

Impact of credit programs on employment and income: Evidence from Lombok-Indonesia

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Summaries

This study examines the impact of credit programs on employment and income in two different projects in Lombok-Indonesia. The extent to which the impact varies between credit program is evaluated and assessed and the main factors influencing the impacts are identified. The framework analysis of this study was adopted from Chen and Dunn's conceptual model of Household Economic Portfolio (CHEN/DUNN: 1996). The results indicate that credit programs have brought desirable positive and significant impacts on percapita income of people who participate in the programs. The deviation of percapita income between participant and non-participant is 60 percent. In terms of employment creation, credit programs also have positive impact on employment creation based on the total number of labor absorption. However, the results of analysis reveal that involvement in credit programs denotes insignificant influence on labor absorption

1 Introduction

Under the rubric of rural development, a wide variety of approaches are under way or being planned around the world directed at ultimately helping the poor increase their employment and income. Providing adequate employment opportunities is not a new issue, but often insufficiently considered in practice in rural development approaches, though it has been realized that the poor households depend heavily on labor income.

Indonesia, with more than 200 million people, ranks fourth among the world populations and is the largest archipelago state. About 64.96 percent of the population live in rural areas, making their living in one form or another agriculture and agriculture-related activities. Since the country gained political independence, the rural development policies have been dominated by a striving for the attainment of self-sufficiency. These policies were almost exclusively directed at the increase of rice production and productivity levels (TIMMER, 1981). After 1960s, various rural development-related policies have been launched such as the policy towards agricultural production and productivity, rural works programs, the *Bantuan Desa* programs, small-industry and rural based activities, and various social infrastructure programs, especially in the field of primary education and rural health facilities.

Recently, micro-credit programs are increasingly sought as a way to enhance the income and employment of the poor who can be self-employed in a variety of informal activities. The objective is to ease the credit constraint of households or to provide them with capital to initiate an activity, thereby increasing their income and consumption. Micro credit programs are also being used to target the poor, especially women, to involve them in income-generating activities.

This study aims to investigate, analyze, and assess the impact of credit programs that have been implemented for the poor people in the rural area. The impact of credit programs, however, concentrated more on employment creation and income opportunities created by such program.

The main problem to be addressed by this study can be framed as a series of questions: Do the credit programs that have been implemented in Indonesia, especially in Lombok Island have a positive impact on the rural poor? What are the nature, extent, and distribution of these impacts? Have the credit programs created employment and income opportunities as an active input of the approaches? Have the credit programs helped to reduce poverty in the rural areas? What lessons can be learned from different credit programs that have been implemented so far?

2 Framework of Analysis

The study of the impact of credit programs, particularly with regards to the household, can be analyzed through various frameworks. However, in this study, household economic portfolios framework developed by CHEN/DUNN (1996) is adopted. This framework is based on the three key developments in the analysis of households by economists, anthropologists, and feminists scholars. First, it recognizes that there may be negotiation, bargaining, and (even) conflict within the household. Second, it presents the household as a permeable unit, rather than bounded unit, which is embedded in wider social units, networks, and processes. Last, it recognizes that there is enormous variability in household composition, structure, and functions both between and within societies and over time (CHEN and DUNN, 1996).

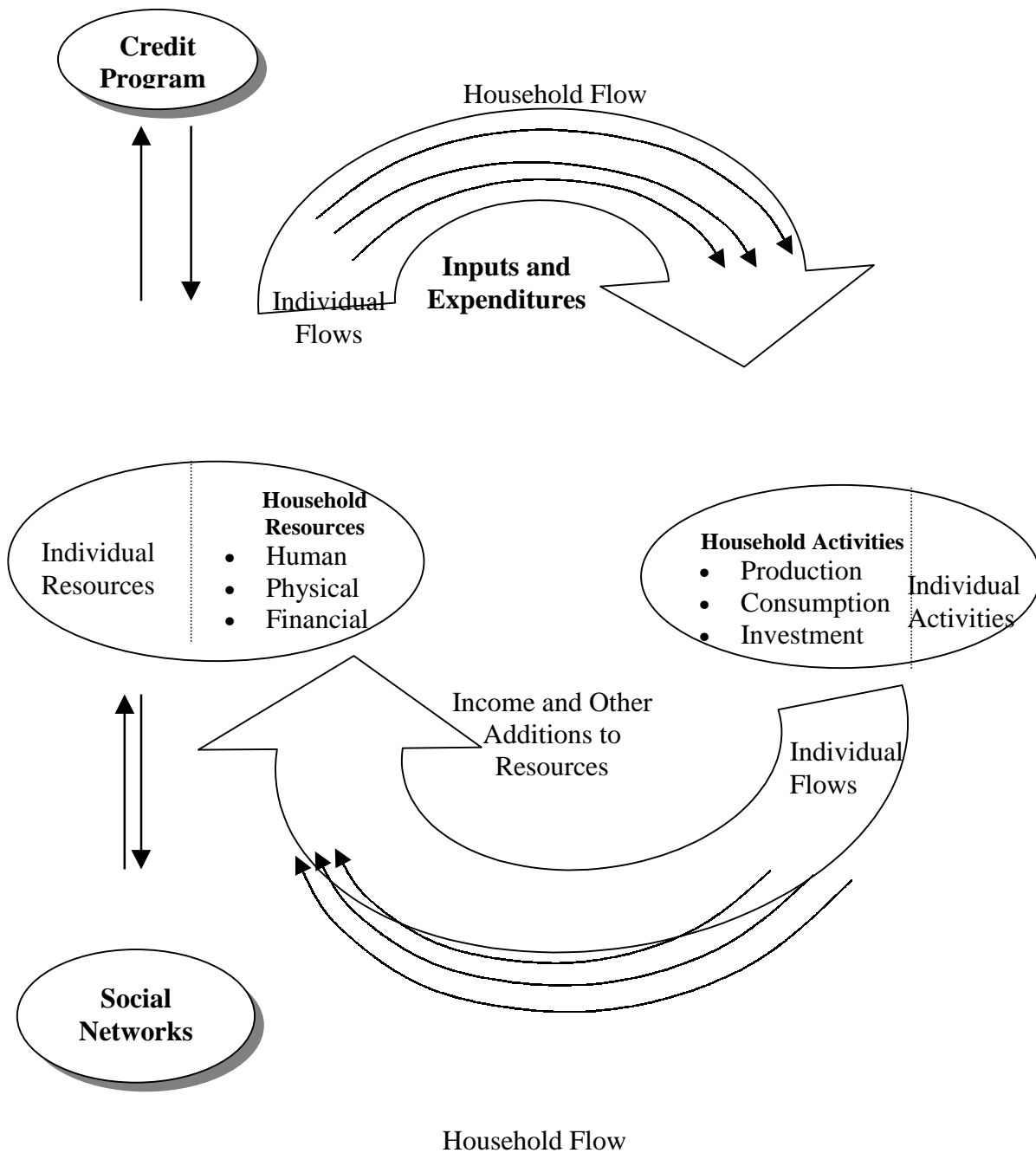
The conceptual model is defined in terms of three elements: a) household resources, b) household activities, and c) the circular flow of interaction between household resources and household activities. This model is presented in Figure 1. The model recognizes that household resources - *financial, human and physical resources*- are fungible within the portfolio of household activities - *production, investment and consumption activities* - and that decisions regarding the allocation of resources are made in relation to options and tradeoffs within the overall household portfolio of activities. The model places microenterprise within the context of a broader household strategy to achieve economic security and family well-being.

The role of credit programs in the household economic portfolio can be interpreted relative to the conceptual model. When the household participates for example in credit programs, it creates an addition to the resources available in the current time period for supporting the household activities. If credit has been received in previous period(s), then some portion of the resources generated by the household's activities will flow out of the household economy to the lender in the form of a debt repayment. If credit has been used in production or investment activities, then it may increase the size of the resource flow generated by the household's activities, thus increasing the repayment capacity of the household. If the resources of the household are low in any given period, then credit may be used to smooth consumption. If credit is allocated to consumption activities, it is not expected to increase the flow of income in the current period. Thus, credit invested in consumption activities does not directly increase the repayment capacity of the household.

On the basis of the theoretical and conceptual framework -- the unit analysis of this study focused on the household-- then the hypotheses generated will focus on the impact of credit programs at the household level. The hypotheses is as follows:

- a. Participation in credit programs leads to an increase in employment creation generated by the programs.
- b. Participation in credit programs leads to an increase in the household and percapita income generated by the programs.

Figure 1. Impact of Credit Programs: A Conceptual Model



Source: Chen and Dunn (1996)

3 Methodology

Programs Selected for Inclusion. The result of desk study reviews and short visit to the areas of many credit programs have been implemented, and then two different credits programs in two different villages were selected for inclusion in this study. The credit programs selected are: (1) *Pembinaan Peningkatan Pendapatan Petani dan Nelayan Kecil (P4K)* at Tamansari

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Village Sub-district Gunungsari, West-Lombok Regency and (2) *Proyek Peningkatan Kelangsungan Hidup Ibu dan Anak* (PP-KHIA) at Lenek Village, Sub-district of Aikmel, East Lombok Regency.

P4K is a group-based microenterprise promotion and lending program targeting the rural poor. It is sponsored by the Ministry of Agriculture and several international donors. The Directorate of Agricultural Extension acted as a credit agent for BRI to help the bank reach groups of the rural poor. The program also provides training in microenterprise skills, and link borrower groups with community activities and social service agencies.

PP-KHIA is one of the action researches conducted by the Center for Cultural Research, Mataram University. This action research mainly aims at developing models for improving the health of mothers and babies in Lombok, which is still categorized as being in the lowest level in Indonesia. This projects also a microenterprise promotion and lending program targeting especially pregnant women and breast-feeding mothers and their families. This project attempts to increase the economic status of the target-group households by providing cheap and continuous working capital.

Unit Analysis. The unit analysis of this study is households. The household is defined as a group of people who live together under a common roof, use a common kitchen, are provided for from a common household budget (income pooling unit), and contribute to the common budget from their own income (MANIG, 1991:26). The household fulfills many functions (ELLIS, 1988; MANIG, 1993b). In this study, we confine ourselves to socioeconomic functions geared towards obtaining employment and income.

Data Collection and Sampling Frame. The primary data used in the study was collected in a field survey in Lombok using structured questionnaires and in-depth interview techniques. The respondents included the participants and non-participants in the villages where the credit programs were implemented. This is also supplemented by data from the focus groups discussion and participant observation in each village in the study area. In addition to this primary data, the secondary data related to credit from different publications, reports, or files from relevant agencies and organizations will also be utilized.

The sample frame of this study consists of households that participate in two credit projects whose impact, is under investigation. Households that do not participate were also selected so as to facilitate a 'with' and 'without' projects impact analysis. About 80 households were selected from two different credit programs in two different villages using a proportional random sampling method. About 40 households were selected in each project area, giving a total of 80 households. Of the 40 selected households, 30 are project participants while 10 are not.

Methods of Analysis. The data were analyzed using Statistical Package for Social Sciences (SPSS). Statistical analysis employed to assess the effect of background factors (program intervention and non-program intervention factors) on income and employment creation are factorial analysis of variance (Anova) coupled with Multiple Classification Analysis (MCA). Oneway Anova and MCA are used to describe the bivariate relationship between each background variable and the dependent variable and as the stepping point to build the model in the multivariate analysis. All variables showing the significant relationships at confidence level of $\alpha \leq 0.15$ are included in the full model. The final model is selected based on the value of F statistics and the goodness of fit model.

Analysis of variance is based on the following three assumptions:

1. The observations are normally distributed on the dependent variable in each group
2. The population variances for the group are equal (homogeneity of variance);
3. The observations are independent.

The general formula of oneway Anova may be written as follows:

$$Y_{ij} = U_{ij} + e_{ij} \quad [1]$$

where Y_{ij} = the observation-i in the treatment or the group-j;
 U_j = the parameter model indicating the mean of sub-population-j or group-j;
 e_{ij} = a random error-i within treatment-j.

The current adopted model of multi-factor Anova with MCA is in term of additive model and is based on the main effect parameter that has the following form:

$$Y_{ij} = U + A_i + B_j + e_{ijk} \quad [2]$$

where U = parameter of total mean (grand mean)
 A_i = the effect of category- i of factor-A
 B_j = the effect of category- j of factor-B
 e_{ij} = a random error-i within treatment- j .

The decision to include MCA is based on the fact that in almost all cases, the two-way interaction does not exist, and hence the additive model is appropriate.

4 The Impact of Credit Programs on Income

Income is recognized as a critical variable for measuring the impact of credit programs. Income is a critical indicator for the overall household economic security; where it is used to assess change in household welfare and poverty status as defined in terms of material needs (HULME/MOSLEY, 1996). Long term increases in income contribute to improved quality of life because income provides the means to obtain improved nutrition, health, education, and overall economic status.

The Credit Program Factors. The results of analysis presented in Table.1 and Table.2 reveal strong association between programmatic factors and income level. Involvement in the credit project denotes highly significant influence on the annual per capita income ($F=6.664$, $p=0.012$). Table 1 shows that households who participate in the project have per capita income 59 per cent greater than those whom do not participate. Controlling for other factors, the net effect of the involvement status is even more significant ($F=9.522$) and the difference in income level is wider (69 %).

The types of credit program intervention play remarkable role on income differential. The recipients of credit program in Lenek village enjoys 62 per cent higher income compared to those of recipients of credit program in Pemongkong respectively. This factor alone explains 13.9 per cent of the variation in per capita income and emerges as the largest contributor among all significant determining factors.

The credit system employed by PP-KHIA in Lenek village more liquid than the other credit project in Tamansari village. In PP-KHIA credit project, each household participant obtained credit for their enterprise, which varied depending on their scale of enterprises. The cycles of credit are shorter. In one year, each household can obtain credit six to eight times, depending on the condition of the enterprises. While in the P4K credit project, participants only obtain credit once a year from the project. As a result of the credit system, household income increased dramatically due to the process of enterprise development at Lenek village, much faster than at Tamansari villages.

Moreover, Zaini (1999:150) found that the average per capita income of the participants was higher than that of the non-participants, even higher than that of the population in the

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province and the national average per capita income. The majority of the participant households are in the high-income class, while a large number of non-participant households fell in low-income categories.

Table 1. Annual per Capita Income According to Selected Background Factors: Bivariate Anova and MCA (N=80)

Background Factor	Mean Income (Rupiahs)	F Stat	p value	R²
Involvement in project		6.664	0.012	0.079
▪ Participant	800,871			
▪ Non-participant	503,878			
Village		12.643	0.001	0.139
▪ Taman Sari	555,426			
▪ Lenek	897,820			
Respondent education		6.858	0.011	0.081
▪ No schooling or PS unfinished	646,363			
▪ Finished primary school +	938,216			
Respondent occupation		5.182	0.008	0.119
▪ Agriculture	650,357			
▪ Industry	551,705			
▪ Services	875,486			
Household dependent		1.538	0.219	0.019
▪ < mean	800,771			
▪ > mean	671,817			
Respondent age		2.946	0.038	0.104
▪ < 30 years	943,581			
▪ 30-39 years	566,158			
▪ 40-49 years	803,210			
▪ 50+ years	628,832			

Note: R² = Coefficient of determination produced from Multiple Classification Analysis (MCA).

The Socioeconomic and Demographic Factors. The socioeconomic and demographic characteristics of the households theoretically also affect income differential. Table1 suggest that household backgrounds such as respondent education, occupation and respondent age have significant individual effect on income. The multivariate analysis presented in Table2 suggest that respondent education and respondent age show consistent effect (at p <=0.10), while household occupation degrade and show insignificant effect after controlling for programmatic factors. Combined with the programmatic factors, respondent education and respondent age account for 31 percent of the variation in per capita income (R²=0.314).

The selected model displayed in Table2 shows that educational levels have linear positive effect on income. The higher the education of the respondents, the more likely the per capita income of their households to be higher. Those who finished primary school or above tend to

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have income 23 percent higher than those who did not finish primary school or who did not have schooling.

Table 2. Annual per Capita Income According to Selected Background Factors: Multivariate MCA (N=80)

Background Factor	Full Model		Selected Model	
	Income (rupiahs)	F Stat	Income (rupiahs)	F Stat
Involvement in project		9.300**		9.522**
▪ Participant	807,311		809,713	
▪ Non-participant	484,557		477,350	
Village		3.060 [♦]		7.142**
▪ Taman Sari	603,953		592,197	
▪ Lenek	849,293		861,049	
Respondent education		2.087 [♦]		2.136 [♦]
▪ No schooling or PS unfinished	683,250		681,842	
▪ Finished primary school +	840,967		844,680	
Respondent occupation		1.018 ^{ns}		
▪ Agriculture	488,063			
▪ Industry	689,234			
▪ Services	779,610			
Respondent age		1.879 [♦]		1.683 [♦]
▪ < 30 years	910,235		914,185	
▪ 30-39 years	606,417		617,684	
▪ 40-49 years	699,370		719,022	
▪ 50+ years	735,576		691,211	
Combined effect		4.433**		5.341**
Goodness of Fit (R ²)	0.333		0.314	

Note: ^{ns} not significant [♦] significant at $p \leq 0.10$ *significant at $p \leq 0.05$ **significant at $p \leq 0.01$.

Occupation also determines the level of income as shown by individual effect in Table 1. The table suggesting that those who are engaged in services tend to have higher income compared to those who are engaged in agriculture and industry. Those who engaged in services tend to have income 35 per cent higher than those who engaged in agricultural sectors. Those who engaged in services tend to have income 59 per cent higher than those who engaged in industry sectors. However, the net effects of occupation diminish after controlling for other socioeconomic, demographic and programmatic factors.

This finding supported the result of preliminary finding that there is wide variation in the impact of credit programs on agricultural and non-agricultural activities as sources of income. In terms of non-agricultural activities, credit programs can enhance diversification activities of participant households. Respecting agricultural activities, however, credit programs have a relatively small impact in diversifying income sources of the participant households. In addition, the main source of income is dominated by a combination of agricultural and non-agricultural activities. Most of the agricultural income comes from labor activity, while the

majority of the non-agricultural income comes from production, services, and marketing activities (Zaini, 1999:156).

The similar patterns also occur when looking at association between the number of household dependent and income. Those of smaller household dependent appear to possess greater income. Table 2 indicates that families with smaller household dependent are 19 percent more likely to have higher income compared to those of larger household dependent. This is due to the likelihood that families with larger member tend to consume more while produce less as opposed to those with smaller member. However, after controlling for other socioeconomic, demographic and programmatic factors, the net effect of household dependent on income diminish.

The age of respondent who may link to the experience appear to have non-linear association with income. The youngest age groups (< 30 years) tend to have greater income compared to the older age groups. Those of 30-39 years appear to have the lowest income, followed by the oldest age group (50 years +) and those of 40-49 years. The income differential between the youngest and the oldest age group depict 50 percent of difference to the favor of youngest age group. However, the multivariate analysis suggests that the effect of age of respondent weaken to be insignificant.

5 The Impact of Credit Programs on Employment

Employment which is a reflection of both the supply and demand for labor can rise or fall depending on how and in what ways credit programs affect production. If, for example, increased production is attained through improved technology, then it is unlikely to have positive and significant impact on employment. On the other hand, if production technology does not change, an over all increase in production can be attained through employment expansion.

The Credit Program Factors. The results of analysis presented in Table 3 and Table 4 reveal that there is an association between programmatic factors and employment absorption. However, involvement in the credit project denotes insignificant influence on the total labor absorption ($F=1.398$, $p=0.241$). Table 3 shows that households who participate in the credit project have average labor absorption 20 per cent greater than those whom do not participate. However, after controlling for other factors, the net effect of the involvement status is diminish, even non-significant ($F=0.503$) and the difference in labor absorption only 10 per cent.

The types of credit program intervention play more roles on labor absorption, compared to involvement status. The recipients of credit program in Tamansari village enjoys 43 per cent higher labor absorption compared to those of recipients of credit program in Lenek respectively. This factor explains 10.4 per cent of the variation in labor absorption. After controlling for other factors, the net effect of the involvement status, however, is also diminish, even non-significant ($F=0.308$).

The limited impact of credit program on employment creation perhaps associated with the credit programs do not bring about new economic activities among the participating households, but instead tend to support ongoing rather than new economic activities. The preliminary findings (Zaini, 1999:146) however, found that credit programs tend to have more impact on job stability than job creation. Credit programs that have been implemented have positive impacts on employment, especially through providing more productive employment and increased used of family labor. The impact of the programs on employment occurred through the process of intensification and diversification of economic activities of participant households.

Table 3. Total Labor Absorption According to Selected Background Factors: Bivariate Anova and MCA (N=80)

Background Factor	Mean Labor (Persons)	F Stat	p value	R ²
Involvement in project		1.398	0.241	0.018
▪ Participant	2.57			
▪ Non-participant	2.15			
Village		9.009	0.004	0.104
▪ Taman Sari	2.90			
▪ Lenek	2.03			
Respondent education		0.778	0.381	0.010
▪ No schooling or PS unfinished	2.38			
▪ Finished primary school +	2.68			
Respondent occupation		5.680	0.005	0.129
▪ Agriculture	2.00			
▪ Industry	2.03			
▪ Services	2.05			
Household dependent		6.324	0.014	0.075
▪ < mean	2.03			
▪ > mean	2.78			
Respondent age		3.410	0.022	0.119
▪ < 30 years	2.17			
▪ 30-39 years	2.58			
▪ 40-49 years	1.95			
▪ 50+ years	3.24			

Note: R² = Coefficient of determination produced from Multiple Classification Analysis (MCA).

The Socioeconomic and Demographic Factors. Socioeconomic and demographic factors also relating to the expansion of employment creation. Table3 suggest that household backgrounds such as respondent occupation, household dependent and respondent age have significant individual effect on labor absorption, while education do not exist as determinant factor for labor absorption. The multivariate analysis presented in Table 4 suggest that household dependent and respondent age show consistent effect (at $p \leq 0.01$ and $p \leq 0.05$), while respondent occupation degrade and show insignificant effect after controlling for programmatic factors. Combined with the programmatic factors, household dependent and respondent age account for 21 percent of the variation in labor absorption ($R^2=0.213$).

Looking at association between the number of household dependent and labor absorption, the selected model presented in Table 4 shows that household dependent have consistent effect on labor absorption. Those of larger household dependent appear to absorb more labor. The net effect indicates that families with larger household dependent are 41 percent more likely to have higher labor absorption compared to those of smaller household dependent.

Table 4. Total Labor Absorption According to Selected Background Factors: Multivariate MCA (N=80)

Background Factor	Full Model		Selected Model	
	Income (rupiahs)	F Stat	Income (rupiahs)	F Stat
Involvement in project		0.503 ^{ns}		0.356 ^{ns}
▪ Participant	2.52		2.51	
▪ Non-participant	2.29		2.31	
Village		0.308 ^{ns}		
▪ Taman Sari	2.58			
▪ Lenek	2.34			
Respondent occupation		0.818 ^{ns}		
▪ Agriculture	1.80			
▪ Industry	2.73			
▪ Services	2.31			
Respondent age		1.710 [♦]		3.993*
▪ < 30 years	2.42		2.35	
▪ 30-39 years	2.47		2.55	
▪ 40-49 years	2.01		1.82	
▪ 50+ years	3.07		3.25	
Combined effect		3.277**		3.953**
Goodness of Fit (R²)	0.270		0.213	

Note: ^{ns}not significant ♦significant at $p \leq 0.10$ *significant at $p \leq 0.05$ **significant at $p \leq 0.01$.

The age of respondent who may link to the experience appear to have non-linear association with labor absorption. The oldest age groups (50 years +) tend to more absorb than the other age groups. Those of 40-49 years appear to have the lowest absorbed, followed by the youngest age group and those of 30-39 years. The labor absorption differential between the oldest and the youngest age group depict 49 percent of difference to the favor of youngest age group. The selected model presented in Table 4 reveal that the affect of age groups to labor absorption is positive and significant ($p \leq 0.05$).

The greater labor absorption of the oldest age group perhaps relating to the types of occupation where they engaged. More than 90 percent of respondent at Tamansari village project were engaged in home industry production and trade, like making the fence and chair from bamboo, while large part of respondent at Lenek village project were employed in agricultural trade and home industry trade. Therefore, the highest labor absorption of the oldest age group can be understood since those occupations operated in their home, without needed to go outside home or village.

6 Conclusion

The credit programs have brought desirable positive and significant impacts on percapita income of people who participate in the programs. The deviation of percapita income between participant and non-participant is 60 percent. The results of multivariate analysis reveal strong association between credit programs and income level. Involvement in credit programs denotes highly significant influence on annual percapita income ($F=6.664$, $p=0.012$). Controlling for other factors, the net effect of the involvement status is even more significant ($F=9.522$).

The types of credit programs play remarkable role on income differential. The recipient of credit program at Lenek village project enjoys 62 percent higher income compared to the credit program at Tamansari. This factor alone explains 14 percent of the variation in percapita income and emerges as the largest contributor among all significant determining factors.

The socioeconomic and demographic characteristics of the households such as respondent education, occupation and respondent age have significant individual effect on income. The result of multivariate analysis suggest that respondent education and respondent age show consistent effect (at $p \leq 0.10$), while household occupation degrade and show insignificant effect after controlling for programmatic factors. Combined with the programmatic factors, respondent education and respondent age account for 31 percent of the variation in per capita income ($R^2=0.314$).

Although credit programs have positive impact on employment creation based on the total number of labor absorption, however, the results of analysis reveal weak association between credit programs and labor absorption level. Involvement in credit programs denotes insignificant influence on labor absorption ($F=1.398$, $p=0.241$).

The deviation of labor absorption between participant and non-participant is 20 percent. The credit programs tend to have more impacts on increased use of family labor, providing more job stability than employment creation. The limited impact of credit program on employment creation can be understood since most of the credit programs do not bring out new economic activities among the participant households, but instead tend to support ongoing rather than new economic activities. Therefore, the credit program significantly increased percapita of those who participate in the programs, but not created more jobs opportunities.

The result of multivariate analysis suggest that household dependent and respondent age show strong association with labor absorption (at $p \leq 0.01$ and $p \leq 0.05$), while household occupation degrade and show insignificant effect after controlling for programmatic factors. Combined with the programmatic factors, household dependent and respondent age account for 21 percent of the variation in labor absorption ($R^2=0.213$).

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