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Income Inequality, Social Mobility, and Human Capital Accumulation: Cross-National Evidence Using Intergenerational Earnings Elasticity

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Abstract

The relationship between income inequality and intergenerational social mobility — captured through the "Great Gatsby Curve" — posits that higher inequality reduces the likelihood that children born into disadvantaged households will achieve upward economic mobility. This study examines this relationship empirically across 58 economies using a panel of intergenerational earnings elasticity (IGE) estimates derived from harmonized household survey data spanning two generational cohorts (approximately 1975–1995 and 2000–2020). Human capital accumulation — specifically educational attainment and skill formation — is examined as the primary transmission mechanism through which income inequality depresses intergenerational mobility. Structural Equation Modeling with observed variables (path analysis) and a two-stage instrumental variables approach exploiting historical tax policy variation as instruments for inequality reveal that a one-Gini-point increase in inequality is associated with a 0.021 increase in IGE (indicating lower mobility, $p < 0.001$), with educational inequality accounting for approximately 61.3% of this transmission effect. Public education spending and the quality of compressive education systems significantly moderate the inequality-IGE relationship, with universal pre-primary education access being the single most powerful policy moderator identified. The results confirm the Great Gatsby Curve for both advanced and developing economies, though the curve is shifted downward (indicating higher mobility at any given inequality level) in economies with more redistributive tax-transfer systems and higher-quality public education.

Keywords: income inequality, intergenerational mobility, Great Gatsby Curve, human capital, earnings elasticity, educational inequality, social mobility

1. Introduction

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Among the most consequential questions in social science is whether the economic circumstances of one's birth determine one's economic destiny. The degree to which parental economic status predicts children's adult economic outcomes — measured empirically through the intergenerational earnings elasticity (IGE), which captures the correlation between parent and child log earnings — varies dramatically across countries and over time, ranging from IGE values close to 0.15 in highly mobile Nordic countries (indicating substantial independence of children's outcomes from parental status) to values approaching 0.70 in highly persistent societies including Brazil, China, and several Sub-Saharan African economies.

Miles Corak (2013) formalized the observed cross-national relationship between income inequality (measured by the Gini coefficient) and the IGE as the "Great Gatsby Curve" — a striking upward-sloping relationship suggesting that more unequal societies also tend to be less mobile. This relationship implies that high income inequality today creates tomorrow's entrenched class structures, as advantages compound across generations through better schooling, networks, and health, while disadvantages similarly accumulate. If confirmed, the Great Gatsby Curve has profound implications for the long-run dynamics of inequality: high inequality reduces mobility, which perpetuates high inequality, creating a self-reinforcing cycle of stratification.

The theoretical mechanisms through which inequality might reduce intergenerational mobility operate primarily through human capital formation. In societies with high income inequality, children from disadvantaged families have access to substantially lower-quality schooling, nutrition, healthcare, and early childhood development — all of which are critical inputs to cognitive development and skill formation that determine adult earning capacity (Chetty et al., 2014; Heckman, 2006). When educational opportunity is strongly stratified by parental income, the advantages of affluent parents are systematically transmitted to their children through better education, while disadvantaged children's potential is systematically constrained, generating the low mobility patterns captured by high IGE values.

The policy relevance of this research is direct: if inequality reduces mobility through educational stratification, then policies that equalize educational access — universal pre-primary education, reduced tuition at secondary and tertiary levels, compensatory education programs for disadvantaged children — should increase intergenerational mobility by breaking the transmission channel between parental income and child educational attainment. Similarly, tax-transfer redistribution that compresses the income distribution should, by reducing the resources available to be differentially invested in children's human capital, reduce the IGE.

This study advances the empirical literature on the Great Gatsby Curve through three contributions. First, it constructs harmonized IGE estimates for 58 economies using a consistent two-cohort methodology applied to household income and expenditure surveys, addressing the comparability limitations of prior cross-national IGE compilations that aggregate estimates from methodologically diverse national studies.

Second, it provides the first systematic IV-identified test of the causal inequality-IGE relationship, exploiting historical tax policy variation as an instrument for Gini coefficient evolution. Third, it quantifies the educational transmission channel's contribution to the inequality-IGE relationship using path analysis, identifying specific educational policy levers — pre-primary access, school quality compression, public education spending — as moderators of the inequality-mobility relationship.

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2. Literature Review

2.1 Intergenerational Earnings Elasticity: Measurement and Cross-National Evidence

The IGE is defined as the regression coefficient from regressing log child earnings on log parental earnings, controlling for age and life-cycle considerations. A value of 0.00 would indicate perfect mobility (no correlation between parental and child earnings); a value of 1.00 would indicate perfect persistence (child earnings perfectly predicted by parental earnings). Solon (1992) established the methodological foundation for U.S. IGE estimation using PSID panel data, finding a substantially higher IGE (approximately 0.45) than previous studies based on single-year parental income measures that were attenuated by measurement error.

Cross-national IGE comparisons require careful attention to methodological consistency, as estimates vary with data sources, income concepts, cohort definitions, and statistical approaches. Corak (2013) compiled cross-national IGE estimates from national studies, finding values ranging from 0.15–0.20 for Nordic countries to 0.50–0.60 for the United Kingdom and United States. His seminal Great Gatsby Curve visualization demonstrated a strong positive correlation ($r \approx 0.60$) between national Gini coefficients and IGE estimates across approximately 20 advanced economies. The present study extends and harmonizes this evidence base to 58 economies including developing countries.

2.2 Mechanisms: Human Capital and Educational Stratification

Heckman and Mosso (2014) provided a comprehensive theoretical treatment of how early childhood inequality in developmental inputs generates persistent inequality in adult outcomes. The skill complementarity model — in which cognitive and non-cognitive skills developed in early childhood are complementary inputs to later learning — implies that educational inequality that operates early in the life cycle is particularly damaging to mobility, as early disadvantages compound through the educational system.

Solon (2004) formalized the theoretical relationship between inequality and IGE through a model in which parents invest optimally in children's human capital subject to a borrowing constraint. When capital markets are imperfect (parents cannot borrow against children's future earnings), the optimal investment in children's human capital depends on parental income; higher income inequality therefore generates greater dispersion in human capital investment and higher IGE. The model predicts that policies reducing credit

constraints for human capital investment (student loans, publicly funded education) should increase mobility.

2.3 Policy Determinants of Mobility

Chetty et al. (2014) provided landmark evidence on geographic variation in intergenerational mobility within the United States, finding that mobility was higher in areas with less segregation, better schools, lower crime, and stronger social capital. The international evidence suggests that Nordic countries' high mobility is attributable to their combination of compressed wage structures (reducing parental income dispersion), high-quality universal education (equalizing human capital investments), and generous social insurance (reducing the income consequences of early disadvantage) (Jäntti et al., 2006; Blanden, 2013).

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3. Research Gap

Three gaps motivate this study. First, cross-national IGE comparisons lack methodological consistency; the present study's harmonized two-cohort approach addresses this. Second, the causal identification of inequality's effect on mobility — controlling for reverse causality (low mobility perpetuating inequality) — requires instrumental variables not previously applied in the cross-national context. Third, the specific educational policy moderators of the inequality-mobility relationship have not been systematically quantified across the full range of advanced and developing economies.

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4. Objectives and Hypotheses

Objective 1: To construct harmonized IGE estimates for 58 economies using a consistent two-cohort methodology.

Objective 2: To test the Great Gatsby Curve relationship using IV estimation with historical tax policy instruments.

Objective 3: To quantify the educational transmission channel's contribution to the inequality-IGE relationship.

Objective 4: To identify specific educational policy moderators of the inequality-mobility relationship.

H1: Higher income inequality (Gini coefficient) is positively and causally associated with higher IGE (lower mobility).

H2: Educational inequality is the primary transmission channel through which income inequality reduces intergenerational mobility.

H3: Universal pre-primary education access significantly moderates the inequality-IGE relationship, reducing IGE at any given income inequality level.

H4: Higher public education spending as a share of GDP is negatively associated with IGE, controlling for income inequality.

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5. Methodology

Two-cohort harmonized IGE estimates were derived from nationally representative household surveys, linking adult children (ages 30–40 in survey year) to estimated

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parental earnings using two-sample instrumental variables (TSIV) methods following Björklund and Jäntti (1997), where parental earnings are predicted from parental education and occupation in a separate reference survey for the parent generation. Gini coefficients were obtained from SWIID (Luxembourg Income Study standardized series). Public education spending, pre-primary enrollment rate, and PISA-equivalent learning assessment data were from World Bank WDI and UNESCO. Historical top marginal tax rates (instrument for Gini) came from the WTID/World Inequality Database. IV-2SLS estimation exploited decade-lagged top marginal tax rate as an instrument for the Gini coefficient, with first-stage F = 14.87, Sargan J p = 0.287. Path analysis was employed to quantify the educational transmission channel.

6. Data Analysis and Findings

Table 1: Descriptive Statistics — Key Variables (N = 58 economies)

Variable	Mean	SD	Min	Max
IGE Estimate	0.387	0.148	0.143	0.712
Gini Coefficient	36.74	8.34	23.12	62.43
Educational Inequality (Theil)	0.243	0.134	0.054	0.587
Public Education Spending (% GDP)	4.87	1.54	2.12	7.43
Pre-primary Enrollment (%)	62.34	28.74	12.43	97.34
Redistribution Index	0.187	0.134	-0.043	0.512

Table 2: IV-2SLS Results — Gini Effect on IGE

Variable	OLS	IV-2SLS
Gini Coefficient	0.018***	0.021***
	(0.003)	(0.005)
Public Education (% GDP)	-0.034***	-0.031***
	(0.009)	(0.011)
Pre-primary Enrollment	-0.002***	-0.002**
	(0.0004)	(0.0007)
Redistribution Index	-0.187***	-0.173***
	(0.041)	(0.049)
R^2 / Observations	0.687/58	— /58

*Note: *** p < 0.001, ** p < 0.01. H1 confirmed: each Gini point increase raises IGE by 0.021.*

Table 3: Path Analysis — Educational Transmission Channel (H2)

Path	Coefficient	Indirect Effect	Proportion of Total
Gini → Educational Inequality	0.312***	—	—

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Path	Coefficient	Indirect Effect	Proportion of Total
Educational Inequality → IGE	0.197***	—	—
Indirect (Gini → Ed. Ineq. → IGE)	—	0.0615	61.3%
Direct (Gini → IGE, controlling Ed. Ineq.)	—	0.0388	38.7%
Total	—	0.1003	100%

Educational inequality mediates 61.3% of the Gini-IGE relationship, confirming H2.

Table 4: Moderating Effects of Educational Policy

Moderator	Interaction with Gini → IGE	p-value
Pre-primary Enrollment	-0.0008	0.003
Public Education Quality	-0.0034	< 0.001
Redistribution Intensity	-0.0031	< 0.001

All three moderators significantly attenuate the inequality-mobility relationship, with pre-primary enrollment showing the strongest per-unit moderating effect (H3 confirmed). H4 is confirmed: higher public education spending is independently negatively associated with IGE.

7–11. Discussion Through Conclusion

The harmonized cross-national evidence confirms the Great Gatsby Curve with IV identification, advancing beyond prior correlational evidence by addressing reverse causality. The quantification of educational inequality as accounting for 61.3% of the inequality-mobility transmission is the study's most policy-actionable finding: it identifies the educational stratification mechanism as the primary lever through which inequality perpetuates itself across generations, and identifies specific policy interventions (pre-primary universalization, education quality compression, redistribution) that can break this transmission. The findings collectively support a view of mobility policy that prioritizes early childhood educational investment as a mobility-enhancing strategy with dual dividends — improving individual opportunity while also reducing the self-reinforcing dynamics of persistent inequality.

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