Do Doubled-up Families Minimize Household-level Tax Burden?

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Research question

What predicts the sorting of dependent children, for tax purposes, between related adult filers in a household?

Definitions

- Sorting: There is a child in the household who

    - looks like he belongs to the reference person, according to survey response

    - is actually claimed by another adult relative in the household

- Multiple related adult filers: A child, grandchild, parent, sibling, or other relative of a survey household reference person who lives in the HH and

    - files a 1040

    - is not claimed as a dependent on another return

- Example: A mother with 2 children lives with her mother; the mom claims one child and the grandmother claims the other.
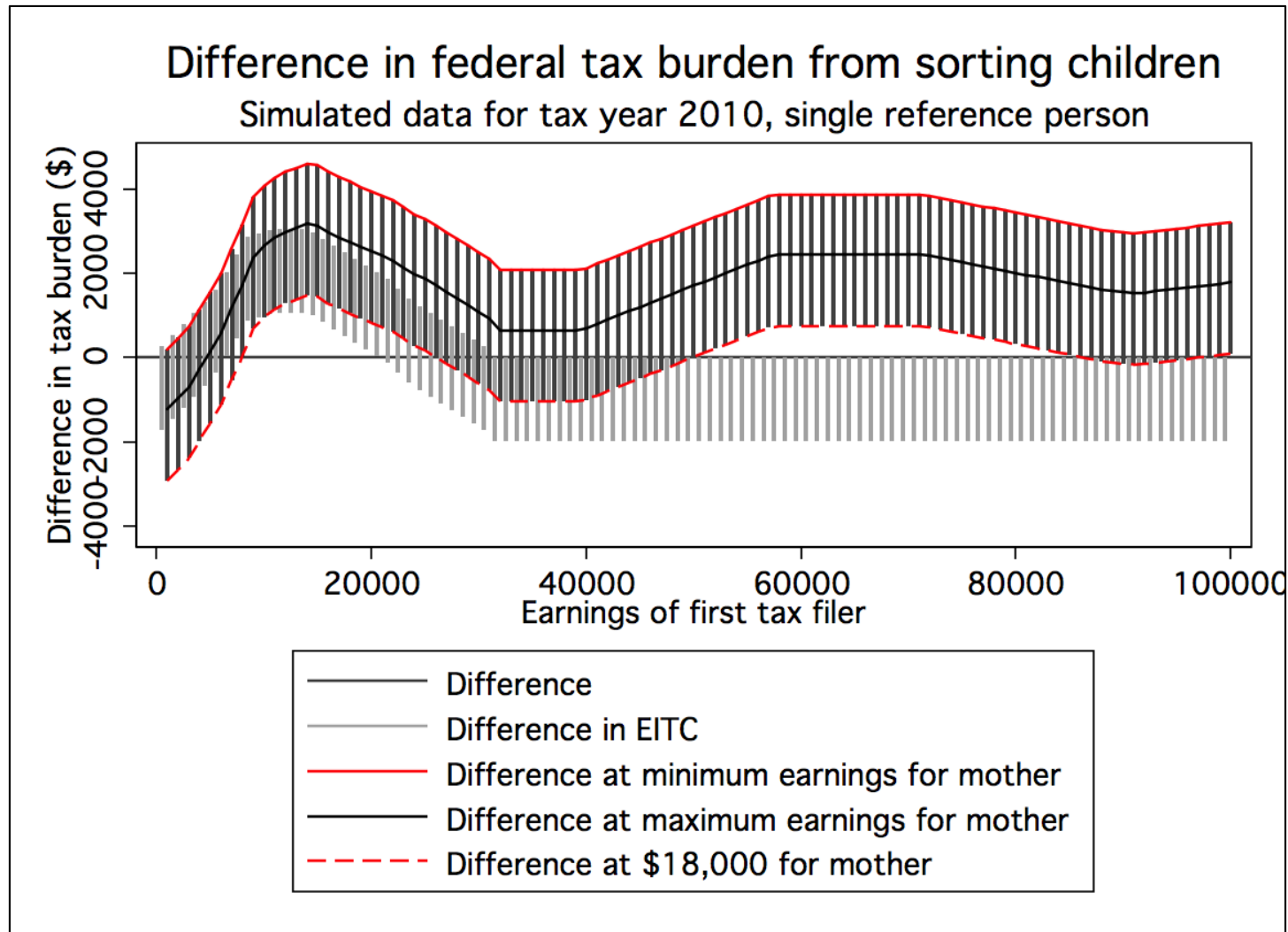
Mechanism

- Income tax burden is

  - Unambiguously smaller for an *individual* when a dependent can be claimed

  - Larger or smaller for a *household* depending on the details of who claims or how many dependents each taxpayer claims

- Complexity of income tax laws regarding qualifying children

  - Residency versus support

  - Relative status

- Avoidance or evasion?

  - Complexity of rules leaves many situations open to interpretation

  - We assume sorting is generally allowed by rules (and we wouldn't be able to distinguish anyway)

Incentives in tax rules

- Dependent exemption
    - lowers taxable income for claimant
    - value depends on tax bracket
- Head of household filing status
    - higher standard deduction
    - wider tax brackets
- Earned Income Tax Credit (EITC)
    - larger credits for more children, but
    - credits are not multiplicative in children
- Child Tax Credit (CTC, also ACTC)
    - credit is per child

Example I: Single mother, single grandmother

Example II: Single mother, married grandmother

Difference in federal tax burden from sorting children

Simulated data for tax year 2010, married reference person

Legend:
- Difference, including EITC
- Difference in EITC
- Difference at minimum earnings for mother
- Difference at maximum earnings for mother
- Difference at $18,000 for mother

X-axis: Earnings of first tax filer
Y-axis: Difference in tax burden ($)
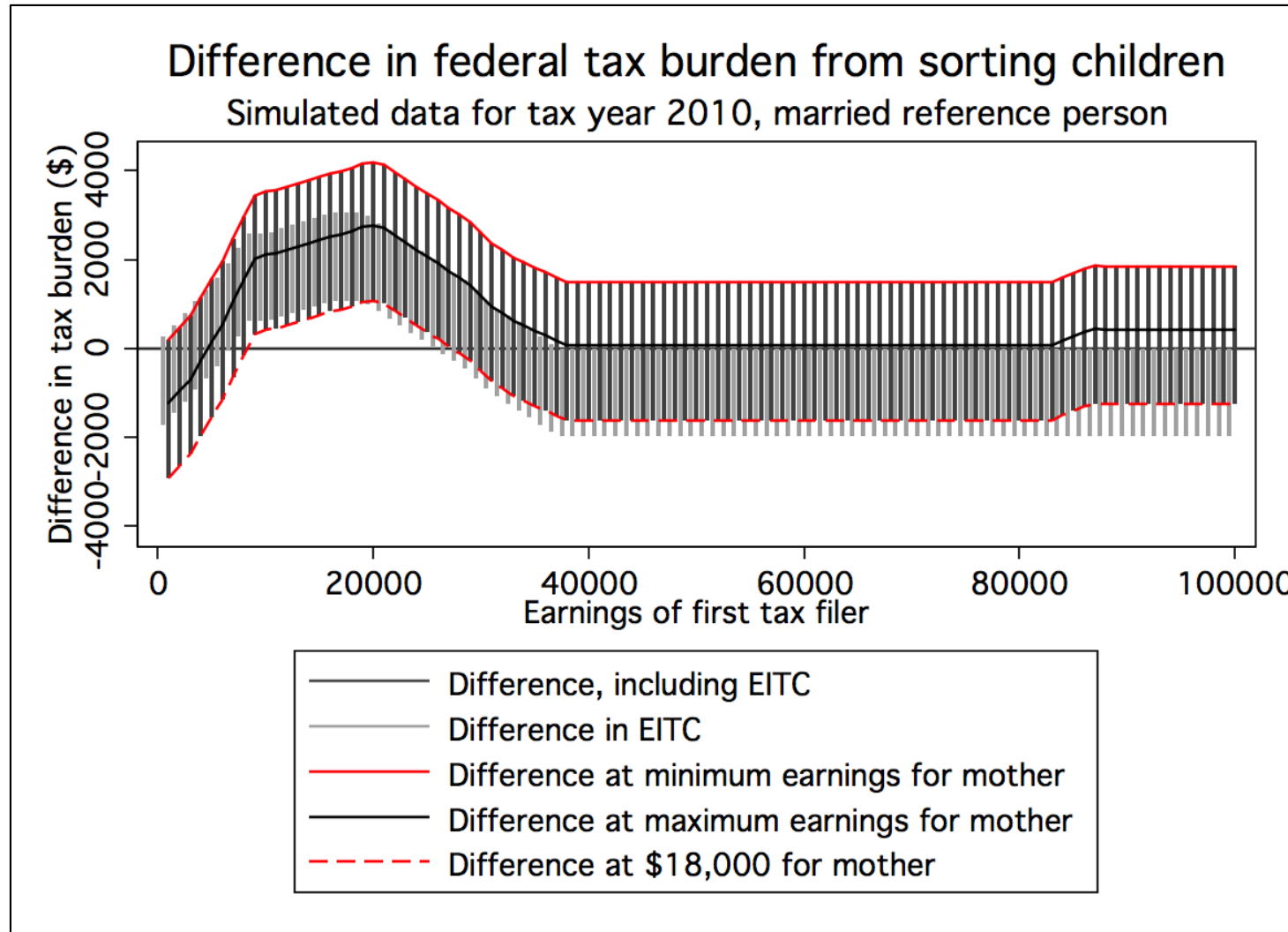
Motivation and background

- **Exploitation of quirks in tax rules**
  - Saez (2010): "bunching" of earnings at favorable points in the tax schedule

- **Exploitation of dependent credits/EITC**
  - LaLumia & Sallee (2012): requirement to provide children's SSNs
  - McCubbin (2000): "mystery" children

- **Policy implications**
  - Poverty and its measurement
  - Duflo (2003): distribution of benefits in multifamily HH

Model

- Following McCubbin (2000), we use the increase in tax refund (or decrease in tax burden) due to optimal sorting of children:

$$\frac{\partial E(y_r, x_r)}{\partial x_r},$$

where y_r is reported income and x_r is number of claimed dependent children

- For now, we express this in terms of per person EITC, which will make up much of the difference in burden

- Using probit models, we use this value as the explanatory variable predicting whether or not a household sorts

Data

- Current Population Survey Annual Social and Economic Supplement (CPS ASEC), 2006–2011

- IRS tax data from 2005–2010

  - Universe of 1040s

  - Universe of W-2s

- Records are matched at individual level using probability linkage techniques (Layne & Wagner, 2012)

  - Name, DOB, address, SSN used to assign unique identifier

  - Records linked using identifier, personal information stripped

  - Matches kept when CPS values not imputed

Eligibility modeling

- Starting with relationship status in the CPS, modeling proceeds as described in Jones (2013)

  - Model eligibility from survey responses on earnings, AGI, investment income, dependents

  - Iteratively swap in values from W-2 and 1040 data for all possible fields

  - Update eligibility based on administrative info for everyone for whom info is available

  - For this project, *modeled* eligibility calculated based on survey response regarding dependents

- We model eligibility status (0/1) and credit amount ($)

Sample selection

- Households where the reference person or spouse files a 1040, and

    - there is at least one other adult relative 1040 filer in the HH, and

    - there is at least one dependent child claimed on a 1040

- All info on adult related filers then linked to the reference filer

- We get the *original modeled total* for the household:

    - number of EITC-eligible filers

    - total credit amount

- Next, simulated eligibility models are run

Simulated Eligibility

- For every combination of filers/children in a household, we compute all possible EITC amounts for the household (up to a max of 4 filers and 6 children)

    - constitutes a permutation

    $$\frac{(n+r-1)!}{n!(r-1)!}$$

    where *n* is the number of children and *r* the number of filers.

    - largest possible number of eligibility runs for a household is thus 84

- All other variables that go into eligibility determination (income, earnings, etc.) remain the same

- Matrices provide the rules for an eligibility run. Example, for two filers, one child:

	Run 1	Run 2
Filer 1	0	1
Filer 2	1	0

Simulated Eligibility

- Using Stata matrices and loops, a run of simulated eligibility

  - assigns the number of children in the household across household filers according to the rules of that permutation

  - calculates eligibility status and credit amount for each filer

  - sums the number of filers eligible and totals the credit amounts for that run

- The retained simulated totals for the household are:

  - maximum number of EITC-eligible filers possible

  - maximum total credit possible (*optimal total* credit)

- We then calculate the difference between *original modeled total* credit amount and simulated *optimal total* credit

- Because this will be larger for larger households, we divide the difference by household size to get a per-person difference

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Results

Doubling up

- Unsurprisingly, doubling up increased during the Great Recession

Table 1. Change in multiple-filing households, 2005-2010

	Non-multiple-filer households	Multiple-filer households
2005	89.47	10.53
2006	89.08	10.92
2007	87.28	12.72
2008	87.40	12.60
2009	87.90	12.10
2010	87.42	12.59
N	167,126	

Source: CPS ASEC—IRS linked file, 2005 to 2010. Sample includes CPS reference persons who filed a 1040 in the tax year, who received a PIK and could be matched, and who had at least one dependent in the household who was claimed on a 1040.

Make-up of sorting and non-sorting HH

Table 2. First and second relative filers in sorting and non-sorting households

First relative, sorters	Child	Grandchild	Parent	Sibling	Other	None	Total
Child	11.96	0.98	0.51	0.37	2.09	50.21	66.12
Grandchild		0.09	0.00	0.00	0.00	2.84	2.93
Parent			0.42	1.91	0.70	8.66	11.68
Sibling				0.70	0.88	5.91	7.49
Other					0.61	11.17	11.77
Total						78.78	100.00
N	2,149						

First relative, non-sorters	Child	Grandchild	Parent	Sibling	Other	None	Total
Child	8.22	0.50	0.31	0.34	1.37	58.90	69.63
Grandchild		0.11	0.01	0.00	0.16	1.09	1.37
Parent			0.24	1.59	0.40	10.45	12.69
Sibling				0.33	0.32	5.48	6.13
Other					0.52	9.67	10.19
Total						85.59	100.00
N	17,729						

Source: CPS ASEC-IRS linked files, 2005-2010.

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Main Results

Table 2. Probit models predicting sorting. Dependent variable = 1 when a household sorts

	(1)	(2)
Eligible for EITC, reference person	0.042***	0.031***
	(0.005)	(0.005)
Eligible for EITC, relative	0.047***	0.035***
	(0.005)	(0.006)
Maximum possible eligible, simulation	0.046***	0.027***
	(0.003)	(0.002)
Per-person max EITC (log)	0.006***	0.007***
	(0.001)	(0.001)
Difference in per-person EITC (log)	0.000	0.001
	(0.001)	(0.002)
N	19,877	
Difference in per-person EITC (log), eligible HH	0.005*	0.005*
	(0.002)	(0.002)
N	9,020	
Year and region fixed effects	yes	yes
Characteristics for reference person	yes	yes
Characteristics for household	no	yes

Source: CPS ASEC-IRS linked files, 2005-2010.
Each row reports a separate probit regression. Marginal effects are reported for each independent variable
listed. The unit of observation is the CPS reference person.

Earnings of sorters and non-sorters

Table 4. Differences in earnings in multifamily homes between sorters and non-sorters

	Mean earnings, reference filer***	Mean earnings, filer 2**	Mean earnings, filer 3	Difference between ref filer and lowest earner***
Sorter	33,758.44	18,535.71	18,521.36	17,102.71
Non-sorter	55,055.80	20,386.04	20,058.79	36,115.80

Source: CPS ASEC-IRS linked files, 2005-2010. Asterisks indicate whether the difference in mean is statistically different from 0.

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Sorting to three

- Thought experiment: Find an exogenous change in the incentive to sort to see how it changes behavior

- We use the change in EITC rules in 2009, which instituted higher benefits for filers with three or more children versus two

- The *change* in incentive did not affect EITC-ineligible filers, thus the diff-in-diff is (simplified)

$$\delta_1 = \left(y_{B,2} - y_{B,1}\right) - \left(y_{A,2} - y_{A,1}\right)$$

where the difference estimated is the probability that a household will sort AND at least one filer will claim exactly 3 children

Assumption: between pre and post, no other change in tax laws regarding number of children were instituted that affected EITC-ineligibles

Sorting to three

Table 5. Difference-in-difference model predicting sorting to exactly three children. Dependent variable = 1 when a sorting household has at least one filer who claims 3

Post*Any eligible	0.071***
	(0.011)
Any eligible	-0.007
	(0.004)
Post	0.006
	(0.010)
Characteristics for reference person	Yes
Characteristics for household	Yes
N	4,039

Source: CPS ASEC-IRS linked files, 2005-2010.
OLS coefficients are reported. The unit of observation is the CPS reference person.

Conclusion

- We examined the way multiple filers in a household sort dependents to minimize household tax burden

- As a function of optimal EITC amount, the propensity to sort

  - Increased as ΔEITC increased, but only when looking at households where at least one filer was eligible for EITC under original modeling

  - Results could be due to an information story or sorting among relatively less affluent households

- Sorting to exactly three children increased after the 2009 change in EITC rules

  - Supporting evidence that the behavior is a direct response to rule-making

Thank you!

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