

Fiscal Progressivity of the U.S. Federal and State Governments

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The views herein are those of the authors and not necessarily those of the Federal Reserve Bank Minneapolis, the Federal Reserve Board, or the Federal Reserve System

This Paper

Goals:

- Estimate how **total net tax burden varies with income**:
 - income and payroll taxes
 - + sales and excise taxes + property taxes + corporate and business taxes
 - transfers - public goods
- Explore how much redistribution / progressivity is delivered by **federal** versus **state and local** taxes and transfers
 - State & local tax revenue 8.9% of GDP (2010-2023)
 - Federal personal income tax revenue: 8.0% of GDP
- Explore extent to which **tax rates** & **tax progressivity** vary across U.S. states

Main findings

1. Federal income taxes and transfers are progressive
2. On average, state & local tax-transfer systems proportional
3. But substantial heterogeneity
4. Positive correlation between state net tax take & progressivity
5. State tax base impacts progressivity
 - Mostly property & consumption taxes \Rightarrow typically regressive
 - Mostly income taxes \Rightarrow typically progressive

Data Sources and Sample Selection

Main data source: ASEC (CPS March Supplement)

- Unit of observation: household
- Start with all households
- Sample for most of the analysis:
 1. Age of household head between 25-60
 2. One spouse has earned income > part-time * min. wage
- Years: 2005/06, 2010/11, **2015/16**

Income Mis-measurement and Tax Progressivity

- Tax rate = Taxes Paid / Pre-Government Income
- To accurately measure progressivity, need accurate measurement of distribution of taxes paid *and* of income
- Challenge: household surveys under-report income, especially business and asset income + income top-coded
 - ⇒ under-estimate income at the top
 - ⇒ over-estimate tax rates at the top and tax progressivity
- Two part strategy to address this:
 1. Use IRS and SOI data to impute income and taxes paid at the top of the distribution
 2. Inflate income measures to match NIPA counterparts

Income and Taxes at the Top

Replace income and tax variables for ASEC households with income \geq \$200,000 using IRS SOI data (from 1040 tax returns)

- SOI income includes S-corp income and capital gains
- SOI records actual federal income taxes paid
- High income households mostly itemize prior to TCJA
⇒ know property taxes and state income taxes paid
- Avoid time-varying topcoding issue with ASEC
- SOI income and tax tables available at the state level

Income Concepts

	ASEC	SOI	NIPA
Pre-Govt Inc.	wage income + business income + asset income	total income + untaxed pensions + untaxed interest - social security - UI benefits	personal income - current transfers + contribs for govt. insurance
Wage Inc.	wage income + employer FICA	salaries and wages + employer FICA	compensation of employees
Business Inc.	business income + farm income	business / profession net income + partnership	proprietors income
Asset Inc.	interest income + retirement income + dividend income + rents and royalties + private transfers + imputed cap. gains	Pre-govt income - wage income - business income (includes S-corp income) (includes cap gains)	interest income + dividend income + rental income (includes S-corp income)

Income Inflation Procedure

- Start with ASEC
- Impute income values at the top using SOI \Rightarrow ASEC+
- Compare per capita values in ASEC+ to NIPA
- Inflate ASEC+ values proportionately, household by household

	Per capita values, 2015/2016					
	ASEC	SOI	ASEC+	NIPA	$\frac{NIPA}{ASEC}$	$\frac{NIPA}{ASEC+}$
Pre-Govt Income	30,220	37,484	34,350	43,823	1.45	1.28
Wage Income	25,570	25,923	24,952	30,407	1.19	1.22
Business Income	1,358	3,284	3,025	4,170	3.07	1.38
Asset Income	3,142	8,277	6,373	9,246	2.94	1.45

Rescaling

- Deciles of household pre-govt income distribution (NIPA measure)
- Shares of income components (left axis)
- Rescaling factors (right axis)

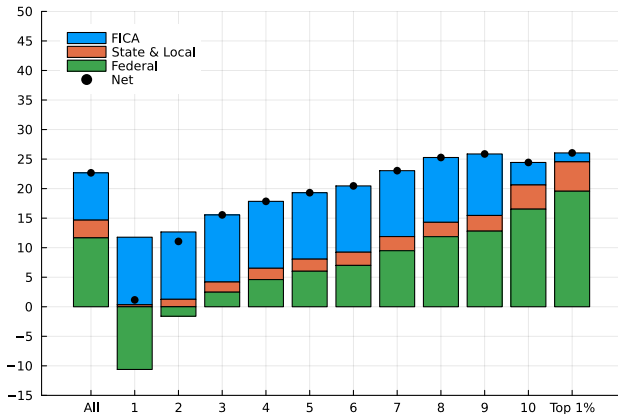


Taxes and Transfers Included

Federal Taxes and Transfers			State & Local Taxes and Transfers			
		Sample	All		Sample	All
Taxes	Income	11.67	11.40	Income	3.00	2.87
	FICA (employee+employer)	8.01	7.58	Property	1.75	2.13
	Excise	0.29	0.35	Sales	1.20	1.35
				Excise	0.63	0.76
	Corporate Income	2.15	2.27	Corporate Income Business	0.37 2.19	0.40 2.16
Transfers	Medicaid* (cash value)	0.47	0.76	Medicaid* (cash value)	0.36	0.58
	Medicare (cash value)	0.43	3.51	Unemployment Benefits	0.12	0.14
	Social Security Disability and Survivors Benefits	0.31	0.70	Worker's Compensation Benefits	0.05	0.08
	Social Security Old Age Benefits	0.27	4.70	TANF*	0.01	0.02
	SNAP	0.26	0.48	Alaska Permanent Fund Dividend	0.01	0.01
	Veteran's Benefits	0.17	0.41			
	Disability Benefits	0.14	0.26			
	SSI	0.13	0.39			
	Survivor's Benefits	0.12	0.36			
	School Lunch	0.08	0.09			
	Housing Assistance	0.07	0.27			
	TANF*	0.01	0.02			
	Public Spending	2.41	3.24	Public Spending	5.74	6.11

Taxes and transfers as shares of pre-government household income. 2015/2016.

Income Taxes: Progressive at Top, Flat at Bottom

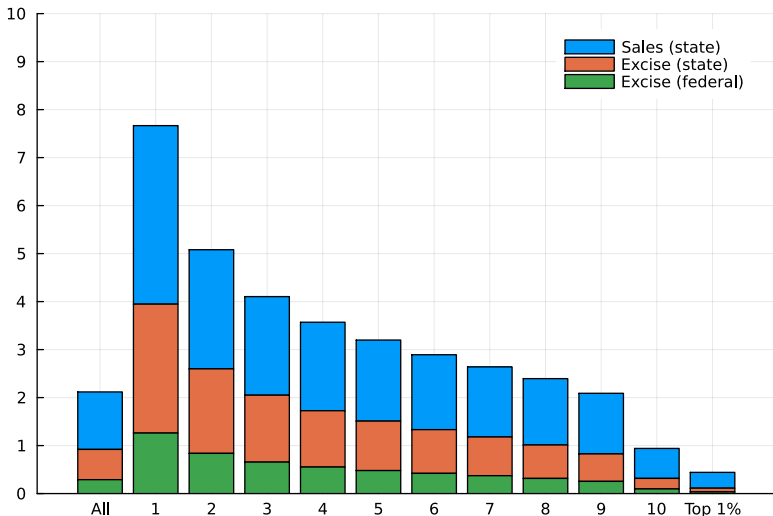


- **Income taxes:** Census Bureau tax model (federal + state) + Census of State and Local Governments (local)

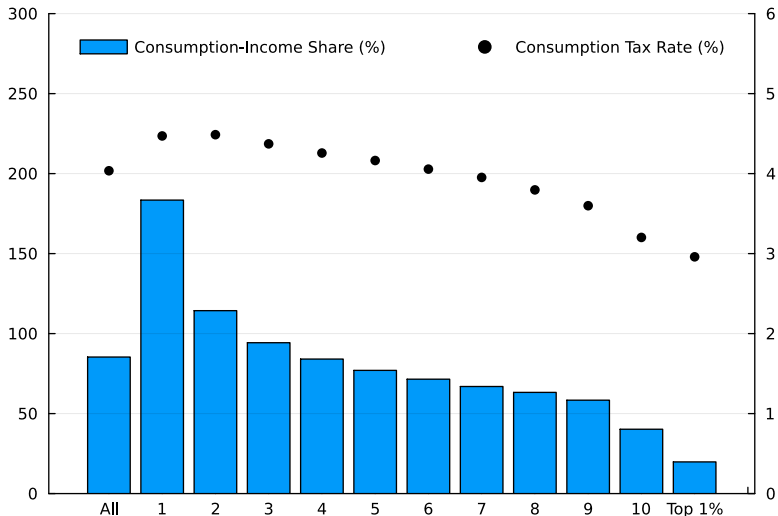
Sales and Excise Taxes

- Record state and local sales tax rates for different consumption categories:
 - Some categories taxed at standard rate, some tax exempt, special rates for food at home, different services
- Target state and federal revenue from excise taxes
 - Alcohol, tobacco, motor fuel, utilities, insurance, amusements
- Use CEX spending-by-income tables to apportion taxes across households for each consumption category

Sales and Excise Taxes are Regressive



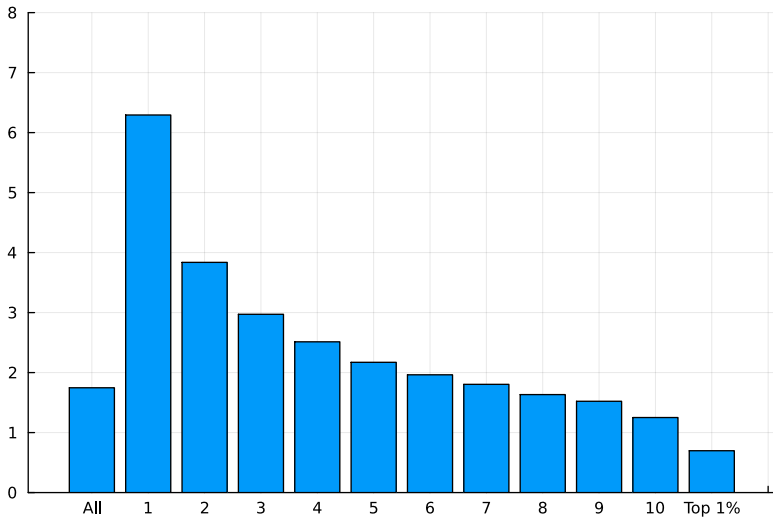
Sources of Regressivity



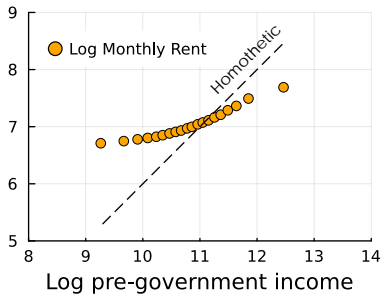
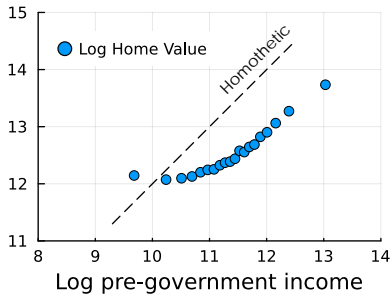
Property Taxes

- ASEC estimates unreliable \Rightarrow match ASEC homeowners to ACS homeowners and use ACS self-reported taxes
 - nearest-neighbor matching on county, household income, head education, housing units in structure
- Model of partial pass-through of taxes into rents for renters
 - Assume share of property taxes paid by renter proportional to county level share of structures in home value

Property Taxes are Regressive



... Because Housing is a Necessity

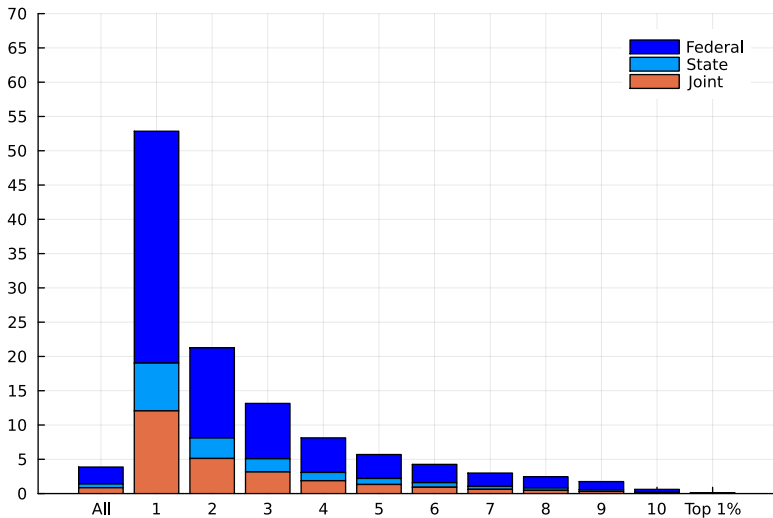


- Box-scatter plot of log home values (for owners) and rents (for renters) against log pre-government income

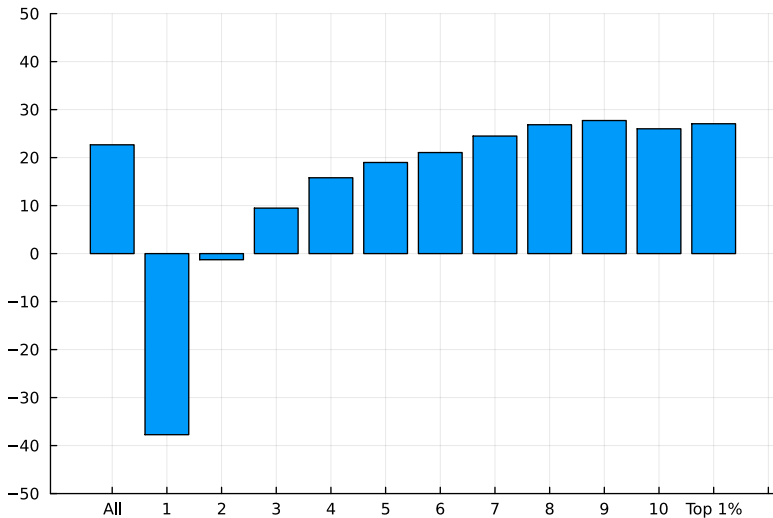
Data Sources for Transfers

- Transfers mostly self-reported in ASEC
- For Medicaid, SSI, SNAP, Housing Assistance use CBO imputation procedure
 - for Medicaid, adapt to match state level admin. enrollment & spending data
- Value Medicaid per enrollee at 40% of amount spent, Medicare at 82%
- (extension) include all other govt. spending as an extra transfer

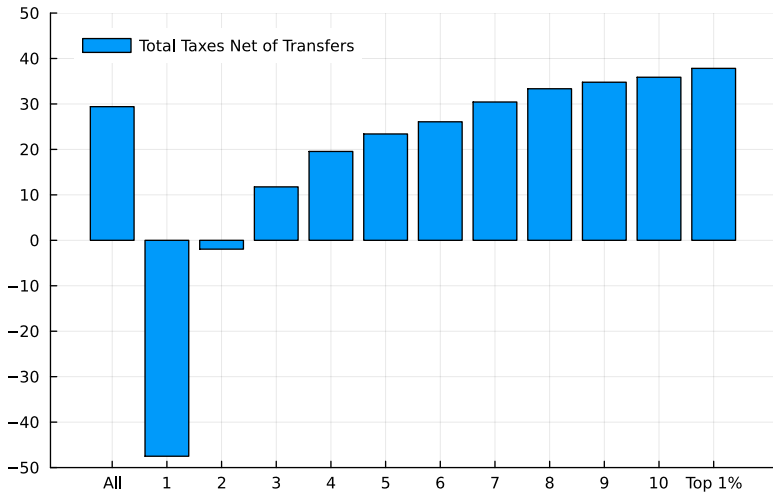
Transfers are Progressive



Net Tax Rates



Net Tax Rates Absent NIPA Rescaling



Estimating Progressivity Following Benabou / HSV

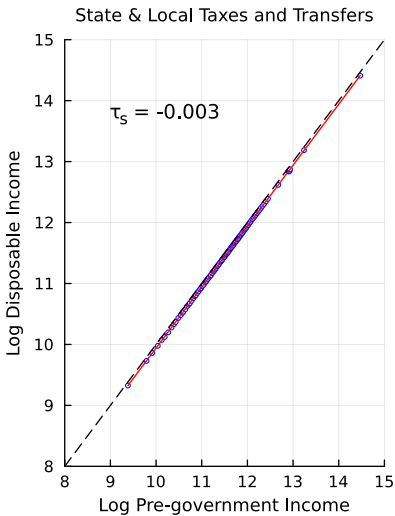
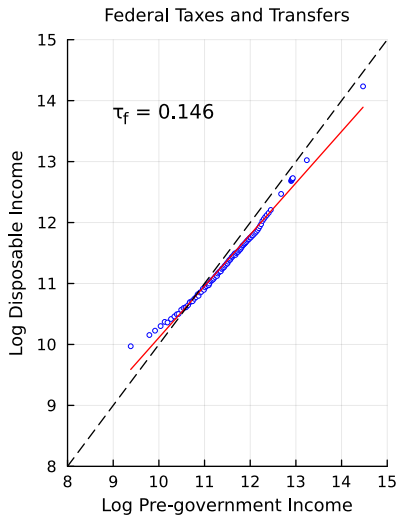
- y_i : pre-government income of household i
- T_i : tax liability net of transfers

$$y_i - T_i = \lambda y_i^{(1-\tau)}$$

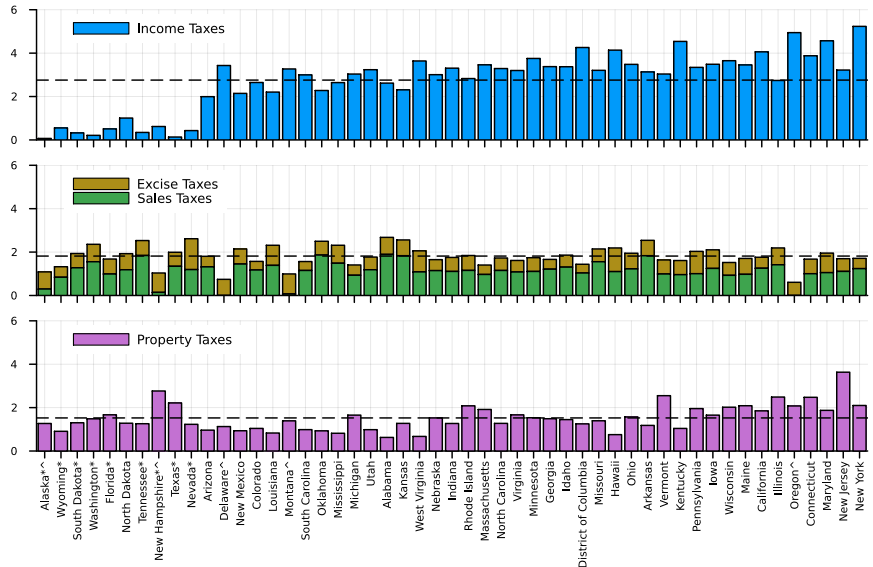
$$\log(y_i - T_i) = \lambda + (1 - \tau) \log(y_i)$$

- τ is index of progressivity
- Estimate this equation in different 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
- For state level statistics, re-weight households state by state so pre-govt income dist. resembles national dist.
 - τ estimates reflect difference in state tax systems only

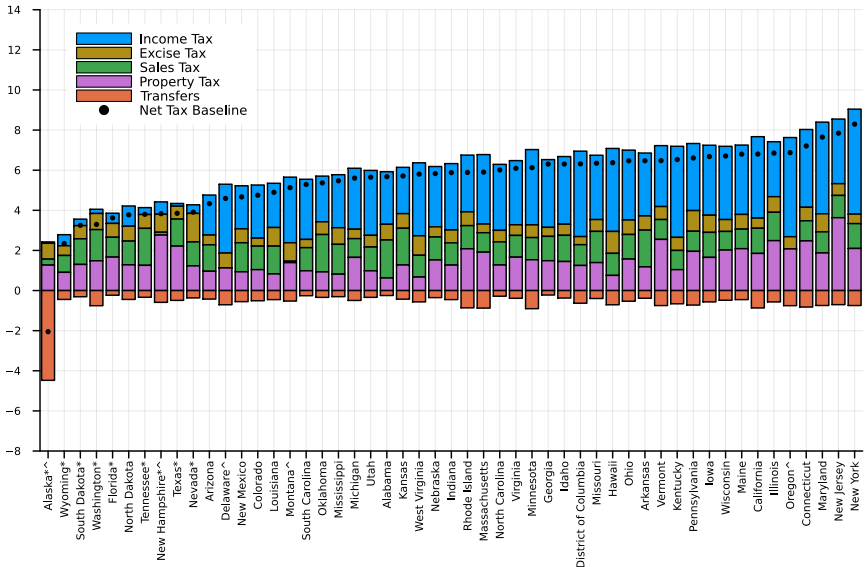
Progressivity: Federal vs. State & Local for 2015/16



State Average Tax Rates

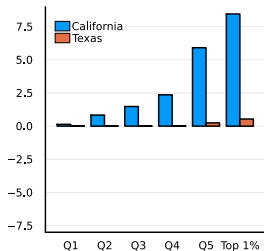


State Average Tax and Transfer Rates

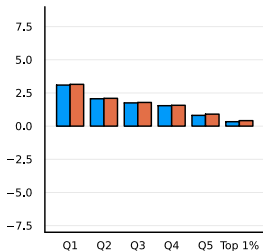


Tax Rates by Income: California vs Texas

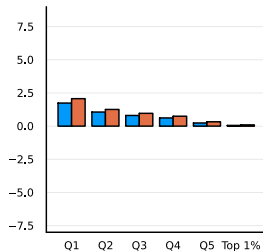
State Income Tax



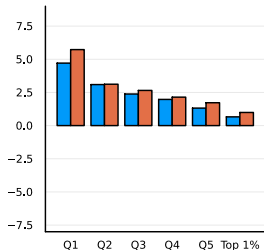
State Sales Tax



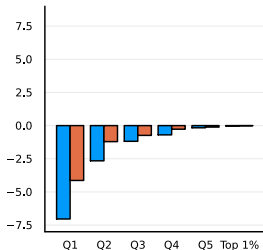
State Excise Tax



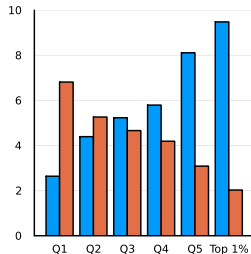
State Property Tax



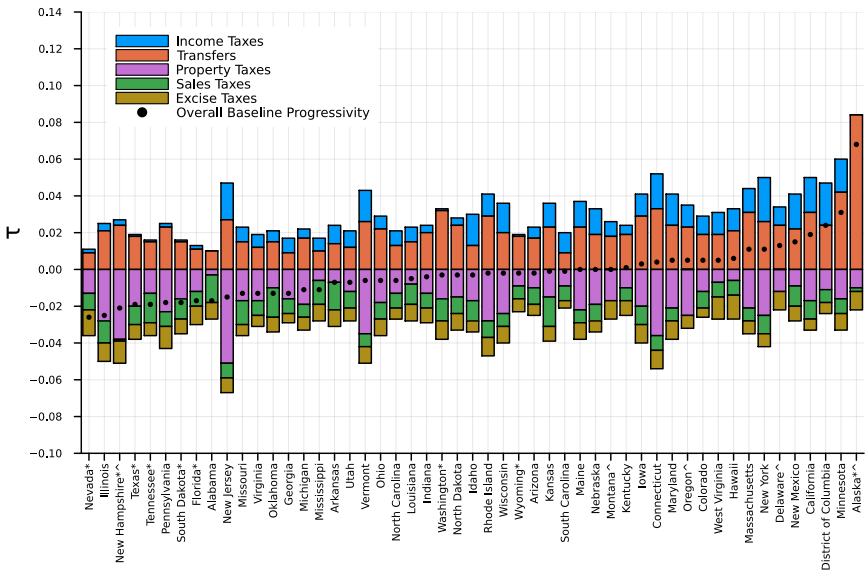
State Transfers



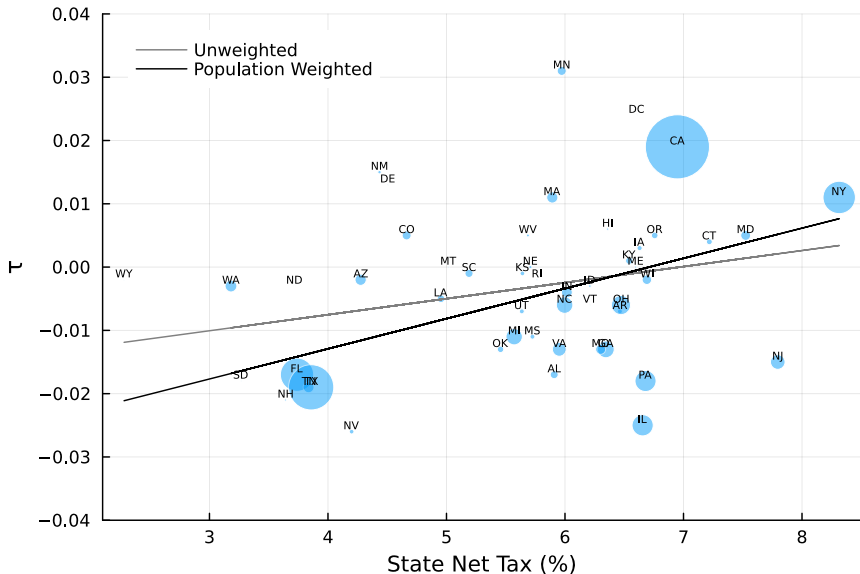
State Total Net Taxes



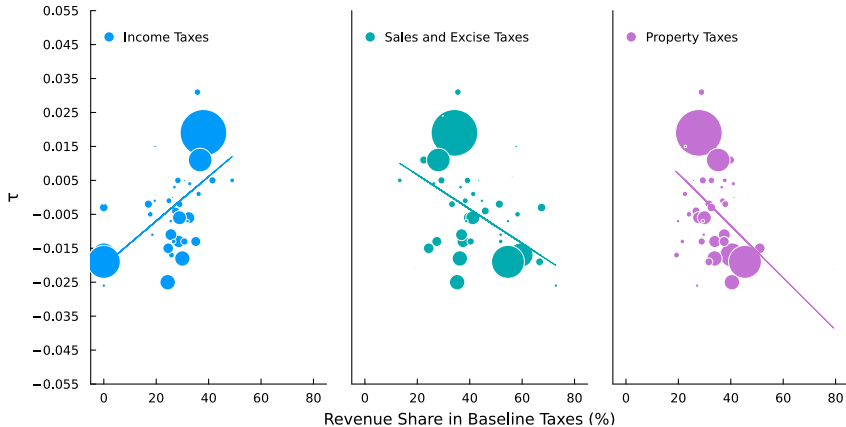
Decomposition of τ^S across States



Correlation between Tax Rates and Progressivity



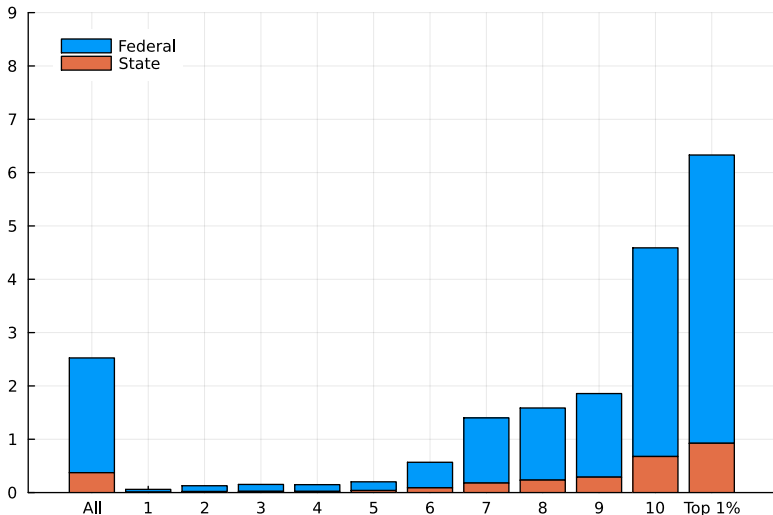
Correlation between Tax Base and Progressivity



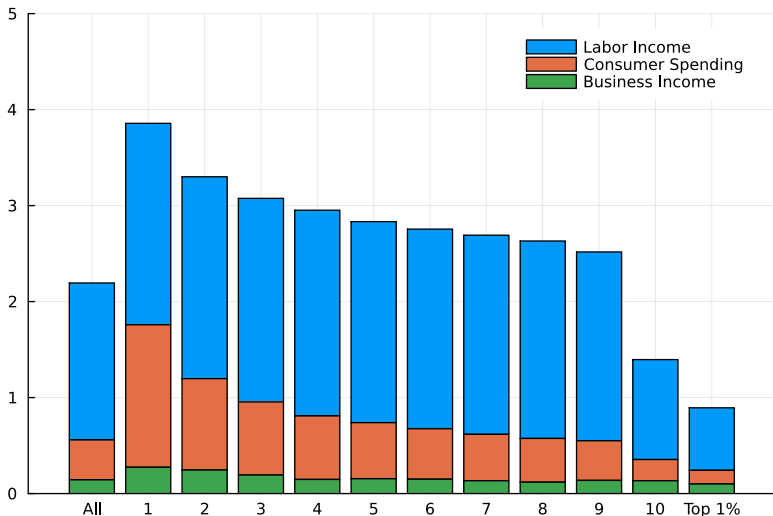
Extensions 1: Taxes on Businesses

- Corporate income taxes:
 - 60% of incidence on capital (prop. to dividend income)
 - 40% on top quartile of labor earnings distribution
- Sales + excise taxes on business inputs
 - Incidence on consumption for non-tradable sector
 - Incidence on wage income for tradable sector
- Business property taxes
 - Land's share of incidence on business income
 - Rest split between consumption and wage income as for sales taxes

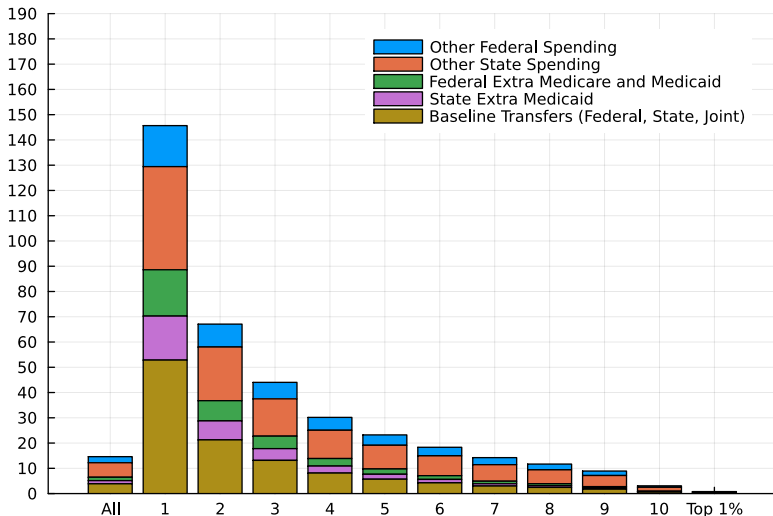
Corporate Income Taxes are Progressive



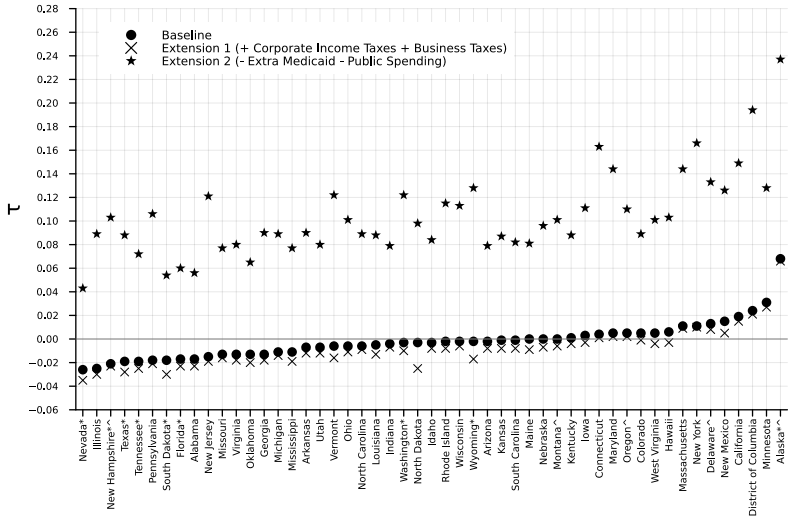
Other Business Taxes are Regressive



Extension 2: Broader Measure of Transfers



Progressivity Under Extensions



Conclusions

1. Federal income taxes and transfers are progressive
2. On average, state & local tax-transfer systems proportional
 - But substantial heterogeneity
3. State tax base impacts progressivity
 - Mostly property & consumption taxes \Rightarrow typically regressive
 - Mostly income taxes \Rightarrow typically progressive
4. Measured progressivity sensitive to choices regarding how to measure transfers