

論文審査の要旨  
(Summary of Dissertation Evaluation)

博士の専攻分野の名称 (Major Field of Ph.D.)	博士 (経済学) Ph.D. in (Economics)	氏名 (Candidate Name)	<b>GIVEN MATOPOTE</b>
学位授与の要件	学位規則第4条第1・2項該当		
論文題目 (Title of Dissertation) <b>Climate Variability, Agricultural Production, and Farmers' Willingness to Seek Financial Assistance in Botswana</b>			
論文審査担当者 (The Dissertation Committee)			
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論文審査の要旨 (Summary of the Dissertation Evaluation)			
<p>This dissertation studies the relationship between climate variability and agriculture (livestock and major grain) production in Botswana. Further, it explores the factors affecting livestock farmers' willingness to apply for financial assistance which would be instrumental in adapting to the negative association between climate variability and livestock production. The study is structured in five chapters.</p> <p>The dissertation is divided into five chapters, of which three are analytical, while the two are introduction and conclusion.</p> <p>The first chapter introduces the dissertation by giving a general overview of climate variability, and global agricultural production. It also includes a basic literature review from southern African and Botswana perspectives. Botswana's climate policy is also discussed in this chapter. All the research interests generated in the successive chapters are derived from this chapter.</p> <p>The VARX analysis in chapter two reveals that livestock production is sensitive to maximum temperatures. This is a concern considering that the world is currently getting warmer. Thus, livestock production is likely to be more vulnerable as temperatures increase. Cattle production also has a negative association with wet years (WY). The emergence of pests and diseases during the wet season (WS) can be connected to this association. Pests and diseases spread easily in communal livestock systems since the movement of animals is not strictly controlled. The negative association between goat production and dry years (DYs) is surprising given that several studies have pointed out that goats can withstand harsh conditions.</p> <p>In chapter three, the trends of maize and sorghum production show that the production of crops has fluctuated at low levels for the entire study period. Sorghum seems to have fared better than maize over the years. The linear trends also reveal a decreasing mode in cereal production. This</p>			

could be attributed to several factors, climate variability, being one of them. The ARDL estimates also show that maize is sensitive to maximum temperatures and DS in the long and short run, respectively. Therefore, there is a need for more investment in irrigation systems since dry periods are a reoccurring phenomenon in Botswana. The positive association between sorghum and unfavorable climate variables, as shown in the ARDL and VARX estimations, could be confirmation that the crop performs under harsh weather conditions, as pointed out by some studies. This may also be a sign that more efforts should be channeled towards the cultivation of sorghum, as an alternative to maize.

Chapter four is the result of a cross-sectional survey conducted in Ghanzi and Kgalagadi Districts in Botswana to measure the effect of vignettes, or information on the willingness of farmers to seek government financial assistance using the vignette experiment. show that information about CEDA services improves the willingness of farmers to seek credit/funding. The vignette about loan interest rates has a positive effect on farmers' willingness than others. This suggests that farmers consider information about interest rates more than others. Farmers understand what low interest rates look like in terms of percentages or numbers. In a nutshell, the results of chapter four underscore the importance of information in an individual's decision-making, especially for farmers. Access to information is, therefore, crucial in the utilization of agricultural policy at a larger scale. The study recommends a vigorous dissemination of financial schemes' information to the farmers to motivate and encourage them to seek finance to expand and diversify their farming enterprises, and income.

Chapter five concludes the discussion. It also contains the implications of the research.

This dissertation is positively evaluated in the following two points:

1. Explains a comprehensive relationship between climate variability and agriculture (livestock and major food grains) production in Botswana, which otherwise is understudied or researched from the perspective of less rainfall only,
2. Explores livestock farmers' willingness to apply for the financial assistance program, which aims to promote commercial farming and thereby might help in dealing with climatic stress associated with climate variability.

As a result of the above review, the author of this dissertation is found to be fully qualified to be awarded the degree of Doctor of Philosophy in Economics.

令和 6年 7月 30日

Note: The summary of the Dissertation should not exceed A4 size, 2 pages (about 500 words).