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Financing of Agriculture in Burkina Faso: Risks and Mitigation Measures – A Conceptual Paper

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Affidavit

I, at this moment, confirm that my article Financing of Agriculture in Burkina Faso: Risks and Mitigation Measures (Projecting the Issues and Problems in the Research, Problem Statement, Research Objectives, Research Questions, Significance of the Study, Feasible Limitation and Research Process) is the result of my work, carried out under the scientific supervision of Babandi Ibrahim Gumel, following the principles of honesty, integrity, and responsibility inherent to the research mission.

Furthermore, I confirm that this article has not yet been submitted as part of another examination process, neither in identical nor similar form.

Ouagadougou on February 6, 2024. Signature

Abstract

This article is a conceptual paper of a doctoral thesis that aims to understand better the difficulties linked to financing agriculture in Burkina Faso. We seek to analyze the risks that hinder agriculture financing to propose mitigation measures for better access to financing for stakeholders. Data was collected from households across the entire national territory to do this. In addition, data was collected from providers of financial products and services to analyze the adequacy of offers about demand. The data in this study comes from administered questionnaires and interviews. The macroeconomic data comes from the General Directorate of Economy and Planning and the National Institute of Statistics and Demographics.

Key words: *agriculture, financing, determinants, hazards, risk, measures, mitigation.*

Introduction

Burkina Faso is a landlocked country in the heart of West Africa. Its bordering countries are Mali, Niger, Benin, Togo, Ghana, and Ivory Coast. Ouagadougou, the capital of the country, is in the center of the country. The population of Burkina Faso was estimated at 19.2 million in 2017, with a growth rate of about 2.9% per year, according to the World Bank (2016). Its area is estimated at 274,200 km2, with a population density of 70 inhabitants per square kilometer, which is higher than the continental average of 42 inhabitants per square kilometer. The majority rural population is estimated at 70% of the total population. In Burkina Faso, the primary sector is the largest economic sector dominated by agricultural activities, which employs about 80% of the population of the active population and contributes up to 40% to the formation of the Gross Domestic Product (GDP).

Projecting the Issues and Problems in the Research

In Burkina Faso, in the next few years, farmers will have to respond to a strong increase in demand. This phenomenon offers great opportunities and emphasizes the need to strengthen the entire agricultural sector to face the challenges of population growth. Indeed, several initiatives at the national level aimed at transforming the sector and improving agricultural productivity have been adopted. These initiatives are expected to increase domestic production and reduce import dependence on food products. The national poverty rate was estimated at 40.1% in 2014, compared to 46.7% in 2009. The regions of Burkina Faso can be grouped into four categories according to their level of poverty in 2014. More than half of population is below the poverty line, rising to seven out of ten in the Northern Region. Inequality is moderate, with a

Gini index of 0.353 in 2014. Taking a broader perspective of well-being, Burkina Faso is ranked 185th out of 188 countries on the UNDP Human Development Index in 2015.

The financing needs of the agricultural sector are diverse, and a substantial diversity of constraints accompanies this diversity of needs. It also depends on agro-economic contexts, more or less diversified and intensive agricultural production systems, household activity systems, their degree of integration into the market, etc. (Wampfler & Lapenu, 2002).

Problem Statement

Despite its effectiveness in improving the living conditions of vulnerable population segments, the agriculture sector faces many challenges including its financing. It should be noted that agriculture in Burkina Faso is poorly mechanized and highly dependent on climatic hazards, hence its low productivity. This situation makes it difficult to access funding for the sector, thus hindering its modernization. It is therefore urgent to analyze the main obstacles that make the financing of the agricultural sector. Several solutions could be proposed to overcome the difficulties that undermine the agricultural sector; however, the analysis of the risk of financing the agricultural sector is essential to understanding the difficulties faced by these structures in the financing of agriculture. In this respect, it is important to ask why, despite the agricultural sector's importance to the country's socio-economic development, the financing needs of the agricultural sector are not met. In other words, what are the risks that hinder the financing of the agriculture sector?

The following subsidiary / specific questions can be asked from this main question: (i) What definition can be given to the agriculture sector? (ii) What is risk? (iii) What are the main causes of the risk of financing agriculture in Burkina Faso? (iv) What are risk mitigation measures in the financing of agriculture in Burkina Faso?

The answers to these questions are the backbone of the present study, which revolves around the following theme: "Financing of agriculture in Burkina Faso: risks and mitigation measures".

Research Objectives

The objective of this study is to analyze the financing risk of the agricultural sector in Burkina Faso to propose mitigation measures. In other words, it is a question of examining the main constraints that limit the financing of the agricultural sector, despite its essential role in achieving food self-sufficiency in the country. The starting point of our methodological approach is, therefore, the identification of the main determinants of the survival of the agricultural sector financing using statistical and econometric methods. For this purpose, survival (or duration) models that are more suitable than traditional classification techniques in this context, such as discriminant analysis and binary choice models (Logit and Probit), will be used. Indeed, unlike other methods, the estimation of the determinants of survival or the risk of financing the agriculture sector can be made from semi-parametric survival models that do not require a precise hypothesis formulation on the distribution of the duration of occurrence of a natural disaster. Indeed, a natural disaster is a natural hazard that involves the exposure of human populations and their infrastructure to a catastrophic event of natural origin. There are mainly avalanches, bush fires, floods, land movements, cyclones, storms, earthquakes, and volcanic eruptions but also tidal waves, pest invasions, prolonged droughts, etc.... It is thus the meeting between a hazard of natural origin and human, economic or environmental stakes. In Burkina Faso, the natural disasters already known since the 1970s are bush fires, floods, storms, pest invasions, prolonged droughts. Second, the survival analysis allows a continuous time analysis of the probability of funding failure. Third, both full data and censored life data are quickly considered in this approach. Moreover, unlike other available techniques, survival models allow the estimation of the time required for the occurrence of disasters in the agricultural sector, information that may be useful for monitoring the financing of this sector. Finally, survival analysis is a more flexible method of analyzing the determinants of sector financing risk than ordinary least squares (OLS) regression analysis because the latter requires a proxy for sector or risk financing insolvency such as z-score. The major disadvantage of a regression on the z-score is that the latter, being a proxy, does not capture the information on the current failure event. Also, the calculation of the z-score requires knowledge on a sufficient period for each farm, which, in the context of this study, would eliminate several newly established farms from the sample. The specific objectives pursued within the framework of this study are as follows: (i) define the agricultural sector, (ii) define the risk, (iii) identify and analyze the causes of agricultural finance risk, (iv) present the financial products and services offered by financial institutions and intended for agriculture in Burkina Faso, (v) make recommendations for better financing of agriculture in Burkina Faso. To achieve the objectives of the present study, which revolves around the following theme: "Financing of agriculture in Burkina Faso: risks and mitigation measures", the following hypotheses have been formulated to guide this reflection.

The hypothesis can be defined as a proposition of answers to the questions that one asks about the object of research, formulated in terms such that observation and analysis can provide an answer. Thus, the following hypotheses have been formulated: (i) The volume of funding allocated to the agricultural sector in Burkina Faso is very small compared to the sector's need for development, (ii) High risk is the main cause of the financing gap in the agriculture sector. This study will focus on credit risk.

Research Questions

Several solutions could be proposed to overcome the difficulties that undermine the agricultural sector; however, the analysis of the risk of financing the agricultural sector is essential to understanding the difficulties faced by these structures in the financing of agriculture. In this respect, it is important to ask why, despite the agricultural sector's importance to the country's socio-economic development, the financing needs of the agricultural sector are not met? In other words, what are the risks that hinder the financing of the agriculture sector? From this main question, the following subsidiary / specific questions can be asked. (i) What definition can be given to the agriculture sector? (ii) What is risk? (iii) What are the main causes of the risk of financing agriculture in Burkina Faso? (iv) What are the risk mitigation measures in the financing of agriculture in Burkina Faso?

Significance of the Study

Completing this study is of capital importance for the State of Burkina Faso. Indeed, accessibility to financial services, especially for those in the agricultural world, is essential in reducing poverty and vulnerability. However, all current public policies are oriented toward reducing poverty and vulnerability. Therefore, the possible solutions that will be identified following this study will offer new opportunities to the State in the implementation of its public policies in favor of the economic and social development of Burkina Faso.

For LIGS University, this subject is of interest due to its novelty and will increase the number of discussions carried out, particularly about agriculture financing.

For the author himself, carrying out the study first makes it possible to complete the training received at LIGS University through this research and writing effort. The subject of risk analysis in agricultural financing allows you to become familiar with the concepts of risk analysis in a practical way in the farming sector. In general, it could be a valuable information base for all those working in the agricultural financing field.

Feasible Limitation

This study is not intended to exhaust research on agricultural financing. Other complementary studies will focus on the specific financing of different value chain segments to complement this study's results.

Methodologically, the main limitations lie in the nature and size of the sample. Indeed, although the chosen sample mainly comprises actors involved in developing the agricultural sector, it remains that it is only a sample. The generalization of the results of this study can, therefore, only be done with caution, pending more in-depth validation from new studies. Social and cultural factors may influence the individuals who make up the sample.

The use of statistical methods to analyze the data reduces most of the limitations regarding data collection. Suppose the limitations mentioned above hurt the study and the quality of the information. In that case, the fact remains that they did not significantly affect the analyses carried out, which ultimately made it possible to reveal the timely nature of the analysis. Of the financing risk of the agricultural sector in Burkina Faso to propose mitigation measures. Our concern is to help in decision-making and to serve for future reflections in the sense of deepening research.

Research Process

This chapter combines all the knowledge and theories linked with the risk of financing the agricultural sector. These elements constitute benchmarks for the theoretical framework by facilitating the literature review. The conceptual framework is not intended to provide explanations for phenomena; however, it facilitates their understanding by facilitating access to bibliographical references. It is an analytical tool with many variations and contexts used to make conceptual distinctions and organize ideas.

Analysis Model

To carry out this study, the development of an analytical model is necessary. For this purpose, the following elements have been highlighted: (i) present the internal factors of the risk of financing agriculture in Burkina Faso, (ii) present the external factors of the risk of financing agriculture in Burkina Faso, namely natural disasters, country risk, (iii) appreciate the risk of financing agriculture through its quality and volume, (iv) Identify mitigation measures for better financing of agriculture in Burkina Faso.

Figure 1

Analysis Model

The figure below summarizes the explanatory variables for credit risk in the agricultural sector in Burkina Faso.

EXPLANATORY VARIABLES (SOURCES OF DIFFICULTISES OR

EXPLICIT VARIABLE

Quality of the agricultural promoter
- ✓ Market share
- ✓ credibility
- ✓ Skill;
- ✓ Warranty held

Production, processing or marketing techniques
- ✓ Mechanized
- ✓ Hand
- ✓ Quality of fertilizers

Financial indicators of the agricultural project
- ✓ Personal contribution
- ✓ Internal rate of profitability
- ✓ Cash-flow

Natural disasters
- ✓ Drought
- ✓ Flood
- ✓ Attacks of parasites

Country risk
- ✓ Political instability
- ✓ Exchange rate
- ✓ Land Policy
- ✓ Agricultural Policy

Financing of agriculture

Source: *Prepared by the author of this thesis*

To test our hypotheses and achieve the purpose of this research, various methods and techniques were used. The hypothesis can be defined as a proposition of answers to the questions that one asks about the object of research, formulated in terms such that observation and analysis can provide an answer. Thus, the following hypotheses have been formulated: (i) The volume of funding allocated to the agricultural sector in Burkina Faso is very small compared to the sector's need for development, (ii) High risk is the main cause of the financing gap in the agriculture sector. This study will focus on credit risk.

The Methods Used.

The method can be defined as the set of intellectual operations by which a discipline seeks to reach the truths it pursues, demonstrates, and verifies them. In this study, the methods used are as follows: (i) The descriptive method: This method consists of describing a social phenomenon or a specific situation. It serves as a guide to introduce Burkina Faso by describing its characteristics, (ii) The historical method that allowed to locate the research theme in time, (iii) The statistical method: This method makes it possible to analyze and interpret the results of the surveys carried out, (iv) The analytical method: This method makes it possible to break down the subject as a whole, to understand all its constituent elements in order to explain it better.

The Techniques Used.

The techniques constitute all the means to collect the data. In this study, the main tools used for data collection are documentary research, questionnaires, interviews, and direct observation. (i) Documentary research: It is a question of consulting writings related to the studied topic in order to impregnate the reflections already carried out and to specify the terminology used. For this purpose, a set of books have been listed, (ii) The question sheet: The questionnaire will be administered to the actors of agriculture and the financial sector in Burkina Faso. The aim is to gather information on the context of financing agriculture. Burkina Faso has a total of thirteen regions (13) subdivided into forty (45) provinces. The sample will consist of fifteen farmers per region for a total of 195 people to investigate. In addition, fact sheets will be sent to funding structures in each province. About 5 structures for Ouagadougou and Bobo-Dioulasso and 2 in the other provinces. The administration of the questionnaires will be carried out by us with the support of a team of three (03) other person who have received explanations on the method of administration. The development of the questionnaire, as well as the recording of the collected data and their processing, are carried out using “Stata”, which is statistical software for data science. (iii) Interviews: They will be conducted with the help of an interview guide and will provide information on the context of agricultural financing to resource people. (iv) Direct observation: In some points of financing, production, processing, or marketing of agricultural products, users interact with agents either to understand more, to complain about difficulties, or for other reasons. The direct observation made it possible to note the elements of these exchanges, enriching the analysis. In practice, this involved field trips to give oneself a presence in some of these service points and observe practices and exchanges. It was a question of consulting writings on the studied topic "Financing of agriculture in Burkina Faso: risks and mitigation measures.” To immerse oneself in the reflections and specify the terminology used, works have been listed and grouped according to the subject treated.

Thus, the literature review consists of documents relating to:

- How to Write a Research.
- How to Write an Exceptional Thesis or Dissertation.
- Research in Organizations.
- Research Methods for Business and Management.
- Survey Basics Association of Talent Development (ATD).
- Practical Data Analysis.
- Corporate Social Responsibility.
- The financial sector in Burkina Faso deals with agriculture financing.
- The national, sub-regional, and international financial markets.
- Financial risks.
- Risks in the field of agriculture.
- Financing issues for agriculture and the products and services offered by financial institutions.

As we progress in the research, other documents and internet sources could be exploited.

Thesis Structure

The study consists of five main parts, preceded by an introduction. They are (i) Chapter summary, (ii) Chapter two: literature review, (iii) Chapter three: research methodology, (Iv) Chapter four: data presentation and analysis, and (v) Chapter five: discussion of findings, recommendations, and conclusions.

Definition of Terms

The following sentences define the main terms or expressions of this thesis.

Risk - Risk is a form of uncertainty about outcomes that may negatively affect an individual or entity. The risk is subjective depending on the perception of the entity that could suffer the loss or injury. According to (Renard, 2010), risk is the set of hazards likely to have negative consequences on an entity and the mission of which internal control and audit are, in particular, to ensure control as far as possible. (Hamzaoui, 2005) adds that risk is a concept by which management expresses its concerns regarding the likely effects of a detrimental impact on the ability to achieve its objectives successfully in an uncertain environment.

Risk Exposure - This refers to a gross measure of risk before taking into account risk mitigation measures and before incorporating knowledge of the probability of claims that would trigger it.

Operational Risk - The Bâle Committee on Banking Control defines operational risk as the possibility of "resulting losses from internal processes, from people and systems that are inadequate or failing, or from external events. This definition includes legal risk but excludes strategic and reputational risk. Legal risk includes, but is not limited to, exposure to fines, penalties or punitive damages resulting from measures of the supervisory bodies, as well as out-of-court settlements. " (Wharton, 2002) defines operational risk as a non-financial risk having three sources: internal risk (e.g., "rogue trader"), external risk, i.e., any uncontrollable external event (e.g., a terrorist attack), and strategic risk (e.g., a confrontation in a price war). According to Cleary and Al. (2006) the weight of risk results from two components, namely the probability of occurrence and the level of negative impact on the company and its objectives.

Market Risk - It is the potential loss of income or the value of assets, liabilities and equity arising from changes in market prices. These market prices may include benchmark interest rates, foreign exchange rates, quoted prices of stock market shares, prices of precious metals and other commodities, and so on.

Interest Rate Risk - Interest rate risk is the risk of a negative impact on net banking income and the value of assets and liabilities in response to changes in interest rates in the market. The most important loss factors are (1) the risk of rate adjustment that occurs via temporary differences in the maturity (for the fixed rate) and the rate adjustment intervals of assets and liabilities (for the floating interest rate) and (2) the basic risk, which arises from the imperfect correlation in the adjustment of the rates received and paid on the different instruments, which also have characteristics of similar rate revisions.

Credit Risk is defined as the possibility that a borrower or other contractual counterparty will default on its debt, that is, it will fail to honor its contractual obligations.

Convertibility Risk - There is the possibility that the government or central bank may restrict resident debtors from accessing the foreign exchange market. This makes it impossible to purchase the desired currency, even if the local currency equivalent is available.

Transfer Risk - Refers to the possibility that local authorities do not allow foreign currencies to leave the country, regardless of where they come from. This could mean, for example, that a local entity may have a USD balance in a local bank account, but transferring these funds to a foreign partner would be prohibited as a loan repayment.

Exchange Rate Risk (currency risk) - In the narrow sense, it arises from unexpected movements in exchange rates that can lead to losses for the entity concerned in local or functional currency. Specifically, currency risk arises from the inequality between assets and liabilities denominated in a particular currency and their respective cash flows, considering their size and maturity. **Liquidity risk** - This is the possibility of adverse effects on the interests of a financial institution's owners, customers, and other stakeholders because of an inability to meet current payment obligations in a timely manner and profitably.

Farming - According to the FAO, agricultural holding is an economic unit of agricultural production subject to a single management and including all animals found there and all land used, wholly or in part, for agricultural production, regardless of ownership title, legal form, or size. Single management may be exercised by an individual, by a household, jointly by two or more individuals or households, by a clan or a tribe or by a legal person such as a corporation, a collective enterprise, a cooperative or a state agency.

Agricultural Finance - According to (Meyer, 2011), "agricultural finance refers to financial services, including savings, money transfer, insurance and loans, which may be needed by the agricultural sector; ie all agricultural or agriculture-related activities (input supply, processing, wholesale, and marketing). Even though most of these activities are practiced in rural areas, there are also some processing facilities and some agro-food companies in urban or peri-urban areas ".

Value Chain - According to Porter (1982). The value chain can be defined as the precise study of the company's activities in order to highlight its key activities, i.e., those which have a real impact in terms of cost or quality, and which gives a competitive advantage. This distinction makes it possible to know where to position oneself and to work one's positioning to develop the added value of the company, a value necessary to sustain the company.

According to (ISO 31000, 2009), "Risk management can be applied to the entire organization in all its areas and at all levels, at any time as well as to specific project functions and activities. "

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Approved by (lecturer's name)	Babandi Ibrahim Gumel
Turnitin check (Lecturer will add this information)	16%

Evaluation of the article on a scale from 1-10 (10 is the best):

Content	8
Formal criteria, language, grammar	8
Overall evaluation	8

Overall feedback (approximately 100 words):

The author presented the conceptual framework of his thesis excellently. The paper demonstrated the researcher's knowledge of agricultural finance. The paper is apt with details on objectives, research questions, significance of the study, and research structure. A reader can easily understand the concept of the thesis with enthusiasm for reading the thesis in the future. The paper is a good addition to the academic theories of agricultural finance.