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موجز السياسات Policy Brief

Causal Inference in Economics: An application to the Effect of Education on Health

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Introduction

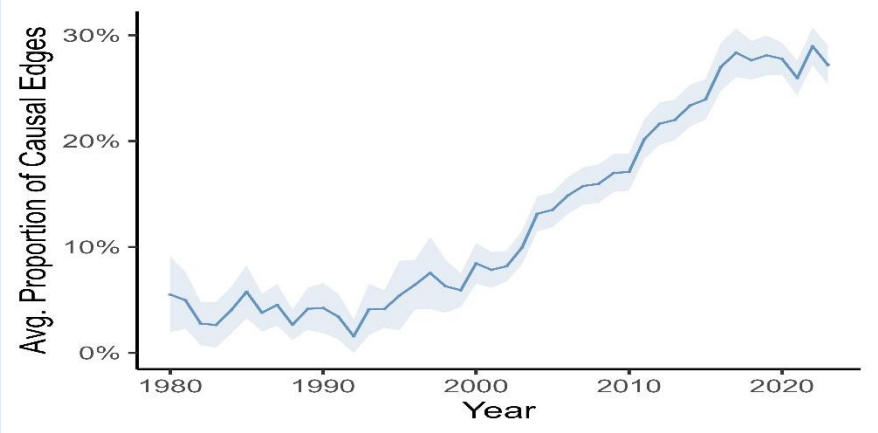
Education matters for health. On average, more educated individuals tend to have better health outcomes and longer life expectancy. However, whether this relationship is causal or driven by other underlying factors such as family background remains an open question. This brief summarizes findings from recent research that utilizes a natural experiment in Egypt, where a reduction in the length of primary schooling (effectively compulsory schooling) in 1988 created an opportunity to assess the causal effect of education on health.

The "Credibility Revolution" in Empirical Economics

Over the past few decades, empirical economics has undergone a "credibility revolution," emphasizing rigorous identification strategies for causal inference and evidence-based policy making. Non-causal observational studies might suffer from various biases due to confounding factors, making it difficult to establish true causal relationships. To address these issues, researchers increasingly rely on design-based methods, such as randomized controlled trials (RCTs) and natural experiments, to provide more credible and reliable estimates of causal effects.

One prominent example on the application of causal inference in development economics is Progresa, a conditional cash transfer program in Mexico that was designed with a randomized rollout, allowing for rigorous evaluation. Studies of Progresa by IFPRI and leading development economists provided strong evidence of its success, inspiring over 30 countries to adopt similar programs. This underscores the importance of designing randomized interventions with research in mind, enabling researchers to assess their impacts effectively.

When RCTs are impractical or unethical, economists turn to other causal inference methods such as difference-in-differences, instrumental variables, and regression discontinuity designs. When their assumptions are satisfied, these methods could leverage institutional changes and naturally occurring events, to infer causal relationships.



The growth in causal claims in economic research between 1980s and 2020s. Adapted from Garg and Fetzer (2025).

Furthermore, access to high-quality administrative data is critical for generating evidence-based policy recommendations. Governments and institutions should prioritize data transparency and integration to enhance the quality of economic and social research. The combination of causal inference methods and big data analytics holds immense potential for uncovering policy-relevant insights.

The Education-Health Link: Correlation vs. Causation

Education is often linked to improved health outcomes, including lower mortality, reduced disability, and healthier behaviors such as lower smoking rates. However, the challenge lies in determining whether education causes better health or whether other factors drive this relationship such as family background, cognitive abilities, or income levels. These factors could influence education and health simultaneously. For example, individuals from high socioeconomic backgrounds often attain better educational opportunities and greater access to healthcare, leading to a positive correlation that is not necessarily causal.

Another issue is reverse causality, where better/worse health might lead to better/worse education rather than the other way around. For instance, sick children or those with disabilities may not attend school for many days and hence perform worse in school than their healthier peers, making it difficult to disentangle the direction of causation.

Natural Experiment: Education Reform in Egypt

In 1988, Egypt implemented an education reform that reduced the duration of primary schooling from 6 to 5 years (effectively reducing compulsory schooling from 9 to 8 years).[1] This policy change created exogenous variation in schooling, providing a unique opportunity to estimate the causal impact of education on health outcomes.

This study utilizes data from the Egypt Health Issues Survey, conducted by the Demographic and Health Surveys in 2008 and 2015. The survey includes objective health indicators such as Body Mass Index, diabetes, hypertension, and smoking behavior. Unlike self-reported health status which suffers from subjective self-anchoring biases (individuals referencing different benchmarks while reporting their health status), these indicators provide more reliable insights of the health and health-related behavioral effects of education.

Key Findings

The study finds that a one year less of compulsory schooling did not harm health outcomes. While no strong evidence suggests that an extra/less year of schooling led to significant changes in health and health-related behaviors, there is some weak evidence that education reduces the likelihood of smoking among males.

These findings align with previous studies that report mixed results regarding the education-health relationship. One possible explanation is the low quality of education in Egypt, which may limit its potential impact on health outcomes. Additionally, the reform primarily affected individuals at the lower end of the education distribution, where the health benefits of marginal increases in schooling may be less pronounced.

Another point to consider is that our results may suggest the link between education and health is influenced by other important factors, like family background and natural abilities. Once we took these factors into account, the connection between education and health outcomes disappeared.

[1] It is worth noting that in 1999, the Egyptian government decided to reverse the 1988 policy change, announcing a return to the six-year primary education system (9 years of compulsory schooling), to be effective from 2004 onwards.

Policy Implications

- **Focus on Education Quality, Not Just Quantity**: Increasing years of schooling alone may not lead to significant health improvements. Investments in education quality, particularly in health literacy, could enhance the potential health benefits of schooling.
- **Leverage Causal Inference in Policy Design**: Future policy reforms should take into consideration evaluation strategies from the outset to facilitate rigorous analysis. Implementing randomized rollouts, as seen in Progresa, can help ensure that policy impacts are accurately measured and understood.
- **Expanded Data Availability for Research**: Governments should prioritize longitudinal data collection and administrative data sharing to assess policy effectiveness and inform future reforms
- **Encourage Interdisciplinary Approaches**: Collaboration between economists, public health experts, and policymakers can help design more effective interventions that maximize both educational and health outcomes.

In conclusion, while reducing compulsory schooling in Egypt did not harm health outcomes, the broader lesson is that policymakers should move beyond merely increasing schooling years. Generally speaking, the integration of rigorous impact evaluations into policymaking can lead to more effective and evidence-based decisions that enhance socioeconomic development. `