

Agricultural Credit Allocation and Constraint Analyses of Selected Maize Farmers in Ghana

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ABSTRACT

The study analyzes factors influencing agricultural credit allocation and credit constraint condition of maize farmers in the Upper-Manya Krobo District in the Eastern region of Ghana. The study uses primary ^{data} solicited from the maize farmers through a structured questionnaire. Using the paired ^A sampled t-test to test for significant differences between the amounts of credit demanded and the amount received by farmers, it is revealed that the amount of credit received was significantly lower than the amount of credit demanded by farmers. The Probit regression model was then used to estimate the parameters of the determinants of credit constraint condition of farmers. Factors found to have significant influence on credit constraint conditions of the farmers are gender, household size of farmers, annual income of farmers and farm size. The Tobit regression model was used to estimate the parameters of the determinants of the rate of agricultural credit allocated to the farm sector. Factors found to have significant influence on the rate of agricultural credit allocation to the farm sector are age, bank visits before credit acquisition and the amount (size) of credit received. These results have implications for financial institutions' lending to farmers in developing countries.

Key Words: Agricultural Credit Allocation, Agricultural Credit Constraint, Maize Farmers, Ghana, Probit Regression, Tobit Regression

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1. INTRODUCTION

The Agricultural sector in Ghana plays a crucial role in reducing poverty and achieving economic growth. In Ghana, about 60 percent of the population relies on Agriculture for their livelihood (Al-Hassan and Diao, 2007). The potential of the Agricultural sector in securing incomes, employment and food supply and thus to reduce poverty among the Ghanaian population has greatly reduced. The greatest challenge to the development in the sector is low productivity and the reasons for this are numerous. Producers have little access to financial resources and modern technologies and their organizational structures are weak. Agriculture in the pre-historic period sustained humanity over the years with little or no significant attachment to capital for production (Ezedinma *et al.*, 1995). However, in this modern period, lack of

capital is regarded as one of the major constraints in expanding production and modernizing agriculture (Richard, 2000). Credit is considered as a major aspect of financial services which is fundamental in all production units (Dicken, 2007). There has been a general awareness of the importance of credit as a tool for agricultural development (Omonona *et al.*, 2008). In view of this, the need to provide farmers with credit is inevitable due to its importance in fostering agricultural development and also ensuring efficiency in the production process. In recent years, there has been a growing interest in understanding the impact of financial structure on production as well as on the efficiency of production (Barry and Robinson, 2001).

Agriculture is highly input intensive and agricultural products are used extensively by a number of agro-based firms in Ghana and as such a reduction in credit to the sector may have the potential of affecting both upstream and downstream firms. Therefore, the importance of institutional credit as a source of finance to agriculture cannot be overemphasized (Fosu, 1998). Agricultural credit can be obtained from both formal institutions and informal sources. In most cases, smallholder farmers are seen as conservatives and unattractive to new and improved technology. However, the fact is that they are rational not to engage in uncertainty bearing in mind their resource poor circumstances. They will need external support in the form of credit to accommodate the adoption of new practices and technology.

In most developing countries, agricultural credit is considered an important factor for increased agricultural production and rural development because it enhances productivity and promotes standard of living by breaking the vicious cycle of poverty of small scale farmers (Adebayo and Adeola, 2008). Credit is regarded as more than just another resource such as land, labor and equipment, because it determines access to most of the farm resources required by farmers. The explanation is that farmer's adoption of new technologies necessarily requires the use of some improved inputs which may be purchased. Credit also acts as a catalyst for rural development by motivating latent potential or making under-used capacities functional (Oladeebo and Oladeebo, 2008).

Generally, the accessibility of a good financial service is considered as one of the engines of economic development. Governments of less developed countries have frequently practiced the policy of providing cheap credit to the agricultural sector through financial intermediaries. This cheap credit, it was hoped, would lower the dependence on the rural money lenders (Pinaki, 1998). The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing resources for more productive uses. As development takes place, one question that arises is the extent to which credit can be offered to the rural poor to facilitate their taking advantage of the developing entrepreneurial activities.

The usefulness of any agricultural credit program does not only depend on its availability, accessibility and affordability but also on its proper and efficient allocation and utilization for intended uses by beneficiaries (Oboh, 2008). However, credit diversion, poor repayment rate and loan default among farmers continue to be a challenge.

The use of farm production credit for consumption purpose is still an issue of controversy. Institutional lenders usually insist that, traditionally targeted production credit should be disbursed strictly for income-generating productive assets (such as fertilizer, seed or machinery). Any other use of farm credit for non-farm activities in this context is regarded as loan diversion.

Several studies that analyzed the use of credit among resource-poor rural dwellers concluded that credit was allocated mainly for agricultural and non-agricultural productive activities as well as for consumption purposes though at varying allocative proportions (Oyatoye, 1983; Zeller 1993; Zeller *et al.*, 1996; Berger, 1989; Schreider, 1995; Heidhues, 1992).

On account of this background this study was undertaken, to fill the vacuum in the literature on the factors that affect credit allocation to the farm sector. A better understanding of the farmers' behavior in allocating credit may assist policy makers in designing sustainable financial systems that can serve resource poor farmers better.

The objectives are fourfold: to analyze the amount of credit demanded and the amount received by farmers; to estimate the percentage of credit allocated to the farm and the non-farm sectors by farmers based on the amount of credit received; to analyze the factors that affect credit constraint condition of farmers; to estimate the factors that affect the rate of credit allocation to the farm sector.

92 The problems of agricultural credit in Ghana include source, availability and use. There is inadequate
93 or complete absence of financial projections and planning, and also high level of illiteracy among
94 farmers and lack of relevant information as to how, when and where to obtain credit. There is also
95 lack of skilled personnel in our credit institutions to supervise and monitor loan packages as well as
96 manage them, and diversion of credit to non-agricultural purposes by farmers.
97 Every segment of agricultural production requires the availability of adequate capital since capital
98 determines access to all other resources on which farmers depend (Ayoola and Oboh, 2000).
99 However, small-holder farmers in the Upper Manya Krobo district as in other parts of Ghana are
100 constrained by inadequate credit to carry on with meaningful agricultural activities.
101 Accessibility to credit alone without good management by beneficiaries cannot guarantee the
102 expected improvement in farmer's food production level, income and hence prompt loan repayment.
103 It has been shown that farm level credit if well applied, enhances capital formation and diversified
104 agriculture, increases resource productivity, size of farm operations, innovations in farming,
105 marketing efficiency, value added and net farm incomes (Nwagbo *et al.*, 1989).
106 The study, therefore, will help determine the credit situation of the farmers in the study area; help
107 provide information that will enable financial institutions to understand credit usage by farmers and
108 thereby formulate appropriate lending policies accordingly; help identify innovative options and
109 institutional arrangements that would serve as an input for policy makers in formulating rural credit
110 policy; and help policy makers in designing proper extension training programs regarding efficient
111 credit utilization.
112 This rest of the paper is organized as follows. Section two provides the literature review. Section three
113 describes the research methodology that includes a brief description of the study area, data collection
114 procedures and analytical techniques. Section four presents the results. Finally, summary of the major
115 findings, conclusions, implications and recommendations are presented in Section five.

116 2. MATERIALS AND METHODS

117 2.1 Materials

118
119 Agricultural credit has been defined by several authors. For instance, Nwaru (2004) defined
120 agricultural credit as the present and temporary transfer of purchasing power from a person who owns
121 it to a person who wants it, allowing the later the opportunity to command another person's capital for
122 agricultural purposes but with confidence in his willingness and ability to repay at a specified future
123 date. It is the monetization of promises and exchanging of cash in the present for a promise to repay in
124 future with or without interest. Without the willingness and ability to repay, the promise to repay at a
125 future date would be futile.
126 Credit can be in cash or in kind. However, in this study we consider credit in cash. The control over
127 the use of money, goods and services of another person termed credit is at a price usually regarded as
128 the interest rate ((Adegeye and Dittoh, 1985; Ellis, 1992). The interest rate is required to be paid
129 together with the amount borrowed at a specified time in the future.
130 Credit is an instrument whose effectiveness depends on the economic and financial policies that go
131 with it (Nwaru, 2004). If well applied, credit should increase the size of farm operations, introduce
132 innovations in farming, encourage capital formation, improve marketing efficiency and enhance
133 farmers' consumption (Nwagbo, 1989; Nwaru, 2004). Udoh (2005), reported that the demand for
134 credit tends to be a derived demand, which indicates that the borrowers will demand for credit based
135 on the need for it and the satisfaction to be derived.
136 The financial institutions in Ghana can be classified into three categories: formal, semi-formal and
137 informal. The formal finance sector is predominately made up of commercial banks, which are
138 normally within urban areas; and for rural areas there are Rural Community Banks (RCBs) and their
139 association the ARB Apex Bank. Ghana's semi-formal finance sector consists of credit unions,
140 savings and loans (also known as Microfinance institutions), and non-governmental organizations

(NGOs). The informal finance sector consists of moneylenders, traders, family members, friends, neighbors, and the traditional Susu system.

Financial institutions that fall into this category are incorporated under the Companies Code 1963 (Act 179), which gives them legal identities as limited liability companies, and subsequently licensed by the Bank of Ghana under either the Banking Law 1989 or the financial Institutions (Non-Banking) Law 1993 to provide financial services under Bank of Ghana regulation (Steel and Andah, 2003). Most of these banks target urban, middle-income clients and higher net worth clients. However Rural Community Banks and the Agricultural Development Bank concentrate their focus within rural areas. Therefore, these two institutions have become the main source of financial resources for smallholder farmers.

Semi-formal institutions in Ghana consist of credit unions, savings and loans associations, and financial NGOs. Credit unions are organizations that offer savings and credit facilities exclusively to its members. However, these organizations are performing poorly because a majority of their focus is on welfare programs, and therefore cannot impose higher interest rates on their clients (Steel and Andah, 2003).

The credit union association (CUA) is similar to ARB Apex Bank, however, it does not have any control over portfolios. There are some credit unions that operate within banks whose tasks are to look for clients and to report back to the bank (Gyamfi, 2010). There are a total of 47 Savings and Loans reporting institutions in Ghana. As of 2009, services from Savings and Loans are provided to 358,717 borrowers, with an average loan balance of US\$ 290.9 per borrower (MIX Market, 2010). According to Mix Market there are 47 reported microfinance institutions in Ghana.

Ghana's Savings and Loans have 6 percent of portfolios at risk for more than 30 days. This is the at-risk average compared to its peer groups with East Asia and the Pacific at 4 percent, Eastern Europe and Central Asia at 4 percent, Latin America and the Caribbean at 5 percent, Middle East and North Africa at 3 percent, and South Asia at 2 percent (MIX Market, 2010).

According to Kashuliza *et al.* (1998), informal financial services refers to all transaction, loans and deposits that take place outside the regulated monetary system and these include activities of intermediaries such as relatives and friends, traders and moneylenders.

In Ghana, informal credit is defined to embrace all financial transactions that take place beyond the functional scope of banking and other financial sector regulations.

Informal credit transactions can be grouped into noncommercial transactions, such as transactions between relatives and friends or small-scale group arrangements, and commercially based ones, conducted by savings collectors, estate owners, landlords, traders, and moneylenders. Informal financial units have been formed to meet the demand of a diverse customer base (Nissanke and Aryeetey, 2006). There has been substantial increase in demand for informal credit and savings in Ghana. This is due to an increase in unsatisfied demand for formal sector credit, which has been continuously restrained as part of stabilization efforts. *Sand*

Ghana has a mature informal credit system in the rural areas that satisfies the urgent demand of the people for production and consumption. The informal credit system also helps to meet the pressing social commitment, such as paying the cost of the sick and funeral expenses (Ekumah and Essel, 2001). Sources of the informal credit are relatives, friends, traders and/or private moneylenders and landlords. Relatives, that is, close family relations, and friends do not normally charge interest. But depending on their claims to the sources of the money being lent, some may do so. In any case, interest charged by relatives and friends are, however, exceptions to the rule. The interest rates charged by moneylenders are between a 50-percent and 100-percent base on the period that was contracted with the borrower (Ekumah and Essel, 2001). One of the characteristics of informal credit in Ghana is that it does not attach different risk to borrowers within their usual clientele. Borrowers are preselected by membership requirement especially in group-based arrangements. Traders on the other hand only lend to people with whom they have a business relationship. According to Nissanke and Aryeetey (2006), moneylenders are the only informal lenders that do not lend to distinct clientele. A study by Udry (1990, 1994), stated that screening in the formal sector depends extensively on the personal knowledge of borrowers. He explains that the development of personal ties and proximity is a mechanism for countering the effects of adverse selection and moral hazard.

300 These are the wet South-west trade winds which blow across the district from the Atlantic Ocean
301 between March and July and the Northeast trade winds (harmattan) from the Sahara desert between
302 November and early March. The temperatures are generally high with average ranging between about
303 26° C and 32° C.

304 The topography of the district can be generally described as undulating. The highest point in the
305 district is over 660 meters above sea level located in the southern part of Sekesua. The lowest area
306 which is located in the south- eastern part of the district is about 50 meters above sea level. The
307 average height of the land is about 452 meters above sea level. Underlying these landmasses are
308 several rocks or parent rocks from which several rocks have developed.

309 The district is drained with several rivers such as the Volta, Dawado and Anyaboni. With the
310 exception of the Volta River, almost all these rivers are seasonal with most of them overflowing their
311 banks during the rainy season. The dominant vegetation cover is semi-deciduous forest and derived
312 Savannah zone. Human activities on the vegetation have resulted in scattered patches of secondary or
313 broken forest. Traditional practices such as collection of fuel wood, charcoal burning and overgrazing
314 coupled with climate change have degraded the vegetation. Because of these the semi-deciduous
315 forest is gradually turning into savannah woodland especially at areas like Akateng, Sesiamang and
316 Akotoe. These activities have resulted in low crop yields, poor soil fertility, surface run-off and
317 erosion among others.

318 ③ Quantitative data was collected from primary data sources. Structured questionnaire was ⑦
319 prepared and administered to the sampled respondents to collect the necessary data
320 needed for the study. Primary data source was the sampled farm households including both ②
321 male and female headed maize farmers receiving agricultural credit from the Asesewa Rural
322 Bank in the Upper Manya-Krobo district. Secondary data source was the district office of
323 Ministry of Food and Agriculture (MoFA) located in Asesewa. The questionnaire was pre-
324 tested to evaluate for consistency, clarity, ambiguity and to avoid duplication, and to estimate
325 the time requirement during data collection.

326
327 The data collection process required a preliminary survey in order to construct the sampling
328 frame and draw a sample. A pilot study was conducted for this purpose. A multi-stage
329 sampling procedure was employed for selecting individual respondents in the study. A
330 population of smallholder maize farmers who receive agricultural credit from the Asesewa
331 Rural Bank was identified in the study area with the help of the district office of the Ministry
332 of Food and Agriculture (MoFA). A list of maize farmers who received agricultural credit for
333 the 2011 cropping season was provided by the district office of MoFA. With the aid of the list
334 provided three zonal areas namely: Asesewa, Sekesua and Anyaboni were purposively
335 selected. A random sampling technique was then used to select 50 farmers each within the 13
336 three zones to get a total of 150 maize farmers. In the end 130 properly filled questionnaires
337 were returned and utilized for analysis.

338 The paired-sample t-test was used to test for significant differences between the amount of
339 credit applied by farmers and the amount of credit received by the farmers.
340 Descriptive statistics (means, frequency distribution, percentages) was used to analyze the
341 percentage of credit allocated to the farm and the non-farm sectors based on the amount of
342 credit received.

343 The Probit regression model was employed to analyze the factors that influence credit
344 constraint conditions of farmers.

345
346 According to Nagler (2002), the Probit model constraints the estimated probabilities to be
347 between 0 and 1 and relaxes the constraint that the independent variable is constant across

327 — 336 — should come first; then followed by
318 — 325.

434 **Table 1: Credit Status of Respondents**

Credit Status	Constrained	Unconstrained	Total
Frequency	124	6	130
Percentage	95.38	4.62	100

435

436 **4.3 Amount of credit applied for and amount received by farmers**

437 The results of the t-test analysis used to determine whether significant differences exist between
 438 amount of credit applied for and amount received by farmers indicated that the mean value of credit
 439 received (GH¢ 2,114.60) was significantly lower than the mean value of credit applied (GH¢
 440 2,746.90) at 1% significance level (see Table 2). The inadequate amount of credit granted to
 441 applicants might limit their capacity to finance their farm investment plans thereby affecting farm
 442 output and productivity negatively. This result confirms earlier findings of Oboh and Ekpebu (2011)
 443 and Ike (2008). For example, Oboh and Ekpebu (2011) found out that the mean value of credit
 444 received by arable crop farmers in Benue State, Nigeria was significantly lower than the mean value
 445 of credit demanded at one percent (1%) level of significance.

446

447 **Table 2: The results of the paired t-test showing significant difference between**
 448 **amount of credit applied and amount received by farmers**

Variables	Individual Mean	t-value	Degree of freedom	Significance (2-tailed)
Loan applied	2,746.90	17.29	129	.000***
Loan received	2,114.60			

449 ***Significance at 1% level

450

451 **4.3 Percentage of credit allocated to the farm and non-farm sector based on the total amount of**
 452 **credit received**

453 Table 3 below presents the amount and the respective percentage of credit allocated to the farm and
 454 the non-farm sectors across the various categories of loan amount. On a comparative basis,
 455 beneficiaries belonging to low loan amount category ($\leq$ GH¢ 1000) allocated less of their loans to the
 456 farm sector and by implication, more to the non-farm sector. On the other hand, beneficiaries in the
 457 high loan amount category (GH¢ 5100-GH¢ 6000) allocated more of their loans to the farm sector.
 458 These results suggest that there is high propensity for low loan amount (which seems inadequate for
 459 meaningful farm work) to be easily diverted for non-farm activities. The results indicate that as
 460 farmers credit portfolio increases, the percentage of credit allocated to the farm sector increases
 461 while the percentage of the credit allocated to the non-farm sector decreases.

462 The average amount of credit allocated to the farm sector by all the farmers in our sample was 72.43%
 463 leaving the balance of 27.57% to the non-farm sector. This is called the average budget share (ABS)
 464 and it is a measure of the percentage of total credit spent on each sector. Even though, the ABS value
 465 of 72.43 for the farm sector is relatively high, the value of 27.57% for the non-farm sector suggests
 466 that there is a reasonable level of loan diversion. This finding is consistent with the findings of Rabo
 467 *et al.* (2001) in which about 36.7% of small scale farmers institutional credit intended for farm
 468 activities in Bauchi State in Northern Nigeria was diverted. This finding is also consistent with earlier
 469 findings by Ike (2008). The study of Ike (2008) showed that averagely 56.1% of the loan received by
 470 farmers was directly allocated to the farm sector for farm activities while the remaining 43.9% was
 471 diverted to the nonfarm sector. This finding is also consistent with earlier finding by Oboh and
 472 Ekpebu (2011). The study by Oboh and Ekpebu (2011) showed that 43.9% of the loan received by

- 648 Nissanke, M. and Aryeetey, E. 2006. Institutional analysis of financial market fragmentation in Sub-
 649 Saharan Africa. World Institute for Development Economics Research. Research Paper No.
 650 2006/87, 1-26
- 651 Nosiru, Marcus Omobolande (2010). "Microcredits and Agricultural Productivity in Ogun State,
 652 Nigeria. *World Journal of Agricultural Sciences* 6(3): pp 290-296
- 653 Nuryartoon, N., S. Schwarze, and M. Zeller 2005. "Credit Rationing of Farm Households and
 654 Agricultural production: Empirical Evidence in the Rural Areas of Central Sulawesi, Indonesia".
 655 Invited Paper at the Mini-Symposium Held at the Tri-Annual Conference of Agriculture
 656 Economics, October 11-13, 2005 Stuttgart Hohenheim.
- 657 Nwagbo, E.C, Ilebani D, Erhabor P.O (1989). *The role of credit in agricultural development: a case*
 658 *study of small-scale food production in Ondo State, Nigeria.* Samaru J. Agric. Educ., 3(1 and 2):
 659 29-35.
- 660 Nwaru, J. C. (2004). Rural credit markets and resource use in arable crop production in Imo State of
 661 Nigeria. Ph.D. Dissertation, Michael Okpara University of Agriculture, Umudike, Nigeria.
- 662 Nwaru, J. C., Onyenweaku, C. E., Nwagbo, E. C., & Nwosu, A. C. (2004). Determinants of rural farm
 663 loan repayment: implications for rural credit markets development in Imo State, Nigeria. *Journal*
 664 *of Agricultural and Food Science*, 2(1), 57-67.
- 665 Nweze, N.J (1991). *The role of women's traditional savings and credit cooperative in small-farm*
 666 *development.* Winrock Int. Institute Agric Dev., pp234-253.
- 667 Oboh, V.U., (2008). Farmer's allocative behavior in credit utilization: a case study of arable crop
 668 farmers in Benue State, Nigeria. Ph.D. Thesis, Agricultural Economics and Extension
 669 Programme, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
- 670 Oboh V.U., Ekpebu I.D. (2011). *Determinants of formal agricultural credit allocation to the farm*
 671 *sector by arable crop farmers in Benue State, Nigeria.* Afr. J. Agric. Res., 6(1): 181-185.
- 672 Oladeebo, J.O. and O.E. Oladeebo, (2008). *Determinants of loan repayment among smallholder*
 673 *farmers in Ogbomosho Agricultural Zone of Oyo State, Nigeria.* J. Soc. Sci., 17 (1): 59-62.
- 674 Omonona B. T, Akinterinwa A.T and Awoyinka Y.A (2008) "Credit Constraint and output Supply of
 675 Cowan Farmers in Oyo state Nigeria". *European Journal of Social Sciences* Vol 6 No. 3 Pp 382-
 676 390.
- 677 Omonona B.T., Lawal, J.O., and Oyinlana, A.O. (2010). Determinants of Credit Constraint
 678 Conditions and Production Efficiency among Farming Households in Southwestern Nigeria.
 679 Contributed Paper presented at the joint 3rd African Association of Agricultural Economists
 680 (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA) Conference,
 681 Cape Town, South Africa, September 19-23, 2010.
- 682 Oyatoye, E.T., (1983). *An Economic appraisal of small farmers credit schemes: A cost study of*
 683 *Western Nigeria.* Sav. Dev., 7(3): 279-292.

547 **Table 5: Tobit Regression Results of the Factors Influencing Credit Allocation to the**
 548 **Farm Sector**

Variable	Coefficient	Robust Std. Err.	P-value
Age	-1.678647	.8129167	0.041**
Age squared	.0197057	.008404	0.021**
Gender	1.616665	5.265839	0.759
Household size	.7892378	.522362	0.134
Education	.3413959	.2940639	0.248
Annual income	.0000407	.0006706	0.952
Farming experience	-.1742334	.2908091	0.550
Farm size	.0890857	.2552068	0.728
Extension visit	-5.115038	3.750744	0.175
Loan delay	-.0217141	.0950807	0.820
Bank visit before credit acquisition	13.28136	3.414263	0.000***
Bank visit after credit acquisition	-.8985074	3.115754	0.774
Amount of credit received	.005823	.0013291	0.000***
cons	77.26323	20.40017	0.000
Number of observations (130)	Pseudo R ² (0.0488)	Prob>chi ² (0.0000)	LR chi ² (52.66)

549 Source: Survey Data *** significant at 1% ** significant at 5%

550 5. CONCLUSIONS

551 The study seek to analyze the effect of socio-economic factors on credit constraint of farmers and the
 552 rate of credit allocation to the farm sector in the Upper Manya Krobo District of Ghana. Primary and
 553 quantitative data was solicited from the sampled farm households receiving agricultural credit from
 554 the Asesewa Rural Bank in the Upper Manya Krobo District. All predictor variables were obtained
 555 from the primary data gathered. In order to determine the amount of credit demanded and the amount
 556 received by farmers, descriptive statistics and the paired-sample t-test were used. Descriptive statistics
 557 was also used to analyze the amount of credit allocated to the farm and non-farm sectors respectively.
 558 The probit regression model was used to identify the determinants of credit constrained condition of
 559 the maize farmers, while the Tobit regression model was then used to identify factors that affect credit
 560 allocation to the farm sector.

561 The results of the paired sample t-test analysis to determine whether significant differences exist
 562 between amount of credit applied and amount received by farmers revealed that the mean value of
 563 credit received was significantly lower than the mean value of credit applied at one per cent
 564 significance level. The study also revealed that farmers who received low loan amount allocated less
 565 of their loans to the farm sector and by implication more to the non- farm sector. Farmers who

566 received high amount of loan allocated more of their loans to the farm sector and less to the non-farm
 567 sector. Averagely farmers allocated 72.43 per cent of their loans directly to the farm sector while the
 568 remaining 27.57 per cent was diverted for non-farm activities.
 569 The Probit regression model reveal that out of the eight explanatory variables considered, four were
 570 found to have significant influence on credit constrained conditions of the farmers: gender, household
 571 size, annual income and farm size. Also out of the thirteen explanatory variables considered in the
 572 Tobit regression model, four were found to have significant influence on credit allocation to the farm
 573 sector: age; age squared, bank visits before loan acquisition and the amount (size) of loan received.
 574 The study provides the following recommendations. Bank visits before credit acquisition and the
 575 amount of credit received has a positive influence on the rate of agricultural credit allocation to the
 576 farm sector. Therefore, it is imperative that bank-officials visit farmers on their farms before granting
 577 them loans, and also farmers must be granted the required amounts of loan to enhance the rate of
 578 agricultural credit allocation to the farm sector to ensure increased productivity of crops grown for
 579 increased welfare and livelihood of these farmers and the citizens of the country as a whole.
 580 The study provides the some contributions to the existing literature by assessing the credit constraint
 581 conditions of maize farmers and the factors influencing this condition, as well as analyzing the factors
 582 influencing the rate of credit allocations by these farmers to the farm sector vis-à-vis the non-farm
 583 sector. Therefore, the results of this study would enhance our understanding of credit constraint
 584 conditions and credit allocation decisions by farmers in developing countries, as well as provide a
 585 guide to lending institutions to the farm sector.
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587 References

- 588 Adebayo, O.O. and R.G. Adeola, (2008). Sources and uses of agricultural credit by small scale
 589 farmers in Surulere Local Government Area of Oyo State. *Anthropologist*, 10(4): 313-314.
- 590 Adegeye, A. N., and Dittoh, J. S. (1985). *Essentials of Agricultural Economics*. Ibadan, Nigeria:
 591 Impact Publishers Nigeria limited.
- 592 Akram, W., Z., Hussaun, M.H., Sail, J., Hussain, (2008). "Agricultural Credit Constraints and
 593 Borrowing Behavior of farmers in Rural Punjab", *European Journal of Scientific Research* 23
 594 (2), pp. 294-304.
- 595 Al-Hassan, R. and Diao, X. (2007). *Regional Disparities in Ghana: Policy Options and Public*
 596 *Investment Implications*. International Food Policy Research Institute, Sustainable Solutions for
 597 ending hunger and poverty. IFPRI Discussion Paper. February 2007 Washington D.C, USA.
- 598 Amemiya, T., (1985). *Advanced Econometrics*. T.J. Press, Pad stow Ltd: Great Britian.
 599
- 600 Asiam, Johnson P. and Osei, Victor. (2007). —Microfinance in Ghana: An Overview, Research
 601 Department, Bank of Ghana. DOA: 14th December 2010.
 602 <http://economicswebinstitute.org/essays/microfinanceghana.htm>
- 603 Ayoola G.B., Oboh V. U., (2000). A model of public expenditure to reveal the preference for
 604 agriculture in the budget. *J. Rural Econ. Dev.*, 14(1): 56 –73.
- 605 Baiyegunhi L.J.S. G.C.G. Frazer and M.A.G. Darroch (2010). "Credit Constraints and Household
 606 Welfare in the Eastern Cape Province, South Africa. *African Journal of Agricultural Research*
 607 *Vol: 5(16) pp. 2243-2252, 18 August 2010.*

- 608 Barry, P. J. & Robinson, L. J. (2001). Agricultural Finance: Credit, Credit Constraints and
 609 consequences. In B. Gardner and G. Rausser, eds. *Handbook of Agricultural Economics*, Vol. 1A:
 610 513-71. Amsterdam: Elsevier.
- 611 Berger, F., (1989). Giving women credit: The strengths and limitations of credit as a tool for
 612 alleviating poverty. *World Dev.*, 17: 7-15.
- 613 Dicken, P. (2007) *Global Shift: Mapping the Changing Contours of the World Economy*. 5th Edition,
 614 SAGE Publications Inc. London, California, New Delhi. Dorfamn, J. H.
- 615 Ekumah, E. K., and Essel, T.T. (2001). *Gender access to credit under Ghana's financial sector*
 616 *reform*: A case study of two rural banks in the central region of Ghana. IFLIP Research Paper.
 617 01-4.
- 618 Ellis, F. (1992). Agricultural policies in developing countries. School of development studies,
 619 university of east Angellia, Cambridge university press.
- 620 Emerole, C.O. (2004), "Determinants of Income and Consumption Expenditure of Smallholder Farm
 621 Households in Ikwuano LGA of Abia State, Nigeria. Unpublished Ph.D. Dissertation, Michael
 622 Okpara University of Agriculture, Umudike, Nigeria.
- 623 Ezedinma Y. Anthony, F.O.C, Onazi, A.O. (1995). *Introduction to Agriculture*: British Educational
 624 Publishers (low price) Books Scheme. 15, 16 pp.
- 625 Fosu, K.Y. (1998). Monetary policy, credit market liberalization and institutional agricultural credit
 626 supply in Ghana. Paper Presented at the European Association of Agricultural Economists
 627 Conference on Agricultural Markets Beyond Liberalization. Wageningen, Netherlands.
- 628 Gyamfi, Yaw. (2010). Ghana's Microfinance Network (GHAMFIN). Meeting on 25th November
 629 2010.
- 630 Heidhues, F., (1992). Consumption credit in rural financial market development. Seminar on
 631 Financial Landscape Reconstruction. Wageningen, The Netherlands, 17-19 November, pp: 29.
- 632 Johnston, J., and J. DiNardo (1997). *Econometric methods*. New York: McGraw Hill.
- 633 Kashuliza, A. K., Hella, P., Magayane, F.F., Mvena, Z.S.K. (1998). The role of Informal and Semi-
 634 formal Finance in Poverty Alleviation in Tanzania: Results of a field study in two regions of
 635 REPOA. Research Report No 98.1
- 636 Lawal, J.O, B.T Omonona, O.I.Y. Ajani and O.A. Oni. (2009). "Determinants of Constraints to
 637 Credit Access among Cocoa Farming Households in Osun State" *Pakistan Journal of Social*
 638 *Sciences* 6(3): 159-163.
- 639
- 640 Maddalla, G.S., (1992). *Introduction to Econometrics*: 2nd ed. Business Economics: University of
 641 Florida and Ohio state University, Mac Milan publishing Company, New York.
- 642
- 643 Mejeha R.O. (2005). Determinants of Savings Mobilization in the Rural Economy of Abia State,
 644 Nigeria. PhD dissertation, Department of Agricultural Economics, Michael Okpara University of
 645 Agriculture, Umudike, Nigeria.
- 646 MIX Market. (2010). —Microfinance in Ghana, Microfinance Information Exchange. DOA: 2nd
 647 December 2010. <http://www.mixmarket.org/mfi/country/Ghana>

He (2008)
not the ref.