly double the rate of the average household. We also find that shoppers are spending a higher share of their rebate in supercenters –like Walmart and Target– relative to their usual behavior. Most people are not using the rebates to increase or maintain their purchases of apparel or groceries, but are spending more on durable goods and personal services instead. Finally, the rebates are having different effects in different parts of the country, with people in the Greater Los Angeles and South East areas spending more than people in major metropolitan areas in the rest of the country.

Our findings underscore the potency of the economic stimulus payments in stabilizing consumer spending during recessions.

Introduction

Early in 2008, in response to slowing economic growth, the Federal government enacted an economic stimulus package consisting mainly of a \$100 billion tax rebate program. By July 1st 2008, over 70 million American households had received tax rebates of around \$950 on average. The hope of policymakers was that by putting money directly back into the hands of US

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households they would increase spending levels and avoid or at least mitigate the severity of the slowdown.

Skeptics argued that households would not spend their tax rebates. People tend to dislike swings in their consumption levels, so that the one-time stimulus payment would be spent only gradually over many years. This would imply that the spending effect of the rebate would be modest at best, rendering fiscal policy ineffective. Others argued that since the money to pay for fiscal programs has to be borrowed and paid back in taxes, it's a wash for the economy as a whole, and thus using fiscal policy to get the economy going is like "taking a bucket of water from the deep end of a pool and dumping it into the shallow end."

So how effective has the 2008 economic stimulus program been at getting people to spend? We answer this question by tracking the weekly expenditures of more than 30,000 households who have received or are to receive rebates, and relating their spending levels to the timing of the receipt of their rebate. Because it was not administratively possible to mail all rebate checks at once, rebates were mailed out to households during a nine-week period between mid-May and the end of July, or deposited into their accounts in one of the first three weeks of May. The particular week in which a check was mailed or deposited depended on the second-to-last digit of the taxpayer's Social Security number, a number that is effectively randomly assigned. This randomization allows us to identify the causal effect of the rebate by comparing the spending of households that received the rebate earlier to that of households that received it later. Because of the experimental nature of the timing of rebate receipt and the wealth of information that we are working with, we can identify the effect of the rebate on spending without the interference of other concurrent factors –like high gas prices or lower interest rates– or households characteristics that are typically hard to observe.

Main Findings

We compare the weekly expenditures of households that received a rebate by June 14th, to those that would later receive a rebate but had not yet received it by that date. We use detailed expenditures covering a range of non-durable goods as reported by households in ACNielsen's Homescan database. Because households report spending using bar-code scanners at home, we are mainly able to study spending at grocery stores, mass-merchandise outlets and drugstores.² We use the following specification to examine the average impact of the tax rebate on spending:

$$\ln C_{ht} = \gamma_h + \gamma_t + \beta I(\text{Rebate} > 0)_{ht} + \varepsilon_{ht},$$

where $\ln C_{ht}$ is the log non-durable consumption of household h in week t , γ_h are household fixed effects, γ_t are week fixed effects, and $I(\text{Rebate} > 0)_{ht}$ is an indicator variable that takes the value of 1 in weeks where the household has already received the rebate and 0 in weeks prior to the rebate receipt. The coefficient β is the main parameter of interest and can be

² For a complete description of these data please see Broda and Weinstein (2008).

interpreted as the average change in weekly spending on non-durable goods due to the receipt of the rebate. The more effective is fiscal policy, the higher is this coefficient.

The table below shows the main results from this specification for different groups of households. The first column shows the results using all households in our sample that have or will receive a rebate. Almost 19,000 out of the 34,000 households examined have reported receiving the rebate, while the remainder reported receiving a rebate later or reported that they are sure they will receive one. By the end of our sample, June 16th, these households have typically had their rebates for 4 weeks. As shown in column 1, the average household increased its weekly expenditures on non-durable goods by 3.5 percent after receipt of the rebate. The impact is highest in the week where the rebate is received (not reported) with weekly consumption increasing by almost 6 percent on average during the first week. We find no impact on consumption in the few weeks *prior* to the receipt of the rebate.

Average Impact of the 2008 Rebate on Weekly Non-Durable Consumption

Dependent variable: log of weekly expenditures	All Households	Low Income Households	Low Liquid Assets Households	Greater Los Angeles
	(1)	(2)	(3)	(4)
Regression coefficient on an indicator for having receive a stimulus payment	0.035	0.063	0.060	0.044
(Standard error)	(0.007)	(0.015)	(0.012)	(0.015)
Household and Week Fixed Effects	yes	yes	yes	yes
Number of Households	33,466	7,699	11,830	6,718
Observations	697,079	161,289	241,431	139,467
R-squared	0.35	0.35	0.34	0.34

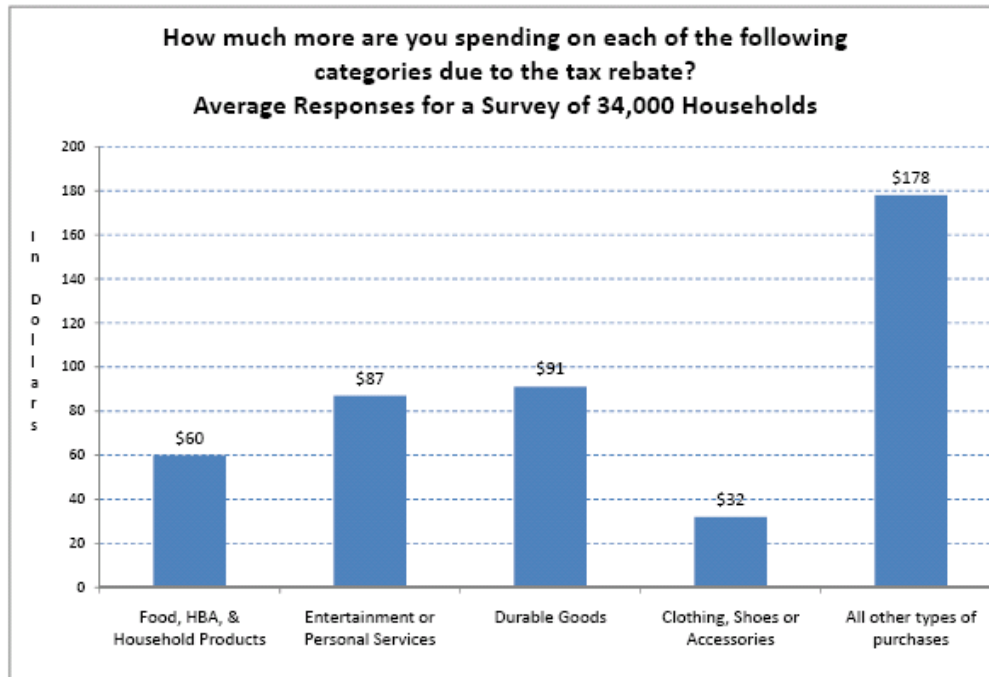
All regressions include household and week fixed effects, and standard errors are calculated allowing for arbitrary household-specific within-household covariances. The sample is weekly data from December 30, 2007 to June 14, 2008 and includes only households reporting receiving a rebate or reporting that they are certain that they will. Estimates are similar when separately estimated for households whose rebates were mailed and for households whose rebates are direct deposited.

Who are the big spenders? Households with low income or low wealth spent more than those with higher income or wealth (column 2). Households with annual income less than \$15,000 increased their non-durable consumption on average by over 6 percent per week when their rebates arrived, almost twice the response of the typical household. Low wealth households –households that reported not having at least 2 months in savings in case of an emergency– also raised their spending more than the average household when the rebate arrived.

What stores and goods benefitted most from the rebate? As many retailers may already suspect, the impact of the rebate on the expenditures was not proportional across stores. While spending at grocery stores was barely affected by the rebate, consumption at

supercenters and other non-grocery outlets increased significantly. In the month after the rebate arrived the share of the average household's spending on traditional grocery stores declined by around 1 percent. The impact of the rebate also differed geographically. We are able to group households into 9 regions (e.g., New England, East Central, South East, etc). Among these regions, the regions with the highest rise in expenditures caused by the rebates were Greater Los Angeles and the South East. For Greater LA the response to the rebate has been around 30 percent larger than the response in the average area (see column 4).

While the regression analysis is based on actual weekly expenditures of a sub-sample of non-durable goods, we also have combined these data with an extensive survey in which we asked households in the Homescan panel how they were spending their stimulus payments across items like personal services and durable goods. These survey data suggest that the categories with the least response to the rebate are clothing and food (see chart below). In particular, people report that the rebate has caused them to spend only \$32 more than usual on clothing and footwear on average, but over \$90 in durable goods such as appliances, electronics, and furniture.



Implications for Aggregate Consumption

Our findings imply that the rebates provided a substantial stimulus to the national economy, helping to ameliorate the ongoing 2008 downturn. While we only examine the response of expenditures on a sub-sample of non-durable goods, we can use the propensity to consume out of a rebate found in previous work to estimate an impact of the rebate on total personal consumption (please see Johnson, Souleles and Parker (2005) for a thorough examination of the 2001 rebate).

In aggregate, the 2008 rebates total around 100 billion dollars, which is about 4 percent of aggregate personal consumption expenditures (PCE) during the three months in which the rebates were distributed, or about 13.3 percent of PCE on nondurable goods. Extrapolating from our results based on the 2001 experience, our estimates imply that the receipt of the tax rebates directly raised nondurable PCE by 2.4 percent in the second quarter of 2008 and will raise it by 4.1 percent in the third quarter.³ These calculations do not include any potential multiplier effects, which might make the full impact of the rebates on the economy even larger, nor do they include price effects, which might mitigate their impact on real GDP.

In short, with the Economic Stimulus Act of 2008, policymakers tried to increase disposable income temporarily through tax rebates in the hopes that households would increase or maintain their spending levels and so end or at least mitigate the severity of a US economic slowdown. We find that to a significant extent they succeeded: we find that the stimulus payments are initially being spent at significant rates. These rates are slightly higher than those observed in 2001 when fiscal policy has been credited with helping end the 2001 recession.

References

Broda, C. and D. Weinstein, (2008) "Product Creation and Destruction: Evidence and Price Implications," Forthcoming *American Economic Review*.

Johnson, D., N. Souleles and J. Parker, "Household Expenditure and the Income Tax Rebates of 2001" *American Economic Review*, Vol 96 No 5, (December 2006) 1589-1610.

³ To extrapolate to total nondurable spending and to longer periods after the rebate receipt, we assume that the spending response both in other periods relative to those we observe and on other goods relative to those we observe are the same as in Johnson, Parker and Souleles (2005).