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RESEARCH ARTICLE

THE IMPACT OF MILLENNIUM CHALLENGE ACCOUNT (MCA) FUNDS ON OUTPUT OF FARMERS IN THE EJURA MUNICIPALITY

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ABSTRACT

Agricultural growth and productivity remains central to poverty reduction, particularly in the developing countries, where a large share of the population relies on agriculture and agribusiness for their livelihood. Generally speaking, there is a greater form of limited access to credit by a greater chunk of Ghanaian farmers. The question that can attract multi-billion answers is whether the risks associated with giving loans to farmers in sub-Sahara Africa of which Ghana is no exception are overtly immeasurable. The study made use of cross-sectional source of data. The research work randomly selected 100 beneficiary farmers of the MiDA facility and 100 non beneficiary farmers from the Ejura Municipality, specifically from the major farming territory zones of the area. The study adopted a household production function and analyzes using the Ordinary Least Squared model. Economic growth theory by way of neoclassical growth and endogenous growth models allowed the study to identify some key variables that influence growth within the framework of a production function. The household production function was thus adopted to see how the output and scale of production by farmers changes as a result of the loan facility given to them by the government. The study find out that, the impact of government financial facility on output was seen not to be significant, but the same regression method revealed that there is a positive and significant impact of the financial facility by the government from the MCA on the scale of production of farmers in the Ejura Municipality. The recommended that, financial facility to farmers in the area should be very monumental, such that it will have a significant impact on the output of the farmers.

INTRODUCTION

Agricultural growth has remained one of the greatest issues of concern to the economies of sub-Sahara Africa. It is seen as one of the basic areas which if properly managed would alleviate the severity of poverty that most countries in Africa are saddled with. It must be mentioned without any shred of doubt and reservation that poverty reduction has been in the centre stage of policy discussions. In fact, it is justifiable to say that the greatest issue of concern on the global agenda for world leaders, academia, International Financial Institutions, policy makers and the Advanced Industrialized Countries today, is the issue of poverty. This socially dehumanizing canker has therefore necessitated the need to look for a more active and pragmatic way to addressing the issue once and for all, hence the need to invigorate farmers in the African sub-region with resources, both technical and financial, to help boost agricultural productivity and thus income of the people.
The problems of agriculture in Africa of which Ghana is inclusive are enormous, ranging from low productivity due to inadequate funds, post-harvest losses, through to lack of mechanization.

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In a situation like this, poverty will be a common disease affecting most of the people in the African continent. Indeed, in the 2000/2001 World Bank Report, the then World Bank President James D. Wolfensohn minced no words when he said ''Poverty amid plenty is the world's greatest challenge'', and that the Bank has made it its mission ''to fight poverty with passion and professionalism''. From the foregoing picture, it is very palpable and unequivocal that attempts by governments and other world leaders aimed at reducing poverty and engendering development cannot be overemphasized. The Millennium Challenge Account (MCA) is no exception in this direction. The MCA is originally supposed to address the basic problems that the agricultural sector is beset with, of which low productivity, low farm size and lack of mechanization, cannot be left out. The five-year compact signed in August 2006, actually took off in February 2007 after MiDA was established. It aimed at reducing poverty by raising farmers' incomes through private sector led agribusiness development. The programme was expected to inject approximately $547 million into the Ghanaian economy over the period, and will also benefit directly those living in areas of the country where poverty rates were generally above 40 percent. Programmes under the compact consisted of three projects namely agriculture, transportation and rural services.

The focus of MiDA was on increasing the production and productivity of high value cash and food staple crops in certain areas of Ghana, and to enhance the competitiveness of Ghana's export base in horticultural and traditional crops. It is not gainsaying that the sector is plagued with several constraints, evident by its declining nature in terms of GDP contribution for some years now. This therefore calls for government attention to restore the image of the agricultural sector to enable it to provide employment to a large number of people.

Jean-claude (2010) emphasize that Africa's growth will depend particularly on agriculture, especially in rural areas. It is based on this pretext that the research is conducted into analyzing how the output level, farm size and level of mechanization of beneficiary farmers in the Ejura Municipality are impacted upon by the MCA funds made available to them. That is, the work aims at finding out if in actuality making funds available to farmers has any positive impact on the farming activities of those who benefit from the facility using the MCA as the measuring parameter and Ejura Municipality as the target group. The study objective is to find out how the MCA funds have impacted on the farming activities of beneficiaries.

Literature Review

There has been a plethora of arguments by a gamut of authors espousing the need for assistance basically by governments to help boost productivity of farmers and to also impact on the well-being of the farmers concerned. The role of the agricultural sector is critical in terms of sustainable growth and development. Agricultural productivity and the provision of price incentives for the production and marketing of agricultural commodities are additional measures that can boost agricultural and overall economic growth (Abdulai, 200). It is crucial to find the right balance between the provision of price incentives and the government role in the market, if this prescription is to be adhered to. Some analysts also argue for the taxation of agricultural output.

Hazell (2006) also cites a number of econometric studies which generally find high poverty reduction elasticities for agricultural productivity growth. It is partly in recognition of this that African leaders at the Heads of State of the African Union Summit in Maputo in 2003 committed to allocate up to 10 percent of their budgets to agriculture by 2008. For many developing countries, especially those in Sub-Saharan Africa (SSA), prioritising improvement in the performance of the agricultural sector implies focusing on the predominant small-scale farmer. Improving agricultural marketing systems is critical in this regard (Dorward et al. 2006). Meera et al. (2004) performed a study on Information and Communication Technology: A comparative analysis of three projects from India. The study was conducted that examined the performance of three ICT projects in India. The projects have quite different origins and purposes, but all are concerned with improving the delivery of information to farmers and other rural dwellers. One project is managed by the government of Madhya Pradesh as part of an exploration of governance. A second project is run by sugar cooperatives (with some government support) in Maharashtra and attempts to expand services to growers. The third project is an experiment by a large private agricultural input supplier to provide information to farmers in Andhra Pradesh.

The study describes the organization of each project; discusses the types of farmers involved and assesses their utilisation of the services; and looks at the backgrounds and performance of the functionaries who manage the projects. The projects studied varied with respect to the type of services provided, but these included marketing information, extension advice, information about rural development programmes, and other information from government and private sources.

The study found the following results.

- The ICT projects provided external and on-the-job training for personnel, although there were variations with respect to sufficient orientation towards ICT for agricultural extension.
- All projects reviewed had younger, better educated, male farmers as their primary users, but a government project in a marginal area was fairly effective at reaching poorer and illiterate clientele.
- In the state government project, users most valued access to market information, land records and information on rural development programmes. In the cooperative project, question-and-answer services, accounting, and farm management information were valued most. In the private company experiment, participating farmers valued various types of information on practices, management of pests and diseases, and rural development programmes.

MATERIALS AND METHODS

The study made use of primary data as its basic source. The research work randomly selected 100 beneficiary farmers of the MiDA facility and 100 non beneficiary farmers from the Ejura Municipality, specifically from the major farming territory zones of the area. The research concentrated on these sizeable numbers basically to be able to conduct thorough one-on-one interactions with the farmers to have a firm grasp of knowledge on the study area. Additionally, researches of this nature requires heavy funding to be able to even make the target group willingly avail themselves to release all necessary bits of information needed for the research. That is, it was believed that with the numbers as stipulated above, giving motivation to the selected farmers in the event that they would feel reluctant and unwilling to release the information needed would not be much of a problem. The outcome of data gathered for the research is output levels as measured in terms of such changes in physical output of the beneficiary farmers as compared to times when they were not having access to the external source of financial boost. The explanatory variables for the study basically included the millennium account package given to the farmers as dummy, expenditure on children's education and expenditure on extension officers and post harvest treatment, labour and capital.

Model Design

The study adopted a household production function and analyzes using the OLS model. Economic growth theory by way of neoclassical growth and endogenous growth models allow us to identify key variables that influence growth within the framework of a production function. The household production function is thus adopted to see how the output and scale of the farmers change as a result of the loan facility given to them by the government.

The baseline production function equation model is thus stated in the form as contained in equation (1).

$$Y = AK^{\alpha} L^{\beta} \quad (1)$$

where Y denotes total output and scale of the beneficiary farmers. K is the accumulated capital stock which refers to the type of machinery used by the farmers in their farming business. K therefore captures how capital-intensive the activities of the farming business are about. It should be mentioned that the type of implements and tools used by the farmer will determine the level of productivity of the beneficiary farmers. K simply considers whether the farmers use modern method of farming, which involves the use of such complex machines as tractors, combine harvesters, shellers, only to mention but a few, or use primitive and crude accoutrements including cutlasses and hoes. By every measure of convenience, the level of government assistance made available to the farmers in the Ejura Municipality has the ultimate potential of impacting on the machinery, buildings, tools and other productive instruments and hence the scale type and/or the expansionary capacity of the farming activities of the beneficiaries. It must be emphasized that the expenditures made on beneficiary farmers wards' education can either significantly or otherwise influence the level of productivity of the farmers and hence their output levels. The quantum of assistance given by the government to the farmers, undoubtedly, can have a certain degree of influence on the quality of the individual farmer.

L is the accumulated stock of human capital which is the labour force and is determined in relation to total population (see Odedokun, 1996 and Sogotemi, 2000). L, which is labour, therefore captures the type of labour used by the beneficiary farmers in their farming business. A is research and development carried out by the farmers that may have positive though indirect effects on their farming business, proxied by the degree of extension services and post harvest techniques employed by the farmers to boost or preserve their productivity or output in the end. This is represented by Esp. A as a function therefore captures the expenditure on the farmers' wards' education (Sch) as an element in it. A can therefore be simplified in equation (2).

$$A = f(Esp, Sch) \quad (2)$$

Substituting equation (2) into equation (1) gives equation (3).

$$Y = F(K, L, Esp, Sch) \quad (3)$$

In an effort to capture the degree of impact that the government loan financial facility can have on the volume of output and scale by the farmers, Gov is therefore included in the model. The resulting equation is yielded as:

$$Y = F(K, L, Esp, Sch, Gov) \quad (4)$$

Taking the natural logs of both sides of equation (4) gives equation (3.5) below.

$$\ln Y_j = \beta_0 + \beta_1 \ln K_j + \beta_2 \ln L_j + \beta_3 Gov_j + \beta_4 \ln Esp_j + \beta_5 \ln Sch_j + \varepsilon \quad (5)$$

where j = 1, 2, 3,…….nth farmer.

The βs are the parameters to be estimated, Y_j measures the total output of the beneficiary and non-beneficiary farmers. K_j is the capital stock used in the production process measured in terms of the nature of the machinery used by the jth farmer, L is the unit of labour used by the jth farmer and Esp is the total expenditure incurred by the jth farmer in securing the services of extension officers and preserving their product after harvest to reduce post harvest losses. GOV_j is the financial assistance given by the government to the farmers. GOV therefore is a dummy variable. GOV = 1 for beneficiaries and GOV = 0 for non-beneficiaries. SCH_j is the expenditures the farmers make on the education of their wards, paramount among which are school fees, school uniforms, exercise books and other stationeries, ε is the error term and ln is the natural logarithmic operator.

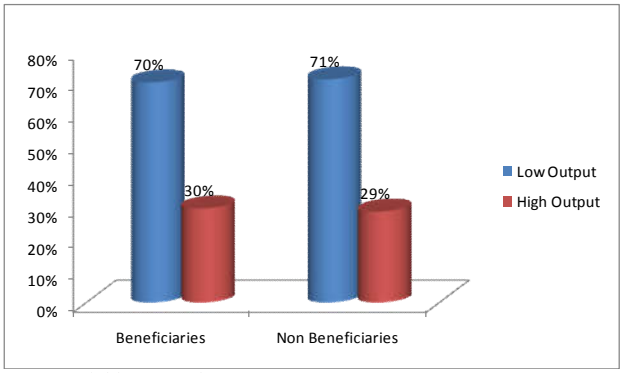
The study is based on the presumption that financially empowered farmers are able to increase their productivity more than those with no external assistance. That is, the generally held conception is that government assistance to farmers has the likelihood or tendency of raising the productivity of farmers on the whole, hence having a positive impact on the farmers. The argument is that the assistance given to the farmers would prominently enable them to procure all necessary inputs that would help augment the overall productivity. Most people are overridden by the conception that farmers generally are, oftentimes, unable to do well because they do not have access to financial assistance. One must not lose sight of the fact that the quantum of assistance given to most farmers does not outstandingly matter but as to whether the assistance would be geared towards the purpose for which it was voted is the most critical and paramount issue of concern. It must be emphasized that most farmers apparently owing to the pervasiveness and severity of the state of poverty in which they find themselves, more often than not, disburse the assistance meant to boost their farming business even before the assistance comes to their hands. Most of the people often see such assistance basically as an increase in merely their transitory income and as such spend it on their current consumption and payment of their children's school fees. In the event of this unfortunate occurrence, financial assistance to farmers, at best, would only have just some marginal positive impact on the affected farmers.

It will be of interest to note that the a priori expectation of access to necessary capital by farmers will generally augment and have positive influence on total production of the farmers. It is also important to note that quality labour by all standards will trigger large volume of production farmers will make. Financial assistance made available to farmers in the right amount and in the right time will, without doubt, improve the productivity of farmers if only the financial boost will be put to good use. Employing the services of extension officers and gaining knowledge in post harvest preservation will bring about improvement in the productivity of the farmer. It should also be stated that expenditures on the education of the farmers' wards will improve output of the farmers, as the knowledge the children acquire will be necessary for the farmers' business. All said and done, expenditures on the education of the farmers' children are expected to have a positive impact on the output, scale and level of mechanization of the farmers.

EMPIRICAL RESULTS AND ANALYSIS

Summary statistics of variables used for the study

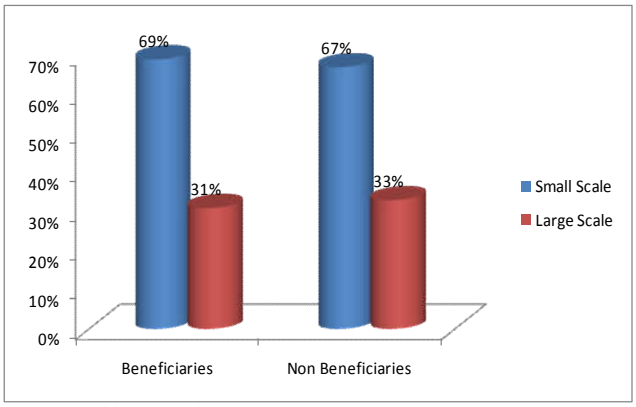
Figure 1 therefore provides the data on nature of the farming activities and the output of the farmers before the financial package was released to the beneficiaries.



Source: Field Data, February, 2014

Figure 1. Output and nature of farming of the respondents prior to the facility

As suggested by the level of output of the respondents, the percentage of the beneficiaries before the facility that had low output is 70%, whilst 30% of them were in the range of high output. It is also shown that 71% of the non-beneficiaries were low-output farmers whereas 29% of the non-beneficiaries before the facility were high-output farmers. It can be said that the output position of both the beneficiaries and non-beneficiaries before the facility was roughly not different from each other. This is because a greater number of the respondents were low-output farmers. Figure 2 also displays the size of farms of the respondents for both the beneficiaries and non-beneficiaries before the financial package. It is clear from Figure 2 that 69% out of the 100 beneficiaries engaged in small-scale farming, whilst 31% engaged in large-scale farming, before the facility.



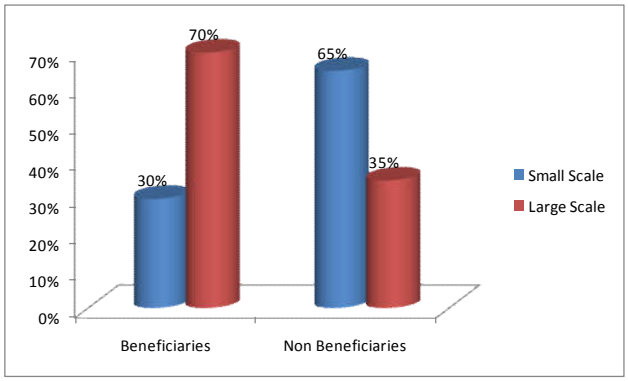
Source: Field Data, February, 2014

Figure 2. Distribution of scale of farms

This tells that before the facility, only 31% of the beneficiaries were producing on large scale. It can also be seen that as 67% of the non-beneficiaries engaged in small-scale farming, 33% did produce on large-scale. It can be noted that there is no major difference between the beneficiaries and non-beneficiaries in terms of size of farms before the facility.

Comparative Analysis of Financial Facility from the Millennium Challenge Accounts and the Scale of Production

This sub-section looked at how the financial facility accessed by the 100 beneficiary farmers had influenced their scale of production. Scale of production as used in this study refers to the size of acreages the farmers cultivated. For purposes of qualitative analysis, if the size of acreages a farmer cultivated was less than five acres, the farmer was seen to engage in small-scale farming. Similarly, if the size of farm was either five acres or more, the farmer concerned was noted to engage in large-scale farming. Percentages of the farmers were calculated and represented in a group bar graph to show the number of beneficiaries and non beneficiaries engaged in both small scale and large scale farming. The analysis followed that if the financial facility had made it possible for a large number of the beneficiaries to engage in large-scale farming, then the financial facility was considered a good policy on the surface, which should be encouraged or be made to continue and be replicated in other areas and sectors of the economy, if the parametric results also revealed similar effect. The reverse also holds. Figure 3 provides the pictorial view of the size of farming of both the beneficiary and non-beneficiary farmers.



Source: Field Data, February, 2014

Figure 3. Group bar graph of the size of farming by the farmers

It is clear from the group bar graph that out of 100 beneficiary farmers, 70% of them were engaged in large-scale farming (by the definition of this study) whereas only 30% of the beneficiaries still engaged in small-scale farming. In contrast, the figure displays that 65% of the 100 non-beneficiary farmers engaged in small-scale farming, whereas only 35% of them engaged in large-scale farming. Following the picture painted in the figure, it can therefore be said that the financial facility made it possible for a greater number of the beneficiaries to engage in large-scale production on the surface than the non-beneficiaries' case. As to whether the net impact is significant or not would be confirmed by the regression results. Going by this simple analysis, one can say that the financial facility from the MCA has had positive impact on the scale of farmers and hence the policy is a good one.

Quantitative Regression Analysis Discussions on the Regression Model

To make the analysis more accurate, t-test statistics of significance was performed by the researcher. Table 1 shows the results of the test of significance of the scale of production of the farmers.

Table 1. Two-sample t-test with equal variance for significance of scale of production

Group	Observation	Mean	Standard Error	Standard Deviation
Non Beneficiaries	100	1.356798	.0905084	.9050844
Beneficiaries	100	2.504005	.0528293	.528293
Combined	200	1.930402	.662212	.9365098
Difference		-1.147207	.1047984	

Source: Field Data, February, 2014

Diff = mean (0) – mean (1) t = -10.9468
Ho: diff = 0 degrees of freedom = 198
Ha: diff < 0 Ha: diff = 0 Ha: diff > 0
Pr (T < t) = 0.0000 Pr (l T l > l t l) = 0.0000 Pr (T > t) = 1.0000

Table 2. Two-sample t-test with equal variances for significance of output of the respondents

Group	Observation	Mean	Standard Error	Standard Deviation
Non-Beneficiaries	100	3.426862	.1154454	1.154454
Beneficiaries	100	4.81119	.0682894	.6828943
Combined	200	4.119026	.0829618	1.173257
Difference		-1.384327	.1341309	

Source: Field Data, February, 2014

Diff = mean (0) – mean (1) t = -10.3207
Ho: diff = 0 degrees of freedom = 198
Ha: diff < 0 Ha: diff = 0 Ha: diff > 0
Pr (T < t) = 0.0000 Pr (l T l > l t l) = 0.0000 Pr (T > t) = 1.0000

Table 3. Regression results of the Size of Farming by the Respondents

Variables	Coefficients	Standard Errors	T-test	P-values
lnK	.0216997	.0482363	0.45	0.653
lnL	.3047763	.0529203	5.76	0.000
Gov	.0515932	.0267655	1.93	0.055
lnSch	.0064017	.0128602	0.50	0.619
lnEsp	.4756959	.0543901	8.75	0.000
Constant	-3.076951	.1246669	-24.68	0.000

Source: Field Data, February, 2014
Prob > F = 0.0000 Y = Scale, dependent variable, R-squared = 0.9769, Adj R-squared=0.9763

Table 4. Regression results of the output of the respondents

Variables	Coefficients	Standard Errors	T-test	P-values
lnGov	-.0012464	.0085529	-0.15	0.884
lnEsp	.9370267	.0173803	53.91	0.000
lnL	.0482659	.0169106	2.85	0.005
lnK	.015498	.0154139	1.01	0.316
lnSch	.0044596	.0041095	1.09	0.279
Cons	-1.715951	.0398372	-43.07	0.000

Source: Field Data, February, 2014
Prob > F = 0.0000, R-squared = 0.9985, lnY = Output, is dependent variable

The test statistic shows the difference between the means of the beneficiaries and non-beneficiaries. The mean difference is statistically less than zero. This means that the mean difference is not zero but a value statistically different from zero. This implies that the beneficiaries' scale of production is statistically different from the non-beneficiaries' case. To make the analysis more convincing, t-test statistics of significance was carried out. Table 2 shows the results of the test of significance of the level of output of the farmers. The test statistic shows the difference between the means of the beneficiaries and non-beneficiaries. The mean difference is statistically less than zero. This means that the mean difference is not zero but a value statistically different from zero. This implies that the beneficiaries' output is statistically different from the non-beneficiaries' output. The OLS regression results in table 3 below showed that the government financial facility from the MCA was positively related to the scale of production.

This sign met the a priori expectation of the research. The results show that as the amount of government facility increases, there is the likelihood of the beneficiaries to engage in large-scale farming. This positive relationship is statistically significant at 10% level of significance from the p-value. Economic theory suggests that investment is a function of savings and savings a function of income, which invariably implies that an increase in income leads to increases in capital. As the beneficiaries are provided with larger working capital, it increases the possibility of them engaging in large-scale production. This is because as the level of capital increases, the farmers are able to procure all the necessary supporting implements and materials needed for large-scale production. The analysis therefore rejects the null hypothesis in favour of the alternative that government financial facility has a significant impact on the scale of production of farmers in the Ejura Municipality.

As shown in the table 4, the financial facility from the MCA had a negative relationship with the output of the beneficiary farmers. The sign did not meet the expectation of the study. This negative relationship is not significant. This clearly shows that the facility had no impact on the level of output of the beneficiaries. Conceptually, the farmers believed that declaring the right volume of output could be used as a basis to tax them heavily. In their quest to avoid the likelihood of tax payment, the farmers did not disclose the actual bags of maize they produced as a result of the facility. Another possible explanation could be that the interest rate and mode of repayment of the facility was not convenient enough to enable it have any impact on the output of the beneficiary farmers. It could also be that the erroneous mentality that any financial facility from the government is seen as a mere increase in the transitory income of the receivers influenced the farmers much, and consequently they did not channeled the loan facility into increasing their output.

Conclusion and Policy Recommendation

The main thrust of this study was to assess the impact of government assistance from the MCA to farmers with Ejura Municipality as a case study. Based on the findings the following economic policy implications and recommendations have been outlined:

- Having established that government financial assistance has no significant impact on the output of farmers invariably implies that there is the need for government to always give assistance with low interest and flexible mode of payment to farmers, if only the government wants it to have a significant impact on output of the farmers in the Ejura Municipality. That is, financial facility to farmers in the area should be very monumental, such that it will have a significant impact on the output of the farmers.
- According to the results of the study, government financial facility had a positive and significant impact on the scale of production of farmers in the Ejura Municipality. This implies that as the loan facility from the government to the farmers increased, it contributed to an increase in the scale of production. The policy recommendation is that governments and policymakers should, as a matter of rule, ensure that giving loan facilities to the farmers in Ejura Municipality with convenient mode of repayment would readily be made available to the farmers, as this would bring about increases in scale of production, leading to increases in output.
- Labour was also found to have a positive and significant relationship with output and scale of production of farmers in the Ejura Municipality. The policy suggestion is therefore that the government should unrelentlessly devote more resources towards ensuring that labour would be given some basic literacy and skills training necessary for the improvement of the activities of farming to enable them contribute significantly towards output growth of farmers.

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