

# 論文の内容の要旨

農業・資源経済学専攻  
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論文題目 **Performance of Rural Markets and Smallholder Farmers'  
Participation in Commercialization in Burkina Faso: Their  
Determinants and Welfare Implications**

(ブルキナ・ファソにおける農村市場のパフォーマンスと小規模農家の商業活動への参加：その決定因と厚生に及ぼす帰結)

The transition from subsistence to commercial agriculture has long been considered as a means of enhancing incomes, ensuring food security, and reducing poverty. However, to achieve this, the coordination of economic activities by market institutions should necessarily contribute to minimize transaction costs and facilitate exchange between economic agents. This dissertation analyzed the role that the rural market functioning has on the use of modern inputs as well as the welfare gain from crop commercialization for small farm households in Burkina Faso.

Burkina Faso is a landlocked country located in West Africa with an estimated population of 20 million. More than 80 percent of its population relies on agriculture for their livelihoods. Agriculture contributes to 30 percent of the GDP approximately. A large share of the agricultural income in Burkina Faso comes from livestock rearing (20.4 %), and cereals (13.3 %), followed by cotton (12.3 %), and legumes, roots, and tubers (11.6%). The poverty headcount ratio in rural Burkina Faso at \$1.90 a day was 47.5 percent in 2014. Like most countries in Sub-Saharan Africa, Burkina Faso is permanently threatened by food insecurity and malnutrition. For example, between 2016-2018, the average prevalence of undernourishment was 20 percent of the total population. During the same period, 9.1

percent of the population were severely food insecure (FAO et al., 2019). This situation is translated into poor anthropometric measures for children under five years. For instance, the prevalence of stunting and wasting for children of this age was 27.3 and 7.6 percent respectively in 2016.

This research tried to answer the following specific questions:

- (i) How do transaction costs affect staple food crops markets functioning in a context with reversible trade flows?
- (ii) Does crop market efficiency enhance farmer adoption decision on yield-increasing technologies?
- (iii) What are the factors that matter in the farm household's market participation?
- (iv) How does crop commercialization affect the rural households' welfare?

This dissertation is divided into seven chapters. Chapters 1 and 2 provide a general background on the research and overview of staple crops production and marketing in Burkina Faso. Chapters 3 to 6 comprise the core of the dissertation and address each of the research questions respectively. Finally, Chapter 7 concludes the dissertation.

Although the reversible trade flows are common in developing countries including Burkina Faso and have influences on the food security of the rural and urban poor population, they are not well investigated in the context of price transmission. Chapter 3 of this dissertation tried to fill this gap in the literature by analyzing price transmission between domestic markets in Burkina Faso. For this, it used cowpea monthly price data collected over fifteen years in 44 local markets across Burkina Faso. The results suggest that transaction costs between central market and secondary markets are asymmetric. Moreover, the sign and the amplitude of adjustment parameters are consistent with the spatial equilibrium even though prices respond quickly to positive shocks than negative shocks. Also, the results show that there are few violations of competitive spatial equilibrium, which, associated with the consistency in the adjustments parameters suggest that the local market of cowpea is relatively performing well.

However, high transaction costs between producing and consuming localities may negatively affect the economic return of yield-increasing adoption and then discouraging farmers from adopting them. Even though previous researches have tackled the conceptual issues around the effects of crop market efficiency on the adoption of yield-increasing technologies by agricultural producers, none of them have provided empirical evidence. Thus, Chapter 4 of this dissertation fills this gap by analyzing the effect of cowpea market integration on farmers' use of modern inputs.

To achieve this, it combined price data with a five years panel from the farm continuous survey of Burkina Faso. The results suggest a strong association between crop output market integration and farmer decision to adopt modern inputs. More specifically, an increase in the price gap between the central market and secondary markets during the last 12 months preceding the planting season reduces the likelihood of adopting modern inputs. Moreover, the results suggest that the association between the crop market performance measures and the adoption of these yield-increasing inputs is stronger for farmers who previously adopted these yield-increasing inputs.

Furthermore, while market access factors such as distance, transportation, and communication assets have received greater attention in previous researches, less is done on how the farmers' comparative advantage affects their decision to participate in a specific crop market. Chapter 5 of this dissertation used data from the nationally representative household cross-section survey collected in 2014 in Burkina Faso under the Living Standards Measurement Study – Integrated Surveys in Agriculture (LSMS-ISA) to analyze the effect of farmer's comparative advantage in the crop production on farm household market participation. The findings suggest that crop net selling is associated with farmer's comparative advantage, regardless of the market access factors. That is, farmers are net sellers of crops for which they are relatively more efficient.

Lastly, the contribution of crop commercialization to farm household's food and nutrition security is widely recognized. However, the answer to how the intra-household distribution of the revenue from crop sales affects household nutrition and food security is scarce in the literature. Chapter 6 of this research used panel data of a nationally representative sample to analyze the welfare gain from crop commercialization, with a focus on the relationship between the wife's share of sales revenues and household nutrition. The results show that raising the wife's share of farm revenue increases household food demand and nutrition diversity. Moreover, increasing the wife's share of farm revenue induces a reallocation of the household budget away from high caloric food towards micronutrient foods purchase. The findings also suggest that the effect of the wife's share of farm revenue on the household nutrition is greater than the effect of the overall level of household commercialization and income, which supports that intra-household distribution of farm commercialization revenue affects household nutritional status.

The policy recommendations are clear-cut. First, better transportation infrastructures, storage, and logistics facilities, which would help to reduce trade costs, are of tremendous importance improve the commercialization of

agriculture and its impact on farm households' welfare in Burkina Faso. Next, facilitating the smallholder's integration to the marketing channel through contract farming or warehouse receipt system could improve the economic returns to investment in yield-increasing technologies and then stimulate their adoption. Promoting access to land and labor-saving technologies by women may help to increase the share of farm revenue they owned and then contribute to improving the household nutrition outcomes.