PhD Defence: Christelle Makougoum Tchoupe

Date

Le 21 November 2018 De 14:00 à 16:30

Location

Room Pascal 313 RO, 26 avenue Léon Blum 63000 Clermont-Ferrand

Climate change in Mali: impact of drought on agriculture and coping strategies

JURY

Catherine Araujo Bonjean, Research Fellow, CNRS, Université Clermont-Auvergne

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SUMMARY

Mali is a West African country where agriculture is mainly rain-fed, therefore essentially dependent on climatic conditions. This strong dependence between agriculture and climate makes it an interesting field of investigation, and especially with agriculture being the mainstay of Mali's economy. Relying on theoretical and empirical methods, this thesis aims to contribute to a better understanding of **the impact of climate change on agricultural production** and to a **better understanding of farmers' practices** that make it possible to adapt to climate change.

The first chapter of this thesis focused on the **manifestations of climate change and their impacts on cereals production**. Analysis of correlations between series of climate and agricultural data indicates that, overall, climate change has a damaging effect on cereals yields. After this analysis at the production level, we turned to the analysis of producer's behavior.

Hence, the second chapter focuses on the **managerial performance of farmers**. Using a stochastic frontier analysis, we found that a part of the farmers' inefficiency is due to climate change. The results also

revealed that even though there is inefficiency due to climate, it is low compared to technical inefficiency of the farmer. Subsequently, we concentrated on how to maintain or increase agricultural production in a context of climate change.

For this purpose, the third chapter identifies the **determinants of adaptation to climate change**. We focused on agricultural adaptation practices that preserve the environment. We used a multinomial logit model. The analysis demonstrated that the socio-demographic characteristics of farm households, the biophysical characteristics of plots and the occurrence of a drought influence the adoption of adaptation strategies.

Finally, the fourth chapter studies the **determinants of farm mechanization using the Heckman selection model**. The results suggest that drought reduces the odds of farm mechanization. We also found that the intensity of farm mechanization increases with increase of farm size and decreases with the increase of family workforce.

KEYWORDS

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