Intergenerational Effects of Early Childhood Shocks

Kibrom Tafere

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Setting the stage

- Shocks experienced by individuals during their *in utero* period or early childhood may have consequences not only for themselves but also for their children, indicating an intergenerational transmission of adversity.
- These effects are transmitted through a variety of mechanisms, including diminished maternal health and education (Currie & Moretti, 2007), chronic stress responses (Yehuda et al., 2015), and epigenetic changes resulting from prenatal stress (Torche & Kleinhaus, 2012).
- Evidence from the Great Chinese Famine shows that individuals exposed to famine during early development had grandchildren with significantly lower cognitive scores and educational attainment (Cheng et al., 2023).
- In Indonesia, children of parents who survived the 2004 tsunami exhibited lower emotional well-being, highlighting a psychological intergenerational transmission pathway (Nobles et al., 2015).

Why this matters

- Exposure to adverse conditions during early development can impair health and economic outcomes throughout life, thus limiting human capital accumulation and reinforcing poverty (Currie et al., 2010).
- When early-life shocks affect the next generation, the consequences multiply, increasing the likelihood of persistent poverty and entrenched inequality (Almond & Currie, 2011).
- Clarifying how shocks affect outcomes across and within generations is vital for designing evidence-based social and health policies aimed at breaking cycles of disadvantage.
- While most evidence stems from high-income countries, recent studies show that shocks in LMICs are frequent, severe, and likely to have underexplored long-term and intergenerational consequences (Delavande et al., 2023).

Canonical literature: high income countries

- Almond (2006): Flu pandemic *in utero* $\rightarrow$ lower earnings and education in adulthood.
- Case et al. (2005): Childhood socioeconomic status linked to adult morbidity in U.S.
- Almond & Currie (2011): Review of fetal origins and lifelong effects across domains.
- Currie & Rossin-Slater (2015): Emphasize importance of early life for human capital formation.
- Almond, Currie, & Duque (2018): Updated review of early-life origins with focus on heterogeneity, policy design, and evidence from LMICs.

Evidence from LMICs

- Much of the evidence from LMICs is on long terms effects of early adverse exposure
  - Maccini & Yang (2009): Rainfall in early life predicts adult outcomes in Indonesia.
  - Hoddinott et al. (2008): Nutrition intervention in Guatemala improved adult wages.
  - Bhalotra & Venkataramani (2013): Disease burden in India lowers schooling outcomes.
  - Roy & Sharma (2022): Prenatal rainfall shocks reduce test scores in India.
  - Alemu et al. (2025): Early life deprivation of iodine reduce high-stakes test scores in Ethiopia.

Evidence from LMICs 2

- Evidence on intergenerational effects emerging:
  - Cheng et al., (2023): Evidence from the Great Chinese Famine shows that individuals exposed to famine during early development had grandchildren with significantly lower cognitive scores and educational attainment
  - Caruso (2017): Evidence from 100 years of natural disasters in Latin America shows that individuals exposed to disasters early in life experienced persistent effects on education and income, with negative impacts extending to the next generation.
  - Caruso & Miller (2015): Evidence from Peru's 1970 Ancash earthquake shows that individuals exposed in early childhood or *in utero* had lower educational attainment and wages, with intergenerational effects observed in their children's human capital.
- Challenge:
  - Many developing countries (especially those in SSA) lack long-term intergenerational panel data, limiting evidence-based policy making.

What we have learned... so far

- Intergenerational transmission most likely *in utero* or during the first 1,000 days of life, a critical window when physiological development and epigenetic programming occur (Torche & Kleinhaus, 2012; Yehuda et al., 2015).
- Cognitive and educational outcomes especially vulnerable, more consistently than physical health or height (Cheng et al., 2023; Caruso & Miller, 2015), suggesting transmission through parental behavior, schooling disruptions, and altered expectations.
- Growing evidence of gender-specific pathways, where paternal vs. maternal exposure may differentially affect children's outcomes (e.g., maternal stress more directly impacting in utero development) (Torche, 2018; Currie & Moretti, 2007).
- The timing and severity of shocks, and social protection systems matter, indicating some malleability in how adverse conditions shape future generations (Almond & Currie, 2011; Montalvao & Schady, 2020).
- Intergenerational impacts often more muted or selective compared to direct long-term effects, but accumulate in marginalized populations and during repeated or compound shocks (Caruso, 2017; Delavande et al., 2023).

Mechanisms

- Malnutrition or illness during a mother's early life can reduce her physical stature and cognitive ability, impacting her children.
- Lower educational attainment and aspirations among exposed mothers may lead to lower investment in their children's development.
- Emerging research points to biological mechanisms like epigenetic changes that influence how stress or undernutrition is passed on.
- Mothers who experience trauma may also transfer psychological stress to their children through parenting practices and reduced resilience.

Case study: 1983–1985 Ethiopian famine

- Ethiopia suffered a catastrophic famine in 1983-1985 as rains failed in successive cropping seasons between 1983 and 1985 in much of the country, especially the northern provinces of Tigray and Wello.
  - Peak of the famine was in 1984, with the average rainfall for all of Ethiopia $< 80\%$
  - Wide geographic variation in rainfall decline (up to 5 SD below average) and famine duration (up to 14 months).
- One of the worst famines in the 20th century: 400,000 – 1 million people excess mortality (Devereux 2000; de Waal 1991).
- Young children disproportionately affected; boys aged 0-4 and girls aged 5–9 had especially high mortality.

Data

- Data: Ethiopia Young Lives panel (2002–2014), 2,000 children tracked from age 1 to 12.
- Famine exposure: mother's birth cohort (1981–85) & wereda-level rainfall shocks (AgMERRA).
  - Measures of famine exposure: famine magnitude and famine duration
- Analysis sample: mothers of YL children, born between 1978 and 1988.
- Key variables:
  - Outcomes: height-for-age z-score (HAZ), PPVT, Math, schooling, locus of control, self-esteem.
  - Channels: maternal height, education, aspirations, expenditures.

Main results: child outcomes

- Significant intergenerational effects: a 1 SD $\uparrow$ in M reduces zhfa by 0.08 and an extra month of exposure (D) reduces zhfa by 0.04.
  - At the sample average M (0.25 SD) and D (1.1 months), Height-for-age z-score decreases by 0.07 SD ($\approx 5\%$)
- A 1 SD $\uparrow$ in M reduces grade achievement by 0.02 and an extra month of exposure (D) reduces grades by 0.04.
  - At the sample average M (0.25 SD) and D (1.1 months), child years of schooling decreases by 0.05.
- Locus of control, self-esteem, test scores all negatively affected.
- Effects persist across survey rounds — from infancy to adolescence.
- Suggest strong transmission from maternal early-life deprivation.

Transmission channels

- Maternal human capital:
  - Exposed mothers are shorter ($\downarrow$ height), less educated, lower aspirations.
  - Lower self-esteem and locus of control.
- Parental investments:
  - No effect on total expenditure as well as spending on child health and education.
  - May be because women are not primary income earners?
- Child level effects weaken/disappear when maternal human capital is included: suggests it's the dominant channel.

Policy implications

- Big picture:
  - Data: study of longer terms effects of early shocks in developing countries (especially SSA) hamstrung by paucity of data.
  - Investments in long-running panel surveys (similar to the LSMS), increasing data collection capacity in national statistical agencies would be crucial.
- Study findings:
  - Prevention (early action) more effective than post-shock remediation.
    - Well targeted social protection/safety net programs may be effective.
  - Invest in maternal health and education to *potentially* break intergenerational poverty.

Thank you!

Comments and questions

ktafere@worldbank.org