

ONLINE APPENDIX

for

Income Taxation of U.S. Households: Facts and Parametric Estimates

REVIEW of ECONOMIC DYNAMICS

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1 Online Appendix

1.1 Relation between Income and Taxable Income

The IRS micro data allows us to estimate a relation between household income and taxable income. To this end, let y represent household income and y_τ be the taxable income. If we know this relation for married and single households, one can use then statutory tax rates in Table 1 in the paper to figure out taxes paid for a household of income y . To this end, suppose the relation between y_τ and y is given by

$$y_\tau = \alpha + \beta y + \gamma y^2 + \theta_1 n + \theta_2 k + \varepsilon,$$

where n is the number of adults and k is the number of children in the household. Since single and married households face different tax schedules, we estimate this relation separately for married and single households. Table A1 shows the results.

Table A1: The Relation between Income and Taxable Income

Estimates	(Married)	(Single)
α	-11597.9*** (0.001)	-2103.9*** (350.77)
β	0.877*** (0.001)	0.814*** (0.001)
γ	-0.000* (0.000)	0.000*** (0.000)
θ_1	-2549.8* (1168.6)	-2924.2*** (344.6)
θ_2	-965.4*** (238.0)	-2223.3*** (230.8)

***, ** and * indicate significance at the 1%, 5% and 10% significance levels respectively.

Based on these estimates one can calculate taxable income and taxes paid for any household. Consider a married household with 2 children that earn about mean household income, 53000\$. The estimates in Table A1 imply that the taxable income for this household is about 27853\$ and according to Table 1 in the paper, they would pay 15% on this taxable income, about 4178. As a result their effective tax rate is about 7.9%, which is close to tax rates we document in Figure 2. One can do similar calculations for different levels of income and household configurations. Hence, the empirical relationship between household income and taxable income, in conjunction with the tax schedule appears as a sensible alternative to our approach in the paper to estimate tax liabilities.

1.2 Additional Tables

Table A2: Taxes by Sources of Income

	Quantiles by Labor Income				
Quantiles by Capital Income	20% (2,932)	20-40% (12,579)	40-60% (24,555)	60-80% (43,253)	80-100% (117,889)
Bottom 40% (-555)	0.005 (0.023)	0.033 (0.109)	0.061 (0.146)	0.091 (0.187)	0.123 (0.251)
40-60% (65)	0.013 (0.042)	0.045 (0.125)	0.069 (0.147)	0.096 (0.194)	0.121 (0.255)
60-80% (1,480)	0.030 (0.055)	0.031 (0.105)	0.067 (0.148)	0.097 (0.194)	0.137 (0.270)
80-100% (55,977)	0.070 (0.144)	0.063 (0.153)	0.089 (0.186)	0.114 (0.225)	0.165 (0.298)

Note: This Table shows average tax rates and statutory marginal rates at different quantiles of the joint distribution of capital and labor income. The statutory marginal rate reported is the average of the corresponding statutory marginal tax rate for each household within the income category. Average capital and labor income in each quantile is also reported. The first two quantiles for capital income are grouped together as 44% of households have non-positive capital income.

Table A3: State and Local Taxes

Income Level	State and Local Taxes
<u>Bottom</u>	
1%	-
1-5%	-
5-10%	-
<u>Quantiles</u>	
1st (bottom 20%)	-
2nd (20-40%)	4.0
3rd (40-60%)	4.0
4th (60-80%)	4.2
5th (80-100%)	4.6
<u>Top</u>	
90-95%	4.6
95-99%	5.0
1%	5.3

Note: This Table shows the magnitude of state and local income taxes at different income levels.

Table A4: Tax Rate Distribution

Statistic	Married	Unmarried
% with zero tax liability	14.5%	31.8%
Median Tax rate	8.5%	6.1%
Mean Tax rate	8.8%	6.4%
<u>Tax Rate at</u>		
80th Percentile	14.0%	11.2%
90th Percentile	17.1%	14.5%
95th Percentile	19.8%	17.5%
99th Percentile	27.7%	23.0%

Note: This Table shows properties of the distribution of average tax rates for married and unmarried households.

Table A5: Parameter Estimates – Special Cases

Estimates	With EITC Refunds			With SS Income			Without SS Income			Only Labor Income			With State and Local Taxes		
	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried	All	Married	Unmarried
<u>HSV</u>															
λ	0.911 (0.000)	0.922 (0.000)	0.911 (0.001)	0.914 (0.000)	0.926 (0.000)	0.901 (0.001)	0.900 (0.000)	0.911 (0.000)	0.896 (0.000)	0.912 (0.001)	0.924 (0.001)	0.907 (0.001)	0.864 (0.000)	0.884 (0.000)	0.841 (0.001)
τ	0.053 (0.000)	0.092 (0.001)	0.048 (0.000)	0.062 (0.000)	0.075 (0.001)	0.064 (0.001)	0.036 (0.000)	0.060 (0.000)	0.034 (0.000)	0.031 (0.000)	0.047 (0.001)	0.033 (0.000)	0.074 (0.000)	0.092 (0.000)	0.080 (0.001)
<u>Power</u>															
δ	-0.294 (0.009)	-15.738 (0.000)	-0.171 (0.006)	-8.995 (0.000)	-9.327 (0.000)	-8.665 (0.001)	-0.084 (0.002)	-0.378 (0.009)	-0.063 (0.002)	-0.028 (0.002)	-0.044 (0.004)	-0.019 (0.001)	-9.024 (0.000)	-10.025 (0.000)	-8.979 (0.001)
γ	0.382 (0.010)	15.812 (0.000)	0.275 (0.006)	9.080 (0.000)	9.400 (0.000)	8.763 (0.000)	0.183 (0.002)	0.462 (0.009)	0.178 (0.002)	0.133 (0.002)	0.121 (0.005)	0.151 (0.002)	9.159 (0.000)	10.141 (0.000)	9.136 (0.000)
ϵ	0.164 (0.004)	0.005 (0.000)	0.283 (0.008)	0.006 (0.000)	0.007 (0.000)	0.007 (0.000)	0.246 (0.002)	0.126 (0.002)	0.314 (0.004)	0.508 (0.014)	0.603 (0.027)	0.680 (0.014)	0.007 (0.000)	0.007 (0.000)	0.007 (0.001)

Note: This Table shows the parameter estimates for all, married and unmarried households under two specifications, *HSV* and *Power*. Five alternative cases are considered: with EITC refunds, for households with only social security income, for households without social security income, for households with only labor income and including state and local taxes. Standard errors are in parenthesis.