

# GENDER CHARACTERISTICS OF THE DETERMINANTS OF ACCESS TO FORMAL CREDIT IN RURAL ZANZIBAR

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## Abstract

*Despite the ongoing financial reforms undertaken in many developing countries, the majority of smallholder farmers still report limited access to formal credit. It is often argued that women are particularly more credit constrained than men. Various studies conducted in many developing countries suggest that access to credit is influenced by both institutional factors as well as by household socio-economic characteristics. However, most of these studies have generalized the effect without the concern of gender.*

*This study was therefore conducted in order to determine the gender characteristics of the determinants of rural households' access to credit in the formal credit markets. The specific research question addressed is whether factors that influence rural household access to credit differ by gender or not. In conducting this study, both primary and secondary data were collected. The data collection took place between May and June, 2006, covering the five districts of Unguja and Pemba islands. In total, 750 households were surveyed.*

*The analysis of the data collected was done using SPSS 17.0 computer software. Both descriptive and econometric statistics were analyzed and discussed. The econometric analysis was meant to determine the gender characteristics of the determinants of credit-constrained households, focusing on the formal credit market by using a Probit model with Heckman procedures. The results of the Probit model show that male and female heads being credit constrained are influenced by different set of factors. For male heads, the degree of market integration as well as the wealth and risk-bearing indicators (value of productive assets owned and household income level) are significant indicators in determining whether a household is credit constrained. For female heads, only the household income level was found to be a significant factor for a household being credit constrained.*

*The results from the second equation (Heckman Procedure) further suggest that human capi-*

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*tal (education) and wealth and risk-bearing factors (keeping financial records, value of productive assets owned, household income level) are significant factors in determining the intensity of use of formal credit among male heads. On the other hand, the value of productive assets owned and the leadership status are factors that significantly influence the intensity of using formal credit among female heads. Generally, these findings suggest the need to develop gender-specific interventions to enhance access to credit in the formal credit markets.*

**JEL classification:** E44; G20; J16.

**Keywords:** Gender, Determinants of credit access, Formal credit, Rural Zanzibar.

## 1. INTRODUCTION AND OBJECTIVES

Access to credit plays a major role in poverty reduction efforts in many developing countries. For poor rural households, credit makes up a substantial portion of their yearly incomes and provides an important means to generate additional income. Despite the importance of credit for poverty reduction, the majority of rural households are constrained to access credit from the formal credit market. Recent financial reform programs in many developing countries, have not impacted positively in terms of improving access to credit by the majority of the rural population. In Zanzibar, the financial sector reforms, which were initiated in 1991 have focused mainly on the urban areas, leaving the majority of rural population highly marginalized. Furthermore, the removal of agricultural inputs subsidies (mainly for fertilizers, seeds and tractor hire services) due to financial reforms has contributed to a large extent to the decline in agricultural productivity and production. The main victim of these reforms therefore has been the rural population who depends on agriculture for livelihood. In particular, women have been severely affected since they are mostly engaged in agricultural activities.

Enhancing access to credit to smallholder farmers is therefore considered to be a key policy option in Zanzibar, aimed at overcoming the negative effect of financial reforms in the agricultural sector. Many credit programs have been initiated and implemented to this effect. Despite this effort, access to credit has remained a major problem faced by smallholder farmers in Zanzibar.

Several factors are believed to influence rural households' access to credit in the formal credit market. Many studies have attempted to identify factors that influence rural households to access credit (see Ibrahim *et al.*, 2007; Nuryartono *et al.*, 2005; Dallimore and Mgimeti, 2003; Mohamed, 2003; Temu *et al.*, 2001; Daniels, 2001; Vaessen, 2001; Mushinski, 1999; Kashuliza *et al.*, 1998;

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Kochar, 1997). However, most of these studies have generalized the effect without taking into consideration gender. Recently there has been an increasing concern whether the financial constraints faced by rural households in developing countries differ with respect to demographic characteristics, including gender (Muravyev *et al.*, 2009). However, to the author's knowledge no study has been conducted in Zanzibar with the aim of understanding the gender characteristics of the determinants of access to formal credit.

The overall objective of this study is therefore to determine the gender characteristics of factors that influence access to formal credit in rural Zanzibar. The key question that is addressed by this study is what socio-economic factors are important in determining rural households' access to formal credit and how does the effect of these factors differ by gender. This key question might possibly give answers to accept or reject the study hypotheses stating that some socio-economic factors do influence farm households to access formal credit and these factors discriminate differently between male and female headed households. The findings from this study will shed lights on socio-economic factors that are important to enhance access to formal credit among male and female heads in Zanzibar. Hopefully, the findings from this study will guide the development of targeted interventions to the benefit of both men and women in terms of access to credit in the formal credit market.

The structure of the paper is as follows: The section two of this paper provides the policy relevance of the study, while section three briefly provides the explanation on the data used and the process followed to collect them. The process used to classify the sampled households into credit constrained and non-credit constrained is provided in section four. In section five, information related to specification of the estimation model is given. The results, both from descriptive and econometric analyses are discussed in section six. The final section covers the conclusions and gives suggestions on policy options to improve access to credit to both male and female heads.

## 2. POLICY RELEVANCE

Research on the gender characteristics of the determinants of access to credit is of great interest as credit is being used as a policy instrument to enhance household welfare for poverty reduction. Women, being a more vulnerable group in the Zanzibar society, are particularly targeted in these poverty reduction initiatives. Women are also the ones that mostly undertake farming activities. Therefore the access of women to credit would in-

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crease their control over resources and this has an implication for the household welfare. It was observed that women in Zanzibar are more credit constrained than men. According to GOZ (2007) women are eight times less likely than men to access credit in the formal credit. It is often argued that women and men are affected by a different set of factors in their access to credit in the formal credit markets (Fletschner, 2008). In many developing countries constraints faced by women farmers with regard to access to land, capital, or credit, technology and training services are generally greater than those faced by male farmers (Fletschner, 2008). Specific women development programmes have been initiated to assist women socially and economically. Credit programmes are some of these initiatives. Therefore the knowledge of factors that influence women to access credit is of great interest to rural development planners, practitioners and policy makers to make informed decisions in accessing credit services for poverty reduction.

### 3. DATA

The data used in this study are from a household credit survey of 750 farm households in 30 shehias (villages) spread over five districts in Zanzibar islands. The survey was conducted between May and June, 2006. The primary purpose of the survey was to study the gender characteristics of the determinants of rural households to access credit in the formal credit markets. To identify the population of interest, we used information obtained from the Population Census of 2002, Shehia<sup>3</sup> register and the comprehensive membership lists of four main credit schemes, namely Zanzibar Smallholder Support Project (ZSSP), Women Entrepreneurs Development Trust Fund (WEDTF), Zanzibar Fund for Self-Reliance (ZFSR) and Chagamoto Life Preservation Fund (CLPF). Because of the study focus, the sample was limited to rural household heads. The sample frame was obtained after a complete listing of all farming households in the sampled shehias and it was stratified into two groups: (i) the sex of household heads, and (ii) the participants of credit schemes. Respondents were selected randomly from each of these strata. Male headed households were overrepresented because of the smaller number of female headed households. Descriptive statistics and econometric analyses were used in the analysis.

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<sup>3</sup> Shehia is a the smallest government administrative structure which is equivalent to a village in an African context.

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#### 4. CREDIT CONSTRAINED VERSUS NON-CREDIT CONSTRAINED HOUSEHOLDS

Fletschner (2008) notes that any strategy designed to address imperfections in the credit market requires identifying those who are likely to be credit constrained. Various methods were employed to assess credit rationing of households. Petrick (2005) distinguishes between approaches that identify households' credit rationing status by relying directly on the observed financial information. Such information is households' reliance on loans from sources other than formal lending institutions, their own credit limit, or qualitative information describing their positions in the credit market. Other methods rely heavily on econometric estimations, indirectly inferring households' credit rationing status from their production, consumption and investment decisions. In this study we build on one of the "direct" approaches to identify households' credit rationing status. This method of eliciting households' credit constraints directly enables researchers to classify households into credit rationing regimes without resorting to assumptions about the financial market. Examples of studies that rely on this methodology include Fletschner (2008), Mushinski (1999), Baydas *et al.* (1994), Zeller (1994) and Jappelli (1990). To identify households' credit rationing status, these studies typically start with observing market transactions, recording all loans taken during a specific period and then asking qualitative questions to determine whether households had been denied credit or had received less credit than they had requested in that particular period. Those households that had been denied credit and had received less credit than they had requested were classified as credit constrained. In addition, the studies recognize that there may be households which, despite having a positive demand for credit at the going interest rate, choose not to apply for loans because of the imperfect nature of rural financial markets. If applying for credit is costly and households believe that there is a high probability that their request will be denied, they may decide not to apply.

In order to properly distinguish which, among the non-borrowing households, are credit constrained, these studies have relied on additional qualitative questions to elicit whether these households would have liked to borrow at the going interest rate and why they had not requested a loan. The attractiveness of the direct approach for eliciting credit rationing status of households lies in its ease of implementation. In this study, using the direct approach, the credit rationing status was determined as follows: Each household head (male or female) was asked about loans obtained from formal financial institutions during 2002-2005. If they reported having received at

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least one loan, they were asked to indicate whether they had been able to obtain as much capital as they would have liked to, and if not, why not. If, on the other hand, they reported that they had not received any loan personally, they were asked whether they had requested a loan. Those who replied that they had applied for a loan were then asked why they had not received it. Those who had not applied for a loan were asked whether they had wanted a loan at the current interest rates. From the responses, household heads were regarded as credit constrained if, during that period, they were unable to obtain the amount they had wished to borrow. That is if, (i) they had asked for a loan and were turned down; or (ii) they were offered an amount smaller than what they had solicited; or (iii) they had wanted a loan at the going rates but had decided not to apply for one or had requested less than the amount they had wished to borrow because they believed they would not get it.

## 5. ESTIMATION SPECIFICATION

The econometric model used in this study is a probit regression. In the probit regression model, the predicted probabilities for the dependent variable will never be less than (or equal to) zero, or greater than (or equal to) one, regardless of the values of the independent variables. However, to overcome the problem of sample selectivity bias, the Heckman approach was employed. Heckman (1979) developed a simple two stages estimator to correct the bias that results from using nonrandomly selected samples to estimate behavioral relationships. This approach proposes the estimation of expected value of error and its inclusion as an extra explanatory variable in the regression (Wooldridge, 2002; Green, 2000; Kennedy, 1998; Madalla, 1992; Berndt, 1991). In other words, using a probit model coefficients are first estimated by maximum likelihood and having the estimates obtained for each observation, they are passed to the second equation to be used as an exogenous variable. This allows the parameters in the second equation to be estimated consistently by least square regression (Hoffmann and Kassouf, 2006). The theoretical exposition of the Heckman procedure is as follows:

Consider the following equation, which causes sample selection.

$$C_1^* = \gamma z_i + u_i \quad (1)$$

Where  $C_1^*$  is latent variable indicating whether a household is credit constrained or Not, and  $z_i$  is a vector of variables that affects  $C_1^*$ .

The variable  $C_i^*$  is not observed, but we observe if the individual is not credit constrained or constrained, in that way that:

$$C_i = 1 \text{ if } C_i^* > 0$$

and

$$C_i = 0 \text{ if } C_i^* \leq 0$$

Let the  $Y_i$  represent the natural logarithm of the formal credit use intensity by each individual, assuming that:

$$Y_i = \beta'x_i + \varepsilon_i \tag{2}$$

Where  $x_i$  is the vector of variables determining the credit use intensity.

Assuming that  $u_i$  and  $\varepsilon_i$  have a bivariate normal distribution with zero means, standard deviation  $\sigma_u$  and  $\sigma_\varepsilon$  and correlation  $\rho$ , and that  $C_i$  and  $z_i$  are observed for a random sample of individuals, but  $Y_i$  is observed only when  $C_i = 1$ , i.e, when the individual is not credit constrained, then

$$\begin{aligned} E(Y_i \mid C_i = 1) &= E(Y_i \mid C_i^* > 0) = E(Y_i \mid u_i > -\gamma'z_i) \\ &= \beta'x_i + E(\varepsilon_i \mid u_i > -\gamma'z_i) = \beta'x_i + \rho\sigma_\varepsilon\lambda_i(\alpha_u) \end{aligned} \tag{3}$$

Where

$$\lambda_i(\alpha_u) = \frac{\phi(\alpha_u)}{1 - \Phi(\alpha_u)} = \frac{\phi(-\alpha_u)}{\Phi(-\alpha_u)} = \frac{\phi(\gamma'z_i/\sigma_u)}{\Phi(\gamma'z_i/\sigma_u)} \tag{4}$$

and  $\phi$  and  $\Phi$  are respectively, the normal density function and the normal distribution function. The function  $\lambda_i(\alpha_u)$  is called the inverse of Mill's ratio.

Due to the correlation between  $x_i$  and  $\lambda_i(\alpha_u)$ , a least squares regression of  $Y_i$  on  $x_i$ , omitting the term in  $\lambda_i(\alpha_u)$ , would produce an inconsistent estimator of  $\beta$ . If the expected value of the error was known, it could be included in the regression as an extra explanatory variable, removing that part of the error correlated with the explanatory variables and avoiding inconsistency. The Heckman's procedure, in its first stage, consists of estimating the expected value of the error and, in its second stage, of using it as an extra variable in the regression equation. In other words, using a probit model, parameters  $\gamma$  of the  $C_i$  equation are estimated by maximum likelihood. Having the estimates of  $\gamma$ ,  $\lambda$  is obtained for each observation and used as an exogenous variable in the  $Y$  equation, allowing parameters  $\beta$  to be consistently estimated by least squares in the regression of  $Y_i$  on  $x$  and  $\lambda$ .

In this study, it is hypothesized that some socio-economic factors have significant effect on farm households' credit constraint condition. According to Vaessen (2001), access constraints to formal credit at household level are mostly related to a lack of collateral (physical, human and/or social capital). The capital endowment of a household is of enormous importance for the household's access to formal credit. Capital can be classified into three different categories, physical, human and social capital. The term physical capital refers to any non-human, infrastructural, financial, or natural asset needed to support livelihood. Human capital represents skills, knowledge, the ability to labor, and good health of individuals or households. The variables that are specified in the models are presented in equation 5 and in Table 1.

$$C_a = \beta_0 + \beta_1 EDUC + \beta_2 AGE + \beta_3 FSIZ + \beta_4 TMFA + \beta_5 FREC + \beta_6 LHOLD + \beta_7 DMKT + \beta_8 ASTV + \beta_9 TINC + \beta_{10} LEAD + \epsilon_a \quad (5)$$

**Table 1: Specification of variables included in probit model for credit access constraints**

Variables	Explanation
$C_a$	Binary dependent variable that stands for "1" non-credit constrained and "0" otherwise
EDUC	Years of formal education of household head
AGE	Age of household head (years)
FSIZ	Family size
TMFA	Type of main farming activity
FREC	Whether a financial record is kept or not, specified as "1" if a financial record is kept and "0" if not
LHOLD	Landholding size (acreage)
DMKT	Degree of market integration (index)
ASSETV	Value of productive assets owned by household, measured by Tanzania Shilling
TINC	Total annual household income, measured by Tanzania Shilling
LEAD	Whether household head has any leadership role or not, specified as "1" if he/she is a leader and "0" otherwise.
$\beta_i$	Vector of parameters to be estimated
$\epsilon_{ij}$	Random error terms or disturbance terms



## 6. RESULTS

### *6.1 Descriptive Statistics*

Before discussing the results from the estimations, we present selected descriptive statistics from the data. In this paper, the data set is partitioned into sub-samples: (i) male-headed households (591 households), and (ii) female-headed households (159 households). Table 2 presents the means of some of the variables of interest. Female heads are on average one year older than male heads. Also the family size of female heads is on average smaller than the family size of male heads (6 versus 7, respectively). As expected, female heads have less formal education than male heads. The average number of years of formal education for female heads is 4 compared to 7 for the male heads. The findings also show that female-headed households are poorer than male-headed households when we compare the value of productive assets owned, size of landholding and value of livestock owned. The average size of land owned by female headed households is 0.8 hectares compared to 1.2 hectares owned by the male heads. Similarly, the average value of productive assets (farm equipment and buildings) is almost two times less for female heads than for the male heads (Tanzania Shilling 405,572<sup>4</sup> compared with Tanzania Shilling 781,360, respectively). Male headed households were also found to have higher value of livestock assets owned than their female counterparts (Tanzania Shilling 994,360 compared with Tanzania Shilling 675,190). Comparing the average annual total household income between female headed and male headed households, the finding also shows that female headed households earned less than the male headed households (Tanzania Shilling 690,869 compared with Tanzania Shilling 1,144,300).

Regarding household heads engagement in off-farm work as a livelihood strategy, the proportion of male heads who were engaged in off-farm work is larger than that of female heads (60 percent compared with 38 percent, respectively). More than half of those engaged in off-farm work (61 percent) were either employed on a permanent basis or performed petty trading. The remaining were engaged in fishing, hand crafting, or seaweed farming. The proportion of male heads who were engaged in permanent employment is three times larger than that of female heads (20 percent compared with 7 percent, respectively), while the proportion of female heads engaged in petty trading is slightly larger than that of male heads (21 percent compared with

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<sup>4</sup> US \$ = Tanzanian Shilling 1,312.

15 percent, respectively). The fact that women are more disadvantaged in terms of getting formal education explains why they are also disadvantaged in employment and in petty trading.

**Table 2: Socio-economic characteristics of sampled household by gender**

Variable	Male heads (N = 591)	Female heads (N = 159)	Whole sample (N = 750)
Age of household head	48	49	48
Landholding size (acreaage)	3	2	3
Years of formal education of household head	7	4	6
Family size	7	6	7
Value of productive assets (T. Shilling' 000)	781.4	405.6	701.7
Value of livestock assets owned (T. Shilling'000)	994.4	675.2	958.3
Total household income (T. Shilling' 000)	1,144.3	690.9	1,048.2
Households engaged in off-farm work (%)	60	38	55
• Permanent employment (%)	20	7	17
• Petty trading (%)	15	21	17
• Casual labour (%)	9	2	8
• Fishing (%)	7	1	6
• Carpentry/mansory (%)	6	1	5
• Seaweed farming (%)	1	3	2
• Handcrafting (%)	1	3	2
Households main farming activity:			
• Food crops production (%)	76	91	79
• Dairy farming (%)	11	4	9
• Vegetable production (%)	5	4	5
• Tree crops farming (%)	6	1	5
• Poultry keeping (%)	2	0	0

The type of main farming activities that the sampled households were engaged in were also found to differ by gender. Food crops production was a predominant activity in the sampled areas, occupying 79 percent of the sampled households. The remaining households were engaged in other activities

such as dairy farming, vegetables production, tree crop farming and poultry keeping in varying proportions. However, the proportion of female headed households engaged in dairy farming as the main farming activity is almost three times less than that of male heads (4 percent compared with 11 percent, respectively). Likewise, the proportion of female heads engaged in tree crops farming is six times less than that of male heads (1 percent compared with 6 percent). No female head was found to be engaged in keeping improved poultry as main activity. These findings suggest that female heads are more subsistence farmers than male heads, whose primary concern is to produce food for their families. This has some implications on the types of interventions that are designed to empower women for poverty alleviation.

## ***6.2 Econometric estimation***

Table 3 reports the results of the Heckman selection models used to predict separately male head's and female head's credit rationed status in the formal credit market. The results from these models shed light on the factors influencing credit rationing in the formal credit markets, which indeed differ by gender. The findings show that the set of variables affecting female head's credit rationing status is quite different from those that impact male the head's position in the formal credit market. The results for male heads suggest that the likelihood that they will meet their credit demands in the formal credit markets is affected by the degree of market integration, the total value of productive assets and the household's total income. Male heads are more likely to be credit constrained when they are less integrated with the market. This finding implies that male heads that produce for market have better chances of accessing credit from formal financial institutions. This could be attributed to the fact that the desire to earn more income may encourage household heads to adopt productivity-enhancing technologies which require additional funding. This may enhance access to credit.

Male heads are also considerably more likely to be credit constrained if have less value of productive assets. Similar findings were observed by Fletschner (2008). Assets ownership is one of the key measures of household's wealth. The more value of assets owned by a household, the wealthier the household becomes and therefore the more credit worthy the household head becomes in the eyes of formal lenders. Besides, being wealthy enables the household head to absorb the cost of a loan. These phenomena explain why assets value is an important factor that influences male heads to access formal credit. The total household income also appears to have a strong effect on the access to credit among male heads. Again, income is a measure of household's

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liquidity and wealth and therefore male heads with relatively higher income tend to benefit from the credit facilities of formal financial institutions.

The annual total income is the only factor that was found to affect the likelihood of female heads to be credit constrained in the formal credit markets. Female heads are less likely to be credit constrained if they have a higher income. This finding suggests that as the income of female heads increases, their probability of becoming non-credit constrained also increases. The influence of income on the probability of access to formal credit among female heads is statistically significant ( $P < 0.01$ ).

Regarding the intensity of the use of formal credit, male heads were found to be influenced by the number of years of formal education, whether they kept a financial record or not, by the total value of productive assets and the total annual household income. The coefficient of the variable number of years of formal education was found to be positive and statistically significant ( $P < 0.01$ ), implying that increasing the number of years of formal education by one unit has the potential of increasing the intensity of use of formal credit by 0.06% for male heads. Similarly, the coefficient of the variable total value of productive assets was found to be positive and statistically significant ( $P < 0.01$ ), suggesting that as the value of productive assets owned by male head increases by one unit, the intensity of use of formal credit increases by 0.13%. The positive and statistically significant coefficient for the variable total annual household income ( $P < 0.01$ ) also suggests that, as the income of the male head increases by one unit, the intensity of use of formal credit increases by 0.26%. Keeping a financial record was also found to be an important factor influencing male heads intensity of use of formal credit. The coefficient for the variable keeping financial record was positive and statistically significant ( $P < 0.05$ ).

The factors that were found to influence the intensity of use of formal credit among female heads were the total value of productive assets and the household head leadership status. As for the female head, the positive and significant coefficient for the variable total value of productive assets is also statistically significant ( $P < 0.01$ ), which implies that as the value of assets increases by one unit, the intensity of use of formal credit increases by 0.25%. The household head leadership status was also found to be statistically significant and the negative coefficient suggests that female heads, who hold some leadership status in society, tend to have a higher intensity of the use of formal credit than those who have no leadership role. Being a leader implies having a network and being in a better position to know about the availability, conditions and procedures for getting formal loans. Therefore for female heads, the awareness of and the right knowledge about loans have the potential of increasing the intensity of use of formal credit.

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**Table 3: Results from the estimation of the Heckman selection models (two-steps procedure)**

	Male heads	Female Heads
<b>Access to credit</b>		
Years of formal education of household head	0.014(0.01)	0.011(0.02)
Age of household head	0.004(0.00)	0.001(0.01)
Family size	-0.015(0.01)	-0.035(0.03)
Type of main farming activity	-0.048(0.03)	0.094(0.06)
Keeping financial record	0.071(0.10)	0.350(0.20)
Landholding size (acreage)	-0.020(0.02)	-0.066(0.04)
Degree of market integration (index) <sup>5</sup>	0.449**(0.17)	-0.254(0.22)
Value of productive assets owned	0.140**(0.04)	0.023(0.10)
Total household income	0.165*(0.07)	0.240**(0.08)
Household head leadership status	-0.078(0.07)	0.116(0.28)
Constant	-4.062**(1.55)	-2.87(2.34)
<b>Credit use intensity</b>		
Years of formal education of household head	0.055**(0.02)	0.036(0.04)
Age of household head	0.003(0.01)	0.019(0.01)
Family size	-0.038(0.02)	0.081(0.05)
Type of main farming activity	0.017(0.06)	0.009(0.22)
Keeping financial record	0.398*(0.18)	0.220(0.79)
Landholding size (acreage)	-0.052(0.03)	-0.097(0.09)
Degree of market integration (index)	0.622(0.25)	0.133(0.56)
Value of productive assets owned	0.126**(0.04)	0.255**(0.08)
Total household income	0.260**(0.08)	0.130(0.15)
Household head leadership status	-0.117(0.13)	-0.799*(0.35)
Constant	-5.388**(0.99)	-4.864(1.93)
Mills Lamda	0.375198(0.3584)	-0.16882(0.5552)
Rho	0.74053	-0.50205
Sigma	0.50667	0.33626
Lamda	0.3752(0.3584)	-0.16882(0.5552)
No. of observations	591	159
Wald Ch2 (20)	136.28**	90.06**

Note: Figures in brackets are standard error

\* and \*\* statistically significant at 5% and 1%, respectively

<sup>5</sup> Degree of market integration (index) is measured as the proportion of the value of marketed agricultural produce out of total annual produce of the household.

## 7. CONCLUSION

Most credit rationing studies carried out at the household level were based on the responses from male heads. The results from these studies presented an incomplete picture and biased assessment as there were no gender considerations on the factors that determine access to credit among male and female heads. This paper addresses this weakness by considering the gender-specific influences of the determinants of rural households' access to credit in the formal credit market in Zanzibar. This paper contributes to the empirical literature on credit rationing by determining individual-specific credit rationing status and by identifying gender-specific factors that constrain individual access to credit.

The most significant findings of the study are that female head's credit rationing status responds to a different set of factors than male head's. These results provide empirically sound support for targeted interventions in favour of women. Among other things, enhancing female head access and use of formal credit requires interventions at several levels. Efforts must be made to support income-generating activities for female heads just like for the male heads. Supporting the diversification of income sources would help increase income and build up an asset base for female heads. This may include the interventions that will encourage the female heads to own live-stock assets and land. It is also important to encourage female heads to engage in more profitable farming activities such as dairy farming, poultry keeping and tree crops farming for income generation. These activities have the potential of increasing income and thus increase female heads' chances of accessing and using formal credit.

The findings also suggest the need to initiate a comprehensive women empowerment programme to create more awareness on the availability of credit facilities, their conditions and application procedures. It is also important to create knowledge among female household heads on the economic use of credit for the reduction of income poverty. Capacity building for female household heads is also crucial as this will help take on the leadership role in their societies and hence keep them in a better position to get credit information, which is a prerequisite to access and use formal credit.

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### Résumé

Malgré les réformes financières en cours dans les pays en voie de développement, la plupart des petits exploitants agricoles continuent à enregistrer un accès limité au crédit formel. On argument souvent que les femmes sont plus limitées dans leur accès au crédit que les hommes. Nombreuses études menées dans plusieurs pays en voie de développement montrent que l'accès au crédit est influencé par les facteurs institutionnels ainsi que par les caractéristiques socio-économiques de l'économie domestique. Pourtant, beaucoup de ces études ont généralisé l'effet sans analyser l'aspect du genre.

Cette étude vise à déterminer les caractéristiques de genre des déterminants de l'accès au crédit des ménages ruraux dans le marché du crédit formel. La question spécifique de la recherche est si les facteurs qui influencent l'accès au crédit des ménages ruraux changent par rapport au genre. Pour mener cette étude, les données primaires ainsi que celles secondaires ont été collectées. La collecte des données a eu lieu entre Mai et Juin 2006, en couvrant les cinq districts des îles de Unguja et Pemba. Au total, 750 ménages ont été interviewés.

L'analyse des données collectées a été effectuée par le logiciel SPSS 17.0. Les statistiques descriptives et économétriques ont été analysées et discutées. L'analyse écono-



métrique avait pour but l'identification des caractéristiques de genre des déterminants des ménages ruraux qui ont un accès limité au crédit; l'attention était focalisée sur le marché du crédit formel en employant le modèle Probit avec les procédures d'Heckman. Les résultats du modèle Probit montrent que les hommes et les femmes chefs qui ont un accès limité au crédit sont influencés par de différentes typologies de facteurs. Pour les hommes chefs, le niveau d'intégration des marchés ainsi que les indicateurs de la richesse et du risque (la valeur des biens de production possédés et le niveau du revenu ménager) sont des indicateurs importants pour déterminer si un ménage a un accès limité au crédit. Pour les femmes chefs, seulement le niveau du revenu ménager est considéré comme facteur important.

Les résultats de la deuxième équation (procédure d'Heckman) suggèrent que le capital humain (éducation) et les indicateurs de la richesse et du risque (la tenue de la comptabilité, la valeur des biens de production possédés, le niveau de revenu ménager) sont des facteurs importants pour déterminer l'intensité d'utilisation du crédit formel parmi les hommes chefs. De l'autre côté, la valeur des biens de production possédés et le statut de leadership sont les facteurs qui influencent remarquablement l'intensité d'utilisation du crédit formel parmi les femmes chefs. Généralement, ces résultats révèlent le besoin de développer des interventions spécifiques sur le genre afin de favoriser l'accès au crédit sur le marché du crédit formel.

