Regional economic impacts of the Brumadinho tailing dam rupture disaster in Minas Gerais (Brazil) based on labor productivity changes

Topic: IO modeling (Chair: Satoshi Inomata, Institute of Developing Economies, JETRO)
Author: ClÃ¡udio Eurico Seibert Fernandes da Silva
Co-Authors: Rayan Wolf, Thais Diniz Oliveira

On 25 January 2019, the Brazilian village of Brumadinho, in the mining-heavy state of Minas Gerais, was taken by the tailings of CÃ³rrego do FeijÃ£o's dam. This dam rupture is arguably one of the worst human and environmental disasters, leaving over 250 people dead and spreading several ore tailing into Paraopeba River and the surrounding area. The toxic waste of the mine dispersed towards the villages along the Doce River basin and reached the Atlantic coast. As a typical case of negative externalities, this type of disaster leaves behind large-scale environmental and economic damages at local and regional levels. This paper aims to analyze the impact of Brumadinho dam failure in Minas Gerais (Brazil) from a labor productivity perspective. In this sense, it has translated the effects of the disaster into changes in productivity through World Bank estimates. The simulations primarily used Input-Output techniques to assess the economic structure and role of mining. Second, B-MARIA Computable General Equilibrium (CGE) model estimates regional effects as a function of changes in labor productivity. Input-Output Matrix database had obtained using IIOAS methodology, in which the cities directly affected are disaggregated with data referring to the year 2015. The result showed Brumadinho could have an accumulated loss of 1.17% of GDP in up to four years and the other municipalities of 1.81%. There is a loss of competitiveness concerning sectoral activity and exports. The manufacturing sectors are the most affected by the simulations applied. Finally, mining production is relevant to local economy, especially for Brumadinho, so security policies about extractive production are significant so that tragedies like this do not happen again.