Indebted Households and Tax Rebates[*]

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Governments issue individual tax rebates hoping that recipients spend the money. A high consumption rate from a tax rebate is essential for such a fiscal stimulus to be effective: according to Keynes' 1936 general theory, tax transfers multiply into the economy at a rate of the inverse of one minus the marginal propensity to consume (MPC). A set of influential papers[1] find a substantial marginal propensity to consume out of tax rebates, ranging from 18 percent to 67 percent. This evidence points to an important role for liquidity constraints in explaining why people deviate from the permanent income hypothesis by spending income shocks. Agarwal, Liu and Souleles (2007) directly test the importance of such liquidity constraints within a sample of credit card borrowers receiving tax rebates, finding that those most likely to be credit constrained (those with low card limits and high ratios of balances-to-limits) have a MPC close to one.

The evidence that constrained individuals are big tax rebate spenders is important for fiscal policy but also raises some puzzles. First, the lifetime (time-consistent) utility cost from spending rather than paying off expensive debt can be quite large. It would be useful to know what types of consumption items are the marginal uses of income for indebted individuals who choose not to retire high-interest debt. Second, it seems plausible that some would categorize constrained individuals as a group likely to be making "mistakes," or at least exhibiting unique

[1] Blinder (1981); Poterba (1988); Souleles (1999); Johnson, Parker, and Souleles (2006), and Broda and Parker (2008).

preferences over time or in purchasing point utility. Is the spending of tax rebate checks by indebted individuals just temptation consumption? Finally, is it possible to reconcile tax rebate spending by individuals that are already highly in debt with Gourinchas and Parker's (2001) evidence that constrained individuals' marginal dollar of income is most valuably used as precautionary savings for buffering income and expense shocks?

With these themes in mind, this paper uses the natural experiment of the 2008 tax rebate to study how payday loan customers use their rebate. This is an interesting group to focus on for several reasons. First, the cost of marginal debt for these individuals is extremely high. Payday lenders are truly the lender of last resort, offering short-term loans with the APR starting at 400%.[2] Given this extremely high cost, one might wonder whether the patterns of consuming rather than saving rebate money that Agarwal, Liu and Souleles (2007) document among those that are "just" credit-card constrained extend to this population. If payday borrowing is mainly used as a form of bridge financing to deal with unexpected short-term income or expenditure shocks, one might expect to see payday borrowers use at least some of their tax rebate to pay off outstanding payday loans. Second, this is a group whose predicament is often attributed, rightly or wrongly so, to irrational behavior. Payday borrowers, some say, do not properly account for the future cost of consuming more today, either because they suffer from self-control problems or because they are overly optimistic about their ability to repay their debt in the future. Under this view, one might expect this group to be especially likely to be tempted to immediately consume their tax rebate and thus see little use of the tax rebate towards retiring payday debt.

We have two modest goals in the analysis below. First, we ask whether individuals choose to use the tax rebate to retire some of their payday debt rather than spend, and whether

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[2] See Ellihausen and Lawrence (2001), Morse (2007), Skiba and Tobacman (2007) or Melzer (2007) for an overview of payday lending.

there is persistence in any debt retirement. On average, we find a persistent decline in payday borrowing in the pay cycles that follow the receipt of the tax rebate. The reduction in borrowing is a significant fraction of the mean outstanding loan (12 percent) but is moderate in dollar magnitude ($40) relative to the size of the stimulus checks.

Building on this finding, our second goal is to investigate heterogeneities across borrowers to hope to better understand why some borrowers would not use the rebate to retire their payday debt. One could argue that it is unlikely that the marginal utility from spending the rebate could be higher than the marginal utility from retiring debt without some unique behavioral preferences. Consistent with this, we find that individuals mentioning vacations, apparel, entertainment, gifts or electronics as a use for the payday loan or as a large expense item from earlier in the year do not use the tax rebate to reduce borrowing. This suggests that some borrowers prefer immediate consumption at the very high cost of interest on a 400% APR loan. This however does not seem to explain why payday loan borrowers as a whole do not use more of their stimulus checks to retire debt, as only a very small portion (only 9 percent) of payday loan borrowers fit this category.

Next we explore heterogeneity in the frequency of borrowing. Following Agarwal, Lui and Souleles (2007), it might be that even among our set of constrained-by-definition individuals, the more constrained consume more out of the tax rebate. This is exactly what we find. Only the low-to-middle users of payday lending services, in terms of frequency of use and fees paid relative to income in the prior year, retire debt. This group retires 15-20 percent of their loan balances after receiving the tax rebate. We believe that the effect is concentrated in low-to-middle frequency users because they are the group most likely to be using payday loans to bridge infrequent unexpected gaps between pay days. If so, this finding corresponds well to the survey

findings of Shapiro and Slemrod (2003), e.g. that those saying that they would have to use credit to finance a shock are the ones most likely to say they used their tax rebates to retire debt.

The high-use quartile of borrowers, i.e., those that appear to use payday loans more as a long-term solution to their borrowing needs, retire no debt. If the payday loan is their marginal debt, this implies that their MPC is approximately equal to one. We explore a host of dimensions that may differentiate these high-use individuals from the others, looking for evidence that these borrowers may be more educationally or behaviorally challenged. We do not find much evidence on this, even though we certainly cannot draw a complete behavioral profile. The only somewhat consistent pattern we find about this high-use quartile is that they are more constrained by the regular monthly bills (rent, utilities, gasoline, groceries, etc.) than other categories of borrowers. It seems that for this group of individuals that is constrained in everyday living, the tax rebate was best used to avoid (or at least postpone) having the gas connection turned off or to catch up with late rent payments.

I. Data

During the period May 19 – June 14, 2008, we conducted a survey and field experiment with a large national payday lending chain (see Bertrand and Morse (2008) for more details). For two weeks at each of 70 payday lending stores, we offered every loan customer a year magazine subscription in return for their participation in our study. Participation entailed filling out a one-to-two minute paper survey at the time of borrowing and allowing us to receive a download of their transaction history and application data from the company. We obtained a 21% participation rate among all customers entering the store, and in October 2008, the lender provided us with loan transaction history for each of these consenting customers.

An important feature of payday lending is that the borrower's pay cycle frequency determines the loan length as loans are always due on payday. We balance the panel in time such that if a person does not have an entry at a date implied by their pay cycle, we create one. The analysis presented is based on this time-balanced panel, weighted such that all individuals receive equal importance in the estimations. To focus our analysis around the IRS payment dates (May – July), we limit the data to being three semi-monthly pay cycles prior to the first IRS check mailing date and three pay cycles after the last check mailing.[3] The resulting sample period is March 24 – September 12, 2008. We also limit our sample to customers who have taken out a loan between March 24th and their IRS tax rebate check, to ensure that we focus on individuals constrained at the time of the tax rebate.

The final sample is 708 individuals. The median person in the sample is 42 years old, with a monthly income of $2257. She borrowed 1/3rd of the possible pay cycles during the prior year and paid $438 in fees over this prior year. Finally, very few payday borrowers in the sample lack a high school degree (5%) or have a college degree (15%). Instead, half have had some college, and the residual (29%) went into the workforce directly after high school. The mean (median) loan in the sample is $506 ($376) conditional on a loan being taken, and $325 ($299) including all zero loan observations.

Almost all of our sample would have qualified for the IRS tax rebates of 2008; single filers with income under $75,000 (and married joint filers with income under $125,000) qualified for the full rebate of $600 per person. If an individual provided her checking account information on her 2007 tax return filing, the IRS would have sent her a direct deposit rebate. Otherwise, the IRS mailed her a check, on a different date. We do not know which individuals receive the rebates by direct deposit and which, by check. However, payday loan customers are unique in

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[3] Eighty-two percent of the sample is paid either bi-weekly or semi-monthly.

that the majority of them (according to payday loan store personnel) use tax filing services to get their tax refunds through tax refund anticipation loans. As a result, they do not provide checking account information on their tax filing to the IRS. Hence, we assume that all of the customers in our sample receive their checks in the mail. To assess how accurate this assumption is, we asked this question directly in a follow-up phone survey in small subsample of study participants. Of 97 people from our sample who said they had received a tax refund payment, 66% said they got a check in the mail rather than direct deposit. Although this statistic is reassuring, this also suggests that our results may be biased toward zero, and up to a third of our sample may just be providing noise.

II. Econometric Specification

The IRS mailed checks in nine waves based on social security numbers from May 16 to July 11, 2008. We allow for a minimum of two days in mailing time and create the variable $Check_{it}$, which is equal to 1 on the first possible borrowing visit (according to the person's pay cycle) to the payday lender after the IRS check issue day for the person's two-digit social security number, and 0 otherwise. We also create additional dummy variables $Check_{it-1}$ and $Check_{it-n}$, respectively indicating the second possible visit to the lender and all subsequent possible visits up until September 12. As in Johnson, Parker and Souleles (2006) and Broda and Parker (2008), the randomness of the last two digits of social security numbers provides exogeneity for identification.

We focus on two main outcome variables (Y_{it}). $I_{NotBorrow,it}$ is a dummy variable that equals 1 if individual i avoided borrowing in payday cycle t, 0 otherwise. *Loan Amount$_{it}$* is the amount borrowed by individual i during payday cycle t; we assign a value of 0 if individual i did not

borrow in payday cycle t.

The main econometric model we estimate is as follows:

$$Y_{it}=a+b*Check_{it}+c*Check_{it-1}+d*Check_{it-n}+Week_t+Ind_i+e_{it},$$

where $Week_t$ is a vector of dummy variables for calendar weeks; Ind_i is a vector of individual

fixed effects; and e_{it} is the error term. The econometric model therefore accounts for any

calendar effects on the amount of borrowing, as well as any individual-level differences in the

level borrowing. The estimated coefficient on $Check_{it}$ measures the change in the likelihood of

borrowing (or amount borrowed) in the payday cycle in which the IRS check is issued

(compared to pre-check level). The estimated coefficients on $Check_{it-1}$ and $Check_{it-n}$ respectively

measure changes in the likelihood of borrowing (or amount borrowed) in the second and post-

second payday cycles after the IRS check is issued (compared to pre-check level); they allow us

to gauge persistence in the tax rebate effect. We allow for clustering of the error term at the

stimulus check date level. We weight each observation by the inverse of the number of payday

cycles for a given individual; this ensures that weekly individuals (for which we have more

cycles covered in the sample) are not over-represented.

III. Results

Table 1 presents our main results. Column 1 shows a statistically significant decline in

the likelihood of payday borrowing in the first two payday cycles following the issue of the tax

rebate check. Payday borrowers are 6 percentage points less likely to take up a payday loan in

the payday cycle in which they receive their rebate, and remain 5 percentage points less likely to

take up a payday loan in the next pay cycle. The mean likelihood of being able to avoid

borrowing in a given payday cycle is 36 percent. Thus, a 5-6 percentage point decline is a 14-17

percent change in the ability of individuals to avoid borrowing. Two payday cycles or more after

receiving the tax rebate, the likelihood of payday borrowing is no longer statistically different from its pre-rebate level. In column 2, we investigate the possibility that individuals might anticipate the receipt of a tax rebate and adjust their borrowing activity prior to actually receiving their check. To do so, we add to the model estimated in column 1 a dummy variable that equals 1 during the payday cycle that immediately precedes the check issue cycle, 0 otherwise. The estimated coefficient on that dummy variable is economically very small (-0.0004) and statistically insignificant.[4]

Columns 3 and 4 replicate columns 1 and 2 but use amount borrowed in the payday cycle as the dependent variable. This allows us to study changes in borrowing activity not only on the extensive margin but also on the intensive margin. We estimate a statistically significant decline in payday borrowing in all the payday cycles that follow the receipt of the tax rebate check. The effect is largest in the first two post-rebate cycles (about a $40 decline in borrowing in each of these cycles, compared to a mean loan of $325) but it stays economically meaningful in all following cycles (about a $26 decline). We find no effect of the (anticipated) tax rebate on the amount of borrowing in the payday cycle that immediately precedes the check issue (column 4).[5]

In summary, we find evidence consistent with the view that the average payday borrower in our sample uses some of the tax rebate to reduce his or her dependence on payday borrowing. The effect appears fairly persistent, at least over the subsequent two to three months included in our analysis. Because we measure the timing of the tax rebate with error (remember that we assume that all the individuals in our sample receive their rebate through the mail and none

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[4] In unreported tests, we look further back in time but find no evidence of ramping up of borrowing prior to the tax rebate date.

[5] We have verified that the results presented in Table 1 are robust to various specification checks. In particular, we estimated an alternative model where we allowed for different time trends in borrowing across the various stores in the sample, to account for the possibility of regional trends in economic activity. We also estimated an alternative model where we allowed for different trends in borrowing based on the specific day at which a given individual was recruited to participate in our primary experiment. Under both of these alternative models, the main effects estimated in Table 1 were economically and statistically unchanged.

through direct deposit), it is likely that the effects we estimate (about a 12 percent "permanent" decline in the amount of payday borrowing) is a lower bound for the true causal effect of the tax rebate on the retirement of high-interest payday loans.

Our findings are somewhat in contrast with those of Agrawal, Liu and Souleles (2007) in that we find some debt repayment in a group that is arguably as constrained as the most constrained in the Agrawal, Liu and Souleles' sample. One candidate explanation for these differential results (in addition to the fact that the macroeconomic environment surrounding the 2008 tax rebate might be quite different from the 2001 environment) is that we might be truly focusing on the marginal liability for the individuals in our data. Rebate recipient who plan to pay down debt should first pay down payday loans if they have any such loans outstanding as those carry the highest interest rate charges. But along the same line of argument, our results appear smaller in magnitude than Shapiro and Slemrod (2003), who find that nearly two thirds of the more constrained group said they used the 2001 tax rebate to pay down debt. To reconcile these findings and shed light on the tensions in spending vs. retiring debt decisions, we investigate next whether possible sources of heterogeneity across payday borrowers affect their use of the tax rebate.

We first explore the possibility that payday borrowers are just people that love spending and get gratification through immediate consumption. We split the sample on whether or not the person chooses any of vacations, eating out or entertainment, or gifts, apparel or electronics as a use for the loan proceeds in the participation survey.[6] These choices correspond to Souleles (1999) and Parker (1999) who find a post-tax rebate jump in consumption for vacations (Souleles) and entertainment and apparel (Parker) for unconstrained individuals. About 9 percent

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[6] The other possible choices were rent or mortgage payments, utilities, medical bills, groceries, family emergencies, transportation expenses, other debt and other bills.

of the sample falls into the first category. So, this is not a very large group. This in itself is interesting, even though there is some reporting concern (e.g. people that intend to use a payday loan to go on vacation may not be tupfront about it). As Table 2 reports, we do however find a sharp contrast between the group of more temptation preference spenders and all others: temptation spenders do not pay down their loans after they receive their tax rebate, neither immediately nor a few cycles out. In fact, the point estimates on all the check variables are positive, suggesting if anything an increase in borrowing after the rebate check is issued.

As a check of the robustness of these findings, we also split a small subsample of the participants whom we reach in a follow-up phone survey based on whether they say that they have had an electronics or vacation large expense item thus far in the year. Columns 3 and 4 of Table 2 show that although the sample size of individuals is small, those who had large vacations or electronic expenditures do not use the rebate check to pay down debt.

Finally, we split the sample on a participation survey question in which asks individuals to rate themselves on a 1-7 Likert scale as to their enjoyment from spending. Those rating themselves above median in enjoying spending are no different in their using the rebate to pay down debt. This lack of a result could be due to noise in self-reporting, or it could be that the amount of utility people differentially get from spending is just not important in the use of tax rebate checks.

In summary, we find no debt retirement among those payday borrowers that can be most naturally categorized as temptation spenders based on their stated reasons for taking-up payday loans. Temptation spenders might be over-represented in the payday borrowing population compared to the more general sample of constrained spenders in Shapiro and Slemrod (2003). If this is true, accounting for their over-representation may bring our results closer in line with

those in Shapiro and Slemrod (2003).

In Table 3, we contrast individuals that are high frequency users of payday loans with those that use payday loans with low-to-medium frequency. To proceed, we compute for each individual in the sample the number of times they had a payday loan outstanding in the year that preceded the tax rebate, which we normalize by the number of payday cycles for that individual during the same year. We then categorize individuals into low, middle and high users of payday loans by percentile: the below the 25th percentile frequency users - borrowing less than $1/6^{th}$ of cycles; the interquartile frequency users, between the 25th and 75th percentiles - borrowing between $1/6^{th}$ and $2/3^{rds}$ of possible cycles; and the above the 75th percentile frequency users - borrowing more than $2/3^{rds}$ of cycles. Columns 1, 2 and 3 of Table 2 replicate the column 3 estimation of Table 1 for the low, middle and high users of payday loans, respectively. We also construct an alternative measure of usage for which we compute the ratio of total payday fees incurred over the prior year over mean monthly income in the prior year. Again, we then categorize individuals into a low (below the 25th percentile), middle (between 25th and 75th percentile) and high (above 75th percentile) usage groups.

A striking finding in Table 2 is that there is no causal effect of the tax rebate on the tendency to pay down payday debt among the high usage groups (columns 3 and 6). The (negative) causal impact of the rebate on the amount of payday borrowing is largest and most persistent in the middle usage category, reaching a $60 to $70 persistent effect after the issue of the rebate check. This reduction translates into a 17 to 20 percent (respectively, for columns 2 and 5) decline in borrowing. Low usage borrowers also borrow less when they borrow; the results from columns 1 and 3 imply that low usage customers immediately reduce their borrowing by 15 percent (column 1) to 35 percent (column 3).

It might appear quite intuitive that the one-time rebate is most effective at reducing the dependence on payday loans among the more moderate users of those loans. Moderate users, by definition, use these loans on a shorter-term basis, and one might venture to guess are more likely to turn to this high-interest borrowing only in the case of unexpected, non-recurrent shocks that create an immediate need for some bridge financing. The one-time tax rebate could offer this group a buffer that would protect them for at least a little while from having to take up another payday loan. Among our payday borrowers, this group may be most comparable to those in Shapiro and Slemrod (2003) that say they would have to use credit to finance a shock, which Shapiro and Slemrod show to be the most likely to say they used their tax rebates to retire debt.

One is left with trying to make sense of the behavior of high usage payday borrowers. Of course, it is possible that this group strongly overlaps with the temptation spenders we studied in Table 2. However, we found very limited evidence for that. At best, we found a slightly higher share reporting using payday loans to pay for vacation expenses among the high paying fees group, but this pattern does not extend to the other temptation spending categories in the list we constructed.[7] It is also possible that this group is more educationally challenged, less aware of the high cost of payday borrowing and therefore mistakenly deciding not to use to rebate to pay down their loan. However, using information collected in a small follow-up survey we conducted, we did not find high frequency borrowers to be less aware about the cost of payday loans, either measured in terms of APR or fees.

The most robust systematic difference we found between low-to-moderate and high usage borrowers was that high-usage borrowers are more likely to use payday loans to cover regular monthly expenses (such as paying rent, bills, or buying groceries). Hence for this group,

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[7] There is also some evidence that high usage borrowers score higher on the "enjoy spending" scale but, as we saw in Table 2, splitting the sample based on the "enjoy spending" scale does not help explain debt retirement behavior.

payday loans are less a mean to adjust to short-term unexpected shocks but rather a part of everyday living. The marginal use of the tax rebate for this group might have been catching up on past due rent to avoid eviction, or paying off a late gas bill to avoid a disconnection.

IV. Conclusion

Using transaction data, we show that payday borrowers used part of their 2008 tax rebate to reduce their level of payday debt. This finding is somewhat in contrast with other recent studies such Agrawal, Lui and Souleles (2007) who find MPC out of tax rebate close to 1 among individuals that are most constrained on their credit card. It is possible that a larger share of individuals in our very indebted sample of borrowers viewed and used the tax rebate as a welcome buffer to protect them for at least a little while for future income and expense shocks. Overall, however, we find that the amount of the check used by borrowers to pay down their marginal debt still leaves a large MPC for indebted individuals, consistent with Agrawal, Lui and Souleles (2007). The largest debt reduction comes from low-to-moderate users of payday loans, who use a lower bound of $70 (11.7 percent) of their stimulus check to retire debt.

In reconciling the cost of not retiring expensive debt, we find substantial heterogeneity across borrowers. Among individuals that we classify as temptation spenders (e.g. those that use 400% APR payday loans to buy electronic goods or go on vacation), we find no reduction in payday borrowing after the tax rebate is issued. This group though is quite a small portion of the sample. A second group for which we find no debt retirement post-check are those individuals that appear to use what should be short-term payday loans as a long-term financing solution. This group maps best to the 8 percent of individuals in the 2004 Survey of Consumer Finance we calculate to be constrained in overall consumer debt relative to their monthly payments.[8] We

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[8] We use the accepted mortgage broker calculation that monthly cash flow is constrained if monthly household debt payments are greater than 28% of monthly pre-tax income. We are conservative in only including credit card and

infer that the marginal use of the tax rebate for this group was to deal with regular monthly obligations, such as paying down late utility bills or making rent payments. Hence, while this group is not paying down debt or saving their tax rebate, we wonder if they are truly engaging in the kind of discretionary spending that is most associated with an effective fiscal stimulus.

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installment debt (excluding mortgages and education loans) to map to the situation of payday loan customers. We assume annual interest of 10% per year and installment loan duration of 2 years, in line with credit card and auto loan weighted averages.

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Table 1

	$I_{NotBorrow}$	$I_{NotBorrow}$	Loan Amount	Loan Amount
Check$_{t+1}$		-0.000 [0.019]		2.422 [10.45]
Check$_t$	0.062** [0.020]	0.061*** [0.016]	-36.24** [10.56]	-34.18** [10.44]
Check$_{t-1}$	0.053 [0.028]	0.053** [0.022]	-42.29** [12.75]	-40.07** [13.83]
Check$_{t-n}$	0.015 [0.031]	0.014 [0.022]	-26.26 [13.89]	-23.93* [11.41]
Obs	7987	7987	7987	7987
Individuals	881	881	881	881
R-squared	0.119	0.119	0.096	0.096

Individual fixed effects & week dummy variables included.
Standard errors clustered at the IRS wave date.

Table 2

	Dependent Variable: Loan Amount					
	Vacation, Eating Out/Entertainment or Gifts, Apparel, or Electronics		Phone Survey: "Have you had any of these big expense items so far this year?" Vacations? Electronics?		"Enjoy Spending" Rating	
	Not Listed as Use	Listed as Use	Not Listed as Primary Expense	Listed as Expense	Low	High
Check$_t$	-42.29*** [12.00]	45.47 [39.43]	-57.56** [20.31]	-16.89 [55.22]	-29.50* [13.14]	-52.89** [20.94]
Check$_{t-1}$	-49.49** [14.58]	50.34 [49.23]	-57.83 [60.18]	50.02 [105.5]	-39.18** [11.78]	-53.99* [25.65]
Check$_{t-n}$	-31.74* [15.16]	42.85 [67.04]	-16.61 [66.44]	106.4 [134.4]	-17.72 [14.75]	-55.26* [28.55]
Obs	7330	657	735	276	4711	2747
Individuals	807	74	78	30	542	283
R-squared	0.095	0.157	0.179	0.170	0.107	0.096

Individual fixed effects & week dummy variables included.
Standard errors clustered at the IRS wave date.

Table 3

	Dependent Variable: Loan Amount					
	Quartiles of Borrow Frequency			Quartile of Fees/Income		
	1	2 & 3	4	1	2 & 3	4
$Check_t$	-49.30*	-45.56**	-16.80	-59.33**	-51.94***	-11.91
	[25.57]	[16.74]	[12.64]	[18.10]	[11.54]	[22.74]
$Check_{t-1}$	-39.06	-70.26**	-16.82	-38.51	-69.92***	-23.29
	[30.55]	[21.47]	[28.79]	[30.62]	[13.98]	[30.41]
$Check_{t-n}$	-18.85	-69.11**	39.19	-9.854	-60.47***	-9.641
	[37.05]	[26.91]	[43.72]	[58.08]	[15.06]	[37.31]
Obs	2167	3790	1938	1974	3948	1973
Individuals	253	428	203	248	458	247
R-squared	0.198	0.103	0.096	0.200	0.110	0.091

Individual fixed effects & week dummy variables included.
Standard errors clustered at the IRS wave date.