Air Pollution and Economic Opportunity in the United States*

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Abstract

Neighborhoods are an important determinant of economic opportunity in the United States. It is less clear how neighborhoods affect economic opportunity. Here we provide early evidence on the importance of environmental quality in shaping economic opportunity. Exposure to pollution in childhood has been shown to have meaningful and persistent effects on health and earnings. Combining 36 years of satellite derived $PM_{2.5}$ concentrations measured over roughly 8.6 million grid cells with linked survey, decennial Census and administrative records from the Internal Revenue Service and other sources, we first document a new fact: Replicating Chetty et al. (2014) we show that early-life exposure to particulate matter is one of the top 5 predictors of upward mobility in the United States. Next, using variation in prenatal pollution exposure from the introduction of the 1990 Clean Air Act Amendments, we estimate meaningful effects on adult earnings and upward mobility – a 1 $\mu g/m^3$ increase in prenatal $PM_{2.5}$ exposure is associated with a \$1,000 reduction in adult earnings every year and a 1.2 percentile reduction in the parent-child difference in income rank. We use these estimates to engage in two quantitative thought experiments, exploring the potential contribution of environmental quality in shaping observed patterns of income inequality and economic opportunity: 1) Combining these estimates with new individual-level measures of particulate matter exposure disparities at birth, we can account for up to 20% of later life black-white earnings gaps and 25% of the black-white gap in upward mobility estimated in Chetty et al. (2018); 2) combining experiment-induced reductions in $PM_{2.5}$ exposure

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from the Moving to Opportunity (MTO) experiment with our new pollution-earnings estimates, we calculate that the MTO-induced improvements in air quality could account for 10-20% of the earnings effects estimated for children that moved before the age of 13 in Chetty et al. (2016). Collectively, these findings suggest that disparities in environmental quality are a meaningful driver of economic opportunity in the United States, and that improvements in air quality and absolute environmental inequality may result in longer term reductions in economic inequality.

References

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