

Mines, Migration and Households' Welfare in Ghana: A Structural Gravity Model Approach

Job market paper

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Abstract

Natural resources, and most specifically extractives industries, have long played an important role in the development of many emerging countries. For example in 2008, gold mining rents represented 33% of the government's revenue in Mali, 27.4% in Peru or 16.3% in Tanzania. In this paper, I estimate the change in household welfare and agricultural land prices following a mine opening in Ghana. More specifically, I elaborate and calibrate a spatial general equilibrium model to study subnational migration and trade flows generated by mine openings. First, I use Ghana's large gold mining sector and improvement in road network between 1960 and 2013 to establish if the cost of distance on gross migration flows between districts is smaller for active mining districts. I then estimate a migration gravity equation with a Poisson Pseudo-Maximum Likelihood method to assess if mining destination districts have lower migration costs. Finally, I use the spatial general equilibrium model to compute the change in welfare and agricultural land prices following a mine opening (represented by a shock in mining districts' productivity, production function's parameters and travel distance to other districts on the road network). Welfare increases by 1.3% on average in the treated district due to outward migration flows, which mitigate the decrease in wages and the large increase in land rental rates of 11.5%. Our results indicate a significant change in indirect utility and land rental rates up to 200kms from the treated district and shed a new light on the mechanisms through which a mining boom can spread to nearby regions.

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Keywords: Mining; Natural Resources; Ghana; Sub-Saharan Africa; Migrations; Labor; Spatial General Equilibrium; Gravity Models.

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