

Natural Disasters and Informality: Effects of the 2016 Ecuadorian Earthquake on Labor Informality

Authors: Andres Mendoza, Viviana Carriel, Benjamin Jara

In April 2016, an earthquake of 7.8 Mw and 20 km of depth occurs in Ecuador, whose hypocenter was located off the coast of Manabí, according to the Geophysical Institute of the National Polytechnic School (IG-EPN). The earthquake mainly affected the Ecuadorian provinces of Esmeraldas, Manabí and Guayas. This paper analyzes the effects on informal employment caused by the earthquake, through a quasi-experimental approach using the impact evaluation technique known as difference in difference will be used to empirically analyze the effects.

The dependent variable is the informality rate, whose treatment is defined whenever the observation corresponds to the affected areas defined according to the intensity of the earthquake, a dummy variable was created for the time of occurrence of the disaster. The interaction between treatment and time, is used to capture the effect in the informality. Depending on specification, a set of covariates such as schooling, age, experience, sex, hours worked, urban area or rural area, economic activity, among others is included.

The main source of information for the estimates is the National Survey of Employment, Unemployment and Underemployment (ENEMDU, for its acronym in Spanish), developed quarterly by the Ecuadorian Institute of Statistic and Censuses (INEC, for its acronym in Spanish).

To define informality, we use the recommendations of the Seventeenth International Conference of Labor Statisticians (2003) of the International Labor Organization, which additionally includes measures such as quality of work and access to benefits that by law correspond to the worker.

Our hypothesis is that informal employment acts as a mechanism to counteract the destruction of formal employment caused by the natural disaster and its consequent impact on the local productive sector in the affected areas. However, preliminary estimates suggest that the results are not robust to all specifications, since the coefficients are statistically significant just in certain models. One possible explanation for the preliminary results is the reconstruction work being developed by the National Government and the consequent creation of employment.

Finally, we study the economic determinants that affect the increase or decrease of informality in the Ecuadorian case. Following what was done by other authors, we studied the statistical significance of some variables to explain informality, we used variables such as: Gross Domestic Product (GDP), international oil prices, government policies related to the labor market (affiliation to the Ecuadorian Institute of Social Security, increases in minimum wage), tax policy reform, public expenditures destined to the reconstruction of the zones affected by the earthquake, productive sector (primary, secondary, tertiary), etc.

This research offers valuable inputs to decision-makers to help develop public policies to protect employment, and promote economic recovery of the affected territories. It is also an important contribution for the labor market literature that focuses on the effect of natural disasters, since case studies of this kind are few and catastrophic events are very different among each other.