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CONSUMER RESPONSE TO  
THE TIMING OF INCOME:  
EVIDENCE FROM A CHANGE  
IN TAX WITHHOLDING

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ABSTRACT

In 1992, the income tax withholding tables were adjusted so that withholding was reduced. A typical worker received an extra \$28.80 in take-home pay per month in March through December 1992, to be offset by a lower tax refund in 1993. The change in withholding amounted to 0.5 percent of GDP. President Bush, who proposed this change in his State of the Union address, intended that it provide a temporary stimulus to demand. But the policy change involved only the timing of income, so, under the life-cycle/permanent-income model, it would be predicted to have a negligible effect on consumption and aggregate demand.

This paper reports consumers' responses to the change in withholding. The results are based on a survey taken shortly after it went into effect. Forty-three percent of consumers report spending the extra take-home pay--substantially more than the zero percent predicted by the standard models, but substantially less than the one hundred percent upon which the policy was predicated. The decision to save the income is not explained by expected income growth. Therefore, while behavior of many households is not fully consistent with the life-cycle/permanent-income model, liquidity constraints do not appear to account for this behavior.

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## 1. Introduction

In his State of the Union Address of January 28, 1992, President Bush proposed a package of fiscal measures designed to stimulate an economy which had been mired in recession since the summer of 1990. All but one of the proposals required Congressional approval, which he never obtained. The policy change that the President could implement by executive order was a reduction in standard rates of withholding for income taxes. This policy reduced an employee's tax withholding by about \$29 per month, unless the employee filed a new W-4 form to offset the mandated change in the withholding schedule. The rationale for this policy was, presumably, that households would spend this extra take-home pay and hence stimulate output in the less-than-fully-employed economy.

Whether the change in tax withholding schedules would in fact change personal consumption behavior is, of course, a question that is central to some of the most controversial macroeconomics questions. If consumers face no liquidity constraints and behave rationally and frictionlessly, then a temporary increase in disposable income, offset by an approximately offsetting decrease within a year, should not affect consumption. On the other hand, if they do face

liquidity constraints or other frictions, they should spend an increment to current disposable income. The change in withholding provides an unusually valuable experiment for studying consumer behavior because it changes the timing of cash flow with essentially no impact on lifetime resources.

Inspecting the aggregate consumption data around the implementation date for signs of a break in behavior would be one natural way to examine this phenomenon.<sup>1</sup> In this paper we have chosen another strategy. We surveyed consumers shortly after the withholding schedule change concerning what they did with the extra cash flow. This strategy is subject to the standard criticism of surveys, that they are related to intentions rather than behavior. Our survey was carried out, however, after the policy change went into effect and it asks about current behavior rather than intentions of future behavior. A further advantage is that the research plan generates

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<sup>1</sup>In a related application, Wilcox (1990) has investigated how aggregate consumption reacts to changes in the timing of the payment of income tax refunds. He uses time-series techniques to relate the aggregate, monthly data to the underlying higher frequency behavior of consumers and the Internal Revenue Service. Since our paper deals with a single, aggregate event, the time-series approach does not apply.

microeconomic data that enable us to investigate correlations of consumption behavior with other attributes in a cross-section.

## 2. The Policy

The President's executive order directed employers to reduce income taxes withheld in paychecks issued after February 28, 1992. The change amounted to \$28.80 per month for married workers and \$14.40 for single workers. A married couple with two earners would receive \$57.50 extra take-home pay per month. Employees in the 31 percent tax bracket (more than \$90,200 annual rate wages for married employees and more than \$53,200 for singles) did not receive the extra take-home pay.<sup>2</sup> President Bush argued in his State of the Union Address that the change could return an extra \$25 billion into the economy over the next year, "money people can use to help pay for clothing, college, or to get a new car."

The \$25 billion spending figure presumed that all of the extra take-home pay would be spent. To rescind the ordered change in withholding, a taxpayer would have to complete a new W-4 form,

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<sup>2</sup>See Department of the Treasury, Internal Revenue Service, Employer's Tax Guide (Circular E) for February 1992 compared to January 1992.

increasing their amount withheld by an offsetting amount. A person who has more than one job would need to file new W-4s with each employer.

At the time the policy was announced, it was intended that the change in the withholding schedules be temporary. But, because of concerns about slowing the recovery from the recession, the planned reversion of the withholding tables to their pre-March-1992 levels in January 1993 was canceled.

### **3. Survey Methodology**

We added seven questions to the April 1992 Survey of Consumers, conducted by the Survey Research Center of The University of Michigan. This is a monthly telephone survey given throughout the month to approximately 500 people. In addition to our seven questions, the survey asked many other questions about the financial and demographic situation of the respondent.

The seven questions inquire first about the tax refund status of the household and whether, if there is a refund, it is usually spent or saved. Then, after asking whether they have noticed a change in the amount of tax being withheld, we describe the Bush plan and ask how

they will use the extra \$25 per month, specifically whether they will spend most of it, save most of it, or use most of it to repay debt. The precise wording of the key 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? (PROBE: What do you think you will do with most of the extra money?)

The possible answers were (i) spend, (ii) save, (iii) repay debt or (iv) changed withholding.

#### **4. Tabulation and Cross-Tabulation of Results**

Of the 501 respondents, 120 claimed not to be currently working for pay, so the withholding change did not apply to them; 36 claimed to have adjusted their withholding to offset the mandated change; 19 gave no response or did not know. Of the remaining 326 people for

whom the change did apply,<sup>3</sup> 158 said they would spend the additional money, 66 said they would save it, and 102 said they would repay debts. Repaying debts is a form of saving. Hence, slightly less than half (48%) spent the extra money and slightly more than half (52%) saved it. If we count those adjusting their withholding as savers, the fraction spending their extra cash flow is 43 percent.

Even though the change in withholding had begun at least a month before the survey, almost as many people (175) had not noticed any change in withholding as had noticed (179), and of those that professed to have noticed, 58 said they had noticed that their tax withholding had gone up rather than down. Thus, as least one month after the policy was in place, only slightly more than one-third of income earners (122 out of 354) had correctly discerned the withholding change. In our survey, we first asked the respondents whether they had noticed a change in withholding. Then, we asked our main question (quoted above) about how they responded to the

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<sup>3</sup>As noted above, the change did not apply to taxpayers whose wages were above a certain amount. As we do not know wage income of each earner, only total household income, we are unable to exclude these people from the analysis. The income breakdown in Table 1 suggests that this is a minor issue.



change in policy. (See the appendix for the precise wording and order of the questions.) Hence, our analysis is predicated on the assumption that the respondents understood the policy change once the survey-taker explained it to them, even were they ignorant of it until the moment of the survey. Moreover, we are presuming that the households' acted in accordance with their answers about spending or saving the extra pay regardless of whether they were cognizant of the change prior to hearing about it from the survey taker.<sup>4</sup> We are, however, aware that an implication of the failure of the majority of respondents to notice the change raises issues about the survey methodology and about consumer behavior. The respondent is an adult member of the household randomly selected in advance by the Survey Research Center. No substitutions are allowed. Therefore, it is possible that the respondent is the non-

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<sup>4</sup>It is not obvious what behavior would be of a household that genuinely was unaware of the increase in take-home pay. It depends what is passive behavior in this context. A household that routinely spends all its pay (or all its pay after saving a fixed amount) would, a fortiori, spend the change in withholding. On the other hand, a household that consumes a fixed amount per period would, if it ignored that change in withholding, automatically save it. What households tell us they would do with the extra \$28.80 should inform us about their behavior in these cases.

working spouse or other adult household member of the employee who is subject to withholding. But such respondents are not over-represented (by virtue, for example, of being more likely to be home to answer the phone) because of the pre-selection of the respondent by the SRC.

Table 1 presents some cross-tabulations of the response to withholding by characteristics that might be related to liquidity constraints. In particular, we investigate the relationship to income, change in financial condition (both retrospectively and prospectively), and current financial condition. In no case is there a clear relationship between the professed response to the withholding change and these indicators of liquidity constraints. In fact, lower income households generally are less, rather than more, likely to spend the temporary increase in after-tax income.

The top panel of Table 1 gives a breakdown by income group of what the respondents said they would do with their extra cash flow from the change in withholding. Columns A-D give the number of respondents in each income group saying they would spend, save, pay off debt, or change withholding. Column E gives the percent who would spend as a fraction of the total. While the eye might detect an

inverted U-shaped pattern of the percent spending their reduced withholding, there is in fact no systematic relationship with income.<sup>5</sup>

On the survey there are two qualitative indicators of the expected change in income, one asking about whether the family's future financial condition is expected to get better, stay the same, or get worse, and one asking whether income next year is expected to be higher, the same, or lower than the current year.<sup>6</sup> For both the questions asking about present financial conditions relating to last year and projecting future financial conditions relative to the current year, there is no strong pattern of response. The retrospective question is difficult to interpret without knowing the serial correlation of income. If transitory disturbances are important, which is likely at the household level, then households reporting worse conditions in

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<sup>5</sup>Caution should be exercised in making too much of the variation in the fraction spending the cash flow. The number of respondents per row in the first panel on Table 1 is small. Across the twelve income classes, the average standard error of spend percentage is 11 percentage points. The differences across the rows is statistically insignificant.

<sup>6</sup>These covariates are part of the standard Survey of Consumers. There is also a question that asks for a quantitative forecast of income growth. We use that question in the regression analysis (below).

the current year relative to previous year are more likely to be liquidity constrained. But in our sample, these households are less likely to report spending the increment to their take-home pay (39 percent of households compared with 44 and 49 percent for households with better or the same financial condition).

The theoretical prediction for expected future income growth is more straightforward. If households are liquidity constrained, those expecting growing income should be more likely to spend the extra cash flow. But for both the qualitative questions about future financial condition and future income growth, those expecting to be worse off in the future are the most likely to spend currently.

Finally, we grouped respondents by whether, given their current financial condition, they would judge it OK, or be reluctant, to use their savings to make a large purchase. Those that said it would be OK were more likely to spend the increased take home pay. This result is also not consistent with the liquidity constraint hypothesis.

The results of these cross-tabulations do not suggest that there are any strong systematic patterns in how people reacted to the change in withholding. In particular, the findings conditioning on the profile of expected income suggest that liquidity constraints do not

motivate the spending behavior of the 43 percent of households who report that the timing of tax payments affects their consumption. It is possible however, that, even though simple relationships do not hold, conditional relationships are important. In the next section we present an econometric analysis that is designed to shed light on this question.

## **5. Probit Estimates**

Table 2 reports the results of some multivariate probit estimates that examine whether the extra income from the withholding change was saved or spent. The logarithm of income, age, age squared, plus dummy variables for educational attainment and marital status were included as control variables. The dependent variable in the probit model is one for those respondents saving the reduced withholding ("save," "pay down debt," or "change withholding") and zero for those spending it.

Some demographic patterns do emerge. The propensity to save first increases with age, peaks at about the age of 44, and then declines. Second, higher educational attainment is associated with a lower probability of saving, though this effect is only statistically

significant for the college dummy variable. Neither marital status nor the level of income has an important effect on the decision of what to do with the extra income.

The indicators of the propensity to be liquidity-constrained fare no better in the multivariate probit estimations than they did in the cross-tabulations of Table 1. None of the indicators of the level or change of income has a quantitatively or statistically significant association with the disposition of the extra money.

## **6. Conclusions**

When President Bush announced in his 1992 State of the Union Address that he would, by executive order, reduce the amount of tax withheld from paychecks, few economists expected that it would provide much stimulus to the economy. Their reasoning was that few taxpayers would interpret this as an increase in their real income, realizing that the increased after-tax income in 1992 would be offset by a decrease in their net tax transaction with the government in the spring of 1993. Consumption would be increased only by those who were liquidity constrained in 1992 and expected to be unconstrained in 1993.

The results of this paper shed doubt on both presumptions. Forty-three percent of those who responded to a telephone survey said they were in fact spending the extra take-home pay. Such a high percentage suggests that the program would be moderately effective in stimulating aggregate consumption. The direct impact of the policy would be to increase consumption by an \$11 billion dollar (43 percent of \$25 billion) annual rate. Any multiplier effect would make the amount larger. The direct impact corresponds to  $2/10$  of one percent of GDP, which is a significant amount, especially given the slow recovery in 1992. But it is significantly less than the  $5/10$  of one percent of GDP that President Bush calculated under the presumption that all of the extra take-home pay would be spent.

Our figure of 43 percent is similar to Campbell and Mankiw's (1989) estimate, based on aggregate time-series that 50 percent of income goes to "rule of thumb" consumers.<sup>7</sup> We could uncover no strong, systematic relationship between indicators of liquidity constraint and the tendency to spend the extra income, which casts

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<sup>7</sup>Their estimate refers to the fraction of income going to such consumers, while our refers to the number of such consumers. Because the propensity to spend does not appear to be a function of the level of income, our fraction also refers to the fraction of income.

some doubt on the standard story of the determinants of spending out of transitory income. Although both age and educational achievement are related to the response to the change in withholding, neither current financial status nor expected future financial status plays an important role.

Our findings hence are puzzling. They support the notion that a substantial fraction of consumers simply spend their current paycheck. Yet, because the propensity to spend does not appear to be a function of either the level or change in income, they do not support the notion that the failure to smooth consumption arises from liquidity constraints. Rather, they suggest some other "rule of thumb" or near-rational behavior. This latter explanation is especially compelling in the context of tax withholding, for which there is a long-standing puzzle as to why so many taxpayers choose to overpay their taxes during the tax year, only to receive a refund, with zero interest, at tax filing time.



## REFERENCES

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- Wilcox, David W., "Income Tax Refunds and the Timing of Consumption Expenditure," Economic Activity Section, Working Paper No. 106, Board of Governors of the Federal Reserve System (April 1990).
- Department of the Treasury, Internal Revenue Service, Employer's Tax Guide (Circular E), revised January and February, 1992.

TABLE 1

## Spend or Save Extra Take-Home Pay? Responses by Income and Financial Condition

Income Range	Response				Spend Percentage $\left( = \frac{A}{A + B + C + D} \right)$
	(A) Spend	(B) Save	(C) Repay Debt	(D) Offset Withholding Change	
0-\$10,000	1	1	1	0	33
10-15	9	3	10	1	39
15-20	11	6	8	1	42
20-25	13	5	9	2	45
25-30	9	4	14	0	33
30-35	16	7	10	4	43
35-40	17	6	10	6	44
40-45	18	6	5	3	56
45-50	8	3	5	1	47
50-60	9	4	13	4	30
60-75	17	8	8	6	44
>\$75,000	18	10	7	6	47
Total	146	63	100	34	43

TABLE 1 (continued)

Financial condition compared to last year	Spend	Save	Repay Debt	Offset Withholding Change	Spend Percentage
better	68	34	37	17	44
same	49	17	27	8	49
worse	41	15	38	11	39
Future financial condition compared to this year					
better	71	27	40	17	46
same	68	33	50	18	40
worse	18	5	6	1	60
Income next year compared to past year					
higher	109	41	70	31	43
same	29	18	20	3	41
lower	20	7	12	2	49
Use savings to make purchase?					
OK	41	16	17	13	47
reluctant	104	47	76	20	42

Note: Totals for various questions are not equal because of failure of respondents to answer various questions.

TABLE 2

## Probit Estimation of the Decision to Save Extra Take Home Pay

Independent Variables	(A)	(B)	(C)
Constant	-0.899 (1.507)	-0.738 (1.503)	-0.989 (1.532)
Age	0.0834 (0.0434)	0.0782 (0.0427)	0.0796 (0.0426)
Age <sup>2</sup>	-0.000938 (0.000506)	-0.000891 (0.000495)	-0.000908 (0.000495)
High School*	-0.204 (0.304)	-0.181 (0.298)	-0.184 (0.298)
Some College*	-0.374 (0.307)	-0.394 (0.304)	-0.416 (0.305)
College*	-0.612 (0.312)	-0.624 (0.308)	-0.647 (0.309)
Married*	-0.136 (0.168)	-0.091 (0.167)	-0.0973 (0.166)
Log Income	-0.0186 (0.131)	-0.0216 (0.131)	-0.00267 (0.133)
Predicted % Growth in Income	0.00814 (0.00438)	—	—
Financial Condition Compared to Last Year*	—	-0.0311 (0.0903)	—
Future Financial Condition Compared to this Year*	—	-0.00161 (0.1200)	—
OK to Spend*	—	—	-0.0736 (0.0859)
Number of Observations	296	306	306
Log Likelihood	-198.2	-204.0	-203.7

Notes: Standard errors in parentheses.

All variables with asterisks are dummy variables

## APPENDIX

### Questions Added to April 1992 Survey of Consumers

1. When you (and your husband/wife) file your federal income tax return, do you usually get a refund, or do you usually have to pay more when you file your federal income tax return?
2. Is the additional amount that you (and your husband/wife) need to pay when you file your federal income tax return usually less than \$250, between \$250 and \$500, between \$500 and \$1,000, or more than \$1,000?
3. Do you (and your husband/wife) usually get a federal income tax refund of less than \$250, between \$250 and \$500, between \$500 and \$1,000, or more than \$1,000?
4. Do you (and your husband/wife) usually spend most of your tax refund, save most of your tax refund, or use most of it to repay debts, or what? (What you do usually do with most of the tax refund?)
5. Are you (or is your husband/wife) doing any work for pay at the present time?
6. In the past month or so, have you noticed a change in the amount of federal income tax that is being withheld from your paycheck (or your husband's/wife's paycheck)? (Has the amount withheld gone up or gone down?)
7. 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? (What you do think you will do with most of the extra money?)