Federal, State and Local Tax Progressivity

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NBER SI 2021 – Macro Public Finance Workshop

Federal vs. State & Local Redistribution

- Federal income tax and transfer system is progressive
  (Guner et al. 2014, Heathcote et al. 2017, Ferriere and Navarro 2020, ...)
- Less research on progressivity at state & local level
  (Suits 1977, Chernick 2005, Fajgelbaum et al 2019, Fleck and Simpson-Bell 2019; ITEP: "Who pays?")
- State & local tax revenue is large: 7% of GDP
  - Federal income taxes: 8%
  - Social security taxes: 6%
- State & local taxes include sales and property taxes
  - Standard claim: sales and property taxes are *regressive*

This Paper

Questions:

- How do state & local taxes and transfers contribute to redistribution across US households?
- How much does progressivity vary across states?
- What accounts for this heterogeneity?

Methodology:

- Measurement of state & local progressivity
- Combine household surveys, augment with gov't statistics

Main findings

1. Federal income taxes and transfers are progressive

2. On average, state & local tax-transfer systems are close to proportional
   - But there is substantial heterogeneity

3. State tax base impacts progressivity
   - Mostly property & consumption taxes $\Rightarrow$ typically regressive
   - Mostly income taxes $\Rightarrow$ typically progressive

4. Predictors of state & local progressivity:
   - Democrat-leaning and more ethnic diversity $\Rightarrow$ more redistribution
   - Higher median income, larger top income and poverty shares $\Rightarrow$ less redistribution

Data Sources and Sample Selection

- Main data source: ASEC ("CPS March Supplement")
  - Unit of observation: household
  - Focus on labor force:
    1. Age of household head between 25-60
    2. One spouse has earned income > part-time * min. wage

    (Share of hhs dropped by income requirement: 4.1%)
  - Years: 2005/06, **2010/11**, 2015/16
- Supplement ASEC with IRS SOI data for very high income households

Definitions

- **Pre-government income**: wages & salaries + business & professional practice + farming + interest + dividends + rents & royalties + private transfers + realized capital gains
- **Post-government income**: Pre-government income + Transfers - Taxes

	Federal		**State & Local**	
		% *inc*		% *inc*
Taxes	Income	*10.99*	Income	*3.26*
	FICA	*6.47*	Property	*2.89*
			Sales	*0.86*
			Excise + User Charges	*0.61*
Transfers	Medicaid*	*1.19*	UI	*1.12*
	Survivors Insurance	*1.13*	Medicaid*	*0.58*
	SNAP	*0.33*	Workers' Comp.	*0.15*
	SSI	*0.21*	TANF*	*0.01*
	Veteran's Benefits	*0.19*		
	DI	*0.17*		
	School Lunch	*0.16*		
	TANF*	*0.01*		

% of sample pre-government income; * federal vs. state shares

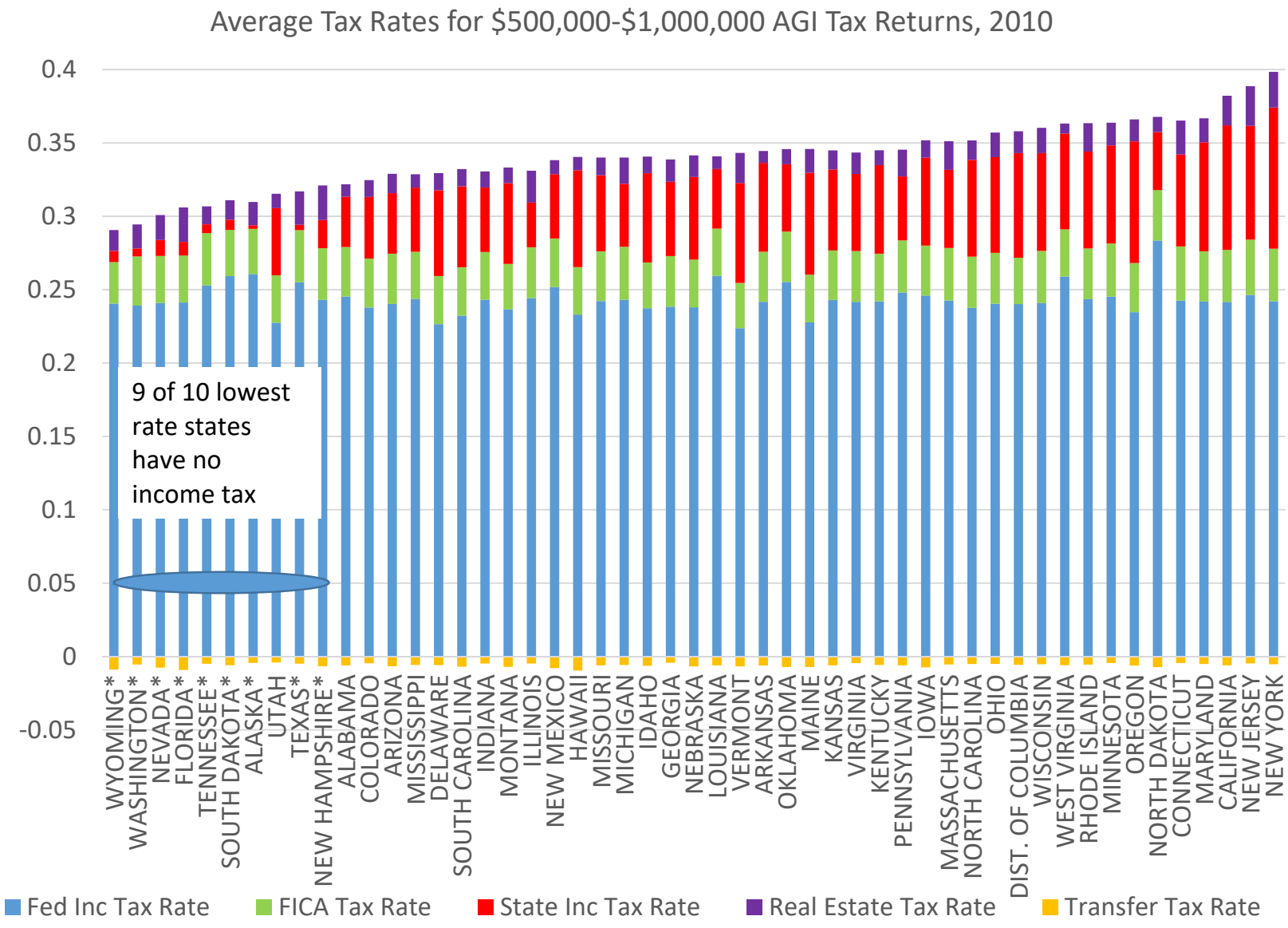
Data Sources for Taxes and Transfers

- Income taxes: Census Bureau tax model + SOI for the top
- Transfers:
  - All self-reported in ASEC, except Medicaid
  - Impute future value of old-age pensions (as in HSV 2017)
- Construct two transfer measures:
  - **Narrow**: TANF, SNAP, UI, DI, Survivors Insurance, APFD
  - **Broad**: Narrow + Medicaid, SSI, WC, School Lunch, Veteran's Benefits, future value of old-age pensions
- Property taxes: American Community Survey, Zillow
- Sales and excise taxes: CEX, Book of States, ...

Supplementing ASEC incomes with SOI data

- Key to measure income & taxes accurately at the top
  - Tax filers with AGI over $500k in 2010 accounted for:
    - 0.58% of tax returns
    - 16.0% of AGI
    - 29.5% of federal income taxes
- Income and taxes top-coded in ASEC $\Rightarrow$ turn to IRS SOI:
  - available at the state level
  - includes realized capital gains (important at the top)
  - records actual federal taxes
  - state income taxes and property taxes for itemizers (almost all high income filers)
- We replace all ASEC households with income over $200k with synthetic ones from the SOI tables

SOI Tax Rates for Top Income Households



Measuring Property Taxes of Home-Owners

- ASEC provides property taxes for owners but imputation does not use location information (since 2011)
- ACS has self-reported data on house values, property taxes and rents (Harris and Moore, 2013; Scarboro, 2018)
- Solution: match each ASEC household with her *k = 10 nearest neighbors* in ACS
  - Match on county (state), demographics and income
  - Impute property taxes using median property taxes of ACS nearest neighbors

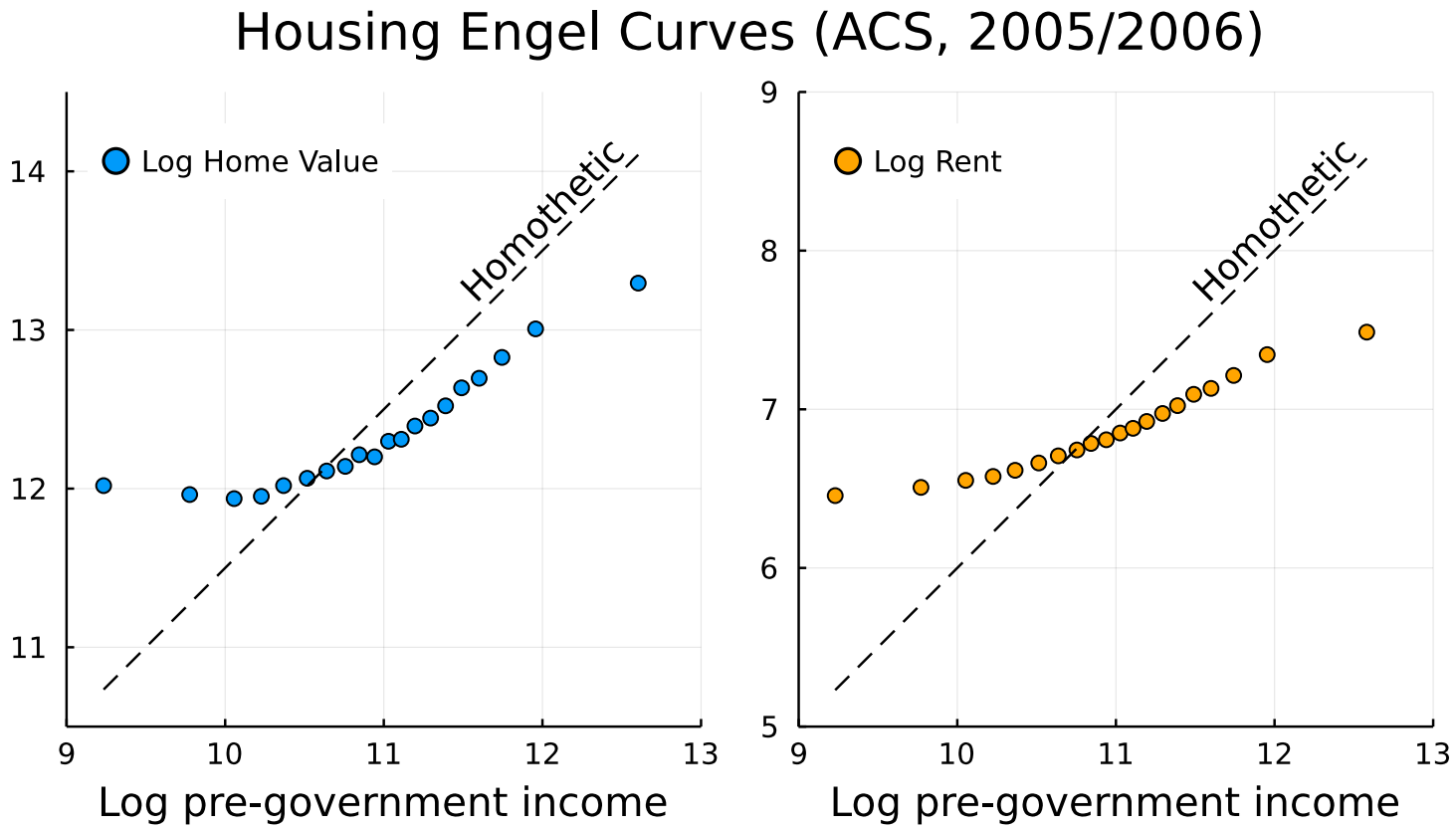
Measuring Property Taxes of Renters

- Two assumptions:
  1. Rent is proportional to house value within a state
  2. Property taxes have full pass-through to rents
     - In line with empirical evidence (Tsoodle and Turner, 2008)

- Our imputation procedure:
  - Construct state price-to-rent ratios $(P/RENT)_s$ from Zillow
  - Impute rent of ASEC hh i, $\hat{RENT}_i$ using Nearest Neighbor matching to ACS
  - Combine to impute value of rented house $P_i = (P/RENT)_s * \hat{RENT}_i$
  - Collect average state property tax rates, t_s^p and impute property taxes as $T_i^P = P_i * t_s^p$

Why Are Property Taxes So Regressive?

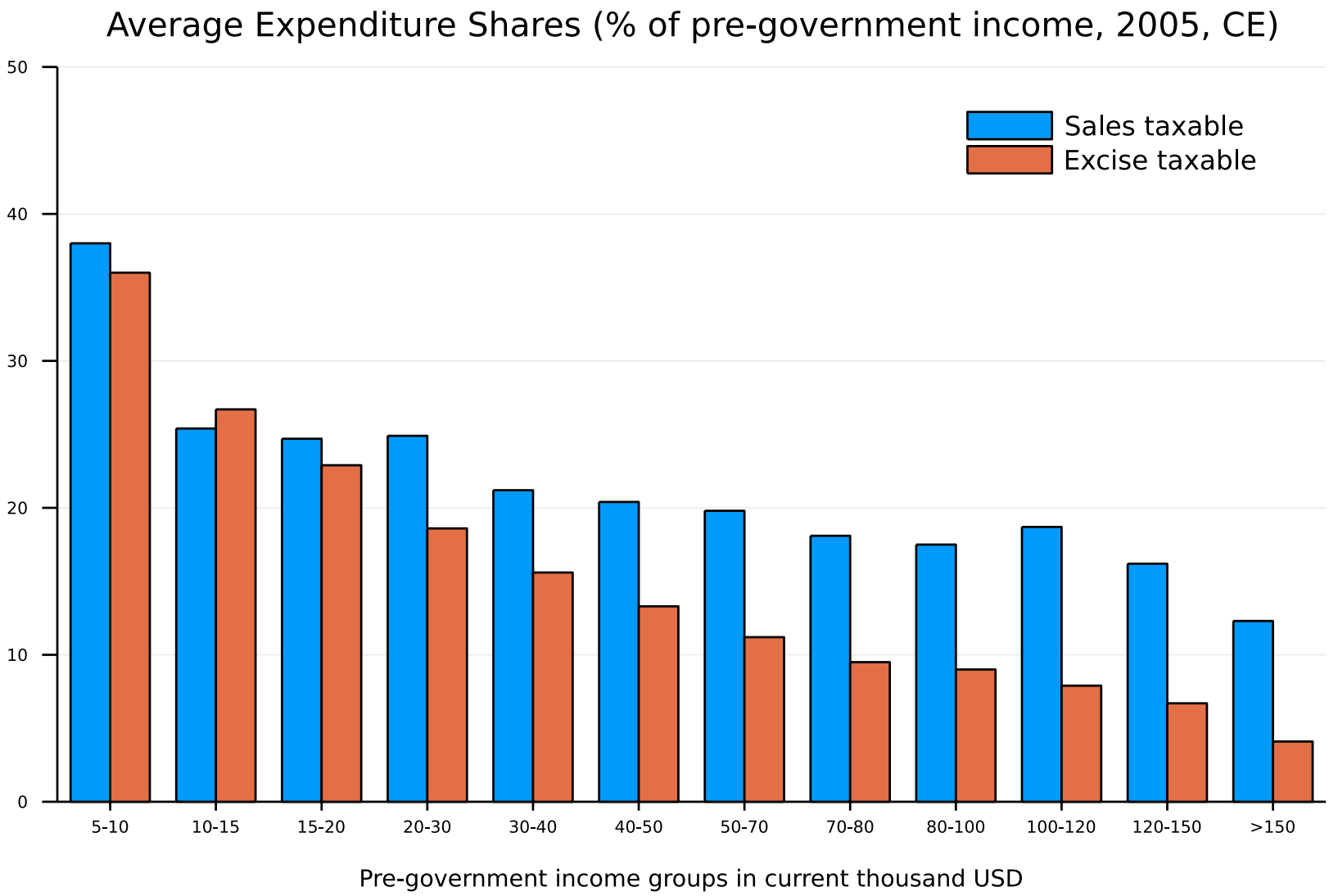
Because housing consumption is strongly non-homothetic:



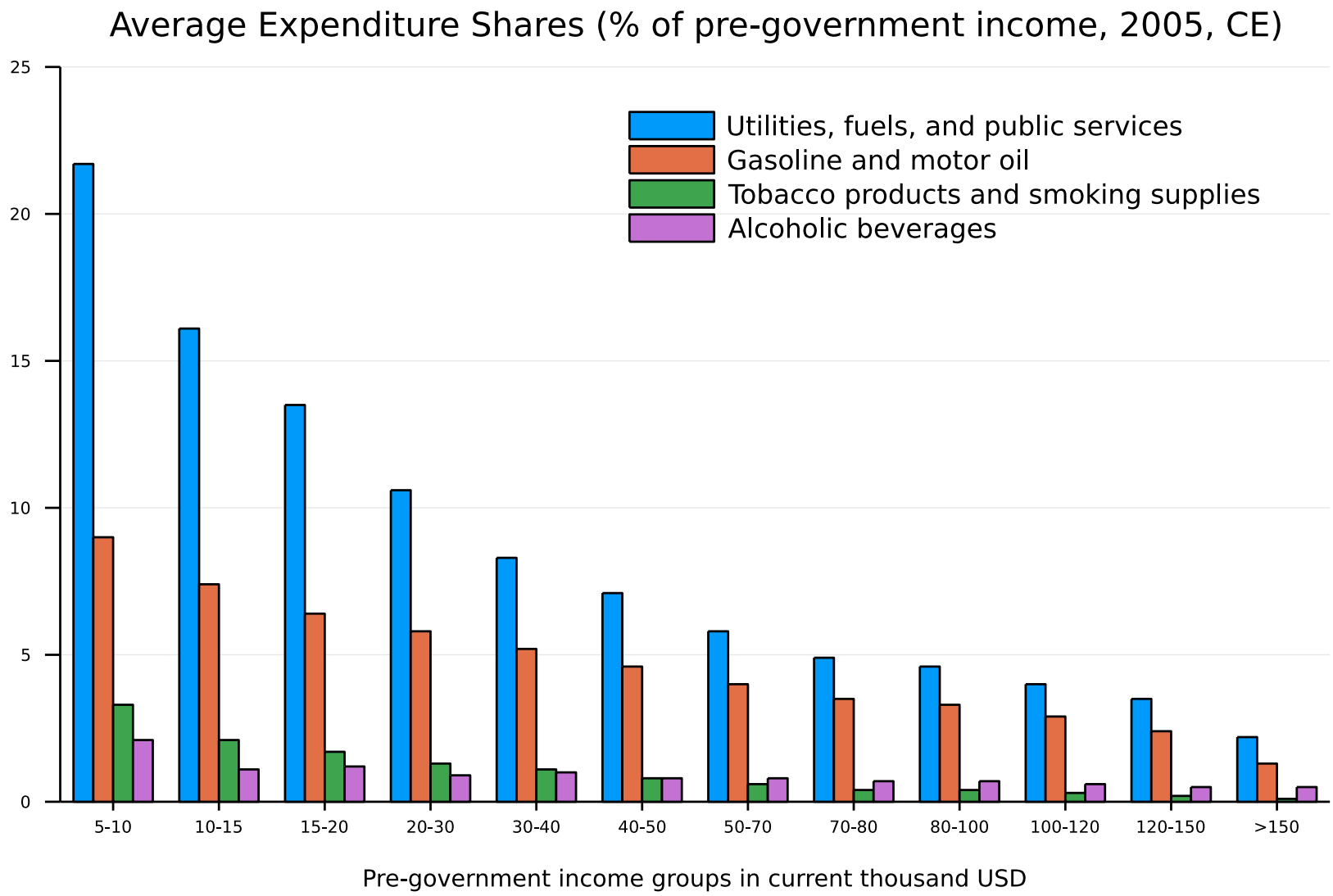
Measuring Sales and Excise Taxes

- **First step:** measure relevant expenditures by income group
- Use CEX to derive expenditure shares on:
  - sales-taxable goods (services in progress)
  - excise-taxable goods and services: tobacco, alcohol, gasoline, utilities (electricity, sewage, etc)
  - obtain imputed $expenditure_k^j$ for households in income group k on good j
- Caveat: we assume the same mapping across states

Components of Taxable Expenditure Share



Components of Excise-Taxable Expenditure Share



Measurement of Sales Taxes

- **Second step:** impute sales taxes paid
- Sales taxes paid by households with income k in state s

$$T_{s,k}^{sales} = \tau_s^{sales} * expenditure_k^{sales}$$

where:

  - $expenditure_k^{sales}$ = imputed expenditure on sales-taxable items of income group k
  - τ_s^{sales} = linear sales tax rate

- Collect τ_s^{sales}: Book of States (state rates) and Tax Foundation (local rates)

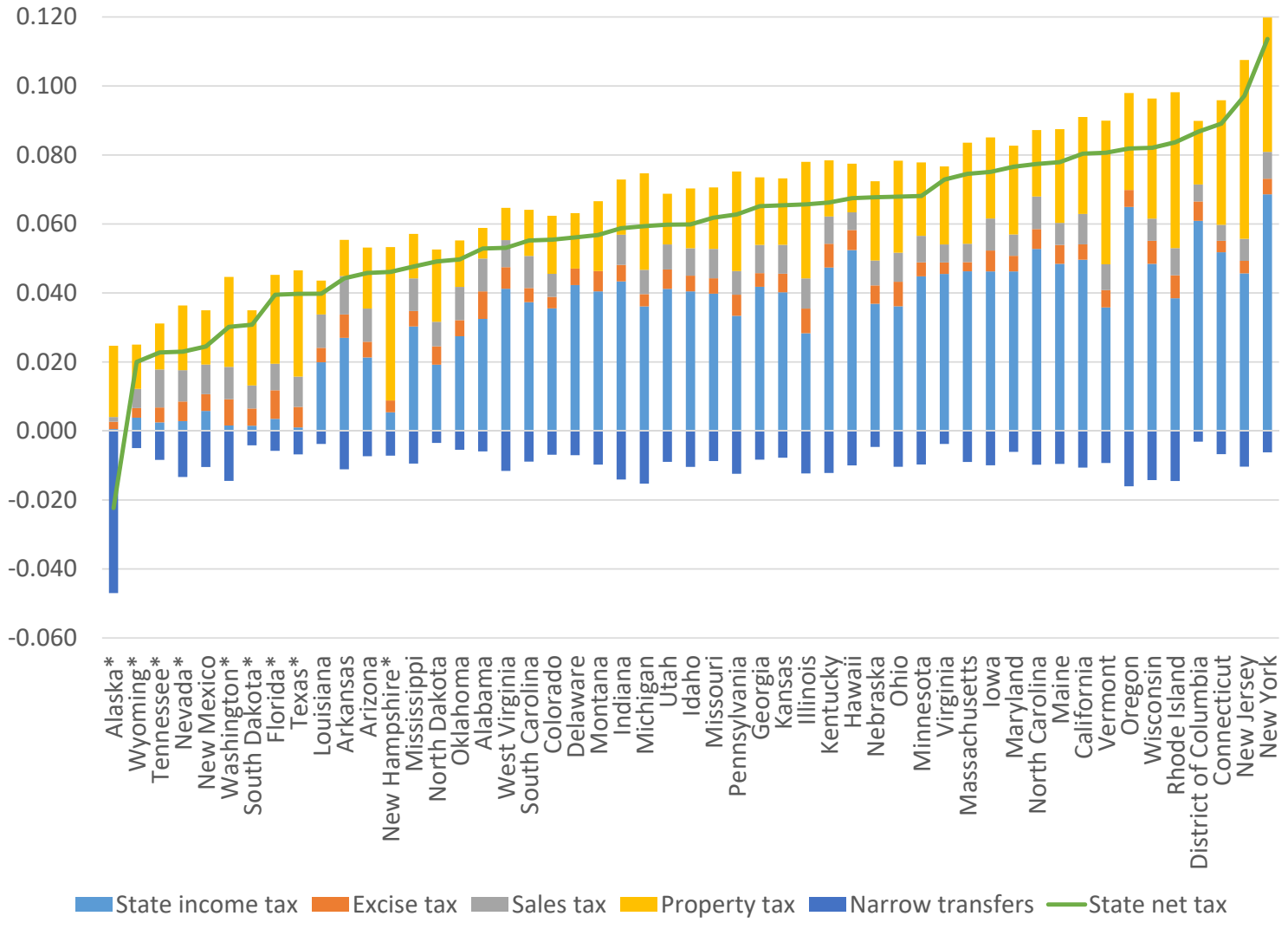
Measurement of Excise Taxes

- **Third step:** impute excise taxes paid
- Example: gasoline
  - Assume linear tax rate: $\tau^{gasoline} = \frac{\text{Excise tax}}{\text{Pre-tax retail price}}$
  - Excise taxes: Book of States
  - Retail prices: US Energy Information Administration
  - Gasoline taxes for household with income k in state s:

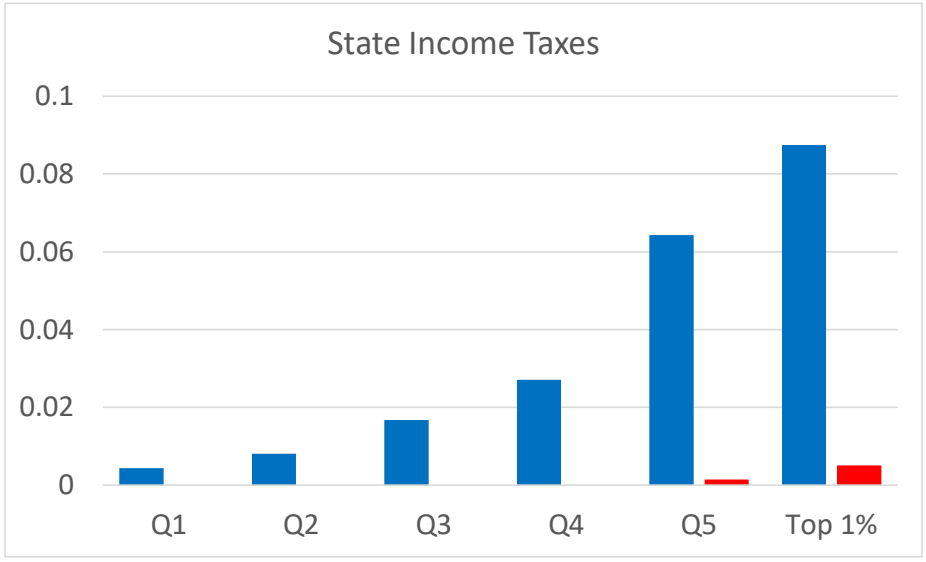
$$T_{s,k}^{gasoline} = \tau_s^{gasoline} * expenditure_k^{gasoline}$$

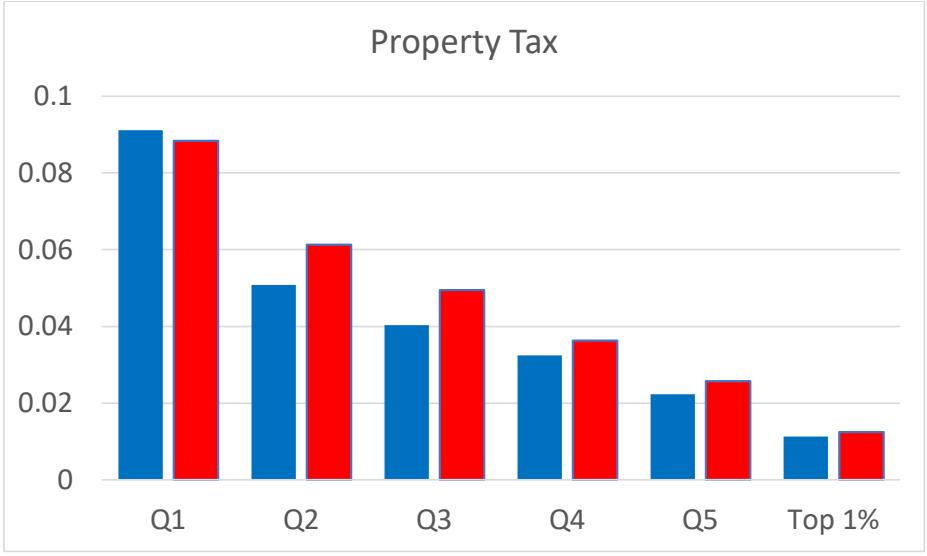
- Similar methodology for alcohol, tobacco, and utilities

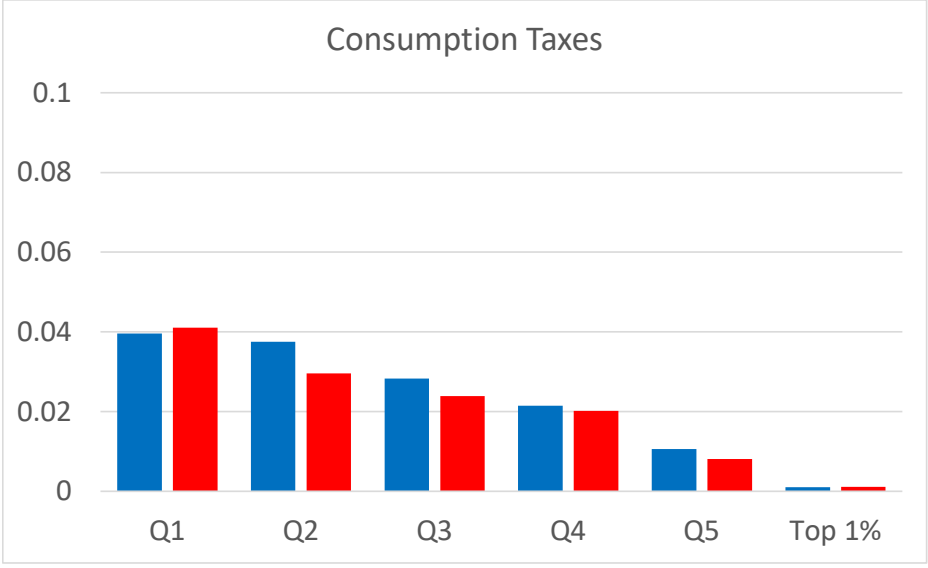
Average Tax Rates by State

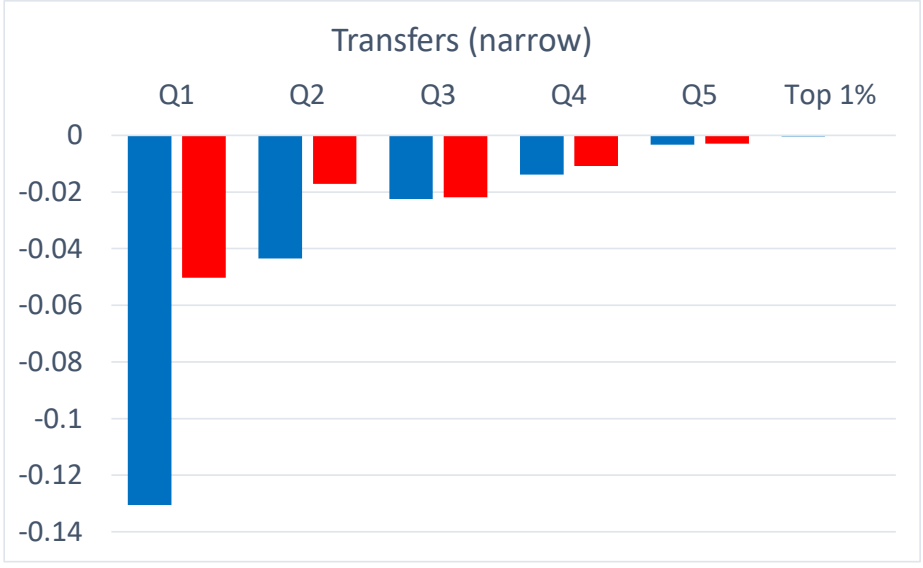


Tax Rates by Income: California versus Texas









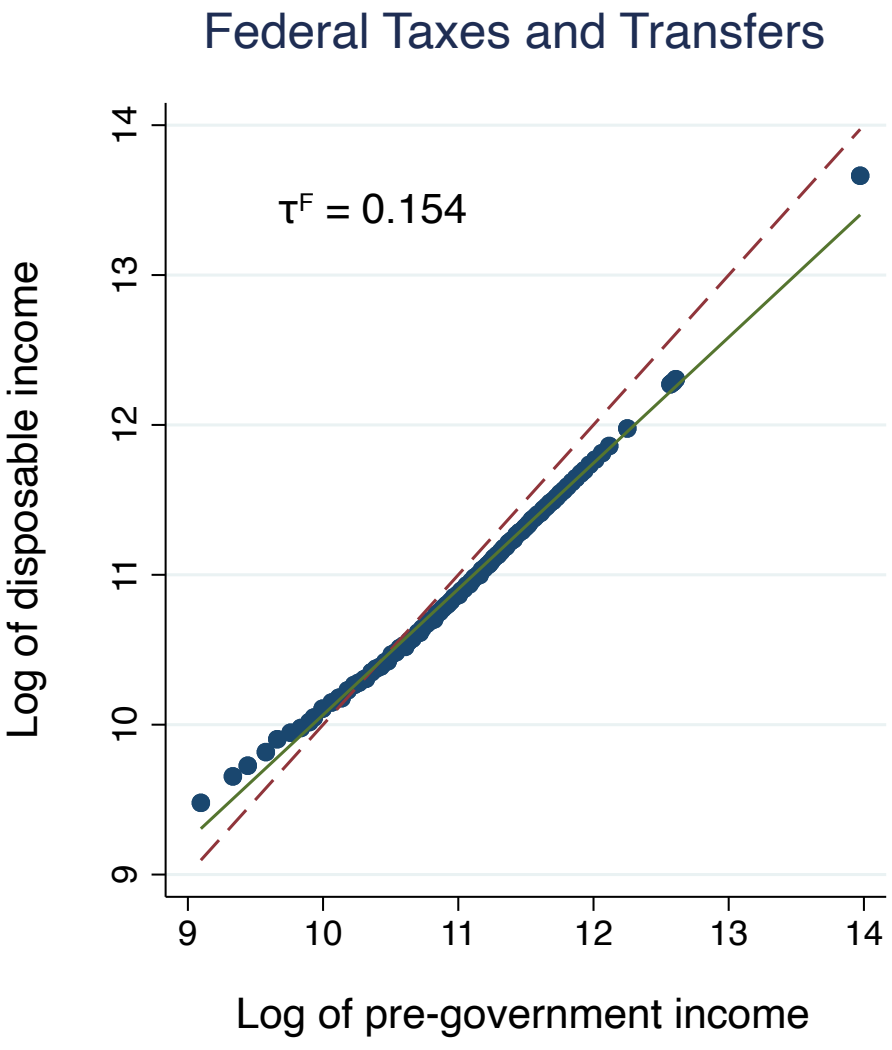
Estimating Progressivity Following HSV

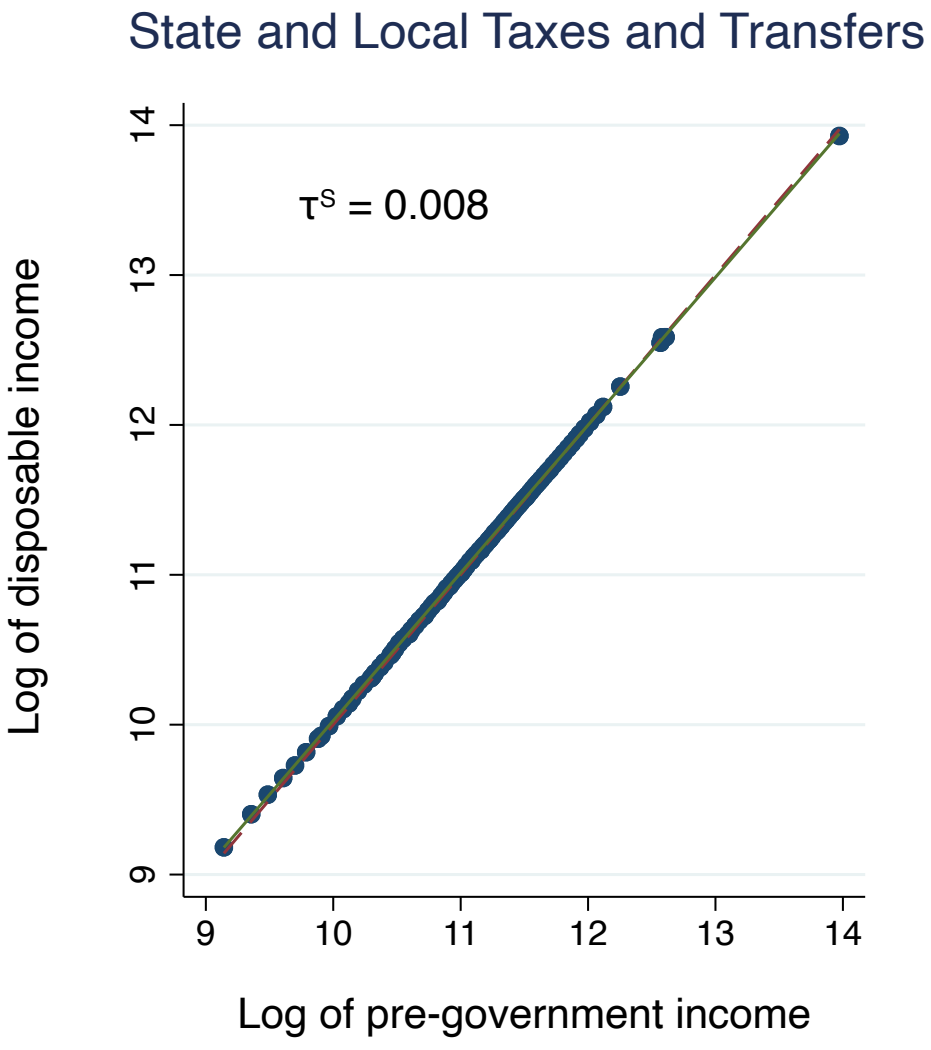
- y_i: pre-government income of household i
- T_i: tax liability net of transfers

$$\log(y_i - T_i) = \lambda + (1 - \tau)\log(y_i)$$

- τ is index of progressivity
- We estimate this equation in three ways:
  1. T_i federal taxes-transfers only $\Rightarrow$ federal progressivity τ^f
  2. T_i state & local taxes-transfers $\Rightarrow$ state progressivity τ^s
  3. T_i federal + S&L $\Rightarrow$ federal + state progressivity τ
- For 2 & 3, re-weight households at state level so pre-govt income dist. resembles national dist.
  - τ estimates reflect differences in state tax systems only

Progressivity: Federal vs. State & Local for 2010

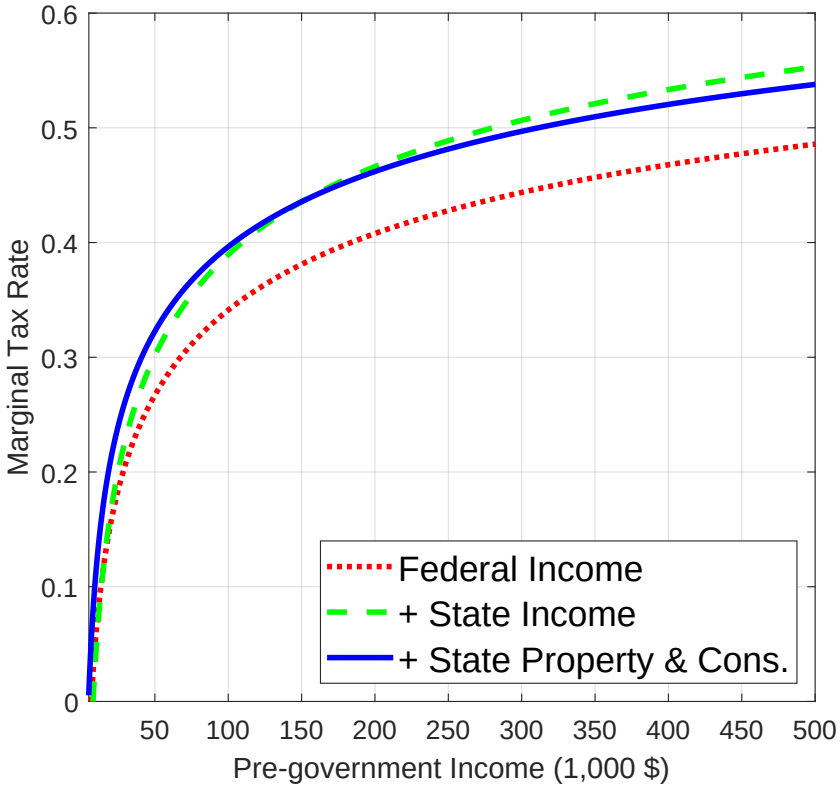


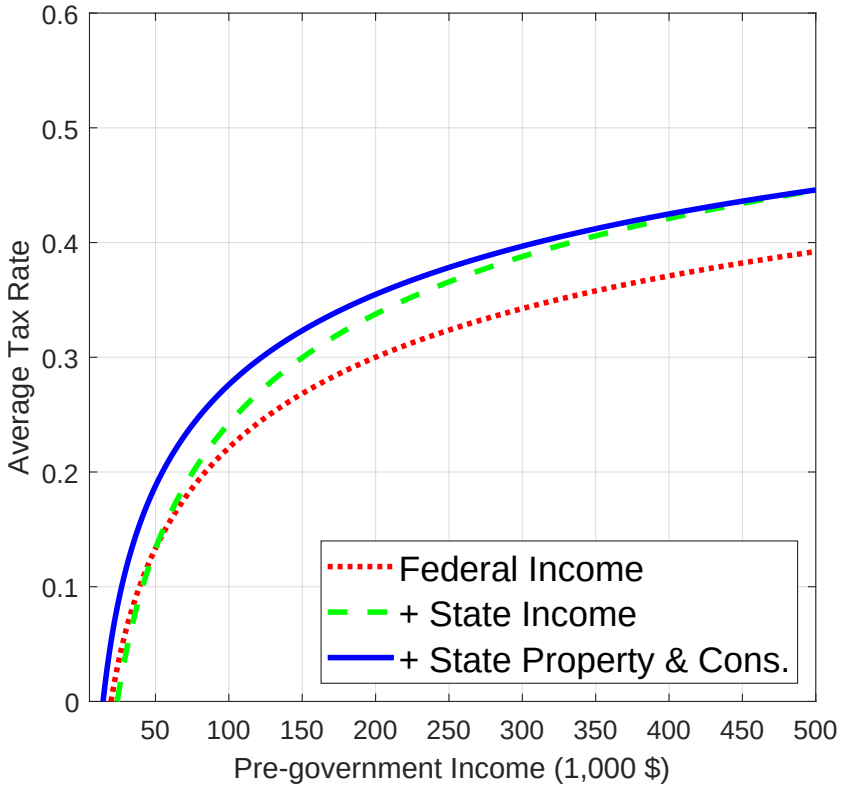


Progressivity estimates τ for 2010

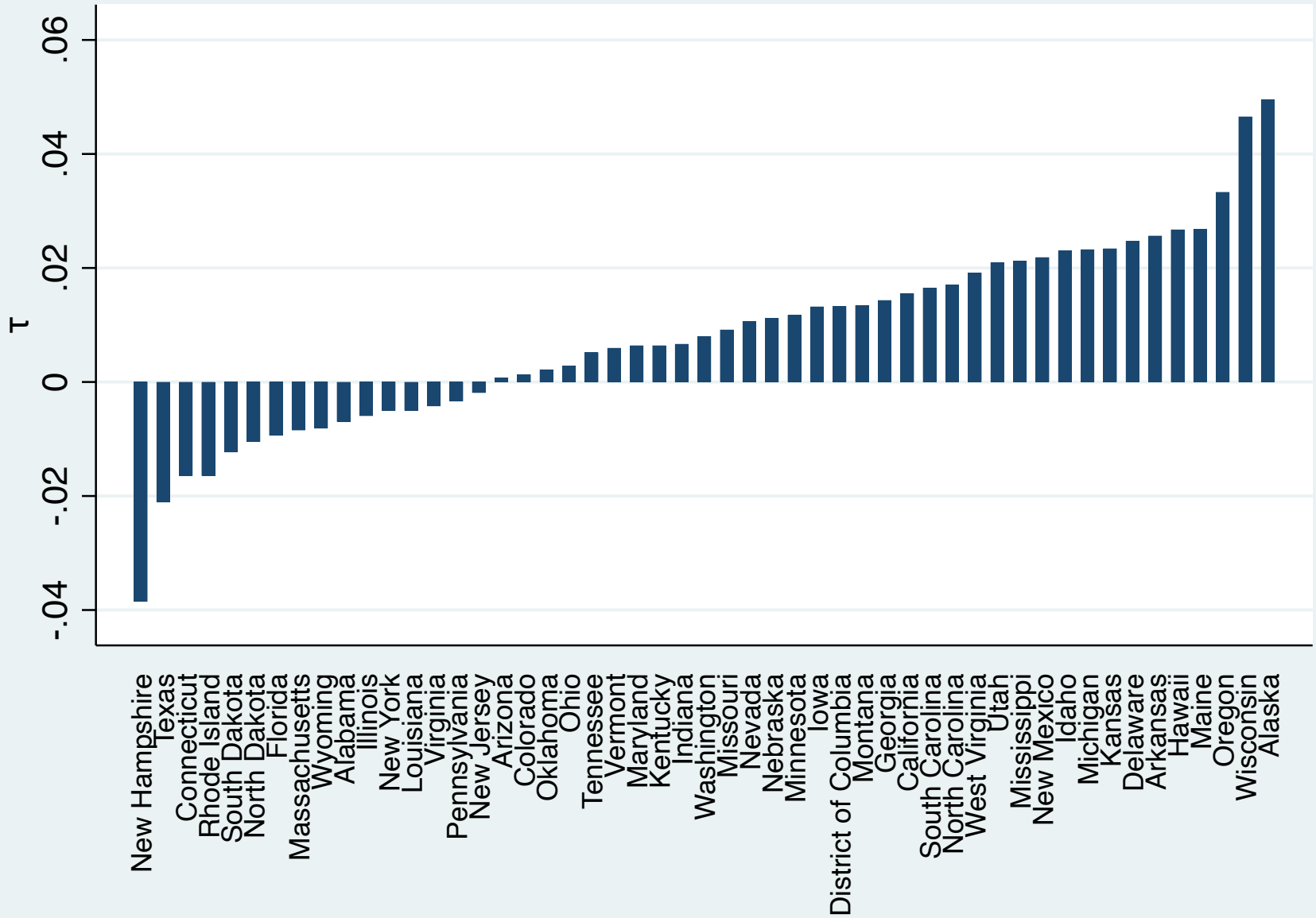
	Narrow	*Broad*
Federal		
Income Taxes	0.119	
+ Transfers (τ^f)	0.154	0.200
State		
Income taxes	0.011	
+ Transfers	0.035	0.053
+ Property taxes	0.018	0.037
+ Sales taxes	0.014	0.033
+ Excise taxes (τ^s)	0.008	0.027
State + Federal (τ)	0.166	0.227

Estimated National Tax Schedule: Decomposition

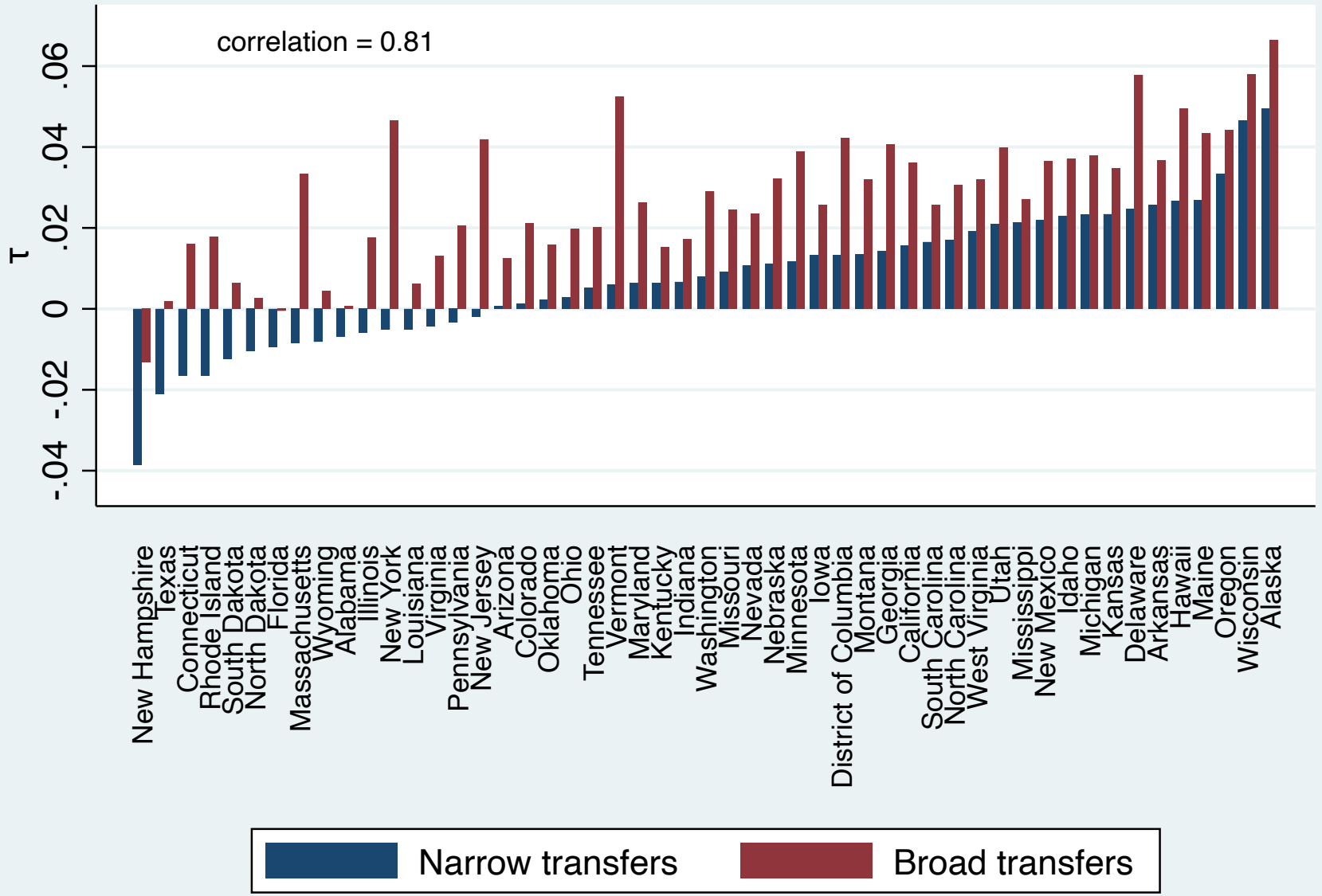




Dispersion in τ^s across States: Narrow Transfers



Dispersion in τ^s across States: Broad Transfers



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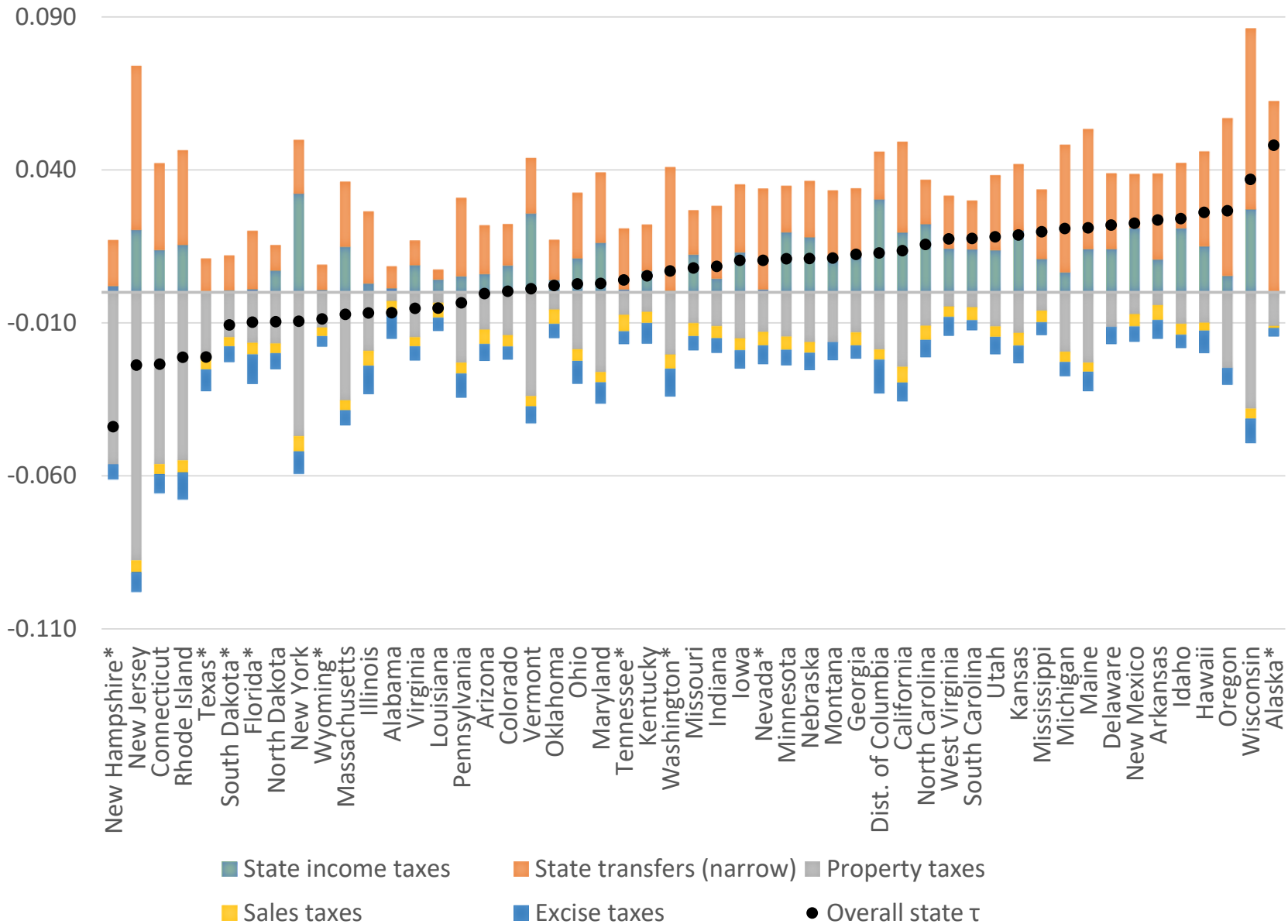
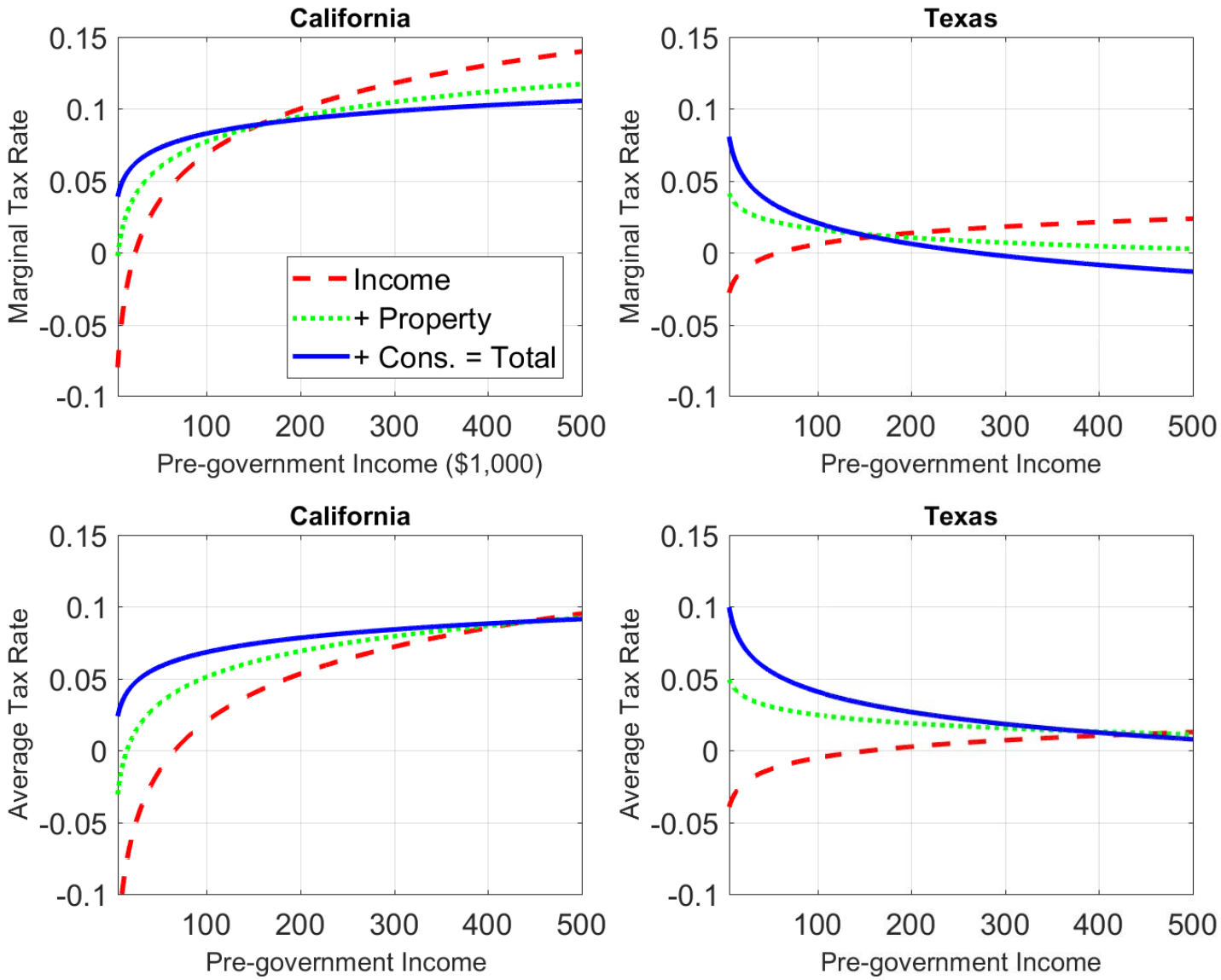
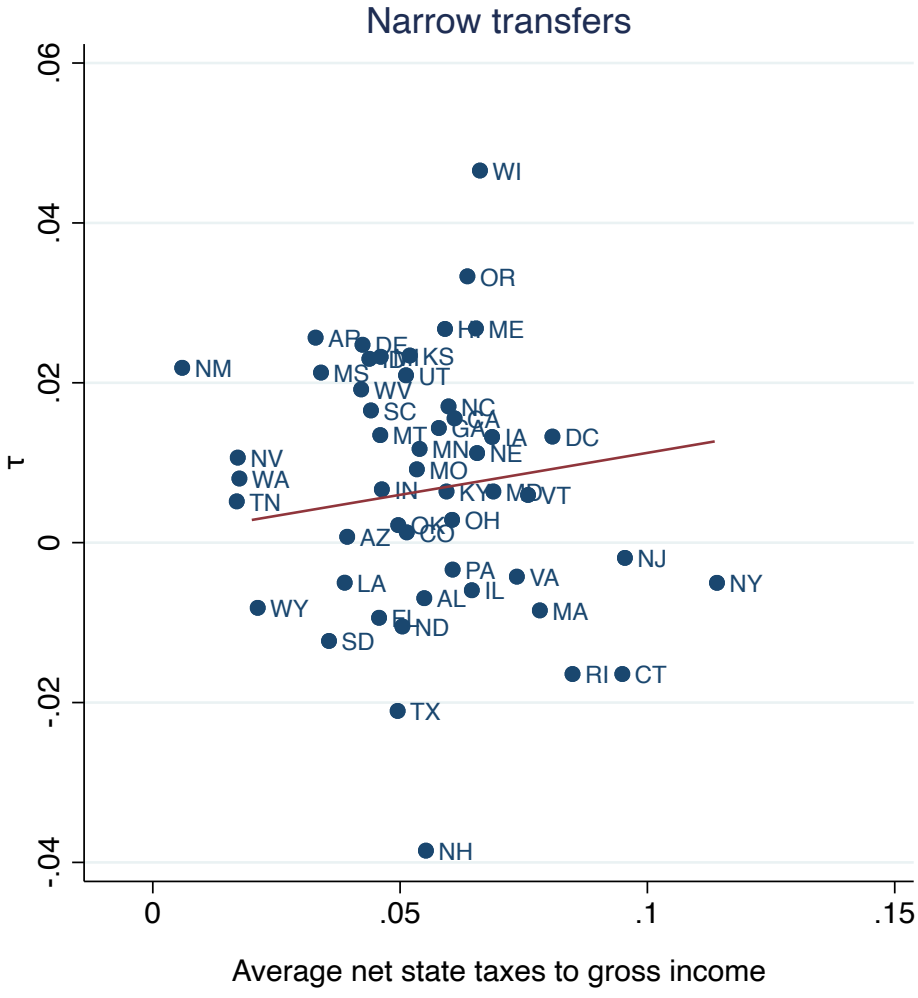


Implied State Tax/Transfer Schedules: CA and TX



Relation Between τ^s and Level of Taxation



What Correlates with State Progressivity?

	Mean (SD)	(1)	(2)
Democratic (0/1)	0.35	0.026	0.028
	(0.48)	(0.007)	(0.007)
Ethnic Diversity	0.52	0.096	0.093
	(0.16)	(0.044)	(0.048)
Log Median Income	11.02	−0.120	−0.098
	(0.14)	(0.044)	(0.049)
Income Share of Top 1%	0.17	−0.193	−0.217
	(0.04)	(0.057)	(0.071)
Share of Population in Poverty	0.14	−0.440	−0.478
	(0.03)	(0.175)	(0.191)
Share of Urban Population	0.74	−0.041	−0.063
	(0.15)	(0.028)	(0.030)
Census Division Fixed Effects		N	Y
N		50	50
R-squared		0.49	0.62

Table: Other controls: 90-50 income ratio, 50-10 income ratio, share of Blacks, share of college educated.

Conclusions

1. Federal income taxes and transfers are progressive

2. On average, state & local tax-transfer systems are close to proportional
   - But there is substantial heterogeneity

3. State tax-base impacts progressivity
   - Mostly property & consumption taxes $\Rightarrow$ typically regressive
   - Mostly income taxes $\Rightarrow$ typically progressive

4. Predictors of state & local progressivity:
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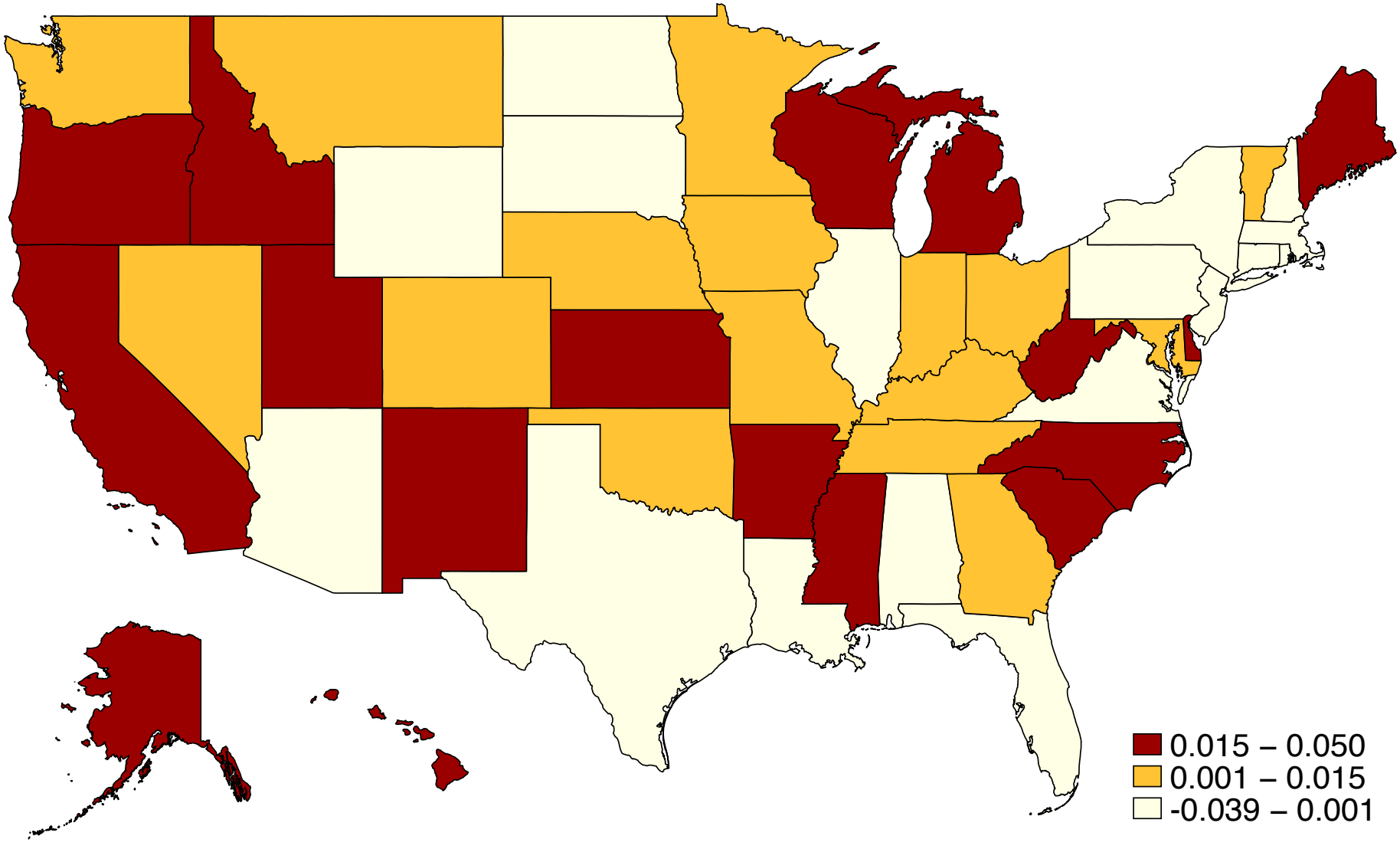
Dispersion in τ^s across States - Narrow Transfers



Dispersion in τ^s across States - Broad Transfers