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The Impact of Temperature Variability on Food Security of Cereals in Morocco: An Econometric Approach by VECM

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Abstract

The objective of this study is to determine the influence of temperature variability and some variables on the food security model of cereals in Morocco. Many variables can play a role in this model. The variables selected for analysis were temperature variation, grain land area, grain imports, fertilizer consumption, and energy consumption. These five independent variables were tested to determine their effect on the food security pattern of cereals in Morocco. This study uses time series data by treating the period from 1981 to 2014. An econometric analysis of food security was conducted for this purpose through the vector error correction model VECM (Vector Error Correction Model) approach. The results of our model estimation show that there is significant long-run causality between food security and the explanatory variables. It was also found that there is a short-term relationship between grain food security and the following variables: Temperature variation, cereal import, and cereal area.

Keywords: Food security, cereals, Morocco, Agriculture, temperature variability, VECM

1.0 INTRODUCTION

Food security in Morocco is a very important issue for the daily life of Moroccans, especially the poor and middle class citizens.

Cereal production is a dominant activity in Moroccan agriculture, both in terms of the area it occupies and the population that depends on it (Ministry of Agriculture and Agrarian Reform, Kingdom of Morocco, 1992).

It represents a multiple role in the agricultural Gross Domestic Product, and in the creation of employment in the rural environment. Cereals are represented essentially by the crops of soft wheat, barley, durum wheat and corn. In Morocco, sorghum and rice are also grown, but with less importance. Morocco focuses mainly on wheat, as it is the most demanded by its population. Agricultural production, and in particular cereal yields, show very high inter-annual variability in Morocco due to uncertain rainfall and periods of drought.

Lately, national cereal production has not been able to cover the country's needs due to low productivity, even in years with sufficient rainfall. This has motivate this research to find the determinants of food security of cereals in Morocco. The challenges facing this country are numerous: poor soils, uncertain rainfall, increasing population pressures, drought, and weaknesses in research and technology delivery systems. In addition, the long-standing neglect of agriculture by political leaders is among the causes of the current food crisis. As a result, agricultural and rural development is given low priority.

So, can the explanatory variables for grain production play an important role in ensuring future food security in Morocco? Is there significant long-term causality between the dependent variable and the explanatory variables? And is there a short-term causal relationship between food security and

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