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**Access to microfinance and intra household business
decision making**

Implication for efficiency of female owned enterprises in Ghana

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Abstract

Inadequate access to credit contributes to poverty among especially women in developing countries. It is evidenced that in patriarchal societies, males are likely to influence investment decisions when loans are granted to their spouses or female relatives. However the existing literature is inconclusive on whether this influence is positive or negative. This study empirically examines the impact of access to microfinance by women, and male involvement in business decision making on efficiency of small scale enterprises in northern Ghana. We found very low level mean technical efficiency of 40 percent indicating that output of the enterprises could potentially be more than doubled without employing additional inputs. Moreover access to microfinance increases efficiency by 11 percent; and enterprises with male spousal influence were less efficient than their counterparts that were independently managed by the women. Furthermore, enterprises owned by women who managed more than one business operated at relatively lower efficiency levels.

Keywords: *Stochastic Frontier, Technical Efficiency, Access to Microfinance, Gender, Ghana*

JEL: C51, D13, D24, G21

1. INTRODUCTION

Inadequate access to credit by the poor has been identified as one of the contributing factors to poverty. It is estimated that at least 400 million poor and low-income people are not being served by microfinance (MF) programmes (IFAD, 2004). This situation has serious negative impact on poor households struggling to reduce poverty, vulnerability, and attain food security. In the wake of the world economic and food crisis, households in developing countries are in danger of falling deeper into poverty. In the event of this, women are more vulnerable, since in most cases they bear the task of providing for the household needs. Most microfinance institutions (MFIs) particularly the donor driven ones target women who are believed to give high priority to basic needs such as health services, water, education and infrastructure and are therefore seen as important agents in the fight against poverty especially in the rural areas. Thus increasing women access to microfinance could be a major contributing factor to increasing efficiency in output which could translate into reducing poverty and empowering women. Available literature attests to the potential of microfinance in reducing poverty (Morduch, 1998; Remenyi and Quinones, 2000; Morduch and Haley, 2002; Khandker, 2005; Gobezie and Garber, 2007). For example, an impact assessment survey in Vietnam found that more than one-half of the women who participated in a microcredit programme engaged more in decision making at the household and community levels (CEP, 2006). Also, research has shown that access to credit empowers women to make financial decisions which in turn lead to allocation of greater disposal income to improved nutrition, health status, housing, and education of children (Duflo, 2003).

However the transmission mechanism from availability of credit through women empowerment is not straightforward. Firstly, it has been found that loans could be registered in

women's names but actually accessed and used by male members in a household, and in some cases the women are not aware loans have been taken in their names (Amin, 1993; Harper, 1995; ACORD, 1996). Secondly, many women who access microcredit relinquish the loans to their spouses or fathers-in-law or sons (Goetz and Gupta, 1996; Rahman, 1999, 2001; Kabeer, 2001). Furthermore, even if women access credit, the loan could be invested in male dominated activities, such as livestock breeding, for which they do not have comparative advantage (Goetz and Gupta, 1996; Ngo, 2008). Moreover, norm entrenched division of labour within rural households limit business activities women invest in (Johnson, 2004; Emran et al., 2006; de Mel et al. 2008, 2009). Finally, in typical patriarchal societies, women strategically engage their spouses in decision making regarding the use of microcredit in order to improve their bargaining position within the household, strengthen marital bonds, minimize credit default, and improve access to future credit in the event their loan projects fails (Ligon, 2002; Van Tassel, 2004). There is evidence that engaging male partners or relations in investment decision making does not necessary mean their views steer the outcomes of such decisions, and toward suboptimal outcomes (Silberschmidt, 1992).

Although men are consulted on all issues in patriarchal societies to avoid open confrontations, in reality, the women go with their independent decisions sometimes through manipulating the men (Silberschmidt, 1992). In contrast, a study in Bangladesh found that the most successful families in a small sample studies were those that the husbands and wives work in partnership on economic activities (Todd, 1996). In lieu of the preceding plethora of constraints inhibiting the efficacy of microcredit to rural women there exists limited research on the extent to which access to credit impact efficiency of female own and operated business, and whether involving males in decision making regarding the use of such credits makes such

business more or less efficient. Using primary data collected on women beneficiaries of microcredit in typical patriarchal societies in Ghana we investigate the impact of microfinance on efficiency of female owned small scale businesses, and whether involving males in business decisions making influences the efficiency of such businesses. Chalfin (2000) found that in Ghana several men assist their wives with the overall management of their businesses but do not appropriate the credit.

The political and financial support currently enjoyed by microcredit programmes flows from the belief that, with improved access to credit, rural poor households will be able to raise their living standards by engaging in more lucrative farm and nonfarm income generating activities (Diagne, 1998). In this study we have found very low level mean technical efficiency score of 40 percent implying that output of the enterprises investigated could potentially be doubled without employing additional inputs. Secondly, while access to microfinance increases efficiency of the enterprises, enterprises that had spousal influence were less efficient than their counterparts that were independent managed by the women. The positive impact of microfinance on technical efficiency has been found in some earlier studies (see, e.g., Islam, Bäckman and Sumelius, 2011; Goyal and Suhag, 2003; Tariq and Mohd-Izhar, 2010; Annim, 2010; and Martínez-González, 2008). It is noteworthy that access to credit does not depend on how efficient the women are since financial statements were prerequisites. Indeed a number of the recipients use the credit as start up capitals. Furthermore, enterprises managed by women who operate more than one business were less efficient. We also found that nearness to market, age of individual operating the business, initial endowment, non-formal education, and the number of days spent on processing the products positively impact technical efficiency. On the other hand businesses operated by older individuals were relatively less efficient.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework of the study. Section 3 contains description of the data. The empirical model is presented in section 4. The results and discussions are presented in section 5, while section 5 concludes the paper.

2. Theoretical Framework

The main objective of the study is to establish the link between MF and technical efficiency in the output of MFIs borrowers. The Stochastic Frontier Production Function (SFPF) is employed. For any given combination of inputs, the SFPF assumes the realized production of a firm is bounded above by the sum of a parametric function of known inputs, involving unknown parameters, and a random error, associated with measurement error of the level of production or other factors (Battese and Coelli, 1993). Accordingly, the greater the amount by which the realized production falls short of this stochastic frontier production, the greater the level of technical inefficiency. Following Aigner et al. (1977) and Meeusen and van den Broeck (1977), the stochastic production function is specified as:

$$Q_i = a_i + \mathbf{x}_i' \mathbf{b}_i + v_i + \mu_i \quad (1)$$

where \mathbf{x}_i = vector of inputs (in logarithms); \mathbf{b} = vector of coefficients (input elasticities) v_i = vector of individual specific error term which is assumed to be symmetrical and normally

distributed $\mu_i =$ non-negative random variables, associated with technical inefficiency of production with truncated normal distribution with mean $z_i\delta$ and variance σ^2 ; and i is respondent's identifier (agro-processor) in the sample. Equation (2) specifies the relationship between technical efficiency and its possible determinants. Thus,

$$z_i = a_i + \mathbf{h}_i' \boldsymbol{\pi}_i + \varepsilon_i \quad (2)$$

where $z_i \in (0,1)$ is the efficiency score of household i ; \mathbf{h} is a vector of explanatory variables; $\boldsymbol{\pi}$ is the vector of coefficients; and ε is a normally distributed error term.

3. Background of the study area and the Data

In Ghana, women constitute about 51% of the total population and also make a substantial proportion of Ghana's informal business sector. However due to gender inequalities rural women have limited access to financial services both in the formal and in the informal sectors. Rural banks are very unequally distributed, with the fewest in the Upper East, Upper West and Northern Regions of the country. Within these regions, the ratio of banks to rural clients is 1:100 000 compared with the national average of 1:16 000 to 1:26 000 and one bank could serve an area of over 50 000 km² (IFAD- Ghana, 2000). For the majority of poor people the cost of a trip to a bank is too high, particularly since the process involved in bank loans often requires several trips. In such a situation women are usually further handicapped from using rural banks

since they have problems leaving their children and household duties to travel to the bank. Besides women are mostly not credit worthy as they lack any collateral necessary to access a bank loan. This situation is seen as a major factor that negatively impinges on productivity of women. As a result microfinance institutions within such financially deprived region intend to alleviate hardships and the specific region selected for the study, i.e., the Upper East Eegion (UER), has been a major beneficiary.

According to the most recent Ghana Living Standards Survey round five (GLSS5), the UER is the second poorest Region in the country with about 70% of the population living below the poverty line. However the region has received massive MFIs activities targeting rural poor women. Most of these women engage in agro-processing activities such as rice milling, shea-butter extraction, and malt making. The financial services from MFIs were meant to help these women start their business, boost their output, increase their earnings, and ultimately improve their socio-economic wellbeing. In addition, the society is predominantly patriarchal with some women obtaining permission from their husbands before taking loans and also engaging their husbands directly in business decision makings. To the best of our knowledge no impact assessment study has been done to evaluate the efficacy of microfinance within the region.

The data for the study was obtained in 2011 through a random survey of 500 microenterprises managed by women within the UER. Questionnaires were administered to the randomly selected respondents in a face-to-face interview. The questions included in the interview borders on productivity and input usage, access to microfinance, initial savings, involvement of spouse in decision making on loan collection and business activities, the number of business activities the woman engages in simultaneously, the location of the business, and several other socio-demographic characteristics.

4. Empirical model

The first empirical model could be specified as follows:

$$\ln(\text{output})_i = a + \alpha \ln(\text{labour})_i + \beta \ln(\text{finputc})_i + \delta \ln(\text{vinputc})_i + \nu_i + \mu_i \quad (3)$$

Where *output* = value added, *labour* = number of people engaged in the business, *finputc* = capital input, *vinputc* = direct materials, while ν and μ are as defined in equation (1). The second stage of estimation is the tobit model for determinants of technical efficiency. This was to determine what factors explain the technical efficiency among the agro-processors in the upper East Region of Ghana. The tobit model, which is equation (4), is used because μ is truncated (i.e., $1 \geq \mu \geq 0$).

$$\text{efficiency}_i = \beta_0 + \beta_1 \text{kasena}_i + \beta_2 \text{bwest}_i + \beta_3 \text{age}_i + \beta_4 \text{agesq}_i + \beta_5 \text{depend}_i + \beta_6 \text{numacty}_i + \beta_7 \text{oldsav}_i + \beta_8 \text{dysprdt}_i + \beta_9 \text{permhhh}_i + \beta_{10} \text{conbs}_i + \beta_{11} \text{acesmf}_i + \boldsymbol{\theta} \mathbf{D}_i + \varepsilon_i \quad (4)$$

where \mathbf{D}_i = is a vector of dummy variables for categories of educational levels and β_i and $\boldsymbol{\theta}$ are coefficients; *efficiency* signify technical efficiency score; *kasena* and *bwest* are spatial dummy variables employed to capture two major market areas; *age* and *agesq* signify age and the square of age, respectively; *depend* is the number of dependants the respondent has; *oldsave* is initial savings; *dysprdt* is number of days spent processing the product; *acesmf* is access to microfinance; *conbs* implies male involvement/control of the business; and *permhhh* signifies

permission needed from husband to borrow. The Hausman test for endogeneity indicates *acesmf* is endogenous hence appropriate instrumental variables (IVs) were used. The IV equation in reduced form is:

$$acesmf = \Pi_0 + \Pi_1 frnsours + \Pi_2 hppbor + \xi \quad (5)$$

Where *frnsours* is number of friend with loans, and *hppbor* is the number of household members who had access to loans. Note that *frnsours* and *hppbor* are IVs for *acesmf* ; $cov(acesmf, IV) \neq 0$ but $cov(IV, \varepsilon) = 0$. These two variables are used as instruments because friends and household members are believed to be the best people who motivate their peers to either go in for a MFI loan or not. Equations (4) and (5) were estimated as a two-step tobit regression model with endogenous regressors.

5. Results and Discussions

Table 1 provides the description of the data used for the study. The variable **acesmf** (access to MF) is a dummy variable which takes the value 1 if the respondent has received a loan from a MFI. The mean value of **acesmf** is 0.508 implying 51% of the respondents received loan(s) from an MFI. **Kasena** and **bwest** are district dummy variables for Kasena-Nankani and Bawku West Districts, respectively. The mean value for each of the two Districts is 0.20, suggesting about 20% of the respondents are from each of the two Districts. Both districts have very vibrant market centres with patronage from the neighbouring country, i.e., Burkina Faso. Therefore the

two dummy variables control for the effect of these market centres. The mean age of the respondents is found to be approximately 40 years (with relatively low variance) indicating a larger proportion of the respondents are within the economically active age group. The mean number of dependents within the household (**depend**) is 3.

Table 1. Descriptive statistics of Variables

Variable	Description	Obs.	Mean	S. Deviation
kasena	Kasena Nankana District (1/0)	490	0.202	0.402
bwest	Bawku west District (1/0)	490	0.200	0.400
age	Age in years	490	39.516	11.554
depend	Dependants in household	490	3.124	2.136
frnsours	Number of friends with loans	490	3.002	4.497
hhppbor	Household members with loans	490	0.302	0.606
acesmf	Has received MFI loan(1/0)	490	0.508	0.500
vinputc	Direct materials	438	204.887	731.766
finputc	Fixed inputs	385	195.546	596.746
labor	Number of people engaged	490	1.637	1.231
output	Output(value added)	323	133.181	302.703
numacty	Number of economic activities	487	1.267	1.077
oldsav	Initial savings	457	98.262	132.218
dysprdt	Days in a production cycle	436	10.807	39.247
permhhh	Needs permission to borrow(1/0)	488	0.604	0.514
conbs	A male controls her business(1/0)	489	0.162	0.368
edulev	Educational level:	482		
	No formal education(1/0)	482	0.434	0.496
	Non-formal education(1/0)	482	0.071	0.256
	Primary school(1/0)	482	0.266	0.442
	JSS/Middle school(1/0)	482	0.154	0.361
	SSS/Secondary school(1/0)	482	0.068	0.253
	Post Secondary school(1/0)	482	0.0083	0.091

Source: Household Survey data (2011)

The variable **vinputc** denotes the amount of direct materials used in the processing of the final product valued in Cedis. The variable **finputc** is also valued in Cedis. The variable **labor** is measured as the physical number of people engaged by the respondent in her economic activity,

which includes the respondent herself. **Output** is measured as value added valued in Cedis. The variables **vinputc**, **finputc** and **output** are all valued at prices in Bolgatanga market. The variable **permhhh** is constructed as a binary variable. It takes the value 1 if the respondent must seek permission from her husband, household head or any male member in the household before she accesses a MFI loan, and 0 if otherwise. The mean of **permhhh** is given as 0.604, implying that about 60% of the respondents had to seek permission from their husband or a male member of the household before accessing a loan from an MFI. The variable **conbs**, is binary: it takes the value 1 if the respondent's husband or any male member of the household controls her (respondent's) business, and 0 if otherwise. Its mean value is 0.162 which indicates about 16% of the respondents had their business controlled by a male member of the household. These two variables (i.e., **permhhh** and **conbs**) measure decision making and control of resources in the household respectively. Furthermore **edulev** is a categorical variable measuring the highest educational level of the respondent. The mean of each level (category) of education shows the proportion (percentage) of the respondents in that category. Of this variable 43.4% have no formal education, 7.1% have non-formal education, 26.6% have Primary school education, 15.4% have JSS/Middle school education, 6.8% have secondary school education, while 0.083% has post secondary school education. The *no formal education* is used as the reference category.

Table 2 presents the results of the stochastic frontier production function. The variables used for the estimation are the natural logarithm of the value added as the dependent variable (i.e., **ln(output)**), and the independent variables are natural logarithm of labour (i.e., **ln(labour)**), direct materials (i.e., **ln(vinputc)**) and capital (i.e., **ln(finputc)**). With the exception of the coefficient of labour which is statistically different from zero at the 5% level, the coefficients of the remaining inputs were significantly different from zero at the 1% level. The constant which is

a measure of the level of technology in use is also significant at 1% level. In addition the log of the variance of the inefficiency component of the error term which is denoted **lnsig2u** is also significant at 1% level.

Table 2: Stochastic Frontier Production Function of Microenterprises in UER of Ghana

Variables	Coefficients	Standard errors
log (Labour)	0.2529346	(0.113131) **
log (Direct materials)	0.0005006	(0.0000994) ***
log (Capital)	0.2920145	(0.0506867) ***
constant	4.075634	(0.2162488) ***
σ_v^2	-1.342383	(0.2917527) ***
σ_u^2	0.8911313	(0.1532508) ***
Lambda ($\lambda = \sigma_u / \sigma_v$)	3.054931	(0.1751034) ***
Observations	271	
Wald chi2(3)	101.02***	
Likelihood-ratio test: $H_0 : \sigma_u = 0$	$\chi^2(1) = 26.47***$	

Note: *= significant at 10%; **= significant at 5%; ***=significant 1%; standard errors are in parentheses

The likelihood-ratio test of no differences in technical efficiency among the producers was rejected at the 1% significant level. This indicates there are technical inefficiencies among the women agro-processors. Also the Wald test of the overall fitness of the model is also significant at 1% level. The number of observation used for the estimation is 271 due to omitted values/ responses for the inputs and output variables.

The coefficients of the logarithm of labour, log of direct materials and log of capital are 0.2529346, 0.0005006 and 0.2920145 respectively. This suggests that if labour is increased by

1% then output would increase by 0.25%. Also if direct materials are increased by 1% then output would increase by 0.0005%. Again an increase in capital by 1% increases output by 0.29%. The sum of the coefficients of the inputs is given as 0.545. An F-test suggests that the scale of production is less than unity attesting to the fact that inefficiencies exist in the agro-processing businesses manage by women.

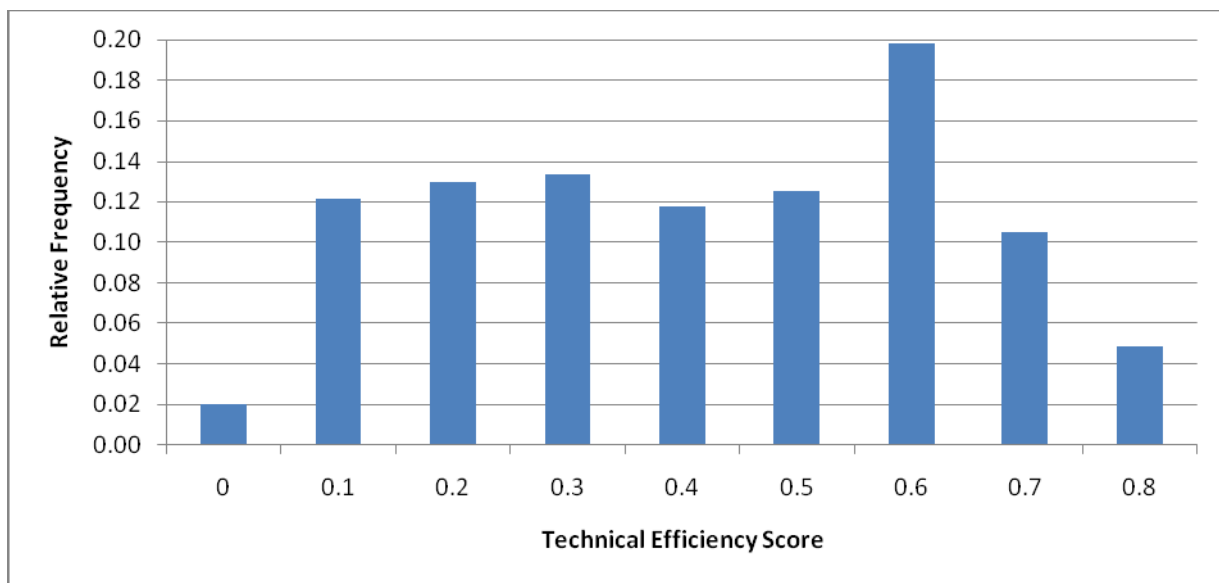


Fig. 1: distribution of technical efficiency scores

Fig.1 presents the distribution of technical efficiency among the respondents. The minimum and maximum technical efficiency scores are 0.001 and 0.846, respectively. About 62% of the respondents operate at technical efficiency levels between 0.001 and 0.50 indicating majority of the respondents have the potential to double output without employing additional inputs. The descriptive statistics on the other hand show that the mean technical efficiency is 40%.

Table 3 shows the results of the estimation of the drivers of efficiencies among the women agro-processors. A two-step tobit regression with endogenous regressors is employed. The results indicate the coefficients of the District level dummies (**kasena** and **bwest**); initial savings (**Oldsav**); number of days in a production cycle (**dysprdt**); and permission from husband before borrowing, which measures the intra-household decision making; and power play (**permhhh**) variables are all significantly different from zero at 1% level. Also the coefficients of access to MF dummy (**acesmf**), the number of income generating activities engaged in by the respondent (**numacty**), and control of business by a male member of the household (**conbs**) are significantly different from zero at a 5% level. The coefficients of dummy for non-formal education, age of the respondent and age-squared are significant at 10% level. However the coefficient of the number of dependants (**depend**) is not statistically different from zero. The **acesmf** variable was instrumented with **frnsours** and **hhppbor**. A spearman's correlation coefficient for the test of the suitability of the variables as instrumental variables indicates their correlation coefficients (**frnsours**(0.4191)) and **hhppbor**(0.4100)) are significant at 1% level in explaining **acesmf**.

Table 3: Determinants of technical efficiency among microenterprises in UER of Ghana

Variables	Coefficients	Standard Errors
Received MFI loan(1/0)	0.108	(0.0462) **
Kasena Nankana District(1/0)	0.171	(0.0399) ***
Bawku west District(1/0)	0.171	(0.0386) ***
Age in years	0.0116	(0.00696) *
Age-squared	-0.000129	(7.32e-05) *
Dependants in household	-0.00494	(0.00635)
Number of income generating activities	-0.0592	(0.0278) **
Initial savings	0.000259	(8.70e-05) ***
Non-formal Education	0.128	(0.0663) *
Primary School	-0.0102	(0.0345)
JSS/Middle	0.0174	(0.0368)
SSS/Secondary	0.0665	(0.0533)
Post Secondary	0.0211	(0.117)
Days in a production cycle	0.000719	(0.00028) ***
Needs permission from spouse to borrow (1/0)	-0.113	(0.0327) ***
Male controls her business(1/0)	-0.0687	(0.0285)**
Constant	0.129	(0.153)
Observations	246	

Note: *= significant at 10%; **= significant at 5%; ***=significant 1%; standard errors are in parentheses

The coefficient of **acesmf** is positive implying women who have accessed or received MFIs loans are more efficient than their counterpart non-beneficiaries. On the average beneficiaries are 11% more efficient than non-beneficiaries. This could be so because those who borrow from MFIs are also given training in business management and other related financial management. These trainings are supposed to enhance the skills of the MF beneficiaries. Secondly by virtue of the fact that these women took loans from MFIs, they are compelled to work harder so as to make enough profits to repay the loans and the accompanying interest. These are motivations for the beneficiaries of MF to be more efficient than the non-beneficiaries.

Secondly, the District level dummy variables: **kasena** and **bwest** have positive impact on efficiency. This suggests that women agro- processors in the Kasena-Nankani and Bawku West

Districts are more efficient than their counterparts in the Talensi-Nabdan, Bongo and Builsa Districts. Based on the coefficients, women processors in kasena Nankani and Bawku West Districts on the average are 17% more efficient than their counterparts in the Talensi-Nabdan, Bongo and Builsa Districts. However there is no difference in efficiency between Kasena Nankani and Bawku West Districts. As indicated earlier, both the Kasena-Nankani and Bawku West Districts have very vibrant and well patronized market centres. It is possible these give good returns on the output of the processors in those Districts thus incentivizing them to be more efficient.

Thirdly, the coefficient of the **age** variable indicates that age positively impacts efficiency until at the maximum age of 45 years, beyond which age has a negative impact on efficiency. This finding contrast with Tariq and Mohd-Izhar (2010) who found a positive relationship between ages of entrepreneurs of businesses that benefitted from MFIs and technical efficiency.

Fourthly, the variables **oldsav** and **dysprdt** have positive impact on efficiency. The respective coefficients are 0.000259 and 0.000719. By implication the more one saves initially before the start of her agro-processing business, the higher is her efficiency level. In the same vein the longer the number days used to process the direct materials into finished products the higher the efficiency level. Thus ones efficiency level increases as she spends more days in processing her products.

Fifthly, the coefficient of the dummy variable for permission from husband or household head before borrowing (**permhhh**) and control of business by husband or household head (**conbs**) -- which measure decision making and control of resources in the household, respectively -- both have negative impact on efficiency. The coefficients are -0.0687 and -0.113 respectively. This indicates women processors who usually obtain permission from their

husbands or household head or a male member of the household before accessing MFI loans are less efficient than their counterparts who do not ask for permission before accessing the loans. In a similar vein women processors whose businesses are being controlled by their husbands or household heads are less efficient than those whose businesses are not controlled. This suggests that these category of women experience male dominance and control over their economic activities. A Hausman test for endogeneity was conducted to find out if the control of business by husband or household head (**conbs**) is endogenous. This was rejected, suggesting that **conbs** is an exogenous variable. Thus women are controlled not because they are inefficient or otherwise. In the Upper East Region, like any other part of Northern Ghana, men are very powerful power brokers and have the final say in most matters concerning women or their wives including whether a woman can voluntarily participate in an MFI programme as well as what economic activity the woman engages in and with what resources. This situation can negatively impact on the efficiency level of the women as they are cowed into submitting to the dictates of their husbands.

Similarly the number of income generating activities the respondent engaged in has negative impact on efficiency level with a corresponding coefficient of -0.0592. Thusly, as one engages in one more extra income generating activity her efficiency level declines by 6%. Credit is said to be fungible, in the light of this, any financial resources obtained may find its way in other income generating activities. Thus the agro-processors, may thinly be applying their credit and other financial resources among the various competing income generating activities which negatively affect their efficiency levels.

Finally non-formal education positively impact efficiency. The associated coefficient of 0.128 suggests that respondents who have had non-formal education are 13% more efficient than

those with no education or formal education. This finding therefore buttresses the relevance or importance of the non-formal education programme in the country. It would be recalled that the non-formal education programme has a component of MF. It is therefore possible that participants of the programme are usually given very good training in their chosen income generating activities

6. Conclusion

Increasing women access to microfinance could potentially contribute to increasing efficiency in output and consequently reduce poverty and empower women. However women especially in patriarchal societies face several constraints that could limit access and effective application of loans. Typically men within households may directly or indirectly control the business activities of women beneficiaries of microfinance. Using data on access to microfinance in patriarchal societies in northern Ghana we have investigated the extent to which access to credit improve technical efficiency, and whether male involvement in business decision making improve or negatively impact efficiency of agro-processing enterprises. We found very low mean technical efficiency score among the enterprises. A two-stage tobit estimation of the drivers of efficiency revealed that beneficiaries of MFIs loans are more efficient than their counterpart non-beneficiaries but women who must ask for permission from their husbands or male household heads or any male member of their household before accessing were less efficient than their counterparts who do not ask for permission before accessing loans. Similarly women whose businesses are being controlled by their husbands or household heads are less efficient than their counterparts whose businesses are not controlled. Furthermore, the processors in the Kasena-

Nankani and Bawku West Districts are found to be more efficient than those in Talensi-Nabdan, Bongo and Builsa Districts. Also age of the processor is a positive driver of efficiency. However efficiency declines with an increase in age beyond the maximum age of 45 years. In addition, initial savings and number of days spent in processing one's products are positive drivers of efficient levels. On the flip side the number of economic activities engaged in by the respondent is a negative driver of efficiency.

As a policy implication of the above findings, MFIs desirous of fighting poverty must take into consideration the factors that drive efficiency in the Upper East Region. This is so because these factors if managed well will increase efficiency and this subsequently could be transmitted into poverty reduction.

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