MICROFINANCE BANKS (MFBS) AND RURAL ENTREPRENEURIAL DEVELOPMENT IN NIGERIA: EVIDENCE FROM LAPAI LOCAL GOVERNMENT AREA OF NIGER STATE

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Abstract

The paper evaluates the impact of microfinance banks on rural entrepreneurial development in Lapai, Niger State. To this end, T-test and Logistic regression model were applied on a cross-section of 160 entrepreneurs in the study area. The results show that entrepreneurs' income has increased owing to their access to microfinance bank credit facility. Also the level of entrepreneur education facility was found to be positively related to access MFB and its facilities, even though gender have had negative relationship. The study, therefore, recommends for an expansion of microfinance banks to interior areas of the local government, and mass campaign on the importance and role of microfinance bank to rural people.

Keywords: *Banks, Nigeria, Rural Entrepreneur, Microfinance*

1.   Introduction

In recent times, Nigeria and other third world countries have been urged to borrow a leaf from Bangladesh by according top priority to the development of rural areas through microfinance banks **(Microfinance Africa, 2011)**. This is expected to provide more entrepreneur opportunities and appropriate climate for investment. It also enables the rural areas to experience fast development, by exposing the poor to more prospective venture in their respective societies and communities. Microfinance services are thus vital in the lives of the rural poor, because most of the income earners either small or medium scale entrepreneurs in rural areas mostly lack the necessary financial services and support, especially the modern savings culture and loans facilities from the commercial banks (Chavan and Ramakumar, 2002). The complaint's usually made by the rural poor is that, conventional banks had remained exclusively reserve for the

rich, in the words of *Microfinance Africa* (2011), "Conventional banking is banking for the rich, whereas micro financing is banking for the poor", which makes savings more difficult for the rural areas. The problem emanated from the fact that Nigeria financial sector is largely concentrated in urban areas, leaving the majority of the rural population with no access to financial services. Rural areas having a large concentration of poor people with business philosophy, lack finances to put them into practice particularly in areas of commerce, agriculture, mining, etc. Thus, the role played by rural poor individuals in every society cannot be de-emphasised, because a strong and healthy economic growth cannot be achieved without putting in place well focused plans that will increase access of rural poor to factors of production.

However, the size of the unserved market by the existing financial institutions is large. The aggregate micro-credit facilities in Nigeria are very marginal, accounted for about 0. 2 % of Gross Domestic Product (GDP) and less than one per cent of total credit to the economy (CBN, 2011). In 2008, 79 per cent of the total population in the country had been unbanked out of which 68% were rural dwellers (CBN, 2011). This revealed the existence of a huge gap in the provision of financial services to a large number of the economically active poor and low income households in rural areas. The effect of not addressing this situation appropriately has further accentuated poverty and slow

down growth and development. Perhaps, it was in recognition to these that Microfinance Banks were launched in 2005 with a view to promoting inclusive financial system, creating sustained financial awareness and contributing to poverty alleviation.

Today, it is clear that a large percentage of the population is still excluded from financial services, and has made little headway towards the goalpost. Although, little empirical work (Irobi, 2008; Olusanya and Oluwatosin, 2012) on rural microfinance banks are available in the LDCs same are not found in rural Areas of Niger State. It is against this background that this study attempts to evaluate the impact of microfinance banks on rural entrepreneurial development of Lapai Local Government Area of Niger State, Nigeria. To achieve this objective, the study is divided into 5 sections including this introduction. Section 2 deals with theoretical framework and literature review. Section 3 focusses on the methodology of the study. Section 4 covers analysis of results and discussions. And finally, section 5 concludes the study.

2. Theoretical Framework and Literature Review

2.1 Theoretical Framework

Capital in the form of money is crucial for entrepreneurial development mostly in rural areas of the country. One way money affects entrepreneur's belief is through its impact on their perception of

their problem situation (Harper, 2003). The self-efficacy and degree of entrepreneur's belief include the nature of the goals to be achieved and the requirements of transactions to be carried out. In the context of microfinance bank facilities, a simple dynamic model of consumption and production decisions by micro-entrepreneurs was analysed. The model entails that, the entrepreneur's output requires financial capital and labour, whose production function requires lumps of financial capital and the entrepreneur cannot borrow due to lack of access to microfinance institutions. The micro-entrepreneurs in this case is assumed to maximise the present value of expected lifetime utility over a finite horizon. The simple dynamic model as a success for rural finance programmes is measured using the coverage of the poor and their demand for financial services; accessibility and equal gender access to the programmes (Zeller, 1997). When households are constrained on the credit market, the opportunity cost of liquidity is given by the conditions under which savings are made (Key, 2000). But in terms of economic policy for rural poor households, the importance is based on improving the institutions and instruments used for savings, and not only access to credit. Indeed, the models rule out one potentially important and interesting mechanism with which able individuals may overcome borrowing constraints (through access to credit facilities by Microfinance institutions) and thus

escape poverty traps through life-cycle savings. As rural entrepreneurs are more likely to be in a poverty trap, the model is used to investigate the significance of microfinance capacities as a function of several parameters of interest. As such, Knight (1942) sees the entrepreneurs as the calculated risk taker where reward ensures from bearing uncertainty.

2.2 Literature Review

2.2.1 Concepts of MFBs and Entrepreneurial Development

Microfinance is a wide issue which tends to encompass the development of medium and low rural entrepreneurial. The term is seen from deferent perspectives, according to Irobi (2008), microfinance is the provision of financial services such as credit, savings, micro-leasing, micro-insurance and payment transfers to economically active poor and low income households to enable them engage in income generating activities or expand/grow their small businesses. ADB (2008) sees "Microfinance as the provision of a broad range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low-income households and, their micro-enterprises". The term also provides a platform for the under-banked segment of the economy that may not be able to meet the stringent requirements of the conventional banks (Olusanya and Oluwatosin, 2012). Irobi (2008) opines that MFBs serve as financial intervention that focusses on the low-

income group of a given society. As such, it is an economic development approach which tends to benefit low-income women and men Ledgerwood (2000). On the other hand, the term microfinance targets the entrepreneurial poor who need help to manage their economic activities that will eventually increase their income (Brandsma and Hart, 2004). Though Rutashobya and Nchimbi (1999) describe an entrepreneur as the one who has the willingness and the need to overcome obstacles, to exercise power and accomplish something difficult; has the capacity to meet objectives, face challenges and accomplish tasks. Also, Kaijage and Mwaipopo (2004) assert that entrepreneurs are dynamic and innovative in many aspects of their business which range from management and marketing to production and operations. The development of rural entrepreneurs is therefore necessary through microfinance banks in order to expand their business philosophy, by having access to savings and credit facilities.

2.2.2 Theoretical Arguments and Empirical Literature

Access to modern microfinance facilities are considered to be an important factor in increasing the development of rural entrepreneurs. It is believed that credit augments income levels, increases employment and thereby alleviates poverty, while saving plays a very important role in economic development as it involves mobilisation of resources (UNCDF, 2004; Ogboru, 2009; Barbara

and Dunford. 1999). Saving is consequently invested with an aim to accelerate the growth process which, therefore, raises the hopes and aspiration of rural entrepreneurs. Access to credit enables poor people to overcome their liquidity constraints and undertake some investments such as the improvement of farm technology inputs, increase in production of local goods, thereby leading to an increase in production (Hiedhues, 1995). The main objective of micro-credit according to Navajas *et al*. (2000) is to improve the welfare of the poor owing to better access to small loans that are not offered by the formal financial institutions, but can be facilitated through microfinance institutions.

Diagne and Zeller (2001) argue that insufficient access to credit by the poor just below or above the poverty line may have negative consequences for entrepreneurs and overall welfare. On the other hand, modern access to microfinance banks increases rural entrepreneur's risk-bearing abilities; improve risk-copying strategies and enables consumption smoothing overtime. With these arguments, microfinance is assumed to improve the welfare of the poor.

It is believed that Microfinance Institutions (MFIs) that are financially sustainable with high outreach have a greater livelihood and also have a positive impact on entrepreneur development because they guarantee sustainable access to credit by the poor (Rhyne and Otero, 1992). Some studies have argued that gender empowerment

has a negative impact on access to microfinance banking culture by the poor entrepreneurs' (Goetz and Gupta, 1994 and Ackerly, 1995). Using a "managerial control" index as an indicator of women empowerment, Goetz and Gupta (1994) indicate that the majority of women did not have control over loans taken by them when married, despite women being the main target of the credit program. The management of the loans were made by the men thereby compromising the development objective of lending to the women (Goetz and Gupta, 1994). Though evidence from Ackerly (1995) using an accounting knowledge as an indicator of women empowerment concluded that women are marginalised when it comes to access to credit. On the contrary, later studies by Goetz and Gupta (1996); and; Ardener and Burman (1995) indicate that women are very reliable microfinance clients, demonstrating more discipline than men in making regular savings deposits and loan repayments. As such, adequate supplies of micro-savings and credit facilities by microfinance banks will leads to more supply of services needed by women, because they have the largest share of the poorest segments of the population and often pursue independent economic activities. In essence, the funds managed by the women are likely to have a greater effect on the welfare of the entire family than those of the men.

In relation to the role of Micro Entrepreneurs (MEs) in creating employment opportunities, Macuja (1981) argues that the rate of labour absorption by this sector is significantly higher, relative to that of urban entrepreneurs. It is thus observed that in the sector of industrial employment, the contribution of MEs is rather more pervasive compared to the large and the medium scale industries and more pronounced at the grass-root level. To this end, Zeller and Sharma (1998) argue that microfinance can aid in the improvement or establishment of family enterprise, potentially making the difference between alleviating poverty and economically secure life. Buckley (1997) on the other hand, in his study covering Kenya, Malawi and Ghana, came to the conclusion that there was little evidence to suggest that any significant and sustained impact of microfinance services on clients in terms of entrepreneur development, increased income flows or level of employment. Though, Burger (1989) indicates that microfinance tends to stabilise rather than increase income and tends to preserve rather than to create jobs. A study of thirteen MFIs in seven countries carried out by Mosley and Hulme (1998) concludes that household income tends to increase at a decreasing rate as the income and asset position of the debtors is improved. Diagne and Zeller (2001) study in Malawi suggests that microfinance do not have any significant effect on household income meaning no effect on entrepreneur development. Investing in rural entrepreneur's activities will have no effect in raising household income because the infrastructure and market are not developed. Coleman (1999) also

discovers that the village bank credit did not have any significant and physical asset accumulation. The women ended up in a vicious cycle of debt as they use the money from the village banks for consumption purposes and were usually forced to borrow from money lenders at high interest rate to repay the village bank loans so as to qualify for another. The main observation from this study was that credit was not an effective tool to help the poor out of poverty or enhance their economic condition. It also concluded that the poor are too poor because of some other hindering factors such as lack of access to markets, price stocks, unequal land distribution but not lack of access to credit. This view was also shared by Adams and Von Pischke (1992). However, on the educational level of rural entrepreneurs, Durrani *et al.* (2011) study focusses on the effect of microfinance on reducing poverty in Pakistan. The study used 68 observations and applied a Pearson's correlation on three independent variables and one dependent variable namely marital status, age, education level and microfinance (MF) respectively. The result shows that there is a positive relationship between education and microfinancing.

3. Methodology

3.1 Data Type, Instrument of Data collection, Sample Size and Sampling Technique

The study applied a cross-sectional data set sourced from Lapai Local Government Area of Niger State using structural questionnaire instrument. Research assistants were hired to help in administering the questionnaires which was translated into Nupe native language for easy response. The sampling frame consists of all small scale entrepreneurs. A non-probability sample method in form of availability sampling technique was used to select 160 entrepreneurs, using Israel (2009) approach in determining sample size from the study area.

Macuja (1981) looks at the role of micro-entrepreneurs on employment opportunities, and this study equally looks at the role of microfinance bank in enhancing rural entrepreneurs' activities by applying an independent T-test, while logistic model was used to determine the effect of rural entrepreneur on those that have access to microfinance bank against those without access, as that of Pitt *et al.* (2003).

3.2   Models Specification

As a result, the cross-sectional data set collected was analysed using the STATA version 9.1 econometric software. The statistical model for independent t-test and logistic regression are as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

Where for t-test $\bar{x}_{1,2}$ are the mean of income before and after banking with microfinance bank, $S_{1,2}$ represents the sample or amount of income and $n_{1,2}$ indicates the number of observations for the two samples.

$$P_r (M_i = 1/0) = \alpha + \beta_1 \text{ Gndr} + \beta_2 \text{ Educ} + \beta_3 \text{ Incm} + \beta_4 \text{ CrdR} + \mu_i \ldots\ldots\ldots\ldots \text{(2)}$$

While for logistics P_r (M_i = 1/0) refers to probability of banking with microfinance bank, α represents the constant parameter of the equation, β_s stands for coefficient of the independent variables, while variables such as gender a dummy variable taking the value of 1 as male and zero otherwise; education level also a dummy variable consist of 1 no formal education, 2 primary certificate, 3 secondary certificate and 4 tertiary certificate; current entrepreneur income; and credit having values as 1 for taking credit loan at the bank and zero otherwise areconsidered as independent variables with error term μ_i.

4.   Analysis of Results and Discussions

The results of this study were obtained from inferential statistics such as t-test and logistic regression. From the t-test side, 160 observations were taken on individual income before and another 160 on individual income after banking with Lapai microfinance bank and the results are shown in Table 1.

Table 1: Independent T test Result

Lapai Microfinance Bank	Mean Value
Income Pre – Access to Microfinance	30318.75
Income Post – Access to Microfinance	68443.75
Standard Deviation of Income Pre	51432.48
Standard Deviation of Income Post	118896.1
Combined	49381.25
Difference	-38125
Diff = 0	0.0002
Diff > 0	0.9999
T	**-3.7227****

Significant at 5% (**)
Source: Fieldwork, September, 2012.

From Table 1, the mean of individual income before banking with Lapai microfinance bank is 30318.75, with standard deviation of 51432.48. On the other hand, the mean incomes of entrepreneurs after banking with Lapai microfinance bank are 68443.75, with standard deviation of 118896.1. From the results, it could be concluded that the establishment of Lapai Microfinance Bank increased income of rural entrepreneurs that bank with Lapai Microfinance Bank by more than double. The two sample **t** test results show that with a significance level of 0.0002, we say that there is evidence, at 5% level using two tailed. This suggests that there is a significant difference

between income before and after operating with microfinance bank. These results are in line with the findings of Mosley and Hulme (1998) study of thirteen MFIs in seven countries. On the contrary, the result of this study did not agree with the findings of Diagne and Zeller (2001), whose findings in Malawi suggested that microfinance do not have any significant effect on household income and by implications no effect on entrepreneur development.

Furthermore, to examine the effect of microfinance bank on rural entrepreneurs, this study also use a set of variables like gender, educational level of the entrepreneurs, income level and their access to loan facilities. The logistic regression results are given in Table 2.

Table 2: Logistic Regression Model

Dependent Variable: Access to Microfinance 1 = Access, 0 = Not having Access		
Independent variables:	Gender	-1.0351 (-1.94)*
	Educational Level	0.5652 (2.57)**
	Entrepreneur Income	0.0000 (1.79)*
	Loan Facilities	3.5009 (5.46)***
Pseudo R²		**0.3881**
Value of Likelihood Ratio (LR)		**68.97*****

Significant at 10% (*); 5% (**); 1% (***)
Source: Field work, September, 2012.

Table 2 shows that gender of the entrepreneur has a significant negative relationship with access to microfinance

at 10% level of significance, suggesting that being a man or woman is more likely to reduce access to microfinance, simply because male engages in modern entrepreneurship system than the female particularly on trade. Also the males are more prone to debts than their female counterparts. These findings concurred with those of Goetz and Gupta (1994), whose findings revealed that management of the loans were mostly made by the men (Goetz and Gupta, 1994), even though this is contrary to findings of Ardener and Burman (1995). The coefficient of educational level of entrepreneur is positive and statistically significant at 5%; indicating that the higher the educational level of entrepreneurs the more they engage in microfinance operation. These findings confirmed with the findings of Durrani *et al.* (2011). Similarly, entrepreneurs' income is found to be significantly related to access to microfinance bank and its facilities, suggesting that a microfinance bank operation leads to increase in entrepreneurs' income. This finding supports that of Mosley and Hulme (1998) study of thirteen MFIs in seven countries, though contrary to the findings of Diagne and Zeller (2001). While the loan (credit facilities) coefficient indicates significant relationship to microfinance bank accessibility at 1%, suggesting that the rural entrepreneurs utilised the loan taken from microfinance banks which led to expansion of their businesses. This finding is not in conformity with that of
.

Coleman (1999) whose result showed that credit was not an effective tool for enhancing entrepreneur economic condition. For the R^2 it can be observed that the Pseudo R^2 value is 0.3881 indicating that approximately 39% of the variations in access to microfinance banks are explained by the explanatory variables. Wooldridge (2006) indicate that low *R*-squared does not necessarily mean that a regression equation is useless, as such the Likelihood Ratio (LR) Chi^2 value was found significant at 1% level of significance, suggesting that the model used is adequate.

5. Concluding Remarks

From the foregoing results, it can be concluded that access to microfinance bank increased entrepreneurs' level of income even though gender was found to have had negative relationship with access to microfinance bank in the study area. It can also be concluded that educational level of entrepreneur was more likely to increase their access to microfinance bank and its facilities. The study therefore recommended that there should be expansion of microfinance banks particularly towards the interior areas of the local government as well as mass enlightenment on the importance and role of the bank to rural dwellers. These are expected to promote rural enterprises, generate more employment and reduce poverty amongst rural poor people in the country

References

Ackerly, B. A. (1995), "Testing the tools of Development: Credit Programmes, Loan involvement, and Women Empowerment". IDS Bulletin 26 (3): pp 56-68.

Adams, D. and Pischke, J.D. (1992) "Microenterprise Credit Programmes", déjà vu. *World Development*, 20(10): pp1463-1470.

ADB, (2008), "Microfinance Development Strategy". Retrieved from *http://www.adb.org/Documents/Policies/ Microfinance/microfinance0100.asp?p=pol icies*

Arderner, S. and Burman, S. (1995) *Money-Go-Rounds: The importance of Rotating and Savings Credit Associations for Women.* Berg Publishers Limited, Oxford

Barbara, M. N. and Dunford, C. (1999) "Impact of Credit with Education on Mothers and Their Young Children's Nutrition: CRECER Credit with Education Programme in Bolivia". Freedom from Hunger Research Paper No. 5. Freedom from Hunger. Davis, CA.

Brandsma, J. and Hart, L. (2004) *"Making Microfinance Work *Better* in the Middle East and North Africa", World Bank Institute and World Bank, Middle East and North Africa Region, Finance, Private Sector, and Infrastructure Group

Buckley, G. (1997) "Microfinance in Africa: Is it either a Problem or the Solution?"

World Development, Vol. 25 No 7, pp 1081-1093.

Burger, M. (1989) "Giving Women Credit: The Strengths and Limitations of Credit as a tool for Alleviating Poverty" World Development Vol. 17 No7, pp1017-1032.

CBN (2011) Revised Microfinance Policy Framework for Nigeria

Chavan P, Ramakumar, R. (2002). "Micro-credit and Rural Poverty: Analysis of Empirical Evidence", *Economic and Political Weekly*, 37(10): pp 955-965.

Coleman, B.E. (1999) "The Impact of Group Lending in Northeast Thailand", *Journal of Development Economics*, Vol. 60, pp. 105-141.

Diagne, A. and Zeller, M. (2001) "Access to Credit and its impacts in Malawi" Research Report No.116 Washington DC, USA: International Food Policy. (IFPRI).

Durrani, M. K. K, Usman, A, Malik, M. I. and Ahmad, S. (2011) "Role of Microfinance in Reducing Poverty: A Look at Social and Economic Factors", Preston University Islamabad Pakistan, *International Journal of Business and Social Science* Vol. 2 (21)

Goetz, A.M and Gupta, S. R. (1994) "Who Takes the Credit: Gender Power and Control over use in Rural Credit

Programs in Bangladesh", World Development, Vol. 24 No 1, pp 45-63.

Goetz, A. M; and Gupta, Rina Sen G, (1996) "Who Takes the Credit? Gender, Power, and Control over Loan Use in Loan Programs in Rural Bangladesh", *World Development* 24 No.1pp: 45-63.

Harper, D. A. (2003). *Foundations of Entrepreneurship and Economic Development*. London: Routledge.

Heidhues, F. (1995) "Rural financial markets- an important tool to fight poverty". *Quarterly Journal of International Agriculture* 34(2): pp105-108

Hulme, D. (2000) "Impact Assessment Methodologies for Microfinance: Theory, Experience and Better Practice", World Development. Vol. 28(1)

Irobi, N. C. (2008) "Microfinance and Poverty Alleviation: *A Case of Obazu Progressive Women Association Mbieri, Imo state – Nigeria", Department of Economics, SLU*

Israel, D. G. (2009) Determining sample size. University of Florida, USA, [on line].Available at: http://edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf.

Kaijage, E.S. and Mwaipopo, L.J. (2004). Developments in research on African Entrepreneurship and future prospects. In: Kaijage, E.S. and Mwaipopo, L.J. eds. (2004). *Entrepreneurship Research and Development in Africa: Achievements,*

Challenges and Future Prospects. Dar es Salaam: Mkuki na Nyota Publishers Ltd.

Key, N. (2000) "Savings, Credit, and the Self-Finance of Crop Production in Mexico." *Savings and Development*.

Knight, F.H. (1942) "Profit and entrepreneurial functions", *The tasks of common history: supplement to Journal of Economic History*, 2, pp. 126-32

Ledgerwood, J. (2000), "Microfinance Handbook: an Institutional and Financial Perspective", Washington DC: *The World Bank*, pp.1-2, 63-90.

Macuja, P.C. (1981) "Small Scale Industry Development in the Philippines." *Small Industry Bulletin for Asia and Pacific, United Nations*, New York, No. l.21, pp. 182-189.

Microfinance Africa (2011) Nigeria: Nation, Others Challenged On Development of Microfinance Banks **Daily Champion** September 28

Microfinance Africa (2011) "Nigeria: Yunus, Nobel Laureate, faults Nigeria's microfinance banking" **Business day Online,** September 6.

Mosely, P and Hulme, D (1998) "Micro-enterprise Finance: Is There a Conflict Between Growth and Poverty Alleviation?", *World Development*, 26:5 pp783-790

Navajas, S, Schreiner, M, Meyer, R. L, Gonzalez-Vega, C. and J. Rodriguez-

Meza (2000) "Micro credit and the Poorest of the Poor: Theory and Evidence from Bolivia", *World Development*, Vol. 28, No. 2, pp 333-346, Elsevier Science Ltd.

Ogboru, P. L. (2009) "An Evaluation of Funding Arrangements for Small and Medium Scale Enterprises (SMEs) in Nigeria". Department of Business and Management Studies, St Clements University, British, West Indies

Olusanya, O. and Oluwatosin, O. A. (2012) "Impact of Microfinance Bank on Standard Of Living of Hairdresser in Oshodi-Isolo Local Government of Lagos State", Economics Department, Lagos State University *Journal of Humanities and Social Science*

Pitt, M, Khandker, S. R. and Cartwright, J. (2003) "Does Micro-credit Empower Women? Evidence from Bangladesh". Policy Research Working Paper No. 2998. Development Research Group, The World Bank, Washington, D.C.

Rhyne, E. and Otero, M. (1992) "Financial Services for Microenterprises: Principles and Institutions". World Development, 20 (11), pp. 1561-1571

Rutashobya, K.L. and Nchimbi, M (1999): The African Female Entrepreneur. Knowledge Gaps and Priority area for future research. In: Rutashobya, K. L. and Olomi, R.D. eds. (1999): African Entrepreneurship and Small Business Development Dar Es Salaam; Dar Es Salaam University Press (1996) Ltd. Ch.11.

UNCDF (2004) Microfinance impact assessment report

Wooldridge, J. M. (2006) *Introductory Econometrics: A Modern Approach.* 2nd Edition.

Zeller, M. (1997) "Rural Finance for Food Security for the Poor, Implication for Research and Policy." Food Policy Review 4, IFPRI, Washington D.C.

Zeller, M. and M. Sharma (1998) "Rural Finance and Poverty alleviation." Washington, DC. USA: International Food Policy Research Institute (IFPRI).

Appendix: *STATA Version 9.1 Statistical Output*

. do "C:\Users\AB1F20~1.ALF\AppData\Local\Temp\STD0l000000.tmp"

. ttest incbe == incaft, unpaired

Two-sample t test with equal variances
```
-------------------------------------------------------------------------
Variable |    Obs      Mean   Std. Err.  Std. Dev.  [95% Conf. Interval]
---------+---------------------------------------------------------------
  incbe |    160   30318.75   4066.095   51432.48   22288.23   38349.27
  incaft |    160   68443.75   9399.559   118896.1   49879.66   87007.84
---------+---------------------------------------------------------------
combined |    320   49381.25   5222.847   93429.13   39105.67   59656.83
---------+---------------------------------------------------------------
   diff |          -38125    10241.33              -58274.32  -17975.68
-------------------------------------------------------------------------
   diff = mean(incbe) - mean(incaft)                     t = -3.7227
Ho: diff = 0                            degrees of freedom =     318

   Ha: diff < 0             Ha: diff != 0             Ha: diff > 0
 Pr(T < t) = 0.0001     Pr(|T| > |t|) = 0.0002      Pr(T > t) = 0.9999
```

. logit acmicf gender educlevel income loan

```
Iteration 0:  log likelihood = -88.85825
Iteration 1:  log likelihood = -60.655076
Iteration 2:  log likelihood = -55.696442
Iteration 3:  log likelihood = -54.563948
Iteration 4:  log likelihood = -54.381309
Iteration 5:  log likelihood = -54.375621
Iteration 6:  log likelihood = -54.375616
```

```
Logistic regression                      Number of obs   =      160
                              LR chi2(4)    =    68.97
                              Prob > chi2   =   0.0000
Log likelihood = -54.375616             Pseudo R2     =    0.3881

-------------------------------------------------------------------------
   acmicf |    Coef.  Std. Err.    z   P>|z|    [95% Conf. Interval]
-------------+-----------------------------------------------------------
   gender |  -1.035068  .5323468  -1.94  0.052  -2.078449   .0083121
```

```
educlevel |   .5651911   .2199873     2.57   0.010    .1340239   .9963582
   income |    .000013   7.23e-06     1.79   0.073   -1.21e-06   .0000271
     loan |   3.500867   .6406353     5.46   0.000    2.245245   4.756489
    _cons |  -1.358584   .5328421    -2.55   0.011   -2.402936  -.3142327
------------------------------------------------------------------------------
```