PhD Defense: Yoro Diallo

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Analysis of the socio-economic impacts of climate change in developing countries

JURY

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ABSTRACT

It is a fact that the consequences of climate change pose a considerable threat to the well-being of all humanity. For many years now, the consequences of climate change, including droughts, floods, and increases in the frequency and intensity of severe weather events, have been felt around the world. Moreover, the economic costs of these climatic phenomena are greater in developing countries than elsewhere. Indeed, the variability of temperature or rainfall strongly reduces agricultural productivity, whichis the predominant sector in these countries. Also, their institutional failures are an obstacle to their adaptation or to face the perverse effects of climate change. Thus, this thesis contributes to the existing literature by proposing four chapters on the socio-economic impacts of climate change in Southeast Asia and Africa. Specifically, we analyze the impacts of climate trends and shocks on agricultural activity, food security, household welfare, and social conflict. The first two chapters focus on the case of Vietnam and the last two chapters focus on Africa. In the first chapter, the results indicate that climate shocks have two effects (direct and indirect) on agricultural productivity. The direct effect is captured by the non-linear impact

of average temperature and precipitation on agricultural yield. Then, the indirect effect is captured by the negative and significant relationship between climate shocks and the technical efficiency of agricultural producers. Also, the results of the simulations are pessimistic about the evolution of technical efficiency in a context where global warming will be more important. Subsequently, in the second chapter, we reflect on the relationship between environmental risk factors and food security through a multidimensional analysis. The results of this chapter indicate that environmental risk factors that include climate variability prevent rural households from achieving adequate nutritional status. Chapter 3 focuses on the analysis of the relationship between well-being and climatic conditions in Mali. This chapter shows that household well-being in Mali is sensitive to climatic conditions. More interestingly, our results show that the elasticity of consumption to changes in rainfall varies across consumption typesand socio-economic groups. First, we find that the value of consumption-rainfall elasticity is higher for non-food consumption and much lower for food consumption. Second, we find that poor households that are most often located far from the capital (Bamako) and heavily dependent on agricultural income are the most affected by climate variability and instability. Since poverty is a key determinant of conflict in Africa, Chapter 4 analyzes the impact of climate shocks on the incidence of domestic conflict. We find that climate shocks, as captured by the aridity index, increase the likelihood of domestic conflict by up to 38 percent. This effect is amplified in countries with more unequal income distribution and a higher proportion of young men. The results in this chapter also highlight key resilience factors, including continued improvements in domestic revenue mobilization, enhanced social protection, and increased public investment in the agricultural sector.

KEYWORDS

Climate change, weather shocks, agriculture, food security, welfare, poverty, conflict, developing countries, Southeast Asia, Vietnam, Mali, Africa, and applied econometrics.

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