

# Consumer Response to the Reagan Tax Cuts

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# Goal Of This Paper

**Goal: Test of the canonical Life-Cycle/Permanent-Income model.**

- No change in consumption in response to a change in income if that change was anticipated
- Want to test whether consumers respond to changes in income which have been anticipated
- How? Consumer Expenditure Survey (CEX) for the time period of the second and third phases of the Reagan tax cuts

# Main Findings

1. Consumption is excessively sensitive to tax cuts
2. Liquidity constraints do not seem to explain this excess sensitivity
3. Consumption response is larger and more concentrated in nondurables

# Reagan's Tax Cuts

- **Economic Recovery Tax Act**, enacted in August, 1981: Phased in the cuts over 3 years
  - Withholding rates decreased on average by 5% in October, 1981
  - Withholding rates decreased on average by 10% in July, 1982
  - Final decrease on average by 10% in July, 1983
- Since the 1982 and 1983 cuts had been pre-announced in 1981, the resulting increases in take-home pay were predictable
- Canonical LC/PI model  $\Rightarrow$  no change in consumption in 1982 or 1983

# Consumer Expenditure Survey

- Work with quarterly data from CEX surveys for 1982 and 1983
- Households are interviewed up to 4 times, 3 months apart
- For each observation (a household-quarter) expenditures are aggregated into a nondurable consumption category (matches CPI's classification) and a durable consumption category
- The questions regarding income are asked in the 1st and 4th household interviews

# Predictable Changes in Income

- CEX records gross amount of last pay check,  $PAY_1^j$ , and federal income tax withheld  $WHOLD_1^j$  from last pay check
- Want: 2 corresponding observations for the expected change in withholding
- Withholding tables provide a function  $f_1^P(\cdot) \Rightarrow$  base-period federal tax withholding:

$$f_1^P(PAY_1^j) = WHOLDP_1^j$$

- Now have 2 observations of base-period withholding for each  $j$ :  $WHOLD_1^j$  and  $WHOLDP_1^j$

## Predictable Changes in Income

- Use withholding tables for subsequent quarters  $s \Rightarrow f_s^P(\cdot)$
- Apply  $f_s^P(\cdot)$  to the same observation of *initial* pay to estimate  $j$ 's predictable future withholding

$$\text{WHOLDP}_s^j = f_s^P(\text{PAY}_1^j)$$

- Predictable change in withholding for  $j$ :  $\text{WHOLDP}_s^j - \text{WHOLDP}_1^j$
- Withholding tables can be inverted to provide mappings  $f_s^W(\cdot)$  from base-period withholding to future withholding in quarter  $s$

$$\text{WHOLD}_s^j = f_s^W(\text{WHOLD}_1^j)$$

- Predictable change in withholding for  $j$ :  $\text{WHOLD}_s^j - \text{WHOLD}_1^j$

## Regression Model

- The approximate Euler equation assumed under the *LC/PI model*:

$$dC_{i,t+1} = \sum_s b_{0,s} time_s + b_1 Z_{i,t+1} + u_{i,t+1}$$

- Demographic variables in  $Z$  (age of HH head, change in # of adults/kids) for preference shifters
- Separate dummies for each month control for common factors like seasonality
- Alternative hypothesis:**  $b_2 > 0$ , i.e. Households consume a fraction  $b_2$  of their tax cut on receipt:

$$dC_{i,t+1} = \sum_s b_{0,s} time_s + b_1 Z_{i,t+1} - \underbrace{b_2 d(\text{withholding})_{i,t+1}}_{\text{predictable change}} + u_{i,t+1}$$

- Estimation of  $b_2$ : OLS for households with successive consumption reference-quarters spanning July 1982 or July 1983



# Main Results

Table 2

The response of consumption to changes in withholding: main excess sensitivity tests, Eq. (2); dependent variable is  $C_{t+1} - C_t^a$

	(1)	(2)	(3)	(4)
	$d(\text{WHOLD})$		$d(\text{WHOLDP})$	
	Nondurable consumption	Total consumption	Nondurable consumption	Total consumption
$\text{Age}_{t+1}$	-0.832 (1.956)	8.75* (5.18)	-1.56 (1.68)	5.42 (4.59)
$d(\text{adults})_{t+1}$	421** (129)	445 (341)	441** (111)	610** (304)
$d(\text{kids})_{t+1}$	67.1 (129.6)	463 (343)	-0.7 (110.6)	301 (302)
$d(\text{withholding})_{t+1}$	0.662** (0.325)	0.976 (0.860)	0.870** (0.283)	0.947 (0.774)
No. of observations	2399	2399	3404	3400

# Robustness of Main Results

Table 3

The response of consumption to withholding: extensions; dependent variable is  $C_{t+1} - C_t^a$

	(1) <i>d</i> (WHOLD)	(2)	(3) <i>d</i> (WHOLDP)	(4)
	Nondurable consumption	Total consumption	Nondurable consumption	Total consumption
Row <sup>b</sup>				
(1) Instrumental	0.900**	1.39	0.835**	1.22
Variables: EIV	(0.362)	(0.96)	(0.392)	(1.04)
No. of observations	2386	2386	2386	2386
(2) Instrumental	0.927**	1.48	0.793**	0.732
Variables: expost	(0.356)	(0.92)	(0.245)	(0.674)
No. of observations	1761	1761	2696	2694
(3) Median regression	0.366*	0.674**	0.694**	1.02**
	(0.220)	(0.284)	(0.200)	(0.23)
No. of observations	2399	2399	3404	3400
(4) Normalize by $C_1$	0.577	0.241	0.998**	1.26
	(0.360)	(0.960)	(0.382)	(1.07)
No. of observations	1599	1599	2084	2081
(5) Control for $dC_1$	0.615*	1.27	0.872**	1.21
	(0.343)	(0.95)	(0.351)	(1.00)
No. of observations	1579	1579	2060	2057

# Heterogeneity in Consumption Response

Table 4  
Heterogeneity in the response of consumption to withholding: dependent variable is  $C_{t+1} - C_t^a$

	(1) <i>d</i> (WHOLD)	(2)	(3) <i>d</i> (WHOLDP)	(4)
	Nondurable consumption	Total consumption	Nondurable consumption	Total consumption
Row <sup>b</sup>				
(1) <i>d</i> (withholding)	0.731* (0.391)	0.828 (1.035)	0.820** (0.318)	0.949 (0.867)
<i>d</i> (withholding) × LCON	-0.158 (0.492)	0.335 (1.303)	0.154 (0.444)	-0.004 (1.213)
No. of observations	2399	2399	3404	3400
(2) <i>d</i> (withholding)	0.662** (0.325)	0.977 (0.861)	0.876** (0.284)	0.925 (0.776)
<i>d</i> (withholding) × <i>I</i> (income < \$20 000)	-0.238 (0.985)	-1.13 (2.61)	0.354 (1.04)	-1.25 (2.83)
No. of observations	2399	2399	3404	3400
(3) <i>d</i> (withholding)	0.208 (0.439)	0.309 (1.16)	0.565 (0.416)	0.854 (1.14)
<i>d</i> (withholding) × <i>I</i> (age ≥ 41)	0.845 (0.549)	1.24 (1.46)	0.488 (0.488)	0.149 (1.33)
No. of observations	2399	2399	3404	3400
(4) <i>d</i> (withholding)	0.391 (0.413)	0.991 (1.09)	0.212 (0.364)	0.263 (0.997)
<i>d</i> (withholding) × <i>I</i> (multiple earners)	0.517 (0.488)	-0.029 (1.29)	1.21** (0.42)	1.25 (1.15)
No. of observations	2399	2399	3404	3400
(5) <i>d</i> (withholding)	0.344 (0.490)	-0.519 (1.30)	0.405 (0.495)	-0.124 (1.35)
<i>d</i> (withholding) × <i>I</i> (no high school)	-1.01 (0.83)	1.04 (2.20)	-0.656 (0.762)	0.657 (2.08)
<i>d</i> (withholding) × <i>I</i> (college)	0.755 (0.550)	2.38 (1.46)	0.760 (0.516)	1.43 (1.41)
No. of observations	2399	2399	3404	3400

# The Response of Subcategories

Table 5

The response of subcategories of consumption to withholding: dependent variable is  $C_{t+1} - C_t^{**}$

	(1) <i>d</i> (WHOLD)	(2) <i>d</i> (WHOLDP)
Row <sup>b</sup>		
(1) Food	0.009 (0.132)	0.083 (0.114)
No. of observations	2420	3437
(2) Food away	0.034 (0.078)	0.071 (0.067)
No. of observations	2420	3437
(3) Strictly nondurables	0.237 (0.266)	0.439** (0.224)
No. of observations	2420	3437
(4) Food and transportation	0.316 (0.216)	0.447** (0.184)
No. of observations	2399	3404
(5) Non-trip nondurables	0.346 (0.267)	0.592** (0.235)
No. of observations	2399	3404

## Summary of Main Results

- This paper found evidence of excess sensitivity in the response of consumption to the Reagan tax cuts
- This response is counter to the canonical LP/PI model since the resulting increase in take-home pay was predictable
- Most of the response came in nondurables
- The source of the excess sensitivity remains an open issue
- The standard candidates, liquidity constraints and household heterogeneity, do not appear to explain the results