Breaking Down the Causes of Rising Income Inequality in the US

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Question and Answer

- What is driving the observed increase in income inequality?
  - Have the causes changed over time?
  - How much has each cause contributed?

- Empirical answers:
  - Technology: positive relationship (5 year lag)
  - Education: strong positive relationship (2 year lag)
  - Taxes: negative, but relatively weak relationship
  - Entrepreneurship: results vary drastically with lag length

- Model: Not for today.

Literature on Causes of Income Inequality _____

- 1990's - Is this skill-biased technological change (SBTC)? Human capital differences? Some combination?
  - Computers: Bound (AER,1992); David (QJE,1998); DiNardo and Card (JLE,2002);
  - Human capital + SBTC: Acemoglu (QJE,1998);
  - Demographics + Human capital: Heckman (RED,1998)

- Other theories:
  - Taxes: Alvaredo et al (JEP,2013); Bakija et al (WP,2012)
  - Globalization: Krugman (Brookings,2008)
  - Finance boom/entrepreneurship: Bakija et al (WP,2012)
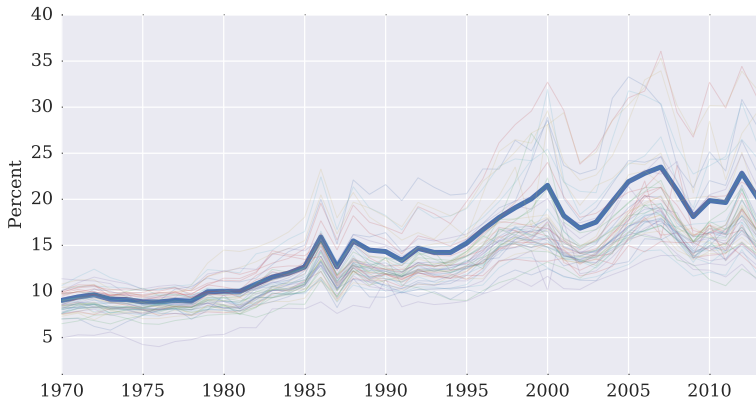 - Stigma: Pickety and Saez (QJE,2003); Atkinson et al (JEL,2011)

Income Inequality in the Data _____

- Data: State-year panel from Frank (2009)

- Time: Annual 1970-2013

- Measures:

    ○ Top 10% income share
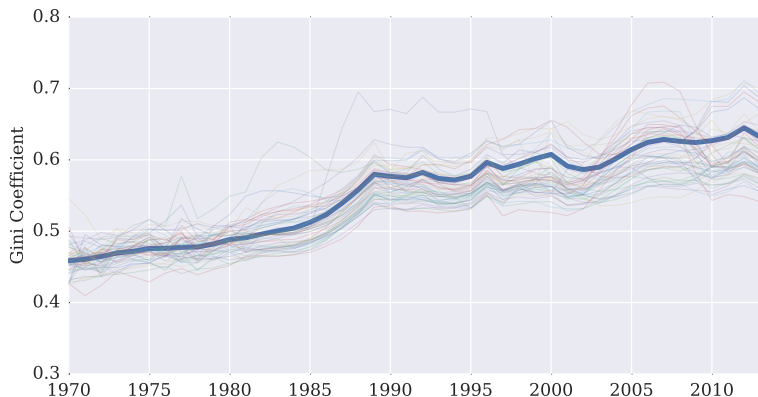
    ○ Top 1% income share

    ○ Gini coefficients

US Top 10% Income Share (1970-2013)
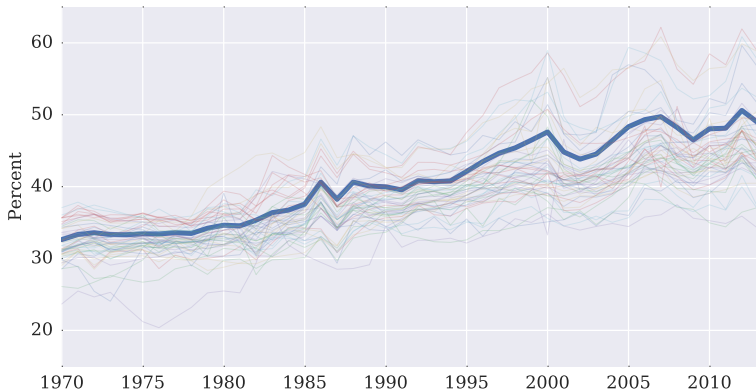
US Top 1% Income Share (1970-2013)

State Gini Coefficients (1970-2013)

Geographic clustering

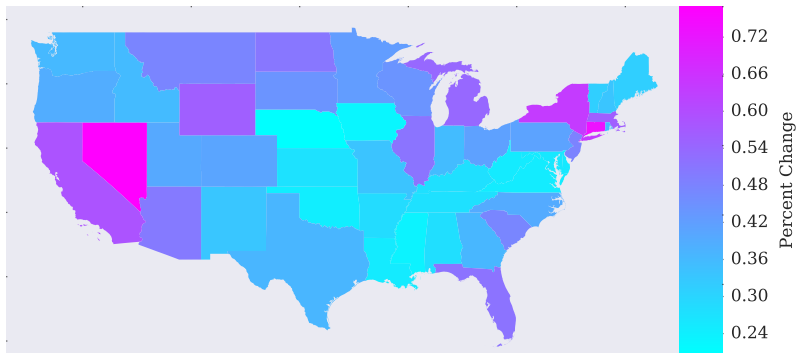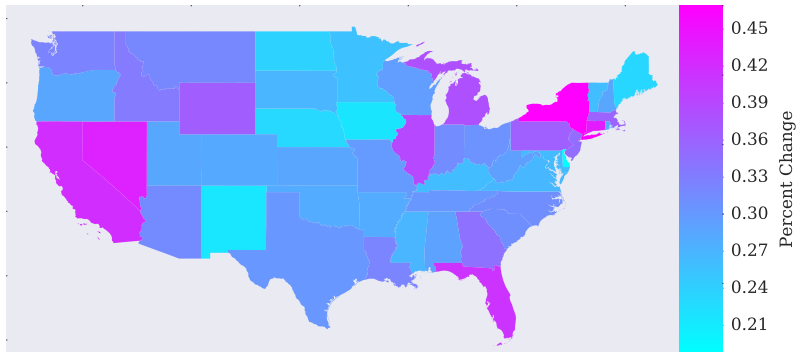Figure: Change in Top Decile Income Shares: 1970-1974 to 2009-2013

Geographic clustering

Figure: Change in Gini Coefficients: 1970-1974 to 2009-2013

Empirics _____

- Dependent variables:
    - Taxes: maximum income tax rates (NBER)
    - Entrepreneurship rates: age 0 firms per 100k people (Kauffman)
    - Demographics: percent black/retired, dependency ratio (Census)
    - Technology: utility patent counts by state/year (USPTO)
    - Education: percent with high school/college (Frank 2009)
    - FIRE: share of employment (BEA)

Example: California Maximum Income Tax Rate
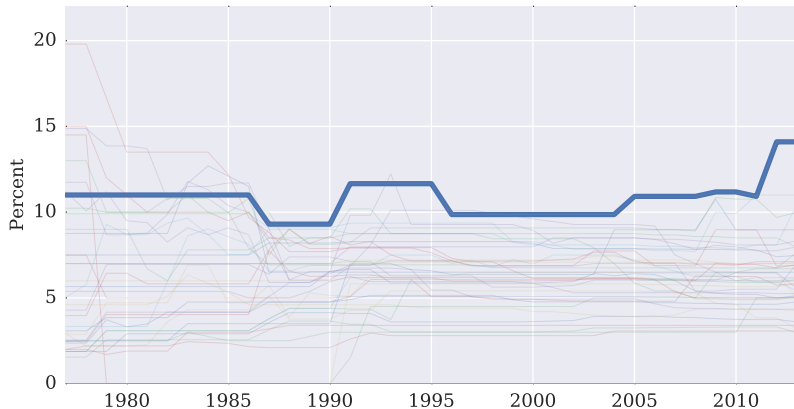
Example: California Entrepreneurship Rate

Figure: Age 0 firms per 100k people
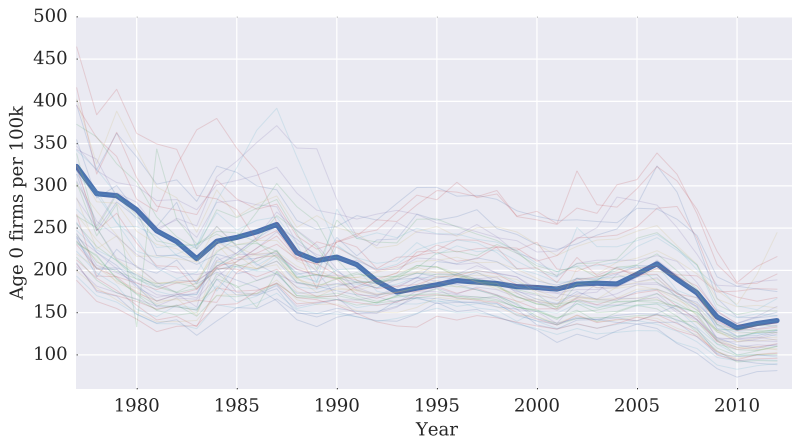
Example: California Patent Originiations
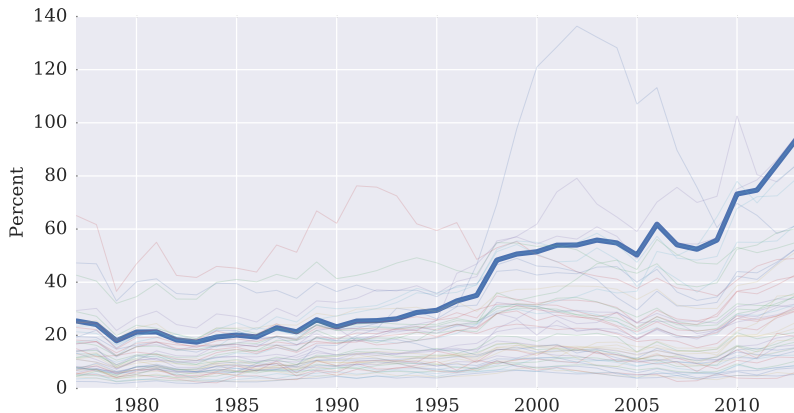

Figure: Utility Patents (i.e. patents for inventions)

Regression Exercises _____

- Many variables/states are not stationary, so use approach from Pesaran et al (1997,1999)

- Accounts for issues arising from cointegrated variables

$$\Delta y_{it} = \phi_i \left(y_{i,t-1} - \theta_i' X_{i,t} \right) + \sum_{j=1}^{n-1} \gamma_{ij}^* \Delta y_{i,t-j} + \sum_{j=0}^{m-1} \beta_{ij}^{*'} \Delta X_{i,t-j} + \alpha_i + \varepsilon_{it}.$$

- Three estimators
   ○ Fixed Effects (benchmark) - slope coefficients are fixed across states, intercepts vary
   ○ Mean Group - average over individual state coefficients
   ○ Pooled Group - long-run coefficients are fixed across states, short-run coefficients vary

Regression Results: Top 10% Income Shares _____

Variable	MG	PMG	FE
WageTax_total	-0.0132	0.0207	-0.0141
	(0.0198)	(0.0130)	(0.0207)
ent1	0.0764***	-0.00611	-0.0287
	(0.0215)	(0.0163)	(0.0336)
pct_black	0.563***	0.0292**	-0.0117
	(0.172)	(0.0127)	(0.0240)
pct_retired	0.414***	0.196***	0.177**
	(0.111)	(0.0307)	(0.0808)
patents_percapita	0.00119	0.0146*	0.0390***
	(0.0171)	(0.00772)	(0.0124)
College	0.159***	0.245***	0.237***
	(0.0473)	(0.0195)	(0.0389)
fire_pct	0.112*	0.106***	0.101**
	(0.0627)	(0.0286)	(0.0431)
Observations	1,550	1,550	1,550
Num. groups	50	50	50

Regression Results: Top 1% Income Shares

Variable	MG	PMG	DFE
WageTax_total	0.0301*	0.0443***	0.0191
	(0.0175)	(0.0130)	(0.0225)
ent1	0.167***	0.0763***	0.0410
	(0.0246)	(0.0149)	(0.0359)
pct_black	0.284	0.0335***	0.0118
	(0.185)	(0.0129)	(0.0290)
pct_retired	0.722***	0.413***	0.282***
	(0.132)	(0.0368)	(0.0915)
patents_percapita	0.0331**	0.0162**	0.0283*
	(0.0156)	(0.00721)	(0.0159)
College	0.232***	0.290***	0.299***
	(0.0576)	(0.0201)	(0.0385)
fire_pct	-0.0121	0.0526*	0.0859**
	(0.0750)	(0.0275)	(0.0415)
Observations	1,550	1,550	1,550
Num. groups	50	50	50

Regression Results: Gini Coefficients _____

Variable	MG	PMG	DFE
WageTax_total	-0.274	-0.277***	-0.633***
	(0.222)	(0.0450)	(0.143)
ent1	0.348	0.617***	0.648***
	(0.216)	(0.0769)	(0.154)
pct_black	1.749	0.736***	-0.0362
	(1.171)	(0.120)	(0.0529)
pct_retired	0.497	0.0248	0.0751
	(0.995)	(0.122)	(0.160)
patents_percapita	0.0108	0.0841***	0.0351
	(0.0857)	(0.0202)	(0.0440)
College	0.457	0.222***	0.263***
	(0.364)	(0.0463)	(0.0903)
fire_pct	0.372	0.418***	0.349**
	(0.385)	(0.0727)	(0.154)
Observations	1,550	1,550	1,550
Num. groups	50	50	50

Example: California Patent Originiations

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