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Factors Affecting Women's Effectiveness in use of Micro-finance and Microcredit Services; Jimma Zone, Southwest Ethiopia

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Keywords: female headed households, loan repayment, logit model.

I. Introduction

The terms microcredit and microfinance are often used interchangeably, it is important to recognize the distinction between the two. Microcredit refers to the act of providing the loan.Microfinance, on the other hand, is the act of providing these same borrowers with financial services, such as saving institutions and insurance policies. In short, microfinance encompasses the field of microcredit (Senguptaet.al 2008).

Microfinance is the supply of loans, savings, money transfers, insurance, and other financialservices to low-income people. Microfinance institutions (MFIs) encompass a wide range ofproviders that vary in legal structure, mission, and methodology offer these financial services toclients who do not have access to mainstream banks or other formal financial service providers(Gutu, 2014).However, microfinance is defined as the provision of financial services to low-income clients, including consumers and the self- employed, who traditionally lack access to banking and related services (Gonzalez-Vega, 2008). Microfinance is a place for the poor and near poor clients to get access to a high quality financial service, which include not just credit but also savings, insurance and fund transfer.

Microcredit or known as micro lending is defined as an extremely small loan given to poor people to help them become self-employed (Nawai and Shariff, 2010). Microcredit was given to the underprivileged individuals for income-generating activities that will improve the borrowers' living standards. The loans characteristics are, too small, short-term credit (a year or less), no collateral required, weekly repayment, poor borrower and mostly women who are not qualified for a conventional bank loan. Usually the loan pays high interest rates because of the high cost in running microcredit program. Microcredit is also used as the extension of very small loans to those who are in poverty that designed to spur entrepreneurship and help them out from poverty group.

Beginning in the mid-seventies, savings and credit institutions started extending small loans togroups of poor women in the villages in order to empower them to invest in micro levelbusinesses. This form of micro-enterprise credit is based on solidarity based group lending whereevery group member is tasked to ensure the repayment of all members (Gutu, 2014).Regarding delivery of financial service, access to women's credit was very limited in Ethiopia. Because of this limited access, the majority of the poor gets financial services from informal sources; like moneylenders, Iqub[1], Iddr[2], merchants, friends and relatives etc. The formal financial institutions have not been interested in delivering credit to the poor because of collateral requirements (Abafita. 2003).

Like in other areas of the world, peoples in Ethiopia are living under poverty. Financial institutions in general and microfinance institutions in particular plays crucial role for the development process ofEthiopia in general and Jimma zone of Oromia in particular. However, no study has been under taken in Jimma zone regarding women's financial services and effectiveness of lending and its impact on repayment performance in particular.

In recent years, the informal and semi-formal lending institutions (such as Iqub, Iddir, Money lenders e.t.c) are becoming the dominant and important source of finance for poor households specially women in

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Ethiopia. Thus, this study has undertake to analyze the extent to which women credit service functions and how default and non-default rates are associated with different personal and socio-economic characteristics of poor women in Jimma Zone, southwestern Ethiopia.

Making women the beneficiaries of credit schemes is a targeting technique to supplement subsistence level of agricultural production. Micro-finance interventions may lead to the empowerment of women by increasing their incomes and their control over that income, enhancing their knowledge and skills in production and trade, and increasing their participation in household decision-making. As a result, social attitudes and perceptions may change, and women's status in the household and community may be enhanced (Kabeer, 1996).

The active participation of women in agriculture has called for the current paradigm of rural economic development via women empowerment. Nweze (1995) observed that rural women: (i) are too poor to save, (ii) lack ability to organize financial self-help activities and (iii) need cheap credit to expand production and income in their farms and non-farm activities. Nwajiuba (1999) accentuates the centrality of credit, especially for women farmers to increase their investment in the absence of adequate savings. Credit is a critical input because it can be used to overcome other obstacles, such as lack of labor. However, the women farmers are perpetually marginalized in the institutionalized credit programmers. Hence, the micro-credits of the rural women farmers must be satisfied largely outside the organized financial markets such as indigenous self help group for the purpose of pooling savings and credit mobilization. Micro-credit is the ultimate economic vehicle, through which poor- women farmers can be empowered economically to overcome poverty.

Many development programs have been extending reasonable amount of credits to rural women since. However, the loan repayment performance of the beneficiaries was found to be verylow. Moreover, factors contributing to the poor loan repayment performance of rural women arenot yet studied. To design appropriate lending strategies and procedures, information onrelative importance of the factors, which affect rural women's loan repayment performance, isnecessary. Hence, this study carried out to answer the following questions: what are themajor socio-economic and institutional factors that affect loan repayment performance of ruralwomen in the study area? What are the sources of credit in the study area? What are the mostimportant factors affecting loan repayment performance of rural women around Jimma?

The general the objective of this study was to investigate the effectiveness of women borrowers to repay their loan back. Specifically; assess the loan repayment performance of women borrowers; identify socio-economic and institutional factors affecting women loan repayment performance; investigate the main source of finance in the area; and provide the mechanisms of improving the effectiveness of women borrowers.

II. Empirical Literature

Although, women are not explicitly excluded from the credit services, they have received virtually no credit from the banks. Several factors are cited by ways of explanation. First, credit is usually administered only to members of farmers' clubs, and women have felt uncomfortable about joining such groups for socio-cultural reasons. In addition, membership in a farmers' club is often at the recommendation of the agricultural extension agents whose contacts are primarily with men. Secondly, although no collateral is required, the applicant for a loan must be seen to be creditworthy, and because women can seldom claim ownership of anything, they are less likely than men to be viewed favorably for credit. Thirdly, the banks cite the small size of the women's fields in order to refuse them credit. In order to get a loan, a woman would have to increase the size of her field up to five or six times its original dimensions, as most banks consider any field under four hectares as unprofitable. Furthermore, lending institutions usually demand a financial guarantee for any loan and only farmers' organizations, of which women are rarely members, are able to supply such guarantees.

Berhanu (2005) studied on the determinants of loan repayment performance of smallholder farmers in North Gondar, Ethiopia. In order to analyze the factors that affect loan repayment, he employed the Tobit model. Land holding size of the family, agro-ecology of the area, total livestock holding, number of years of experience, number of contacts, sources of credit and income from off-farm activities are found to be variables that significantly affect loan repayment performance in the area. The remaining variables (family size, distance between main road and household residence, purpose of borrowing, loan amount and expenditure for social festivals) were found to have insignificant effect on loan repayment performance of smallholder farmers.

Abafita (2003) analyzed the microfinance repayment performance of Oromia credit and saving institution in Kuyu, Ethiopia. According to his finding; sex, loan size and number of dependants are negatively related to loan repayment. On the other hand age was found to be positive, while age squared turned to be negative. Income from activities financed by loan, repayment period suitability and loan supervision are positively and significantly related to loan repayment performance. Moreover, loan diversion is significant and negatively related to loan repayment rate. The negative sign implies that the use of diverted funds for non-income generating purposes.

Assefa (2002) employed a Logit model to estimate the effects of hypothesized explanatory variables on the repayment performance of rural women credit beneficiaries in Dire Dewa, Ethiopia. Out of the twelve variables hypothesized to influence the loan repayment performance of borrowers, six variables were found to be statistically significant. Some of these variables are farm size, annual farm revenue, celebration of social ceremonies, loan diversion, group effect and location of borrowers from lending institution.

Abreham (2002) studied on the loan repayment and its determinants in small-scale enterprise financing in Ethiopia around Zeway area, Ethiopia. He is found out other sources of income, education, and work experience related economic activities before the loan are enhancing loan repayment. While extended loan repayment period is influence the repayment performance negatively. AbsantoandAikaruwa (2013) examine the contribution of credit rationing in loan repayment performance. A case study design was adopted in which Victoria Saving and Credit Cooperative Society (SACCOS), found out that among the factors that were used for credit rationing age influenced loan repayment performance.

Reta (2011) conducted a research with the objective of analyzing and identifying factors that influence the loan repayment performance of the beneficiaries of Addis Credit and Saving Institutions (AdCSI). Age and five business types (baltinaandpetty market, kiosk and shop, services providing, weaving and tailoring and urban agriculture) were important in influencing loan repayment performance of the borrower. In addition, sex and business experience of the respondents were found to be significant determinants of loan repayment rate.

Belay (2002) in Eastern Ethiopia, useda binary Logit model to analyze factors influencing loan repayment performance of rural women. A total of twelve explanatory variables were included in the empirical model and out of these, six were found to be statistically significant. Location of borrowers from lending institution, loan diversion, annual farm revenue and celebration of social ceremonies were highly important in influencing loan repayment performance. The other critical variables include initial credit group formation and farm size.

Ughomeh*et.al* (2008) investigated the determinants of loan repayment performance amongwomen self-help groups in Bayelsa State, Nigeria. The study revealed that credit was available for agriculturalproduction, processing and petty trading among women farmers. Loan repayment percentage was determined to be 83.73%while percentage default was 17.27%. The estimated regression model indicatedthat women as household heads, interest rate and household size, negatively and significantly affected the loan repayment performance of womenfarmers while price stability of farm proceeds and commitment to self helpgroups, positively and significantly affected the loan repayment of womenfarmers in self help groups in the area.

III. Methodology

a) Data Source, the Study Area and Sampling Technique

For this study, primary data was collected from sample women borrowers who are benefited from microfinance service during 2013/14. Information is obtained from women's socio-economic characteristics like family resource level, response to loan repayment, experience in credit uses, access to extension services, marketing, education status, source of credit, etc., and individual characteristics like age is obtain through questionnaires.

The study area was on Jimma zone, southwestern Ethiopia. Jimam zone is one of Oromia regional state located at 345 km south west of the Addis Ababa. It has a latitude and longitude of $7^0$40'N $36^0$50'E. In Jimma Zone, 18Woredas are benefiting from Oromia Credit and Saving Share Company. All Woredas were functionally gave loan to the poor clients. These Woredas can be clustered based on environmental and social-economic characteristics. Of which, 6Woredas are undertaking both cash and cereal crops, the other 7Woredas are cereal crop producing with some mixed farming. The rest 5Woredas are mainly relay on cash crop production.

The researchershave used instruments as self-administered questionnaires and semi-structured interviews to collect primary data from the respondents. Eighteen Woredas were considered for this survey.Of which, 270 respondents are interviewed based on simple random sampling method.Eighteen enumerators who have completed grade 12 and know the local language were recruited and undertake the interview after training.

b) Empirical Model

Regression which involves yes or no is a dummy dependent variable regression model. Which are applicable in a wide variety of fields and are used extensively in survey or census-type of data (Gujarati, 1995).The dependent variable in this study was dummy variable, which assumes a value of zero or one depending on whether or not the borrowers default.

When one or more of the explanatory variables in a regression model are binary, we can represent them as dummy variables and proceed to analysis. The loan repayment performance is a dependent variable, which is dichotomous taking on two values, one if the borrower is a non-defaulter and zero otherwise. Estimation of this type of relationship requires the use of qualitative response models. In this regard, the non-linear

probability models, Logit and Probit are the possible alternatives.

The ordinary least squire regression, when the dependent variable is binary, produces parameter estimates that are inefficient. Consequently, hypothesis testing and construction of confidence interval become inaccurate and misleading. To alleviate these problems and produce relevant empirical outcomes, the most widely used qualitative response models are the Logit and Probit models.

This study is intended to analyze which and how much the hypothesized regression will relate to the loan repayment performance of women. As already noted, the dependent variable is a dummy dependent variable, which took a value of zero or one depending on whether or not a borrower defaulted. However, the independent variable isboth types that are continuous and categorical.

In the analysis of many studies involving qualitative choices, usually a choice has to be made between Logit and Probit models. According to Amemiya (1981), the statistical similarities between Logit and Probit models make the choice between them difficult. However, Maddala (1983) and Kmenta (1986) reported that many authors tend to agree in that the logistic and cumulative normal functions are very close in the mid-range, but the logistic function has slightly heavier tails than the cumulative normal functions. Pindyck and Rubinfeld (1981) illustrated that the logistic and Probit formulations are quite comparable.

Loan repayment is a dependent variable, while different socio-economic and lender related factors considered as independent variables. In this case the value of this dependent variable is 0 and 1, which stands for 1 if the borrower is a non-defaulter and 0 if the borrower is defaulter. Therefore, loan repayment treated as dichotomous dependent variable. Loan repayment is, therefore, a non continuous dependent variable that does not satisfy the key assumptions in the linear regression analysis. When the dependent variable to be modeled is limited in its range, using ordinary least squares (OLS) may result in biased and inconsistent parameter estimates. To examine the factors affecting the loan repayment, discrete choice model should be used. Thus, the most widely used and appropriate qualitative response models are the Logit and Probit models (Verbeek, 2008).

Assume that there exists a latent (unobserved) variable such that:

$$y_i^* = \beta x_i + \varepsilon_i$$

$$yi = \begin{cases} 1 \; if \; y_i^* > 0 \\ 0 \; if \; y_i^* \leq 0 \end{cases}$$

Where:

y_i^*= a vector of the latent variable that is not observed for values less than zero and greater than one,

yi= the observed variable, representing the proportion of loan repayment,

β= the unknown parameters that reflecting the impact of change in variable X,

xi= explanatory variables that determine the dependent variable,

ε_i= error terms that is distributed normally with mean 0 and variance σ2,

i= 1, 2, 3….n, represents the number of observations.

Hosmer and Lemeshew (1989) pointed out that a logistic distribution (Logit) has got advantage over the others in the analysis of dichotomous outcome variable in that it is extremely flexible and easily used model from mathematical point of view and results in a meaningful interpretation. Hence, the logistic model is selected for this study.

Therefore, the cumulative logistic probability model is econometrically specified as follows:

$$Pi = F(Zi) = F(\alpha + \sum B_i X_i) = \frac{1}{1+e^{-Zi}} \quad [1]$$

Where, Pi is the probability that an individual will be defaults or does not default given Xi;e denotes the base of natural logarithms, which is approximately equal to 2.718;Xi represents the i^{th}explanatory variables; andα and$\beta_ı$ are parameters to be estimated.

The logistic model should be written in terms of the odds and log of odds,

which enables one to understand the interpretation of the coefficients. The odds ratio implies the ratio of the probability (Pi) that an individual would choose an alternative to the probability (1-Pi) that he/she would not choose it.

Therefore,

$$\left(\frac{Pi}{1-Pi}\right) = \left(\frac{1+e^{Zi}}{1+e^{-Zi}}\right) = e^{Zi} \quad [2]$$

Or,

$$\left(\frac{Pi}{1-Pi}\right) = \left(\frac{1+e^{Zi}}{1+e^{-Zi}}\right) = e^{(\alpha+\sum BiXi)} \quad [3]$$

If the disturbance term (ui) is taken into account, the Logit model becomes

$$Z_i = \alpha + \sum_{i=1}^{m} B_i X_i + u_i \quad [4]$$

- X1= age of women respondent
- X2= extension agents visitation
- X3= experience in credit use of women respondents
- X4= total income of women per year
- X5= interest rate of received for loan
- X6= time laps between loan application and disbursement
- D1= loan diversion
- D2= social ceremony

- D3= health problem
- X7= total application costs
- X8= loan size and adequacy
- X9= distance from creditors
- X10= number of installments for which the loan is due for repayment.
- X11= health care expenditure in the family
- X12= family size
- X13= number of social ceremonies per year the respondent celebrates
- X15= amount of birr saved per year

IV. Descriptive and Empirical Results

This part is tried to discuss and examine the factors affecting loan repayment performance of female headed households in Jimma Zone south western part of Ethiopia. Descriptive analysis and empirical result by using Logitmodelare well discussed.The empirical part summaries the significant variable found and the marginal effect as well (see Appendix I).

Table 2 : Descriptive statistics of continuous variables

Variable	Observation	Mean	Std. Dev	Min	Max
Age	205	35.02927	8.292988	18	60
Educ	205	2.941463	3.157079	0	15
Expr	205	2.853659	1.461281	0	8
Famz	205	4.360976	2.127421	1	12
Income	205	26705.34	36719.06	900	100000
Expd	205	101.1707	200.7226	0	2000
Time	205	4.531707	3.419268	4	21
Dist1	205	59.56341	44.18095	1	240
Dist2	205	147.2585	75.7218	3	480
Instal	205	5.62439	4.309177	3	12
Loan	205	4107.439	2440.148	550	25000

Source: Own computation

In this survey study 205 respondents were interviewed based on structured questionnaire.Some respondents are to the maximum 60 years old whereas to the minimum 18 years old young borrowers were benefited from these microfinance institutions. However, illiterate women were benefited, though some Degree completed female beneficiaries were borrowed. Some of the borrowers are experienced and used credit up to eight times. However, some other borrows are lack this experience of borrowing (first time borrowers).

Family size of the households is one of the variables identified to affect the loan repayment performance of borrowers. Large family size is hypothesized to increase the consumption expenditure of the household and hence the reason for loan diversion. Finally, borrowers are unable to repay their loan back at the due date. In this study, the maximum family size of borrowers'are12, however single borrower benefited without family. In addition the annual income of borrower is another variable that affect the loan repayment performance. Annually borrowers earn 900 Ethiopian Birr, however some other rich borrowers earn 100000 Birr. Furthermore, the monthly consumption expenditure of households around the study area is up to 2000 Birr.

In some literatures, the gap between loan application and the time of disbursement is one reason for ineffectiveness arises by borrowers to use the required loan at the right time and way. Few borrowers in this study get loan immediately whereas some other borrowers waited up to 21 days to collect the loan. Besides this, distance from credit source is one factor thataffects the loan repayment performance of borrowers. Remote borrowers take 240 munities to reach to their credit source; however some other borrowers are near by the credit sources. Distance from gridding meal is also considered to be the factor that affects the loan repayment performance of female headed borrowers. Females are most affected by gender sensitive issues. They are responsible forfetching water from the river around rural area and to make tasks like gridding meal. Some female headed household may take 480 munities to arrive at their gridding meal services.

Furthermore, installment period of borrowers can be the reason for the poor performance of borrowers to repay backs their loan at the due date. Customers are supposed to pay their loan back in three installment periods. However some others are by 12 installments. Last but not least, adequacy of loan also another reason for the relative performance of borrowers to pay back the borrowed money.

Prior to running the Logit regression model to estimate the result, the explanatory variables were checked for the existence of multicollinearity problem. Variance inflation factor (VIF) was calculated to check

the problem of multicollinearity among all explanatory variables and are significantly far below 10(no serious problem of multicollinearity). *STATA 11* version software was used to estimate the Logit model and the effect of socio-economic variables on the loan repayment performance of female headed households.

Table 3 : Logit regression results

Logistic regression				Number of obs =	204
				LR chi2(16) =	33.28
				Prob> chi2 =	0.0068
Log likelihood = -68.545965				Pseudo R2 =	0.1953
Pback	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Age	.0353927	.0331449	1.07	0.286	-.02957	.1003555
Educ	.143629	.0887273	1.62	0.105	-.0302733	.3175314
Expr	.0214224	.1726228	0.12	0.901	-.3169121	.359757
Famz	-2610359	.1328238	-1.97	0.049**	-.5213658	-.0007061
Income	-1.29e-06	8.15e-06	-0.16	0.874	-.0000173	.0000147
Visit	-.3423635	.7007402	-0.49	0.625	-1.715789	1.031062
Cerm	.8343578	.8933848	0.93	0.350	-.9166443	2.58536
Expd	.0016409	.0031462	0.52	0.602	-.0045254	.0078073
Health	-1.275079	.4985709	-2.56	0.011***	-2.25226	-.2978976
Mchi	.0012794	.5498895	0.00	0.998	-1.076484	1.079043
Dive	-1.150317	.6732704	-1.71	0.088 *	-2.469903	.1692688
Time	-.1572343	.0783197	-2.01	0.045**	-.3107381	-.0037304
Dist1	-.0085588	.005172	-1.65	0.098*	-.0186957	.0015781
Dist2	-.0030366	.0031664	-0.96	0.338	-.0092427	.0031695
Instal	.0135395	.1001113	0.14	0.892	-.1826751	.209754
Loan	.0000377	.000112	0.34	0.736	-.0001817	.0002572
_cons	3.508654	1.495382	2.35	0.019	.5777598	6.439549

(*), (**) and (***) means significant at 10%, 5% and 1% respectively

Source: Own computation

Family size: Family size is negative and statistically significant at 1% of significance level on the effectiveness of borrowers. From the Logit regression, it can be concluded that family size can influence the loan repayment performance of female borrowers negatively. Those households with small family size are more likely to perform better than large family size households. Large family size would increase the consumption expenditure of households and hence use their loan to smooth their consumption and would be a reason for loan diversion and default.

Health status of the respondents: Health care expenditure can be another reason for loan default for borrowers. They may use the required money for health care expenditure instead of using for investment, and then at the end of the day they may unable to repay their loan back. Based on this empirical study this variable has negative impact on loan repayment performance at 1% level of significance. Those households visiting a hospital per year are less likely to repay their loan back as compared to others they didn't go to health care services.

Loan diversion: If borrower diverted their loan in to unproductive task than the intended project, then it would have a negative impact. However, if borrowers use the money for the intended projects it would have a positive impact. Thus, it all depends on their performance of the project the loan is diverted to. Therefore the sign of the variable can't be predetermined. However, the Logit result tells as loan diversion has negative and significant impact on the loan repayment performance of borrowers at 10% level of significance. It is obvious that those borrowers used the intended loan for the right project is more likely to pay back their loan at the due date as compared to those borrowers diverted their loan.

Time of loan application: The gap between loan application and disbursement also another crucial variable that affect the loan repayment performances of farmers especially they are relay on seasonal rain feed agriculture. Because ofagricultural production is more of seasonal in developing countries. If the loan is not disbursed at the required date it would be the major obstacle for supplying the necessary input on time. This is not only for the problem of agricultural production, but also for seasonal trading. Thus, this variable has negative effect on loan repayment performance of female headed households in the study area. Those borrowers get fund at the required date can perform better than others waited for the loan for long period. This result is significant at 5% level of significant.

Distance from credit source: Distance is a community-level variable computed as the mean distance from the village to micro finance institution service. The distance

is taken approximately as the respondents' replied in this study. This variable had a negative and significant influence on the loan repayment performance of borrowers at significance level of 10%. The effectiveness of borrower is higher when the distance is short. Meaning remote borrowers are more likely unable to repay their loan back as compared to other borrower's settled around the source of credit.

V. Conclusion

The nature of this research is descriptive type and econometric model analysis that incorporates fact finding inquiries and surveys with regard to the loan repayment performance of female headed borrowers. The main objective of this research was to assess and analyze that factors affecting loan repayment performance of female borrowers around Jimma Zone.

With regard to credit default as an effectiveness of loan repayment performance of female headed households for the study; family size of the respondents, health status of the respondents, loan diversion, time of loan application and distance from credit sources variables have a negative and significant impact on the loan repayment performance of female headed households in the study area. Unfortunately, there is no any variable that positively affect the loan repayment performance of female borrowers. However, there are variables like; age of the respondents, education level, experience in credit use, celebrating social ceremony, high monthly expenditure, application of machinery, installment period and loan size are insignificant and positively affecting variable from the Logit model of this study.

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Appendix

Marginal effects

variable	dy/dx	Std. Err.	z	P>z	[95%	C.I.]	X
Age	.0030389	.00286	1.06	0.287	-.00256	.008638	35.0196
Educ	.0123324	.0074	1.67	0.096	-.002179	.026843	2.94118
Expr	.0018394	.01482	0.12	0.901	-.027204	.030883	2.84804
Famz	-.0224133	.01136	-1.97	0.049	-.044688	-.000139	4.36275
Income	-1.11e-07	.00000	-0.16	0.874	-1.5e-06	1.3e-06	26664.7
Visit*	-.0276313	.05305	-0.52	0.602	-.131599	.076336	.730392
Cerm*	.0689127	.07241	0.95	0.341	-.073015	.21084	.421569
Expd .	.0001409	.00026	0.53	0.595	-.000378	.00066	101.667
Health*	-.1237985	.05397	-2.29	0.022	-.229575	-.018022	.406863
Mchi*	.0001098	.0472	0.00	0.998	-.092393	.092613	.29902
Dive*	-.1426551	.10906	-1.31	0.191	-.356406	.071096	.098039
Time	-.0135006	.00627	-2.15	0.031	-.025785	-.001216	4.53922
Dist1	-.0007349	.00047	-1.57	0.117	-.001654	.000185	59.5613
Dist2	-.0002607	.00027	-0.97	0.334	-.000789	.000268	147.392
Instal .	.0011625	.0086	0.14	0.892	-.015692	.018017	5.64216
Loan	3.24e-06	.00001	0.34	0.737	-.000016	.000022	4103.06

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Source: Own computation