

The Postsecondary Resource Trinity Model: Exploring the Interaction Between Socioeconomic, Academic, and Institutional Resources



*(ORIGINAL TITLE: VEHICLES FOR MOBILITY OR
ENGINES OF INEQUALITY?: SES AND HIGH-ABILITY
STUDENTS' COLLEGE PATHWAYS)*

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Initial Research Question



Q: To what extent does our higher education system promote social mobility for socioeconomically disadvantaged students?

Three Assumptions



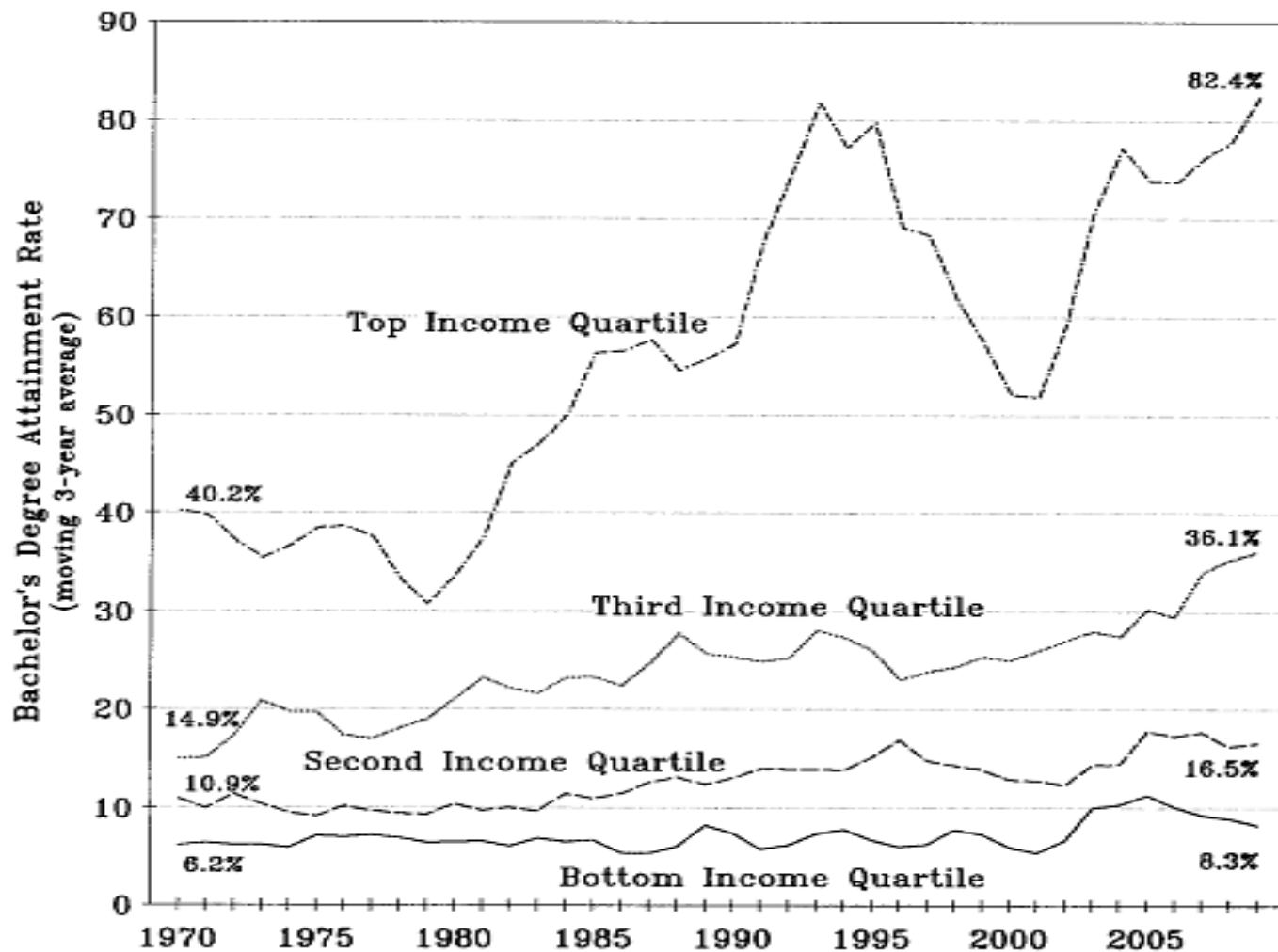
1. Individuals with higher levels of postsecondary education experience greater socioeconomic outcomes
2. One's socioeconomic background is unrelated to one's likelihood of postsecondary attainment
3. Among individuals with equivalent levels of attainment, no disparities in socioeconomic outcomes stemming from socioeconomic origins should exist

Postsecondary Education and Socioeconomic Outcomes



- **Postsecondary attainment leads to:**
 - Lower rates of unemployment
 - Greater earnings
 - Greater occupational prestige
 - Improved health outcomes
 - Greater civic engagement
 - (Becker, 1962; Becker, 1964; Card, 1999; Griliches, 1977; McMahon, 1991; Mincer, 1974; Psacharopolous, 1980; Psacharopolous & Patrino, 2004; Schultz, 1961):
- **Evidence that the effects are causal rather than spurious correlations (Card, 1999)**

Family Income and Bachelor's Attainment



Source: Mortenson, T. G. (2010). Family income and educational attainment 1970 to 2009. *Postsecondary Education Opportunity*, 221, 1-16.

Socioeconomic Background and Postsecondary Stages



- Mare's (1980) Conceptual Framework
- Educational attainment = sequences of transitions
- SES may influence each transition to a different degree
- Impact of SES declines over time
 - (Hauser & Andrew, 2006; Mare, 1980; Shavit & Blossfield, 1993)
- Stages:
 1. Application
 2. Acceptance
 3. Enrollment
 4. Persistence/Transfer
 5. Attainment
 6. Graduate Entry
 7. Graduate Attainment

Limitations of Mare's Approach



- Treats all postsecondary as equivalent
- Assumes effect of SES is equivalent across students
- Hoxby & Avery (2012)
 - “The subset of high-achieving, low-income students who do apply to selective institutions are just as likely to enroll and progress toward a degree at the same pace as high-income students with equivalent test scores and grades.”
- Unclear if ability, institutional selectivity, or combination of both can overcome SES effects
- Q: How do SES, ability, and institutional selectivity interact across postsecondary stages?

Postsecondary Attainment & Labor Outcomes



- Human capital vs. social capital
- Hout (1988)
 - For college graduates, “Current occupational status is independent of origin status. This finding provides a new answer to the old question about education’s overcoming disadvantaged origins. A college degree can do it.”
- Subsequent studies reached similar conclusions
 - (Hauser & Logan, 1992; Torche, 2011)
- More recent studies have challenged this finding
 - (Rumberger, 2010)

Methodology



Research Questions



1. How does the impact of SES vary across postsecondary stages?
2. To what extent do SES, ability, and institutional selectivity interact across postsecondary stages?
3. To what extent do disparities stemming from socioeconomic background exist among students with equivalent levels of postsecondary attainment?

Data & Sample



- **NCES' Education Longitudinal Study of 2002**
 - Sophomores in 2002 base year (2004 graduates)
 - Follow-ups in 2004, 2006, & 2012
 - Eight years of possible postsecondary
- **Sample**
 - Present in base year
 - Graduated HS by summer of 2004
 - Transcript data available
 - N = 11,749

Variables



- **SES** = composite of family income, both parents' educational attainment, & both parents' occupation
 - Quartile variable used
- **“Ability”** = ELS-administered SAT-like assessment
 - Quartile variable used
- **Selectivity** = Barron's Competitiveness Index
 - 3 levels
- **Controls:**
 - Demographics (race/ethnicity, gender, native language)
 - Academics (test scores, GPA, # of AP/IB courses)
 - School variables (region, control, urbanicity)

Statistical Techniques – Postsecondary Analyses



- **Sequential logit modeling (Mare, 1980)**
 - Series of dichotomous transitions
 - Sample restricted to only those eligible for current transition
 - Estimates variation in impact of SES across transitions
- **Separate models run for ability X selectivity combinations**
- **Used multilevel modeling approach with school-level random intercept (Raudenbush & Bryk, 2002)**

Statistical Techniques – Earnings Analyses



- OLS regression
- Outcomes
 - Annual Earnings
 - Hourly Earnings
- Sample = all bachelor's recipients in workforce
- Additional controls:
 - Major
 - Financial aid
 - Institutional selectivity
 - Attainment date
 - Current region of residence

Results



All HS Grads & All Universities



	Applied	Accepted	Enrolled	Persisted	Attained Bachelor's	Attained Bachelor's (Selective)	Enrolled Graduate	Attained Graduate
LowMidSES	0.070 (0.069)	0.117 (0.132)	-0.078 (0.113)	-0.039 (0.137)	-0.040 (0.115)	0.197 (0.165)	0.025 (0.204)	-0.463 (0.547)
HighMidSES	0.384*** (0.071)	0.326** (0.136)	0.083 (0.116)	0.316** (0.138)	0.314*** (0.116)	0.434*** (0.157)	0.050 (0.191)	-0.375 (0.458)
HighSES	0.787*** (0.079)	0.660*** (0.153)	0.527*** (0.122)	0.623*** (0.137)	0.642*** (0.111)	0.843*** (0.150)	0.239 (0.190)	-0.397 (0.458)
<i>Demographics</i>	X	X	X	X	X	X	X	X
<i>Academics</i>	X	X	X	X	X	X	X	X
<i>School Controls</i>	X	X	X	X	X	X	X	X
cons	-2.745*** (0.417)	0.258 (0.838)	-0.794 (0.529)	-1.468** (0.677)	-3.618*** (0.469)	-6.063*** (0.376)	-2.766*** (0.680)	-4.440*** (1.133)
var(cons)	0.294*** (0.048)	0.487*** (0.127)	0.343*** (0.072)	0.059 (0.061)	0.043 (0.041)	0.493*** (0.086)	0.061 (0.057)	0.000 (0.000)
N	11749	7319	6648	5494	5494	5494	3454	580
ll	-5920.39	-1802.19	-2614.18	-2012.99	-3178.85	-2658.83	-1523.02	-257.61
ll_c	-5983.66	-1817.28	-2634.47	-2013.51	-3179.53	-2706.88	-1523.53	-257.61
p_c	0.000	0.000	0.000	0.152	0.121	0.000	0.156	.

Notes: * p<.10, ** p<.05, *** p<.01. Standard errors in parentheses.

High-Ability Students at Selective Institutions



	Applied	Accepted	Enrolled	Persisted	Attained Bachelor's	Attained Bachelor's (Selective)	Enrolled Graduate	Attained Graduate
LowMidSES	-0.298 (0.195)	0.193 (0.380)	0.359 (0.317)	0.128 (0.769)	0.019 (0.367)	-0.160 (0.327)	0.229 (0.474)	-0.487 (1.104)
HighMidSES	0.218 (0.181)	0.423 (0.342)	0.548* (0.280)	0.372 (0.726)	0.188 (0.318)	-0.129 (0.296)	0.396 (0.430)	-0.081 (0.908)
HighSES	0.719*** (0.179)	0.642* (0.338)	0.678** (0.267)	0.844 (0.708)	0.445 (0.302)	0.090 (0.282)	0.346 (0.419)	-0.089 (0.877)
<i>Demographics</i>	X	X	X	X	X	X	X	X
<i>Academics</i>	X	X	X	X	X	X	X	X
<i>School Controls</i>	X	X	X	X	X	X	X	X
cons	-3.597*** (0.916)	-1.545 (3.547)	-3.402*** (0.637)	-3.105** (1.394)	-3.207*** (0.707)	-2.145*** (0.717)	-3.255*** (1.019)	-4.325* (2.214)
var(cons)	0.762*** (0.134)	0.757 (0.513)	0.548*** (0.190)	0.624 (0.706)	0.000 (0.000)	0.000 (0.000)	0.005 (0.095)	0.000 (0.000)
N	3599	2112	1925	1428	1428	1428	1133	235
ll	-1932.95	-511.58	-997.40	-236.04	-687.08	-841.14	-561.72	-114.87
ll_c	-1983.78	-514.96	-1006.52	-236.71	-687.08	-841.14	-561.72	-114.87
p_c	0.000	0.005	0.000	0.123	.	.	0.484	.

Notes: * p<.10, ** p<.05, *** p<.01. Standard errors in parentheses.

Attainment of High-Ability Students at Selective Institutions Revisited

	Model 1	Model 2	Model 3
LowMidSES	0.019 (0.367)	0.013 (0.365)	0.182 (0.385)
HighMidSES	0.188 (0.318)	0.174 (0.318)	0.388 (0.331)
HighSES	0.445 (0.302)	0.448 (0.302)	0.740** (0.325)
Demographics	X	X	X
Academics	X	X	X
School controls	X	X	X
Major		X	X
Financial aid			X
_cons	-3.207*** (0.707)	-3.388*** (0.716)	-3.457*** (0.747)
var(_cons)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
N	1428	1428	1428
ll	-687.08	-679.71	-658.23
ll_c	-687.08	-679.71	-658.23
p_c	.	.	.
aic	1416.16	1415.42	1390.46
bic	1526.71	1562.82	1585.23

Notes: * p<.10, ** p<.05, *** p<.01. Standard errors in parentheses.

Ex: Bachelor's Attainment for Moderately Selective Institutions by Ability

	HTQ	2TQ	3TQ	LTQ
LowMidSES	-0.374 (0.459)	-0.014 (0.335)	0.470 (0.476)	1.347 (0.960)
HighMidSES	-0.267 (0.454)	0.261 (0.298)	0.783 (0.481)	1.606 (1.040)
HighSES	0.115 (0.436)	0.339 (0.317)	0.999* (0.519)	1.983* (1.096)
Demographics	X	X	X	X
Academics	X	X	X	X
School controls	X	X	X	X
_cons	-5.215*** (0.975)	-4.273*** (0.731)	-1.155 (1.559)	-2.450 (2.665)
var(_cons)	0.000 (0.000)	0.000 (0.000)	0.687 (1.785)	0.000 (0.000)
N	584	609	284	64
ll	-321.43	-378.64	-171.44	-33.73
ll_c	-321.43	-378.64	-171.62	-33.73
p_c	.	.	0.275	.
aic	684.87	799.27	386.88	95.458
bic	776.63	891.92	467.16	125.68

Notes: * p<.10, ** p<.05, *** p<.01. Standard errors in parentheses.

Earnings Analysis for Bachelor's Attainers

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Stepwise
LowMidSES	272.4 (2216.6)	-73.94 (2212.4)	-468.7 (2221.3)	-651.9 (2214.7)	-286.6 (2166.3)	-220.7 (2165.5)	*
HighMidSES	277.9 (2074.9)	138.0 (2068.8)	-180.4 (2088.2)	-259.6 (2083.2)	-683.1 (2038.4)	-758.5 (2039.3)	*
HighSES	4244.8** (2046.2)	4343.6** (2041.2)	3918.2* (2083.2)	3149.9 (2087.5)	2690.1 (2041.7)	2699.3 (2041.4)	3457.7*** (1102.1)
Initial controls	X	X	X	X	X	X	
Major		X	X	X	X	X	
Financial aid			X	X	X	X	
Selectivity				X	X	X	
Attain date					X	X	
Residential region						X	
_cons	27001.9*** (3634.1)	27822.6*** (3662.8)	28103.1*** (3695.8)	21827.5*** (8274.9)	37254.5*** (8611.2)	34451.5*** (8820.9)	38390.6*** (2201.0)
N	2654	2654	2654	2654	2654	2654	2654
ll	-30874.1	-30859.3	-30854.0	-30843.2	-30769.1	-30766.3	-30774.0
r2	0.0822	0.0924	0.0960	0.103	0.152	0.154	0.149
aic	61790.2	61774.5	61782.0	61766.5	61640.2	61640.5	61602.0
bic	61913.8	61939.3	61999.7	62001.8	61940.3	61958.2	61760.9

Notes: * p<.10, ** p<.05, *** p<.01. Standard errors in parentheses.

Limitations & Future Research



- Small samples = low power for many analyses
- What aspects of SES driving outcomes?
- Could include additional institutional variables to explain outcomes (e.g. conditional logit model)
- More research on strategies and interventions that promote application
- More research exploring the enrollment gaps of admitted students

Conclusions & Implications



- Results challenge perception that influence of SES declines steadily across transitions
- Even among high-ability students that apply to selective institutions, SES still affects later outcomes
- The impact of SES on attainment is moderated by both ability and institutional selectivity
- Different strategies may be needed for different students attending different institutions
- Baccalaureate attainment does not eliminate labor market disparities stemming from SES background

Thank you!



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