Analysis of Factors Influencing Access to Credit for Vegetable Farmers in the Gulf Prefecture of Togo

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Abstract

This paper addresses the issue of access to credit for market gardeners in the Gulf prefecture of southern Togo. Beyond structural constraints, individual socioeconomic characteristics of market gardeners are factors that play a role in access to credit. The binomial logit regression model was used as an analytical tool. From the National Agricultural Census (NAC, 2011) database, 452 market gardeners were randomly selected. The results showed that gender, membership in a financial solidarity group, sown area, marital status, type of association, interest rate are the significant variables influencing the demand for agricultural credit.

Keywords

1. Introduction

Unequal access to credit is one of the major constraints to agricultural development and exacerbates the effects of poverty in rural areas (Agbodji and Johnson, 2019). Improving poor households' access to financial capital is a common component of rural strategies designed to induce agricultural productivity growth. According to André (2016), the mismatch between the supply of and demand for agricultural credit is one of the reasons for low agricultural productivity in developing countries, particularly in Africa. Agriculture, in the broadest sense, is all work transforming the natural environment for the production of plants and animals useful to humans. The importance of agriculture in the economy of a nation is no longer in question. It provides sustainable livelihoods, economic

productivity and food security in developing countries. Development partners recognize the critical importance of the agricultural sector for diversified growth, food security, improved nutrition and poverty reduction. According to the Food and Agriculture Organization (FAO) and African Development Bank (AfDB) (AfDB and FAO, 2015) analysis, the agricultural sector in West Africa presents a combination of old and emerging challenges among which is the difficulty of access to credit for agricultural producers. According to Wampfler (2016), credit is a capital injection that increases investment capacity. In other words, it is the operation that consists of granting monetary resources or procuring monetary resources for the purpose of carrying out socio-economic and cultural activities. This refers to the need to have access to certain elements to produce and improve well-being.

Access to agricultural credit is an important component of development strategies in most economies. Theory shows that access to credit in the agricultural sector is a function of the economic behavior of the producer. On the one hand, there are farmers with a rational behavior leading them to borrow to invest and maximize their profit. On the other hand, there are farmers who access credit just to meet their consumption needs (Cui et al., 2017). One economic theory is the relationship between agricultural credit and agricultural productivity. Agbodji and Johnson (2019) in their work estimate that agricultural credit has a significant impact on agricultural productivity in Togo. A theory is also based on the link between access to credit and its influence on farmers' income and welfare. Ali and Awade (2019) establish that access to credit for soybean farmers in Togo has a positive effect on their income and welfare.

The literature has discussed the factors that influence farmers' access to credit and has highlighted relevant aspects to consider. One interesting factor is the mismatch between the range of financial services offered by financial institutions and the specific needs of producers. According to André (2016), in the agricultural sector the credit offer of financial institutions does not match the credit demand of farmers. Most commonly, financial services are not adapted to the realities of the agricultural world, which limits producers' access to credit. Indeed, the lack of knowledge of the agricultural sector, the high costs of financial transactions, the lack of technical and economic data on agriculture, the diversity of agricultural production cycles do not favor the granting of agricultural credit. Thus, farmers are faced with criteria that limit their access to credit. This is often reflected in the slowness of the procedure or simply a refusal to grant credit by the financial institution. The literature has highlighted socio-economic characteristics that affect access to credit. As factors gender, age of the head of household, household size, proximity to Microfinance Institutions (MFIs), membership in a financial solidarity group, income (Sossou et al., 2017; Akounnou et al., 2019).

Calvin Miller and Linda Jones (2010) go further to highlight the importance of financing in the agricultural sector. He argues that value chain finance creates new opportunities for agriculture, improves returns and repayments on finance, and strengthens linkages between chain participants. In a value chain, the central

element that makes the activities of the links in the chain profitable is financing. In developing countries, its absence is a constraint to the adoption and use of improved agricultural inputs and technologies. The literature also explains why the agricultural sector faces financing constraints. According to the FAO (2012) analysis, forward agricultural investments are characterized by a long payback period for the capital invested or by the existence of long gestation periods before income is generated. For example, the acquisition of agricultural equipment or machinery requires an initial investment of an overall amount greater than the annual cash flow generated by the investment made. This implies a low return on the use of agricultural credit in the early stages of the investment. This results in a low cash flow that does not allow the capital to be repaid within the time frame set by the financial institution. The credit for soybean farmers in Togo has a positive effect on their income and welfare.

According to Fall (2006), the financial market is experiencing enormous difficulties, especially in developing countries where the agricultural sector, which requires financing, presents many risks. Indeed, traditional African agriculture is highly dependent on natural conditions (rainfall), which raises questions about the viability of agricultural activity. Another factor that explains the difficulty of financing agriculture in a sustainable manner is the variability of revenues as a result of fortuitous, seasonal or unforeseen factors; shortcomings and inadequacies of the organizations that grant credit; attitudes of borrowers unfavorable to repayment; and misallocation of borrowed funds (Sanderatne, 1978). The contribution of vegetables to the gross domestic product (GDP) in some countries is very significant, such as Morocco and Senegal. The fruit and vegetable sector contributes more than 20% to the agricultural GDP of these countries and reduces poverty in the localities where they are produced.

The market study conducted in 2016 by the Europe-Africa-Caribbean-Pacific Liaison Committee (COLEACP) showed that exports of fruits and vegetables to the European market are growing rapidly (20% of exports from the West African Economic and Monetary Union (WAEMU) zone to the European market for revenues estimated at 400 million euros, or about 262.382 billion FCFA) (Laba & Folikoue, 2018). Among the African countries, South Africa, Morocco and Egypt hold the first places in the export of vegetables with respectively 3,532,151 thousand $, 2,079,774 thousand $ and 1,705,346 thousand $ in 2012. At the regional level, vegetable exports from WAEMU countries account for almost 5% compared to 95% for the rest of Africa. It emerges that Côte d'Ivoire occupies the first position in terms of export value over the period 2007 to 2012, with a 3.77% share. It is followed by Senegal (0.73%) and Burkina Faso (0.20%). Togo, Benin, and Guinea-Bissau occupy the last places respectively with export shares of 0.067%, 0.035%, and 0.002% (Galibaka, 2015). In Togo, agriculture is at the heart of economic activity. It employs 70% of the working population and provides more than 20% of export earnings accroding to Panorama of Agriculture in Togo (PAT, 2015). It contributes about 40% of GDP. Increasing the productivity and quality of agricultural products has been identified as indispensable factors in improv-

ing the performance of this sector. Technological innovations are the key factors in achieving this agricultural performance and concern the use of improved seeds, adequate phytosanitary treatments, agricultural machinery and a qualified workforce.

Also, the adoption of these technological innovations can only be done with the establishment of a financing system adapted to the real needs of agricultural producers. Unfortunately, farmers continue to languish in difficult conditions of poverty mainly due to the weakness of actions adapted to their situation. Credit to this sector seems to be a luxury good. Between 2011 and 2016, only 0.3 percent of bank loans were extended to the agricultural sector. This rate dropped to 0.2 percent in 2017. Over the same period, allocations from decentralized financial systems to the sector fell from 11% to 10% (Dada, 2018). For example, at the level of FUCEC and WAGES, which are the most representative local structures, the portfolio of credits allocated to agriculture are only about 6% and 4%. Today, with the launch of the National Development Programm for the period 2018 to 2022, the financing strategy in the agricultural sector is at the heart of governmental reflections. Despite the actions of the Mechanism for Incentive Financing of Agriculture (MIFA), credit is not yet available to the majority of farmers, particularly market gardeners, who are still struggling to find satisfaction. In light of this challenge regarding the weakness of the agricultural credit portfolio, a question arises: what are the factors that can influence access to agricultural credit? On the one hand, the lack of knowledge of the different types of agricultural credit does not facilitate broad access to credit for market gardeners in the Gulf prefecture. On the other hand, individual socioeconomic characteristics influence market gardeners' access to credit.

The main objective of this research is to analyze the factors influencing market gardeners' access to credit in the Gulf prefecture of Togo. More specifically, it aims to: 1) describe the different types of credit in the agricultural sector, 2) determine the individual socioeconomic characteristics that influence the demand for credit by market gardeners. To achieve these objectives, we use the National Agricultural Census (NAC, 2011) database collected. Our strategy for answering these questions is to describe the different types of agricultural credit and estimate the individual socioeconomic characteristics influencing credit demand using a logistic regression model.

2. Overview of the Agricultural Credit Supply of the Institutions

2.1. Conditions of Access to Credit

Most of the credit agencies are located in urban centers, which physically limits producers' access to credit. The network of MFIs "Investing in People," which had service points in remote rural areas that had grown exponentially between 2005 and 2007, closed suddenly in four regions in 2011 due to uncontrolled growth and management problems. In addition to the geographical distance of financial

institutions from rural areas, the conditions for accessing credit are prohibitive for many agricultural producers. Indeed, most MFIs require the mobilization of prior savings representing one third of the loan amount and offer an effective total interest rate often close to 26%/year. In addition to the 18 to 24% rate, there are mandatory application and insurance fees which, being fixed costs, represent a significant burden for small loans.

In addition, the rates charged are sometimes linear (meaning that the interest is calculated on the initial capital and spread over the duration of the loan in a non-degressive manner), which does not allow for early repayment. Lastly, and more importantly, MFIs generally have little knowledge of agricultural activity and consider this activity to be too risky (climatic hazards, poor market integration of small producers and fluctuating agricultural prices, lack of land guarantees), and not very profitable, as the operating costs are high, due to the geographical dispersion of borrowers, the small amount of loans, etc. These different factors mean that MFIs, like banks, are moving away from financing the agricultural sector and prefer to finance commercial activities, handicrafts and urban or rural entrepreneurship.

2.2. The Role of the State in Access to Agricultural Credit

In response to the low level of access to campaign credit for agricultural producers, the government, through community development projects financed by the World Bank, granted input credit (seeds and fertilizer in kind) to 14,000 producers between 2008 and 2011. To this end, the public agricultural advisory services (ICAT) were mobilized and selected the beneficiaries, who had to be organized into groups in order to access these loans. The National Inclusive Finance Fund (FNFI) is a financing mechanism established by the government to facilitate access to finance for all, especially the economically poor, through strong, diversified and sustainable financial service providers. It has three financial instruments: AGRISEF, APSEF and AJSEF. The Agri-SME mechanism is a type of grant fund that has revolutionized the distribution of agricultural fertilizer grants. Indeed, the state subsidy funds, which cover 30% to 50% of the amount of inputs, are deposited with cell phone companies that open an electronic wallet for each beneficiary farmer based on his or her cell phone number and identification data. The competitive ASAP fund is a financing instrument for innovative sub-projects. Within the framework of PASA, the competitive fund mechanism operates through a first window "innovative sub-projects", for innovative sub-projects awaiting support, and a second window "sub-project development", for sub-projects aiming at the development of innovative formulas/technologies.

The PENIASA guarantee fund was set up to facilitate the financing of experienced promoters who develop activities with demonstrated financial profitability, in particular access to bank credit for ESOPs and promoters of warrantage operations and the refinancing of MFIs. Two types of guarantees are provided: 1) the interbank guarantee fund that facilitates the refinancing of MFIs for the

purchase of stocks and inputs in the context of warrantage, as well as small-scale trade and the processing of agricultural products, and 2) the mortgage guarantee fund to guarantee that ESOPs can obtain credit from banks for the purchase of stocks and inputs The Support Fund for Youth Economic Initiatives (FAIEJ). This is an integrated technical and financial support mechanism, open to all sectors of activity. It is set up by the State and aims at the socio-economic and professional integration of young people through the promotion of entrepreneurship and the facilitation of access to financing for their business projects. FAIEJ offers financial services (credit granting and credit guarantee) and non-financial services (initial training, implementation coaching). The mechanisms through which banks finance the agricultural sector are aimed more at formal enterprises than at family farms. These include 1) the financing mechanism of the National Agency for the Promotion and Guarantee of SME/SMI Financing (ANPGF), 2) the Support fund for youth economic initiatives (FAIEJ) set up by the State but serving as a moral guarantor for beneficiaries for a credit at a rate of 4.5% per year (maximum duration 3 years) and the financing mechanism of the PAIEJ-SP. In this context, farmers often turn to usurious credit practiced by women traders, whose interest rates are close to 100%, over a period of 4 to 6 months. This credit can be in kind (granting of bags of fertilizer that can be repaid in bags of grain at harvest time, or granting of grain during the lean season, repayable with bags of grain at harvest time). This type of credit makes producers totally dependent on traders, with whom they no longer have any bargaining power when selling their products.

3. Status of Financial Institutions in Togo

3.1. Banks

The banking sector is characterized by the presence of commercial banks that are monitored and regulated by the Central Bank of West African States (BCEAO/ CBWAS, 2019). A total of 17 institutions were in operation as of December 31, 2020, including 11 banks, 3 financial institutions and 3 branches. At the macroeconomic level, Togo has been engaged in the process of structural adjustment and restructuring of its economy since the early 1980s by implementing several successive programs supported by the World Bank, the International Monetary Fund (IMF) and other bilateral and multilateral donors. As in many West African countries, the Togolese government gradually disengaged from the agricultural sector during the 1980s and the National Fund of Agriculture Credit in Togo was liquidated in 1990, following problems of unpaid bills and poor governance. Only the financing of the cotton sector was maintained, through a state-owned company, but the cotton crisis led to a sharp decrease in input credits, even though these were also used for food crops. The conventional private banking sector is still concentrated in the cities and does not provide much financing to the agricultural sector, particularly to small producers, who do not have the guarantees required to apply for a loan (land title, direct debit, etc.).

3.2. Microfinance

The microfinance sector in Togo has evolved significantly over the last decade. Thanks to the creation of new MFIs and the expansion of others, the main aggregates (outstanding savings, outstanding loans, number of clients) have doubled during the 2007-2011 period. In 2011, there were 87 MFIs and 484 points of service throughout the country. These structures had 977,706 clients 1, 99,775,795,602 FCFA in outstanding savings (152 million Euros) and 82,607,294,747 FCFA in outstanding loans 2 (125 million Euros). Three types of MFIs serve the microfinance market in Togo. The network structures (network of savings and loan cooperatives), by far the largest, account for 70 percent of the sector's market share, followed by the unitary structures and the contracted structures. In addition, two approaches prevail among MFIs: the one requiring prior savings before granting credit (FUCEC, CECAV, etc.) and the one favoring direct credit, without mandatory prior savings (WAGES, etc.)

The financing offer to the agricultural sector by the DFS is also diversified in Togo. There is 1) a credit approach which consists of making very short-term loans (6 to 24 months) to members, 2) progressive credit which is a technique used by the SFDs to motivate borrowers to repay over time; It is based on the principle that when the client repays the loan at the predefined due dates when the contract is concluded, he/she is entitled to another loan of a higher amount, and 3) "group credit" which consists of granting credit to small groups of 4 to 6 people who commit themselves jointly and severally, on the basis of trust and mutual knowledge, to repay the credit of the whole group. Among the SFDs that provide these different types of services are URCLEC, FECECAV, UCMEC-TO, PROMOFINANCE, FUCEC and WAGES. Despite the strong growth of MFIs, the professionalization and diversification of their service offer, the level of financing for the agricultural sector is still very low (around 7% of the MFIs' loan portfolio in 2008). Among the networked MFIs, some, created to specifically meet the needs of the agricultural sector, have gradually turned away from it. For example, the agricultural portfolio of the renovated of Local Fund Union of Credit Savings (URCLEC), which includes 7 mutuals and 17,000 members, in the Central region, fell from 80 to 24 percent between 2005 and 2009.

4. The Different Types of Credit in the Agricultural Sector

4.1. Public Funds

These funds are used to finance the operating expenses of the Ministry of Agriculture, some structural investments (research infrastructure, etc.); some subsidies directly to financial institutions, and national counterparts in projects and programs. The credits mainly concern financial support, essentially short-term: credits through targeted lines of credit (collaboration with PTF); subsidies through funds intended for agriculture; direct subsidies for agricultural inputs. Non-financial support concerns capacity building, participation in trade events, improvement of working conditions (structuring infrastructure, etc.). The tar-

gets are services and other support structures for the agricultural sector, funds and financial institutions, projects and programs. The national financing funds concern public funds used to finance structuring investments (major works, research, etc.), the refinancing of decentralized financing systems, the facilitation of access to credit (guarantees), large agricultural or agro-industrial enterprises (taxes, negotiations/facilitations), and direct financing for family farms (subsidies or credits). They concern mainly short-term financial services (lines of credit, guarantee lines, refinancing lines, interest rate subsidies), risk management: calamity insurance, agricultural insurance and non-financial services such as capacity building, business plans, financial coaching/education.

4.2. Regional or Supranational Financing Funds

These concern public funds used to finance structural investments for the benefit of one or more countries (community projects), public funds used as guarantees or counter-guarantees and risk management: disasters. The products offered are short, medium and long term credit for lines of credit with maturities adapted to financing needs, lines of refinancing of financial activities in the agricultural sector, portfolio guarantees for agricultural credits or related to agricultural sectors for the region's financial institutions, subsidies for interest rate subsidies on lines of credit, balancing risk management mechanisms for the agricultural sector (insurance, (insurance, disaster funds) or to support the payment of premiums, to balance the operation of regional institutions supporting agricultural and rural finance, to balance training or capacity building institutions for human resources involved in the ecosystem supporting agricultural finance in the broadest sense, technical assistance to financial institutions, professional associations (in support of the demand and supply of credit) and regulatory bodies in the region. The targets are national banks and national or regional financial institutions, DFS (large, medium and small), member states, large companies, especially in the agribusiness sector, and national or multinational projects or programs.

4.3. Agricultural Program Credits, Mobile Money Providers and Agricultural Insurance

These are public funds made up of resources that are generally external (TFPs), often with national counterparts, used to finance farms, businesses (specific SMEs, organizations, etc.), to set up lines of credit or guarantees with banks and SFDs, to build structuring infrastructure (rural tracks, agricultural developments, etc.), to strengthen the capacities of the final beneficiaries, and to develop the financing offer of SFDs (development of financial products). The offers concern financial services in the form of subsidies or credits (short and medium term credit lines), non-financial services in the form of advisory support, training, applied research, organizational and institutional strengthening, etc.). These projects and programs also involve technical services and non-financial service providers to support family farms. The targets are Family Farmers and their organizations, enterprises (SMEs/SMIs), banks and SFDs for credit or guarantee lines and tech-

nical services. Mobile money providers and agricultural insurance are not to be neglected. These are private funds from banks and cell phone companies for money transfers. The offers concern financial services: money transfers with an average of 200 agents/1000 adult inhabitants. Agricultural insurance is made up of public and private funds. The offers concern two types of insurance systems: index insurance, conventional insurance.

4.4. Banks, Development Finance Companies (SFDs) and Credit Unions

These are private funds intended to finance family farms, their organizations, businesses (large companies, SMEs), individuals and financial institutions. The offers concern financial services in the form of generally short-term credits, refinancing (banks to SFDs), non-financial services: financial education, development of business plans and financing applications, accompaniment.

The targets are family farms and their organizations, large companies, SMEs and individuals. For credit unions, it is private funds made up of membership fees, sales levies and/or grants/credits from partners to finance members. The products offered are financial services, mainly short-term credit, and non-financial services in the form of advisory support, training, applied research, organizational and institutional strengthening. The targets are individual members, especially family farms and institutional members.

5. Vegetable Production in Togo

Considering the plant organs, vegetables are divided into three categories: "leaf vegetables", "fruit vegetables" and "root vegetables". The term "leafy vegetables" refers to cabbage, lettuce, cortea (adémè), nightshade (gboma), spinach (fontêtê), Guinea sorrel and parsley. As for "fruit vegetables", they include eggplant, cucumber, okra, watermelon, pepper, tomato and green bean. Finally, onions, carrots, beets and turnips constitute the group of "root vegetables". Table 1 presents the evolution of vegetable production in Togo between 2013 and 2017.

According to Figure 1, vegetable production in Togo has been on an upward trend in recent years. Between 2013 and 2017, total vegetable production increased from 21,687 tons (DSID, 2013/2015) to 28,025 tons in 2015 (DSID, 2013/2015). This production is estimated to have reached 37,216 tons in 2016. Population growth, changes in eating habits would explain, in part, this dynamic.

Compared to previous data, credit to the agricultural sector in Togo, like most countries in the WAEMU zone, seems to be a luxury good. Although financial institutions are developing, there is still a reluctance to finance agriculture, which they consider too risky an activity. The different types of credit in the agricultural sector describe the type of financing and the target audience. The trend in vegetable production shows the increase in production in recent decades.

Table 1. Estimated vegetable production in Togo from 2013 to 2017.

Speculations	Production Average Annual growth	Rate in tons				
		2013	2014	2015	2016	2017
Leafy vegetables						
Cortea (adémè)	8.0%	978.59	1056.9	1141.4	1232.7	1331.4
Apple cabbage	4.0%	1902.46	1978.6	2057.7	2140.0	2225.6
nightshade (gboma)	3.0%	1137.65	1171.8	1206.9	1243.1	1280.4
Spinach (fontètè)	11.0%	16.31	18.1	20.1	22.3	24.8
Lettuce	7.0%	342.46	366.4	392.1	419.5	448.9
Guinea sorrel (nyato)	5.0%	473.01	496.7	521.5	547.6	574.9
Parsley	1.3%	1.04	1.0	1.1	1.1	1.1
Total	3,9%	**4851.52**	**5089.5**	**5340.8**	**5606.4**	**5887.1**
Fruit vegetables						
Eggplant	13.0%	711.27	803.7	908.2	1026.3	1159.7
Cucumber	6.0%	263.54	279.4	296.1	313.9	332.7
Okra	6.0%	1279.66	1356.4	1437.8	1524.1	1615.5
Watermelon	17.0%	247.04	289.0	338.2	395.7	462.9
Pepper (red and green)	10.8%	2888.55	3200.5	3546.2	3929.2	4353.5
Bell pepper	9.0%	376.13	410.0	446.9	487.1	530.9
Tomato	15.0%	7620.44	8763.5	10078.0	11589.7	13328.2
Green bean	3.0%	184.18	189.7	195.4	201.3	207.3
Total	10,1	**13,570.82**	**15,292.3**	**17,246.8**	**19,467.2**	**21,990.8**
Root vegetables						
Turnips	1.0%	3.67	3.7	3.7	3.8	3.8
Onions	21.6%	2088.75	2539.9	3088.5	3755.7	4566.9
Carrots	44.6%	1041.33	1505.8	2177.3	3148.4	4552.6
Beets	13.0%	131.38	148.5	167.8	189.6	214.2
Total	23,4%	**3265.13**	**4197.8**	**5437.4**	**7097.4**	**9337.5**
Total	11,4%	**21,687.46**	**24,579.6**	**28,025.0**	**32,171.0**	**37,215.5**

Source: Author, construction from data of the Office of the vegetable sector, DSID Togo, 2018.
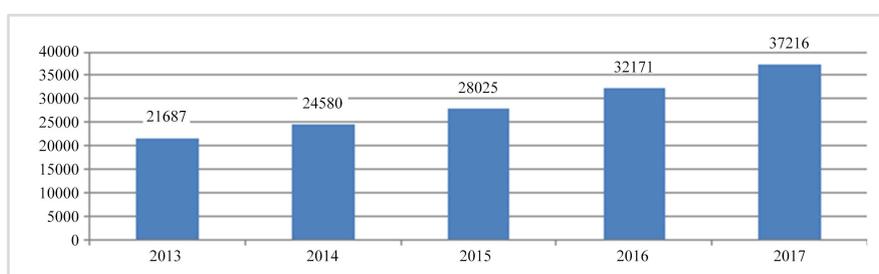

Figure 1. Evolution of vegetable production (production in tons) in Togo from 2013 to 2017. Source: Author, construction from data of the Office of the Vegetable Sector, 2018.

6. Literature Review on Access to Credit for Market Gardeners

6.1. Theoretical Review

A balanced and sustainable economic and social development relies in its first stages on a solid agriculture. This implies the injection of very large amounts of capital, implying a rise in agricultural credit. Economic theory stipulates that the agricultural credit market, like any other economic market, results from the confrontation of supply and demand for credit. The supply of credit is the function of financial institutions (banks and microfinance) and the demand for credit is expressed by farmers. The theoretical literature on agricultural credit is rich and abundant. Indeed, several authors have examined the issue of credit in the agricultural sector from different angles. We have the neoclassical approach to the credit market. This theory stipulates that the interest rate determines the amount of credit granted by the banking sector. According to the neoclassical pioneers, the credit market should be allowed to regulate itself through supply and demand to determine interest rates. An increase in the demand for credit leads to an increase in the interest rate, while a reduction in demand reduces the interest rate.

In an economy, the state must play a minimal role in guaranteeing property rights and the sanctity of contracts, and in protecting the economic and political freedoms of individuals, and these were the essential activities of the public sector. To put it better, in a conventional economy, it would be necessary to let the credit seekers themselves confront the credit supply of financial institutions. This scenario leads to a crowding out effect where financial institutions in order to make their actions profitable will increase the interest rate and also direct their investments towards less risky activities. Although this theory does not discuss the impact of collateral on risk, it gives the impression that collateral has no effect on the interest rate. If the risk-loving borrower wants to borrow at a low interest rate, he must provide more collateral to lower his risk profile and thus benefit from the lower cost of risk.

This appeals to the notion of moral hazard and the asymmetry of information that exists between borrowers and lenders. This theory shows how risk affects farmers' access to credit. If the agricultural risk is high, then the farmer must bear a high risk cost. The reason for the high interest rate is that commercial banks take measures to avoid credit default (Langat and Cheruiyot, 2013). This theory weakly favors the agricultural sector, which presents non-negligible risks. This line of thought has led to capitalism in the United States and Europe with the division of society into two: the capitalists holding the means of production who dominate over the proletarian class. This has resulted in the social distortions that we have seen. Since the economic crises recorded in 1929 and recently in 2008, new trends have emerged. This is the policy of state interventionism advocated by John Maynard Keynes. If the credit market is left to self-regulate with private individuals pursuing their own interests, the economy can really

suffer. Especially in developing countries where the agricultural sector is in its infancy with little productive capacity. Is it possible, at this point in time, after having suffered the devastating consequences of these crises, to completely liberalize the credit market? Even if it is true that this minimal role entrusted to the State by the classics has made it possible to obtain results, this situation has not really favored an equitable and sustainable economic development. If this scenario is maintained, the agricultural sector in developing countries will be considerably affected to the extent that African farms are limited in financial resources.

From this point of view, Keynes' theory seems to be very important. The essence of his thinking can be summed up in the fact that economic markets in general present failures such as moral hazard, incomplete markets and asymmetric information. And it is essential for the public institution to intervene to resolve these distortions and ensure the proper functioning of the economy. The work of Friedman and Schwartz (1987) complements Keynesian theory in an attempt to explain the reasons for the 1929 crisis. According to their theory, monetary policy affects the economy mainly through the supply of credit by primary banks. They emphasize the importance of the state having a good monetary policy. Banks play a large role in the economy and their good health affects monetary policy and the ease of credit supply. The economic theory on access to agricultural credit goes beyond a simple policy of public and private institutions.

The theory of credit rationing is also discussed. It states that creditors are unable to distinguish between good and bad customers, as borrowers have better information about their activity. The work of researchers such as (Stiglitz, 1983) has shown that financial institutions are affected by the uncertainties of the credit market because of asymmetric information. Faced with this dilemma, creditors raise interest rates to compensate for the uncertainties. Bad clients (bad risk) are less sensitive to credit costs than good clients (acceptable risk), especially when their rate of return is higher than interest rates. Good clients are thus rationed. Thus, according to Gresham, bad clients drive out good clients by means of barriers such as high interest rates that prevent good clients from accessing credit. Note that there are several ways to ration credit: either by granting credit at a lower amount than the short-term loan or by granting a loan with a high interest rate. To highlight the importance of credit, in 2002 an international seminar on access to credit was organized by CIRAD and CERISE. The seminar highlighted the lack of access to finance, which remains a major obstacle to the development of agricultural households. Yet, agricultural households have real needs such as: the intensification of agriculture, its modernization, its technical and organizational innovations (Wampfler, 2016). The low fluidity of financial services has been identified as a factor influencing access to credit. The solutions envisaged are in the direction of liberalizing the supply of microfinance services with an improved match between the microfinance sector and the agricultural sector and coordination of the agricultural sector and public policies developed.

According to the UNCTAD (2004) report, financiers generally consider it too

risky and costly to grant loans in rural areas using traditional methods that rely on the risk of borrower insolvency. The interest rates offered, particularly by microfinance, are often difficult to reconcile with the level of profitability of family farming activities. Financial services are not well adapted to the systemic nature of the financing needs of family farmers, who combine food and commercial agricultural production, various forms of livestock production and often non-agricultural activities; family financing needs (food security, schooling, health, etc.) are closely linked to productive needs. There is still a great deal of misunderstanding and mistrust between the agricultural and financial sectors, which hinders access to credit. As for the lender, he must protect himself against the risks linked to a transaction deferred in time: he takes guarantees and integrates the risk into the cost of the credit. The cost of credit is the sum of the transaction cost, the cost of money, the cost of risk and the borrower's profit margin. All of these cost components are high in the context of family farming: high transaction cost linked to the difficulty of access, to the small size of the credits, high cost of money due to its scarcity, high cost of risk linked to the diversity and magnitude of the risk in agriculture (production risks, market risks, family risks …). As pointed out (FAO, 2013) credit is a key input that allows the farmer to finance his agricultural campaign and improve productivity. Productivity is highly dependent on the use of new and improved techniques, hence the importance of credit as a means to acquire these factors of production. The literature has also addressed the issue of the determinants of the adoption of agricultural innovations (Prokopy et al., 2008). Among these determinants, education is presented as a significant variable that positively influences the adoption of a technology (Mariano et al., 2012).

According to Kendo and Sandra (2012) the interest of the banking sector for the rural environment mainly practicing agriculture is gradually declining. This decline is partly explained by the lack of traditional guarantees and the precariousness of agricultural activity, and partly by distance. The credit offices or agencies are mostly located in urban areas and in less isolated areas. This constitutes an obstacle to access to credit for poor people, most of whom live in rural areas. In addition, it is difficult for these banks to establish a relationship of trust with their poor clients, whom they consider to be without any collateral. The costs associated with bank lending in rural areas therefore remain high as they incorporate both transaction costs and the risk involved. According to (André, 2016) in most developing countries the supply of and demand for financial services to agriculture do not match, either in terms of volume or type of service. Some work has examined the impact of agricultural credit on productivity. Agbodji and Johnson (2019) show that credit has a positive and significant impact on grain productivity in Togo.

6.2. Empirical Review

The empirical literature on agricultural finance is also varied. Rahji and Adeoti (2010), in his paper worked on the determinants that influence the decision of

commercial banks to ration agricultural credit in southwestern Nigeria. The data collected in the Logit model indicates that farmer size, previous year's income, type of enterprise, household net worth, and level of household agricultural marketing are significant but negative factors that influence banks' decision to ration credit. Higher values of these factors decrease the likelihood that borrowers will be credit rationed. The number of dependents in the household has a significant positive impact on the probability of being rationed by banks. Therefore, higher values of this variable increase the probability of being rationed. The results also indicate that when the coefficient is large the chances of being rationed increase. Based on the results obtained, redistribution of farmland, improvement of farm income, gender specificity and credit allocation policies to the crop sub-sector were recommended.

Akudugu (2012), in his paper to estimate the determinants of credit demand by farmers and supply by rural banks in the Upper East Region of Ghana. The Logit model was used to estimate the determinants of credit demand by farmers and the Tobit model used to estimate the determinants of credit supply by rural banks. The results showed that farmers' age, gender and political affiliations, among others, are the determinants of farmers' demand for credit. The type of crop grown, size of the farm and the amount of savings are determinants of credit supply by rural banks. He concludes that farmers' demand for credit and the supply of credit by rural banks in the Upper East Region of Ghana are determined by economic and politico-cultural factors. Assogba et al. (2017) conducted an analysis on the determinants of farmers' access to credit in Northeast Benin. The Logit model was specified to identify the relationships between access to credit and the socio-economic characteristics of the selected farmers. The analysis revealed that smallholder farmers' access to credit is determined by years of schooling, literacy, membership, guarantor, collateral and interest rate. For each additional year of schooling, the probability of accessing credit increased by 3.9%, while literacy in the local language increased the probability by 10.9%. Membership in farmers' cooperatives was found to increase the probability of accessing credit by 31%, while having a guarantor increased the probability by 18.9%. However, the availability of collateral decreases the probability of accessing credit by 12.4%, while high interest rate credit reduces it by 11.7%. Thus, to improve rural farmers' access to credit, governments and non-governmental organizations should promote education, literacy, and cooperative membership among farmers. Akounnou et al. (2019) published an article on the financing mechanisms of cashew nut suppliers to processing units in northern Benin. A logistic regression was conducted to determine the factors influencing access to credit. Descriptive statistics were used to assess nut producers' perceptions of the conditions for accessing financing. The results reveal that producers have access to two credit services: Agri Finance and PADME. The quantity of nuts sold by the cooperative to which the producer belongs, the ethnicity, the sale of nuts at the Gebana unit and the sale of nuts at the Afokantan unit determine access to credit. Producers often find it difficult to repay the credit granted by Agri Finance,

unlike the credit granted by PADME. The financial services offered by the banks are: agri-SME. Yusuf et al. (2019) published work on socio-economic factors influencing accessibility to agricultural credit among Sabon Gari farmers in Kaduna, Nigeria. The linear regression model was used to estimate the factors influencing producers' access to credit. Descriptive statistics showed that there was no significant difference between the average minimum credit granted and the average credit sought by the producers. The regression results show that age, annual income, marital status and education influence access to agricultural credit.

7. Methodology of the Analysis

7.1. Theoretical Model

Access to credit facilitates the purchase of equipment and inputs such as labor and improved seeds. This allows for better productivity. Let us assume that market gardeners behave rationally in their activity. Thus, they will allocate available resources and use existing technology efficiently to maximize the expected utility. The decision of a rational vegetable farmer to ask for credit is based on the fact that the utility obtained when he asks for credit DC_1 is higher than the utility of not asking for credit DC_0. The econometric approach will be used to explain the factors that influence the demand for credit. It is to know in our study the variables that influence the demand of credit of market gardeners. Thus, there are socio-economic characteristics that make the market gardener demand credit or not. Here, the demand for credit constitutes our dependent variable, i.e. the phenomenon to be modeled. This decision is represented by a binary variable taking the value 1 if a farmer asks for credit and the value 0 otherwise. We will use data from the National Agricultural Census (NAC, 2011).

The binomial logistic regression model (Logit) will be used to examine the factors influencing credit demand. Credit demand is a dichotomous variable that can only take on the values 0 and 1. The probability and proportion of the variable are also between 0 and 1, as well as the error term, which thus follow a discrete distribution (Bourbonnais/Pierre Dusart, 2005). According to Maddala (1985), in the most classical case of a two-modality choice model (which is our case here, i.e. 0 if the farmer does not ask for credit and 1 if he does), the estimation of the probability of occurrence of the alternative considered is done by a binary Probit or Logit model. On the other hand, if several alternatives are possible, without a predefined order, the probability of each alternative in relation to an alternative taken as a reference must be estimated jointly. The econometric model required in this case is then a multinomial Logit or Probit model, depending on the distribution law chosen for the error terms. Let DC be a binary variable indicating whether or not a farmer requests credit.

Suppose $DC_i = 1$: applies for credit and $DC_i = 0$: does not apply for credit.

Let DC_i^* be a latent variable associated with DC_i. This variable depends on the explanatory variables translated by the equation:

$$DC_i = \alpha + \sum_{j=1}^{j} \beta X_{ij} + \mathcal{L}_i \qquad (1)$$

where $\mathcal{L}_i$ is the random term whose distribution is given by the density function f. We have

$$\begin{cases} DC_i = 1 \ \text{si} \ DC_i > 0 \quad (1) \\ DC_i = 0 \ \text{si} \ DC_i \leq 0 \quad (2) \end{cases} \qquad (2)$$

Replacing (1) in (2) we obtain:

$$P\left[\mathcal{L}_i > -\left(\alpha + \sum_{j=1}^{j} \beta_j X_{ij}\right)\right]$$
$$= P\left[-\mathcal{L}_i \leq \left(\alpha + \sum_{j=1}^{j} \beta_j X_{ij}\right)\right] = F\left[\alpha + \sum_{j=1}^{j} \beta_j X_{ij}\right] \qquad (3)$$

where F is the distribution function corresponding to the density function f. Depending on the nature of the distribution which can be normal or logistic, the estimation of Equation (3) is done by a binomial Logit model. Thus the Logit model to estimate is:

$$\ln\left(\frac{P(DC_i)}{1 - P(DC_i)}\right) = \alpha + \sum_{j=1}^{j} \beta_j X_{ij} + \mathcal{L}_i \qquad (4)$$

where α is the constant, X_{ij} represents the matrix of explanatory variables β_j the coefficients to be estimated and $\mathcal{L}_i$ the run error.

7.2. Description of the Data

7.2.1. Physical Characteristics of the Study Area

The study area is the Gulf prefecture located in the maritime region of Togo. The choice of the agricultural sector as a priority in the implementation of measures to facilitate access to agricultural credit is justified by its significant contribution to GDP (40%). The data used are secondary data from the National Agricultural Census RNA (NAC, 2011). A database of market gardeners in the Gulf prefecture. A total of 452 market gardeners were selected for the study. The data collected included 1) socioeconomic characteristics, 2) market gardening activities and the different sources of financing for these activities. The unit of statistical interest is the market gardener. The data obtained were analyzed using descriptive statistics and the logistic regression model. The descriptive statistics used were frequencies, percentages, and standard deviations. The determinants influencing the demand for credit were determined. Credit demand was modeled as a variable and regressed on a set of explanatory variables described below.

7.2.2. Description of Variables

In our case study, the variables used are gender, age, level of education, membership in a financial solidarity group, surface area, nature of the guarantee, household size, marital status, number of plots, type of association, management status, interest rate, repayment method and main activity. Thus, the variables used are of two kinds, namely the explanatory variables and an explained variable. In our case of study, the explained variable is the demand for credit. The explanatory variables to be considered for our study are: gender, age, level of edu-

cation, membership in a financial solidarity group, surface area, nature of the guarantee, household size, marital status, type of association, repayment method, interest rate and main activity.

Gender: This is a commonly used independent variable in this type of model. The sign of this coefficient can tell us whether there is discrimination against women in access to credit. Age: Age is often used as an indicator of the maturity of individuals in decision-making processes. It is therefore assumed that older people tend to manage the credit allocated to them better than younger people. According to (Sossou et al., 2017) older people are more likely to access credit than younger people. Other authors such as (Abbas et al., 2020) show that the probability of accessing credit decreases as age increases for the simple fact that the producer will not have enough strength to be efficient in his production activities. Education: It increases the ability of the actor to make decisions after analyzing the information available at his level (Gildas et al., 2010). Here, we expect a positive influence of education on the probability of access to credit by the producer. The size of the household: this corresponds to the total number of individuals in the producer's household. It is often used as an indicator of the availability of labor on a farm. It should be noted that as the size of the household increases, so do the needs. Nuryartono (2007) and Oyedele et al. (2009) have shown that high household size equals high demand for credit. It is hoped that household size is significant in accessing credit. Marital status: This is also often used as an indicator of maturity in the management of a farm and even of credit. Indeed, it is believed that a married farmer is more responsible than a single one. It is expected to have a positive influence on the demand for credit. Membership in a group: this is supposed to increase the chances of access to credit for the market gardener. In fact, several institutions use the notion of joint and several guarantees as a prerequisite for granting credit to individuals. It is hoped that membership in the solidarity group will significantly influence the demand for credit. The surface area: this concerns the space sown by the market gardener. When the area planted increases, the producer faces additional production cost expenses. It is expected that the area is significant in accessing credit. The type of association: it reflects the different other crops associated with market gardening. The more the market gardener associates several crops, the higher the maintenance costs. It is hoped that the sign of the type of association variable will be significant. The interest rate: it reflects the reason why the farmer does not ask for credit. The expected sign of this variable is negative. The repayment method: it reflects whether the farmer will repay the requested credit in kind or in cash. The expected sign of this coefficient is positive. The main activity: this reflects the main activity of the farmer. This variable tells us whether the farmer's main activity is market gardening or whether the farmer engages in other activities besides market gardening. The expected sign of this coefficient is negative. Given the absence of data on recent periods, the data used are from the National Agricultural Census (NAC, 2011) and the descriptive statistics of the variables used is presented in Table 2.

Table 2. Descriptive statistics of the variables.

Variable	Description	Mean	Std. Dev.	Min	Max
gender_	1 = man, 0 = woman	1.709	0.454	1	2
age_	Age of the farmer (in yeras)	40.270	12.732	7	95
edu_level_	Number of years eduction	1.434	1.114	0	4
group_	0 = no, 1 = yes	5.886	23.417	0	128
surface area_	Sown area	105.591	676.223	0.044	8911.2
nature_guarantee	0 = yes, 1 = no	4.045	3.294	0	8
household_size	number of person in the household	4.187	1.857	1	6
marital_status	1 = married, 0 = unmarried	2.182	0.821	1	5
typ_as	1 = associeted crops, 0 = non associeted crops	1.926	0.320	1	3
manag_status	0 = unframed, 1 = framed	0.101	0.383	0	2
interest_rate	Cost of credit as a %	2.823	2.606	0	8
method_reimbursement	0 = no, 1 = yes	1.312	0.927	0	2
main_activity	0 = non-farmer, 1 = farmer	1.819	1.971	1	13

Source: Author based on STATA software, the data used are from the National Agricultural Census (NAC, 2011).

8. Results and Interpretations

The results of the econometric regressions and marginal effects are presented in Table 3 and Table 4 below.

In Table 3, the descriptive statistic of chi2 is calculated by the stata software is equal to 47.58 and the associated probability is less than 5% (0.0000 < 5%). The pseudo R^2 equal to 0.4295 gives us information on the quality of the econometric model. The model is globally significant. In other words, there is at least one variable that influences the demand for credit by market gardeners. We analyze whether the variables used in our model have the expected signs and highlight their importance in access to credit. In our case study, we consider a significance at the 5% level. The results in Table 4 show that the variables age, level of education, nature of the guarantee, household size, management status, repayment method and the main activity of the market gardener are not significant. They therefore do not influence the demand for credit by market gardeners.

The econometric results show that gender is significant and negatively influences the demand for credit. The fact of being male or female does not influence the demand for credit. This result demonstrates the absence of discrimination between men and women in access to credit. In other words, being male or female does not influence access to credit. These results are not consistent with those of Morduch (1999) who finds that gender has a significant effect on access to credit. Also, studies that also show that women are disadvantaged in accessing financial services (Goetz and Gupta, 1996). The variable membership in a financial solidarity group has a positive and significant influence on access to credit.

Thus, membership in a group appears to be a determining factor in the probability of applying for credit. These results are consistent with those obtained by (Sossou et al., 2017) who estimated that membership in an association is a relevant determinant since the probability of granting credit is higher for applicants who are members of a financial solidarity group than non-members. Fall (2006) considers that membership in a group is a major obstacle to accessing credit, especially if the group is a debtor.

Table 3. Results of the econometric regressions.

VARIABLES	dem_credit
gender_	−1.931**
	(−2.09)
age_	0.014
	(0.51)
edu_level	0.228
	(0.56)
group_	0.023**
	(2.46)
surface area_	0.0008***
	(3.50)
nature_guarantee	−0.045
	(−0.22)
household_size	0.067
	(0.32)
marital_status	0.789**
	(1.99)
typ_as	−2.130**
	(−2.55)
manag_status	1.005
	(1.54)
interest_rate	−1.084***
	(−3.02)
method_reimbursement	0.536
	(0.78)
main_activity	−0.332
	(−1.20)
Constant	0.914
	(0.33)
Observations	452
LR chi^2 (13)	47.58
Prob > chi^2	0.000
Pseudo R^2	0.429

t statistic in brackets, ***t < 0.01, **t < 0.05, *t < 0.1. Source: Author based on STATA software, the data used are from the National Agricultural Census (NAC, 2011).

Table 4. Marginal effects estimation results.

Variables	Coéf	$P > z$
gender_	−0.036	0.043**
age_	0.000	0.615
edu_level	0.004	0.577
group	0.000	0.015**
surface area_	0.000	0.001***
nature_guarantee	−0.000	0.823
manag_size	0.001	0.75
marital_status	0.014	0.04**
typ_as	−0.040	0.013**
manag_status	0.018	0.13
interest_rate	−0.020	0.004***
method_reimbursement	0.010	0.437
main_activity	−0.006	0.232

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Source: Author based on STATA software.

The area variable has a positive and significant influence on access to credit. The area plays an important role in access to credit for market gardeners in the Gulf. This result shows that as the area planted by the market gardener increases, so does his desire to apply for credit. This can be explained by the economic rationality of the market gardener. Indeed, when the area planted increases, the need for production factors increases. This results in additional production costs, hence the need for the market gardener to use credit (Akpan, 2013) and (Akudugu, 2012). Marital status has a positive and significant effect on credit demand. Thus being married increases the probability of applying for credit by 1.4%. These results are in line with (Sossou et al., 2017) who finds that married agricultural producers are more responsible than unmarried ones when repaying credit.

The estimates show that the variable "typ_as" has a negative influence but its coefficient remains significant. This result shows that the more the number of crops associated with the plot increases, the less likely the farmer is to request credit. When the "typ_as" variable (crop association) increases by 1%, the probability of the farmer requesting credit decreases by 4%. This is explained by the fact that the number of associated crops on a plot influences productivity. Each crop has its own specific soil, soil conditions and ecological characteristics, which means that association can lead to a decrease in productivity. Thus, it is a risk for the market gardener to ask for credit in these conditions where profitability is doubtful. The estimates show that the "interest rate" variable is negative but significant. When the interest rate increases by 1%, the probability of applying for credit decreases by 2%. This can be explained by the rational behavior of the market gardener. In fact, agricultural activity in developing countries is not yet

as profitable as in developed countries. The farmers do not have a perfect mastery of new techniques or agricultural practices to have a good productivity. This is why asking for credit with a high interest rate in this context appears to be a considerable risk.

9. Conclusion and Recommendations

The research conducted on market gardeners in the Gulf prefecture reveals the individual socioeconomic characteristics that influence access to agricultural credit. Indeed, market garden production contributes significantly to agricultural GDP. However, market gardeners who participate in production face constraints that limit their access to credit. The study area is characterized by high production of market garden crops. In Sub-Saharan Africa, the notion of agricultural credit is becoming more and more frequent in the news. The challenge is how to find an effective strategy for financing agricultural activity. Development actors such as the World Bank and the International Monetary Fund (IMF) continue to express their desire to support the financing of the agricultural sector.

The results obtained from the econometric estimations show that gender, membership in a financial solidarity group, area planted, marital status, type of association and interest rate are the significant variables influencing the demand for agricultural credit. Marginal effects analysis shows that membership in a financial solidarity group, area sown and marital status are likely to increase the demand for credit by 1.5%, 0.1% and 4% respectively. This is simply because of the rational and economic behavior of the market gardener. When the area planted increases, the need for production factors increases, so the farmer seeks credit to meet additional production costs.

We recommend that financial institutions lower their interest rates on credit and make market gardeners more aware of their various agricultural credit services. The State should sensitize market gardeners to form or join groups. Also, market gardeners need to increase the area planted in order to better prepare their business plan in order to access the MIFA service. At the end of this study, we can say that the main results have been achieved. The description of the different agricultural credit offers and the determination of the factors influencing the demand for agricultural credit were presented. The question of the area planted raises a particular problem for market gardeners in the Gulf. With the increasing urbanization of the capital city of Lomé, which requires land for economic activities, is the market gardening activity viable in the long term? This question raises a research perspective on the impact of urbanization on the availability of cultivable land in the Gulf prefecture.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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