

DOES MORE INCOME INEQUALITY LEAD TO LESS UPWARD MOBILITY?



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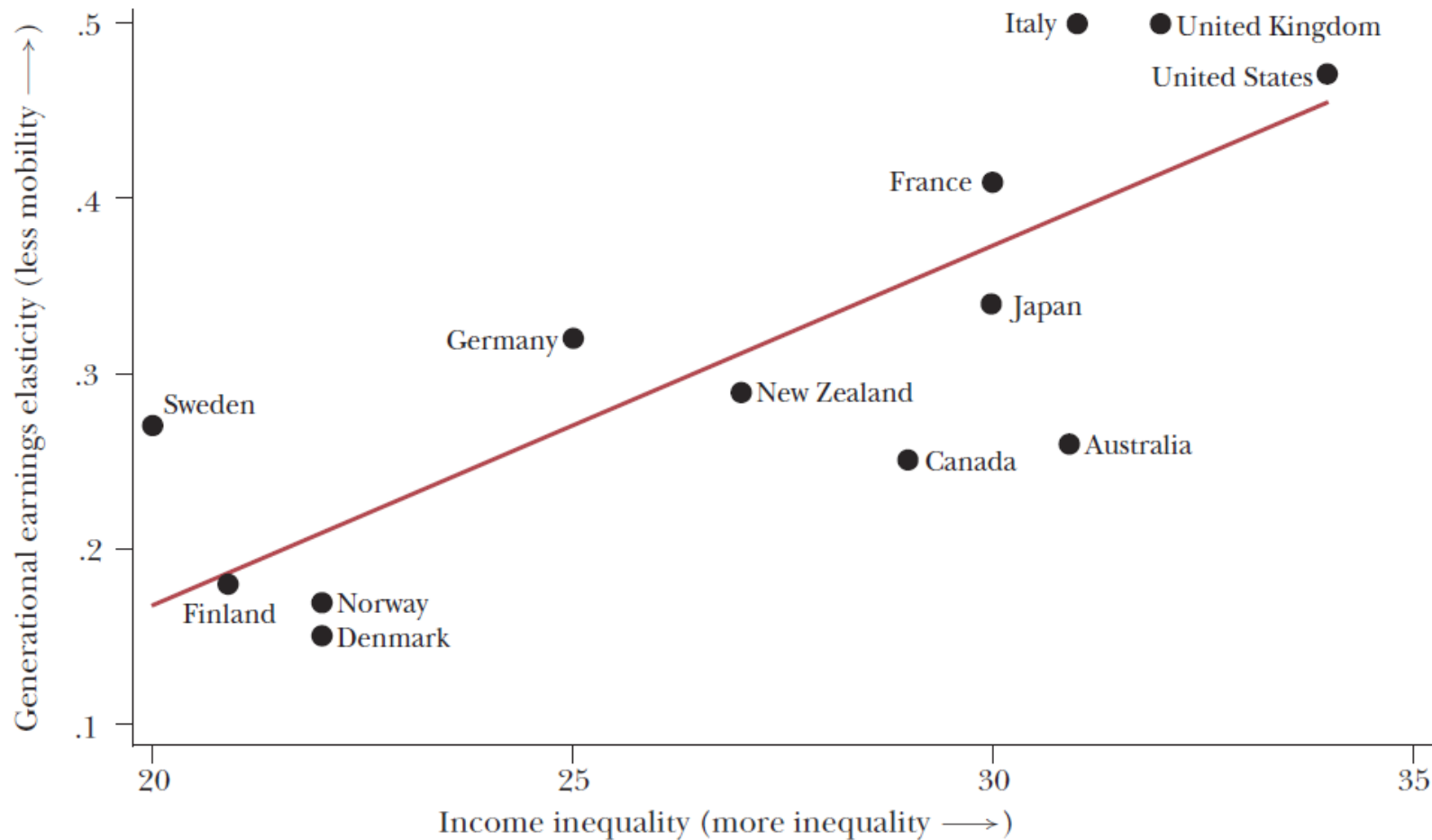
(BASED ON JOINT RESEARCH WITH PHIL LEVINE,
WELLESLEY COLLEGE)

Income Inequality and Economic Mobility



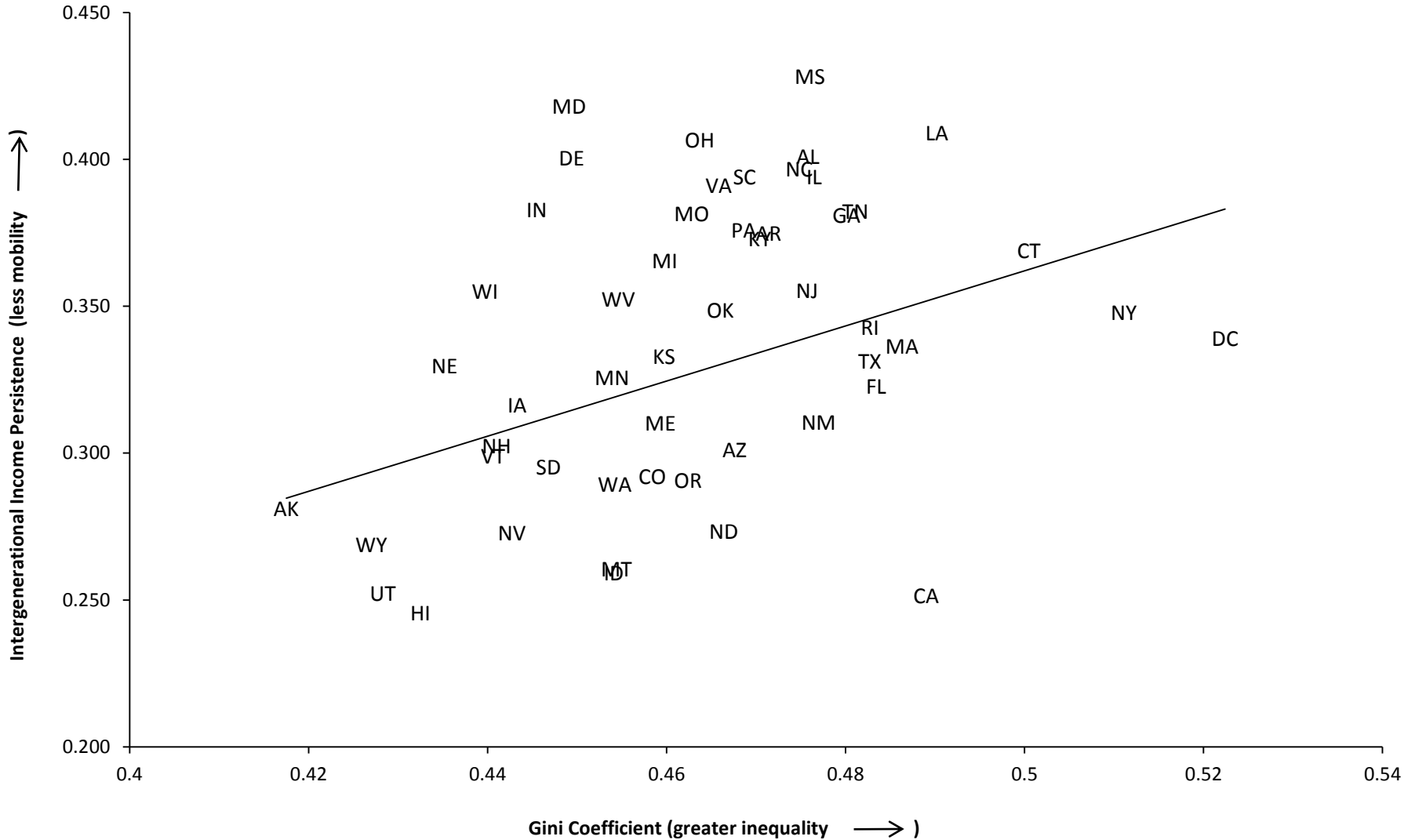
- Places with high income inequality tend to have low economic mobility, and vice versa
 - U.S.: high inequality/low mobility
- “Great Gatsby Curve” (Krueger/Corak): Pattern plays out across countries
 - Exists across states in U.S. too

The Great Gatsby Curve: More Inequality is Associated with Less Mobility across the Generations



Source: Corak (2013).

Great Gatsby Curve in the United States



Notes: Income persistence is the relative mobility measure obtained from Chetty, et al. (2014). The Gini Coefficient data come from the U.S. Bureau of the Census, 2014 American Community Survey.

Income Inequality and Economic Mobility



- Often presumed that inequality leads to lower mobility
 - Several potential mechanisms: residential and school segregation, eroded public goods funding in low-income areas, discrimination
- *But does it??*

Q1: How Should We Interpret the Cross-Sectional Correlation between Inequality and Mobility?



- Lots of other correlated factors
- Social mobility work of Chetty, Hendren, Klein, and Saez (2014)
Commuting zones w/ higher levels of social mobility characterized by 5 key features:
 - (1) larger share of two-parent households.
 - (2) less income inequality (thicker middle class)
 - (3) less residential segregation,
 - (4) better primary schools
 - (5) greater social capital
- Chetty and Hendren (2015)
Children who move to “better counties” have better mobility outcomes. So places have causal effects. But what is it about the places?

OPEN QUESTIONS:

- Which characteristics drive outcomes?
- Does inequality itself have an effect on individual level outcomes?

Q2: Is the Relationship between Inequality and Mobility a Social Problem?



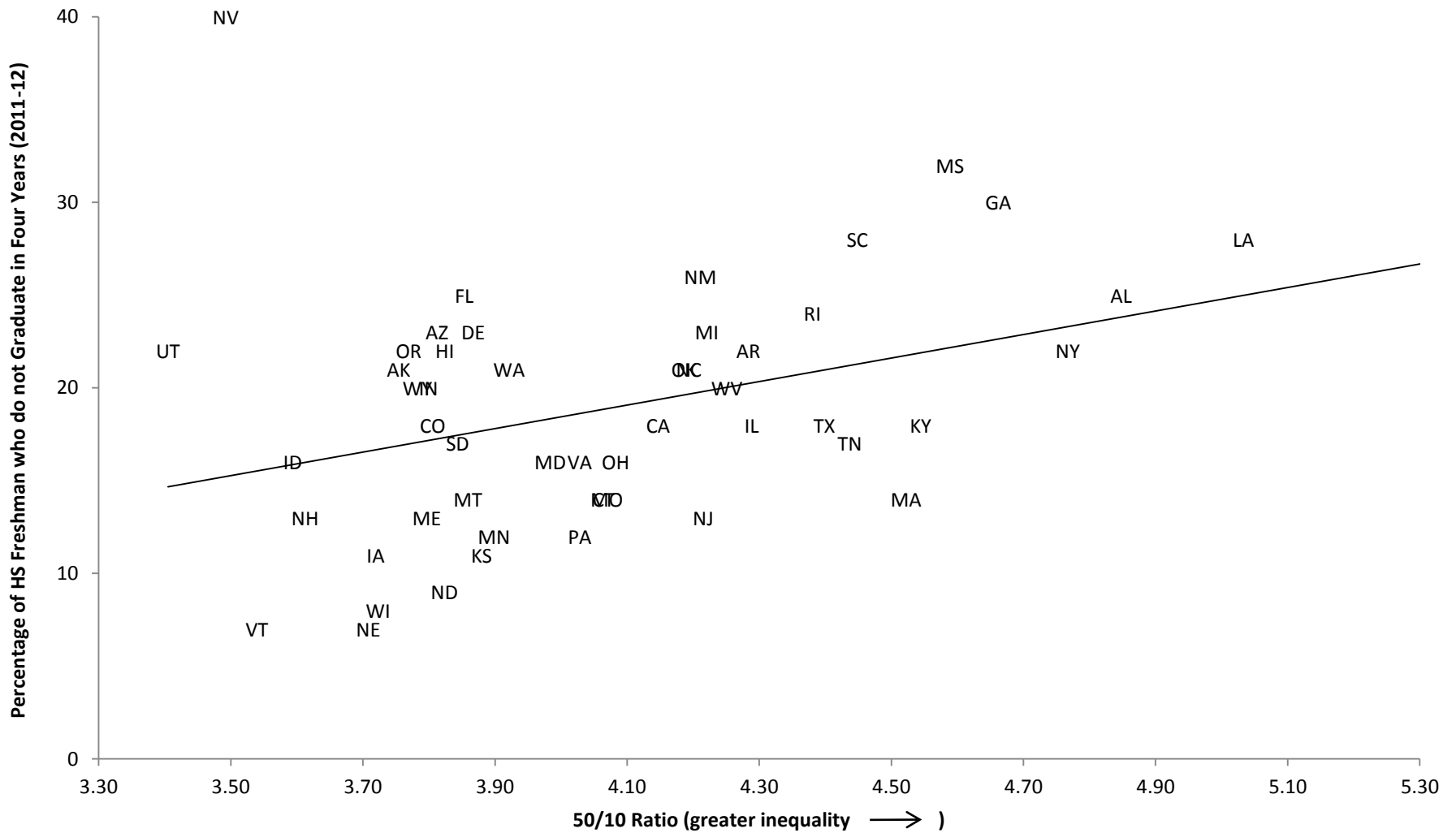
- It may not be that one causes the other, but rather, both high inequality and low mobility reflect underlying population characteristics.
- EX: places like the U.S. tend to be more demographically diverse relative to places like Denmark, which has considerably less inequality and greater economic mobility.
- Mankiw's example of chess tournament

Potential link: “Despair”->Drop-out Behavior



- More income inequality might lead to “economic despair” and cause low-SES kids to drop out of school and mainstream climb to economic success
 - About 1/5 US 9th graders do not complete HS in 4 yrs
 - Higher rates among disadvantaged populations
 - Aggregate dropout rates correlate with inequality
- This would be a direct negative effect of inequality on educational attainment and therefore upward mobility.

Income Inequality and the Rate of High School Non-Completion



Notes: The graduation data is from Stetser and Stillwell (2014). The 50/10 ratios are calculated by the authors. The District of Columbia is omitted from this figure because it is an extreme outlier on the X axis (50/10 ratio = 5.66).

Kearney & Levine “Economic Despair” Model



- Within paradigm of standard human-capital investment model
 - Inequality -> greater return to investment -> more graduation
 - But potentially offsetting effect through perceived returns
- Perhaps more inequality leads to lower perceived returns as it seems harder to achieve success
 - “Why bother?”
 - Some truth to this perception:
 - ✦ Low-SES kids in more unequal places have lower “permanent income” as adults (NLSY)

Related Models



- **Relative deprivation**
 - Support for model: Luttmer (2005)
 - Incomes of neighbors affects happiness
 - Might affect motivation
- **Identity models**
 - Akerlof and Kranton, 2000; Watson and McLanahan, 2011
 - Social norms affect behavior (marriage)
 - High inequality/low mobility may lead poor to feel unworthy
- **Similar model of aspirations**
 - Genicot and Ray (2014): if aspirations are too high, frustration
 - Inhibits incentives to work towards advancement

Kearney & Levine Empirical Contribution



- Examine how being at the bottom of a relatively more unequal distribution affects likelihood of dropping out of high school
 - Don't directly test despair model, but test the prediction
- Individual level data
 - Moves us past aggregate correlations
 - Look separately at low-SES as compared to other adolescents
 - Control for background characteristics
- Separately consider inequality and HS wage premium
- Consider alternative economic conditions
- Consider some potential mechanisms

Overview of Empirical Approach



- *Does inequality affect the rate at which low-SES kids drop out of high school?*
 - Individual level regression of drop-out rate on SES*inequality/mobility
 - Focus on long-term lower-tail inequality at state (and MSA) level
 - Generate inequality measures using 1980, 1990, and 2000 Census
- *How and why?*
 - Horse-race specs with SES*(other contextual factors)

Relevant Measure of Inequality



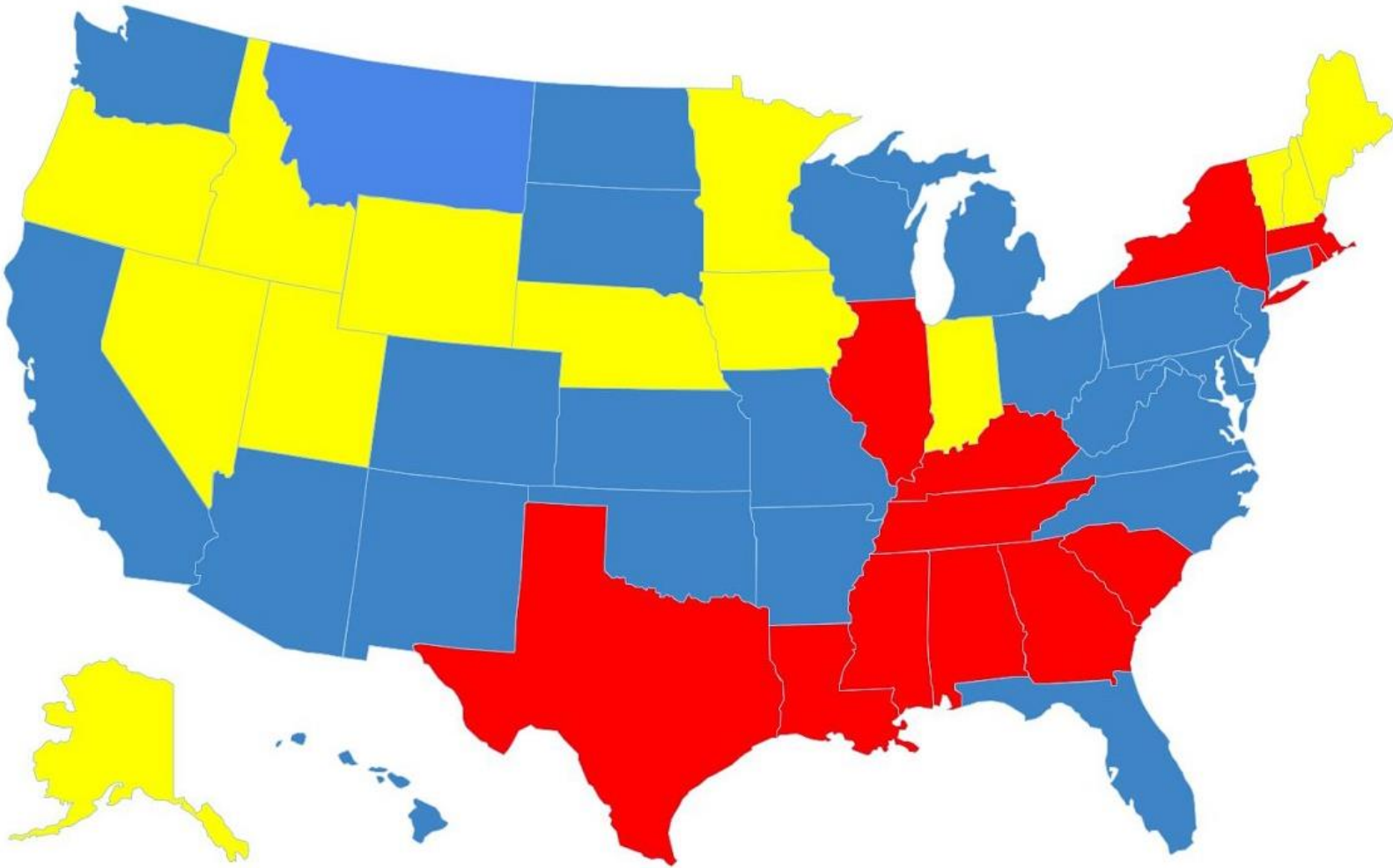
- Long-term measure of inequality
 - ✦ X-sectional variation much greater than within-state variation
 - ✦ State rankings largely stable over time
- Inequality measure: gap between middle and bottom
- Wider geographic unit

Inequality Measure



- Measure of Inequality: 50/10 Ratio
 - U.S. Census (1980, 1990, and 2000)
 - Calculate one long-term average per state
- Geography
 - State or MSA
 - Assumption: inequality a persistent economic condition, not driven by contemporaneous drop-out decisions
 - *FN*: we define inequality for just HS grads – not consequential
- Lowest inequality: UT (3.40), NV (3.49), VT (3.54), ID (3.59)
- Highest inequality: NY (4.77), AL (4.85), LA (5.03), DC (5.66).

Income Inequality (50/10 Ratio) by State



Low Inequality (< 3.8) Middle Inequality High Inequality (> 4.3)

Individual Level Data on Educational Attainment



- National Longitudinal Survey of Youth, 1979 (NLSY79)
 - ✦ Around 13,000 observations from 1957-1964 birth cohorts
 - ✦ HS completion status measured at age 20 in late 70s/early 80s
- National Education Longitudinal Survey (NELS)
 - ✦ Around 15,000 8th graders first surveyed in the spring of 1988
 - ✦ HS completion status in 1994 follow-up
- National Longitudinal Survey of Youth, 1997 (NLSY97)
 - ✦ Around 9,000 observations from 1980-1984 birth cohorts
 - ✦ HS completion status measured at age 20 in early 2000s
- Education Longitudinal Survey of 2002 (ELS)
 - ✦ Around 15,000 10th graders first surveyed the spring of 2002
 - ✦ HS completion status measured in 2006 follow up
- High School Survey and Beyond, 1980 (HSB)
 - ✦ Over 30,000 HS sophomores in 1980, ~13,682 followed in 1984
 - ✦ HS completion status measured in 1984 follow up
- **Comments:** Pooled data ~ 53K; Minor issues of survival bias (to grade 10)

Educational Attainment Measured in Alternative Longitudinal Data Sources



16	Educational Attainment by Age 20		
	GED	High School Dropout	High School Graduate
NLSY79	5.1	16.3	78.6
HSB (1980)	3.8	7.1	89.2
NELS (1988)	5.0	9.3	85.7
NLSY97	6.9	12.2	81.0
ELS (2002)	4.3	7.5	88.3

Econometric Specification



- **Model:**

$$\begin{aligned} Outcome_{is} = & \beta_0 + \beta_1 (I_s \cdot LS_{is}) + \beta_2 (I_s \cdot MS_{is}) + \beta_3 LS_{is} + \beta_4 MS_{is} \\ & + \beta_5 X_{is} + \beta_5 E_s + \gamma_s + \gamma_c + \varepsilon_{is} \end{aligned}$$

- I is inequality (50/10 ratio) or intergenerational correlation in income
- LS, MS: indicators for low and mid SES (mom HS dropout, mom HS grad)
- E: environmental factors at age 16
 - ✦ High school exit exams (indicators); Compulsory schooling age
 - ✦ State unem. rate; state min wage
 - ✦ Welfare/Medicaid policies, abortion policies, SHIP
- γ_s and γ_c : state and birth cohort fixed effects
- **Alternative specification: MSA level (w/o policy controls)**

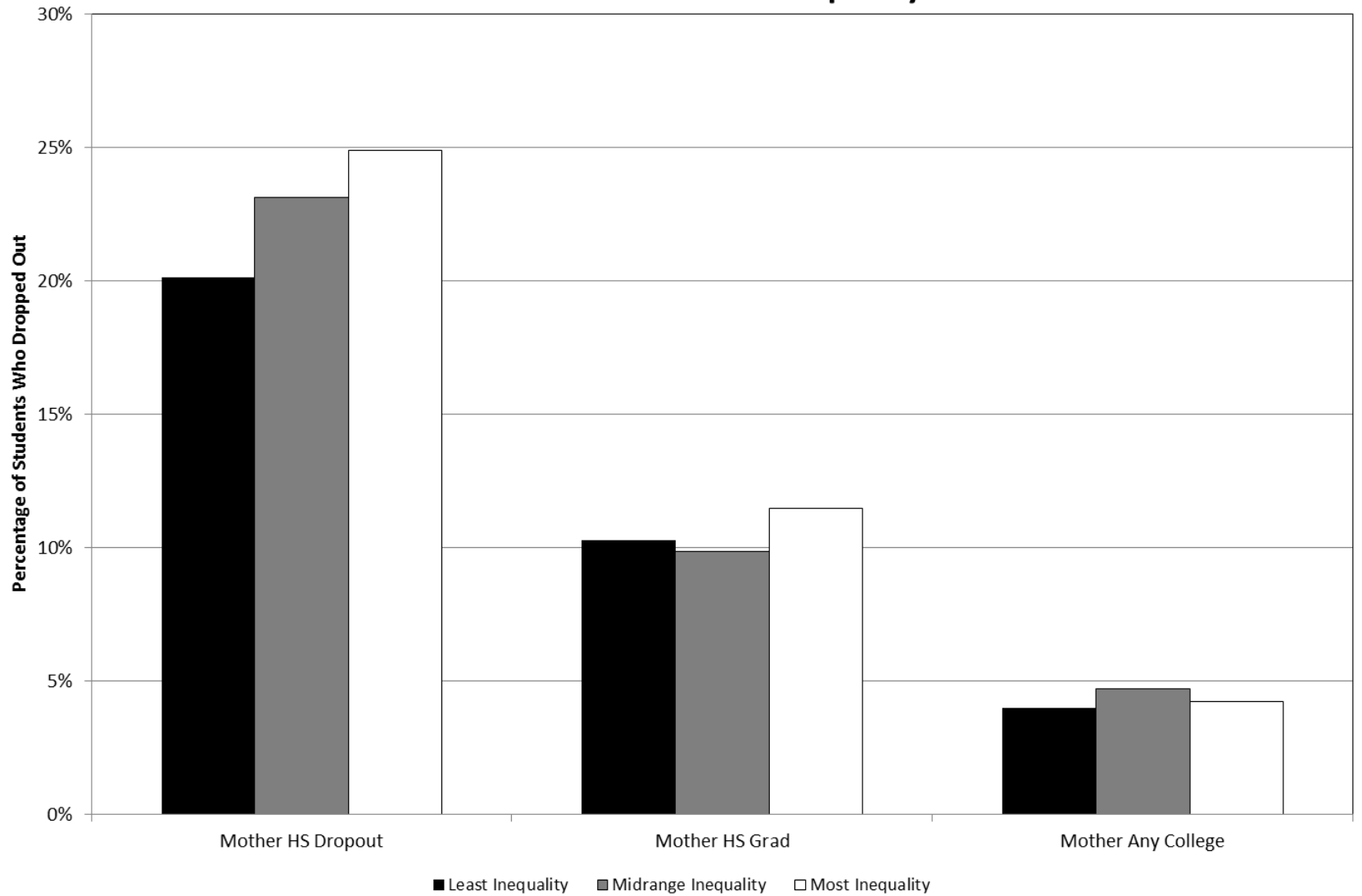
Horse-Race Models



$$\begin{aligned} Outcome_{is} = & \beta_0 + \beta_1 (I_s \cdot LS_{is}) + \beta_2 (I_s \cdot MS_{is}) + \beta_3 (A_s \cdot LS_{is}) + \beta_4 (A_s \cdot MS_{is}) \\ & + \beta_5 LS_{is} + \beta_6 MS_{is} + \beta_7 X_{is} + \beta_8 E_s + \gamma_s + \gamma_c + \varepsilon_{is} \end{aligned}$$

- **Alternative state characteristics**
 - Other features of income distribution
 - Wage premiums
- **Potential Mediating Channels**
 - Racial segregation, income segregation
 - School funding, pupil/teacher ratios
- **Potential confounders**
 - Poverty rate, minority rate, incarceration rate
- **Replace ratio 50/10 with intergenerational income persistence**

Figure 4: High School Dropout Rate by Mother's Level of Education and State Level of Income Inequality



Impact of Long-Term Inequality on HS Graduation by Age 20

ALL STUDENTS

	High School Dropout (1)	GED Receipt (2)	High School Graduate (3)
Percent in Category	11.8	5.2	83.0
50/10 Ratio*	0.023	-0.006	-0.017
Mom HS Dropout	(0.015)	(0.010)	(0.016)
50/10 Ratio*	0.018	0.010	-0.028
Mom HS Graduate	(0.014)	(0.008)	(0.013)

Impact of Long-Term Inequality on HS Graduation by Age 20

BOYS

	High School Dropout (1)	GED Receipt (2)	High School Graduate (3)
Percent in Category	13.0	5.8	81.2
50/10 Ratio*	0.041	-0.018	-0.022
Mom HS Dropout	(0.015)	(0.015)	(0.018)
50/10 Ratio*	0.025	0.013	-0.037
Mom HS Graduate	(0.017)	(0.009)	(0.016)

Alternative Measures of Income Distribution (Boys)

	50/10 ratio (1)	90/50 ratio (2)	10 th Percentile of Income (in \$10,000s) (3)	50 th Percentile of Income (in \$10,000s) (4)
Correlation between 50/10 ratio and characteristic:		0.69	-0.63	-0.25
50/10 Ratio*	0.041	0.058	0.041	0.041
Mom HS Dropout	(0.015)	(0.025)	(0.024)	(0.016)
50/10 Ratio*	0.025	0.023	0.024	0.024
Mom HS Graduate	(0.017)	(0.019)	(0.021)	(0.017)
State Characteristic*	---	-0.069	0.0002	-0.0001
Mom HS Dropout	---	(0.072)	(0.005)	(0.001)
State Characteristic*	---	0.004	-0.0001	-0.0003
Mom HS Graduate	---	(0.050)	(0.003)	(0.001)

Inclusion of Educational Wage Premiums (Boys)

	50/10 ratio (1)	HS Grad to HS Dropout Wage Premium (2)	College Grad to HS Grad Wage Premium (3)
Correlation between 50/10 ratio and characteristic:		0.27	0.35
50/10 Ratio* Mom HS Dropout	0.041 (0.015)	0.046 (0.015)	0.037 (0.017)
50/10 Ratio* Mom HS Graduate	0.025 (0.017)	0.023 (0.018)	0.022 (0.019)
State Characteristic* Mom HS Dropout	---	-0.117 (0.076)	0.039 (0.043)
State Characteristic* Mom HS Graduate	---	0.029 (0.062)	0.024 (0.043)

Potential Mediating Factors (Boys)

	50/10 ratio (1)	Racial Segregation Index (2)	Income Segregation Index (3)	Per Capita Educational Expenditures (x 1,000) (4)	Pupil Teacher Ratio (x10) (5)
Correlation between 50/10 ratio and characteristic:		0.05	0.47	0.17	-0.24
50/10 Ratio* Mom HS Dropout	0.041 (0.015)	0.040 (0.017)	0.040 (0.016)	0.036 (0.015)	0.029 (0.015)
50/10 Ratio* Mom HS Graduate	0.025 (0.017)	0.025 (0.015)	0.025 (0.017)	0.019 (0.012)	0.020 (0.015)
State Characteristic* Mom HS Dropout	--- ---	0.0008 (0.0008)	0.050 (0.396)	-0.001 (0.003)	-0.003 (0.002)
State Characteristic* Mom HS Graduate	--- ---	-0.0008 (0.0004)	0.0001 (0.204)	-0.005 (0.002)	0.004 (0.002)

Potential Confounders: Other State Characteristics (Boys)

	50/10 ratio (1)	Percent Minority (2)	Poverty Rate (3)	Incarceration Rate (x1,000) (4)
Correlation between 50/10 ratio and characteristic:		0.41	0.63	0.44
50/10 Ratio* Mom HS Dropout	0.041 (0.017)	0.053 (0.018)	0.056 (0.026)	0.043 (0.021)
50/10 Ratio* Mom HS Graduate	0.024 (0.012)	0.021 (0.017)	0.021 (0.021)	0.008 (0.014)
State Characteristic* Mom HS Dropout	---	-0.0007 (0.0004)	-0.003 (0.004)	-0.047 (0.092)
State Characteristic* Mom HS Graduate	---	0.0001 (0.0003)	0.001 (0.002)	0.066 (0.045)

Is it ability/aptitude?



- Recall the possibility that higher inequality/lower mobility might simply reflect greater dispersion in ability or aptitude
- So maybe low-SES kids in more unequal places are of lower ability/aptitude
- To investigate:
 - Control for AFQT in NLSY79 and NLSY97
 - Look at relationship between AFQT and low-SES*r50/10
- *Result:* about 1/3 explained by lower AFQT

Summary of Results



- Low-SES youth in more unequal places are more likely to drop out
- Robust to inclusion of other indicators of economic conditions
 - 50/10 ratio is the driving feature of income distribution
- Opposite-signed effect of HS Grad/HS Dropout wage premium
- Results do not appear to come through residential segregation or education spending measures.
- Consistent with model of economic despair

Concluding thoughts



- Income inequality might lead to lower rates of upward mobility through dampened educational attainment of low-SES kids.
- Policy implications
 - To break the cycle, low-SES kids need to believe and opportunities to achieve
 - Mentoring programs, high expectations school and community programs, promise scholarship programs