JEJAK

Journal of Economics and Policy

http://journal.unnes.ac.id/nju/index.php/jejak

Women's Control Over Economic Resources Effect to Family Welfare

Ni Putu Wiwin Setyari[1], A.A Bagus Putu Widanta[2], Ida Bagus Putu Purbadharmaja[3]

[1,2,3]Economics and Business Faculty, Udayana University

Abstract

Within the framework of neo-classical analysis, each individual is assumed homogeneous. However, homogeneity assumption becomes incompatible when discussing human behavior. Latest literatures conclude that men and women allocated resources under their control in different ways systematically. This study was intended to see whether there is an increase in the household's welfare if the head of household is a women and granted credit access to financial institutions. Women's access to all financial services, is essential to allow them to benefit fully from economic opportunities. The data used came from the Indonesian Family Life Survey (IFLS) for two last waves (IFLS 2007 and 2014). Analyses were performed using fixed effect model to overcome the unobserved heterogeneity, especially in terms of the individual character. The results indicated that the credit received by the female head of households can significantly increase household income. These results support the policy of increasing women empowerment in order to improve family welfare.

Keywords: access to finance, women empowerment, family's welfare, intrahousehold allocation, financial inclusion

✉ Corresponding author :
Address: Jl. Raya Kampus UNUD, Bukit Jimbaran, South Kuta,
Badung-Bali, Indonesia
E-mail: wiwin.setyari@gmail.com

INTRODUCTION

Financial inclusion has become an important agenda in international policy in an attempt to boost sustainable economic growth. Financial inclusion means that adults have access to and can effectively use a range of appropriate financial services. At its most basic level, financial inclusion starts with having a deposit or transaction account at a bank or other financial institution which can be used to make and receive payments and to save money. Financial inclusion also encompasses access to credit from formal financial institutions that allow adults to invest in educational and business opportunities that allow people to better manage financial risks (Demirguc-Kunt et al., 2017). The 2014 edition of the Global Financial Inclusion (Global Findex, 2015) database reveals that 62 percent of adults worldwide have an account at a bank or another type of financial institution or with a mobile money provider. Globally, 2 billion adults remain unbanked. South Asia and East Asia and the Pacific together account for more than half the world's unbanked adults. India is home to 21 percent of the world's unbanked adults and about two-thirds of South Asia's. China accounts for 12 percent of the world's unbanked and Indonesia for 6 percent; together they account for three-quarters of the unbanked in East Asia and the Pacific. Women make up 55 percent of the world's unbanked adults.

Household access to financial services, a long-standing topic in policy debates in emerging markets has also been identified as important in advanced economies. Studies show that when people participate in the financial system, they are better able to start and expand businesses, invest in education, manage risk, and absorb financial shocks (Aker et al., 2013). Access to accounts and to savings and payment mechanisms increases savings, empowers women, and boosts productive investment and consumption. Access to credit also has positive effects on consumption—as well as on employment status and income and on some aspects of mental health and outlook.

Access equality for women toward economic and financial resources is deemed extremely important to accomplish sustainable economic growth and development (United Nations, 2009). The said economic resources refer to direct production factors, such as fixed assets which include land, housing, and infrastructure, and also movable assets such as production equipment, technology and inventories, private capital flow, including incomes, loans, savings, and remittances. Both economic and financial resources pose important implication in determining women's role in maintaining sustained family welfare, in jobs market, and in economy in greater context.

Within the framework of neo-classical analysis, each individual is presumed homogenous, including uniformity in each individual's preference. One of the reasons behind this is *rotten kid theorem* from Gary Becker, which asserts that if all family members receive gifts or income from other family members, albeit some selfish family members, they would still maximize family's total income (Bergstorm, 1989). Homogeneity assumption in neo-classical analysis turns inappropriate when discussing human behavior, where each individual has different preferences in allocating his/her resources in order to maximize utility. Some contemporary literatures concludes that men and women allocate resources within their control in such systematically different ways

especially in allocating household resources. For example study performed by Thomas (1994) in intrahousehold resources allocation in three countries, United States, Brazil and Ghana which showed differences persist in household resources allocation depending on child's gender and these differences varied with parent's gender. Some aspects in intrahousehold resources allocation model are very important to policy makers due to two reasons(Fuwa et al., 2006). First, giving attention to individual welfare rather than household level welfare can influence their assessment regarding who and where the poverty is. It is possible, for example, several households with per capita income above poverty line may still have family members with actual living standards below poverty line due to imbalances of resources allocation. Second, the way households allocate resources among themselves has a potential to hamper effectiveness of policy interventions and causing consequences undesired by policy makers. Some policy interventions could be followed by household responses unanticipated by policy makers, for example in introduction of novel agricultural technology and micro lending program which lead to increasing abuse of child labor in family businesses and declining school participation among children from those families (Islam & Choe 2009, Hazarika & Sarangi, 2005).

The World Bank's (2010) study on access to financial services in Indonesia provides relevant information to the issue of financial system inclusion. About 48 percent of all households in Indonesia do not have access to formal financial institutions. Although informal financial services providers are able to serve about 31 percent, there are still 17 percent living without financial services from any sector (both formal and informal). Low-educated households located in rural areas outside of Java generally enter into an exclusionary category of financial services. By shifting the focus on poor household sample, formal financial institutions serve only about one fifth of all poor households in Indonesia. When involved in financial activities, informal financial services providers are generally the first choice for this group. Unfortunately, about 4 out of 10 poor households do not use (or receive) financial services from any sector (formal or informal).

Besides those, financial services do discriminate certain groups in the population: the poor, women, youth and rural population (Mandiri Institute, 2015). Savings and loans are two initiatives one may consider to expand to improve the financial inclusion. Indeed, global studies have showed that saving and credit product designs had significant impacts on individual decisions to use financial services. In order to accomplish financial inclusion goals, it is therefore important to address several behavioral issues related to saving-credit habits. Due to evidence of differences in the management of household assets held by women and men, where women have more impact than men (such as Setyari, 2012, Norwood, 2015), many poverty programs in some countries focused on improving women's empowerment, including in Indonesia. Efforts to empower women's households will be more effective if the program is given in the form of group business, as conducted by Grameen Bank in Bangladesh or *Simpan Pinjam Kelompok Perempuan* in Indonesia. Prawihatmi (2018) research show that capability development through self-help group accelerates the impact of micro credit and initial endowment in creating the family income.

This paper attempted to observe Indonesian households headed by women and given

access to loans from financial institutions, such as banks or cooperatives (non-family loans). This research employed data from Indonesian Family Life Survey (IFLS) for two last waves (year 2007 and 2014). Analysis results showed women headed households with access to loans from financial institutions have a relatively higher income compared to those without similar access. Albeit controlled by some household characteristic variables and assuming other variables outside model having time-invariant qualities, loans from financial institutions remained showing positive and significant results. This study's results showed that when women were being empowered in household budget management, the welfare of other family members would improve. This fact provides signals that if government policies is to improve household welfare, such as micro financing or *Raskin* (rice for the poor), they will be more effective when aimed towards woman in the family. In this case, the study result support the effort of international development agencies like the World Bank and the United Nations whose over the last ten years have prioritized women's access to financial services, mainly those informal financial markets made possible by micro-lending operations.

Intrahousehold resources allocation model can be categorized into two approaches, which are unitary and collective approaches. The difference between the two lies not on internal mechanism aspects of household distribution but rather on preference interaction mechanism among household members (Roushdy & Namoro, 2007). Simplest economic model implicitly assumed all family members have perfectly identical preferences, so that sub utility function becomes identical. Other alternative assumption is by declaring one family member as dictator, who makes all allocation decisions. Both assumptions imply that household is treated as a single unit. This means income distribution in household does not have any impact on demand (as long as dictator remains unchanged). The empirical implication is, if unitary model truly persists, then demand function is independent on individual resources, but dependent on household resources.

Traditional studies in household behavioral model are analyzed under the assumption that family members agreed in terms of how they combine their time and other resources in order to achieve maximum attainable welfare among family members, which later renowned as unitary household model (Fuwa et al., 2006). Unitary approach is frequently associated with article by (Gary S. Becker, 1974) "*A Theory of Social Interaction*" with the term *social income* which refers to the sum of one's income (in salary and other forms), and monetary value of his/her characteristics which are utilized collectively. Head of household is not defined by gender or age, but rather (one) family member who transfers purchasing power generally towards the whole family members due to his/her "concern" of their welfare. Properties which later emerge are: 1) redistribution of income among family members does not influence consumption or welfare of any family members; 2) all family members (not just head of the family) act as though they "love" all family members. Because of them, utility function of a family member depends on family characteristics. This utility function will be the same as the one of the family head, not for the reason that he/she has dictatorial powers, but rather because he/she cares about the welfare of other family members, albeit being selfish.

Therefore all utility functions integrates into single and consistent family function.

Some empirical studies supporting this theory, such as Thomas et al (1999) who tested power distribution in Indonesian households in terms of child health, which found that other than Java and Sumatra, pattern occurred was unitary approach (evidence showing collective approach were relatively weak as well). In unitary approach, the one who earns income should be unimportant towards household consumption pattern since income is said to be pooled before distributed. Unfortunately household behavioral model with unitary approach is deemed insufficient for analyzing resources allocation in households, even the assumptions employed in this model are not well explicable in realities when some empirical studies showed that every household member cannot agree on priorities and preferences. Thus, there were alternative models being developed which relax key assumptions of unitary approach. Those models were generally described as collective model, where unitary model served as a special case (Alderman, 1995).

Basically, they assumed each household member has a different preference and/or bargaining power, and outcome from resources allocation in households emerge as a result of interactions of those various elements. Explicitly based on individual, whose preferences could range from altruistic (where private consumption enters into other's utility function area), caring (someone who cares about his/her partner's private consumption, as long as his/her consumption influences partner's utility), or egoistic (someone who only cares about own private consumption)(Quisumbing and Maluccio, n.d.) (Browning et al, 1994).

A simple bargaining model states that each individual spends income within his/her control without considering other members. Other model states that household allocation decisions resulted from bargaining processes where members try to allocate resources mainly into their desired goods. Even though the nature of bargaining process and equilibrium resulted could materialize in several forms, intuition of this model remains simple. Each family member has a fallback position (utility level) and will exit if his/her welfare falls below its critical point. Every utility exceeding and above individual critical point shared among household members is assumed correlates to their bargaining positions. A wife who brought more assets into marriage probably possesses more power to "force" her preferences in decision making, by controlling husband's assets brought into marriage. Focus group conducted in study by Thomas et al (1999) in Indonesia confirmed that someone who came from family of a higher status than his/her partner is inclined to exert more power in household due to control over his/her assets brought into marriage. Power tends to evolve with length of marriage and highly relates to individual income, either from working or else. If influence of assets brought into marriage on power possessed by an individual diminishes with length of marriage, then strength of power indicator will be measured as error and its effect estimates will be biased. Therefore asset selection as indicator is relatively less stable when compared to other indicators which are capable of determining bargaining power in households. Several empirical studies used individual's and his/her partner's education as an indicator which was deemed more stable.

Numerous literature studies subsequently corroborated the existence of collective model and refuted the existence of unitary approach. This is also frequently referred as pareto-efficient household decision, where in case there is a household member receive better, then other members would receive worse. Main differences in outcome produced under both approaches is that unitary model predicts parents would always pay attention to their children, while in collective model parents could either always pay attention, not pay attention, or even be neutral regarding the welfare of their (Ejrnaes & Portner, 2004). Several empirical studies within intrahousehold resources allocation framework that had been carried out in Indonesia mostly focused on health as one of welfare indicators. Some of them are the ones conducted by Beegle et al (2001) and Thomas et al (1999) which both concluded children welfare was influenced by relative power dimension held by their parents, but unfortunately test results from Thomas et al did not provide convincing evidence to reject unitary model, especially in regions outside Java and Sumatra. The more power exerted by women, the better children's health level. Meanwhile study by (Quisumbing and Maluccio,2002)), took place in Bangladesh, Ethiopia, Indonesia and South Africa focused on household expenditure pattern, especially education, and concluded that share of assets owned by women increased educational expenditures. However, this framework has not been much explored to determine impact of household resources allocation towards improvement of household income when head of the household is granted access to micro financial institutions. This fact becomes highly important since many decisions which influence the outcome of economic development are made in household level including the effect of providing micro financing assistances on household welfare.

Micro financial institutions (MFI) are broadly defined as financial institutions for credit purposes (micro) which provide financial services in small scale dedicated to those having limited access to traditional banking services (World Bank, 2007). The term MFI mostly implicates very small loans towards low income customers for self-employment financing accompanied by small-scale fund accumulation. The way in defining "small" and "poor" will affect what are included or not in MFI category. Small and micro credits according to Bank Indonesia are credits granted amounting up to a maximum of 50 million rupiahs. Grameen Bank (2003) defined micro credits as loans granted in small amounts to businesses having subpar qualifications when accessing loans from traditional banks. MFI as the name suggests basically not just deals with credits but also several programs offering saving and insurance products which are getting more popular as innovations in financial services offered to the poor.

From theoretical point of view, effect of micro credits can be attained from several channels, starting from relaxation of credit constraints, cheaper access to credits, changes in household bargaining power (when loans mostly granted to women), up to differences in decisions between large consumption expenditures versus large investment expenditures where the said households were unable to gain access to efficient saving instruments (Crépon et al.,2011). Direct effect mostly occurred are granting accesses to credit market for households previously neglected. When

these households experience credit constraints then micro credits can provide them with opportunities to start new businesses or expand existing business or increase expenditures in household assets, education and health. Micro credits also provide credit access opportunities to MFI including future needs which influence saving and insurance decisions. According to Deaton, households that keep assets or securities as a buffer against future shocks might decide to decrease their ownership (Crépon et al.,2011.)

RESEARCH METHOD

Empirical study in this paper used data from *Indonesian Family Live Surveys* (IFLS4) and IFLS 5 in 2007 and 2014. IFLS is a longitudinal and continual survey in the fields of social, economy and health. Survey conducted on sample representing 83% population of Indonesian citizens which resided in 13 provinces. Survey collected individual data, including family, household, smallest societal community where they resided and health and educational facilities they enjoyed. First wave of IFLS was conducted in 1993 with 72.444 household respondents. IFLS2 in 1997 re-interviewed the same respondents. Additional survey (IFLS2+) was conducted in 1998 with 25% sample to measure short term impact of economic and political crises in Indonesia. IFLS3 with full sample was conducted in 2000, and IFLS4 was conducted from the end of 2007 through beginning of 2008 for the same respondents as 1993. As many as 13.535 households and 44.103 individuals had been interview (Pitt and Khandker, 1998) ed (Strauss, et.al, 2009). From this sample, two groups would be eliminated, which are: 1) households moving to communities excluded from IFLS survey; 2) households included

IFLS list but have moved and untraceable thus unable to provide further information. IFLS5 data was released in 2014 with data from the same respondents.

Model in this study employed indicator who are decider or those who have relative power in households taken from the data regarding which party takes decisions for household affairs (food, education, and others). The decision makers in these households were being reported by head of the family and other adult family members. Thereby, the probability of endogeneity existed is very high due to probability of some variables affecting those relative positions, such as mentioned before which are relative assets before marriage, education, income from work, and family culture domains of each party. Since this research focused on determining woman's role in micro credit management and its impact on household welfare, the sample used here was limited to households which reported that the head of household was a woman.

According to description in IFLS manual, respondents declare that loan proceeds can be enjoyed by all household members. This means that whoever borrows, in this case female household heads, then all household members would feel the impact. Loans here are limited to those that do not came from family/relatives sources but from micro financial institutions (such as banks and cooperatives). In other words, as head of the household, women (in this sample) is assumed to have access, decision maker and responsible for management of loaned fund from financial institutions.

Measuring impact of MFI existence and participation in micro financing poses its own difficulties. Some analyses used loan amount as relevant measurement parameter

(Steele et al, 1998; Schuler & Hasheni, 1994; Khandker, 2005). Spillover effect could persist in households feeling the impact of those credits without having to borrow from MFI. Should this effect occur, then program existence on community level will be more accurate in measuring its impact compared to participation on individual level (Buttenheim, 2006). However in Indonesia case, using existence of MFI as treatment variable would produce less varied data due to MFI or micro credit program can be said to exist in every community or area. Thus treatment variable used as proxy was participation in micro credit program, or credit ownership ≤ 50 million rupiahs for at least one member in household led by a woman.

In order to anticipate the probability that those participations are endogenous, where there are observed and unobserved variables influencing individual's decision to participate in micro credit, thus fixed effect was used at community or area level. Fixed effect at community level would simultaneously detect the existence of differences at area level which probably influenced micro credit program and assumed to be time-invariant.

Indicator for household welfare outcome used here was household income either profit from agriculture and non-agriculture business, rent proceeds and work wages. In order to provide a more actual estimate of micro credit impact on outcome variable, numerous variables explaining individual characteristics must be controlled. Household level variable used as control variable was last education completed by these female household heads, whether those heads still had husbands or widowed, number of children up to 14 years old (has

yet to enter labor force age), number of adult household members, and job status of household head (employed or not).

There are several bias sources which potentially emerge in measuring program's impact, since it is very reasonable to assume that MFI did not emerge randomly in a community or micro credit was not granted randomly to someone. If MFI was established to target communities with large but potential poor households, then the unobserved community's characteristics (unobserved heterogeneity) which correlated with variables to be tested would provide biased impact estimates. Bias also might appear due to endogeneity problem emerging from household's decision to participate in the program or not (self-selection bias). To control non-random program placement with emergence probability of endogeneity and unobserved characteristics either from area or household characteristics in program participation, thus method employed here was fixed effect area. Equation used is as follows:

$$y_{ict} = \alpha + \beta_1 credit_{ict} + \beta_k X_{ict}^k + \delta_c + \varepsilon_{ict} \quad 1)$$

where y_{ict} indicate household income variable (in form of natural logarithm) and $credit_{ict}$ is dichotomy variable which is micro credit intervention (code 1, if at least one household members receive credit from MFI up to 50 million rupiahs, and code 0 if otherwise). X_{ict}^k is observed household characteristics, and δ_c is fixed effect area which simultaneously captures unobserved community characteristics which correlate with MFI placement and eliminate endogeneity at household level from micro credit participation and assumed time-invariant. ε_{ict} is idiosyncratic error which is assumed uncorrelated with other explana-

tory variables (strict exogeneity assumption). The above equation could subsequently be analyzed using OLS and produce unbiased estimator. β_1 value is estimated measure of household income differences between those who received micro credit and those who did not.

RESULTS AND DISCUSSION

Pitt and Khandker (1998) concluded that MFI customers who were granted credit earned higher per capita income compared to those who did not where per capita expenditures and household welfare also showed similar results, while simultaneously concluded poverty in receiving group was lower compared to non-receiving group.

By using two waves of IFLS surveys, period 2007 and 2014, number of samples included in study was 5.066 households. Treatment variable in this study has to be ensured to eliminate selection bias from the existence of treatment. By using dichotomy variable, code 1 when one individual in household received micro credit from MFI an 0 if otherwise, it can be inferred that this variable was exogenous since determinant of individual's worthiness in receiving credit was eligibility analysis from MFI, not determined by the individual herself.

MFI could make an impact to various aspects of communal living, especially customer's business, customer and her family's welfare, as well as surrounding community. It could be inappropriate to assume that cash borrowed by a particular individual in a household for certain purpose will only be spent according to his/her purpose. As commonly occurred, loan usually would be allocated for various urgent household needs such as food, health, or school. Albeit MFI targets women, loans would frequently reached their husbands. Thus it would be biased if we only measure business fluctuations when evaluating credit program.

Outcomes which could be directly enjoyed from MFI participation were changes in household income (World Bank, 2007). Non-monetary impact from MFI participation were said to be of a greater extent, most prominent examples were children's education level and their nutrition, housing inventories, empowerment, and social capital. MFI most of the time interacts with customers within the category of informal sector without earning regular wages, thus measurement of MFI impact in developing countries would be much easier when using consumption compared to income measurement. Nevertheless, this research would promote income as outcome measure of micro credit impact especially in households led by women. Test results are as shown in Table 1.

Calculation results using regression technique showed that households with access to micro credit earned higher income compared to those who did not have access. Differences in magnitude of credit impact can be seen for 2007 and 2014. Differences in household income between micro credit recipients and non-recipients in 2007 (2.069) was greater than in 2014 (1.836), while overall it can be said that micro credit access in women-led households had a positive impact on improvement of household income.

Table 1. Impact of Micro Credit Access on Woman-led Household's Income

VARIABLES	ln_income (full sample) (1)	ln_income (sample 2007) (2)	ln_income (sample 2014) (3)
dloan	1.896***	2.069***	1.836***
	(0.205)	(0.287)	(0.283)
primary	1.544***	0.704**	2.640***
	(0.265)	(0.324)	(0.431)
secondary	0.788**	-0.218	2.114***
	(0.369)	(0.513)	(0.548)
tertiary	1.448***	0.381	2.764***
	(0.352)	(0.471)	(0.536)
university	0.441	-1.582***	2.555***
	(0.422)	(0.606)	(0.612)
agehead	0.0523***	0.0262**	0.0781***
	(0.00766)	(0.0105)	(0.0109)
marriedhead	0.445**	0.135	0.771**
	(0.222)	(0.320)	(0.305)
numchild1	-0.345	0.290	-0.994*
	(0.383)	(0.502)	(0.558)
numchild2	0.458***	-0.224	1.074***
	(0.168)	(0.248)	(0.228)
numchild3	0.179	0.107	0.200
	(0.117)	(0.161)	(0.173)
numadult	0.670***	0.711***	0.639***
	(0.0369)	(0.0515)	(0.0517)
not_employed	-4.067***	-4.311***	-3.817***
	(0.359)	(0.466)	(0.561)
Constant	6.405***	8.806***	3.738***
	(0.503)	(0.659)	(0.765)
Observations	5,066	2,372	2,694
Prob. F	0.000	0.000	0.000
R-squared	0.167	0.168	0.180

Note: Robust standard errors in parentheses. *** $p_{val} < 0.01$, ** $p_{val} < 0.05$, * $p_{val} < 0.1$

Financial services it of paramount importance for economic development. Credit access can assist a household in starting saving and anticipate uncertainties by providing opportunities or economic prospects such as starting new businesses, expansion, improving efficiency, and competing in both local and global markets. As for poor households, this access would minimize vulnerability and enable them to manage assets in such ways as to improve income, which clearly is a way to remove someone out of poverty (Sutton and Jenkins, 2007).

There were numerous developments in rational thinking in order to broaden women's access to various economic resources. One of the rational reasoning refers to implications of women's access on their children's welfare. Previous studies has proved that women's access towards resources including education, paid occupations, credit, land, technology, and other productive assets would produce much stronger impact on resiliency, welfare, and child education compared when the same resources were managed by men (Quisumbing and Maluccio, 2003 ; Smith et al., 2003).

Women's access to financial services, including saving, insurance, transfer/ remittance, and credit is vital to enable them to enjoy full benefits from various economic prospects. Current limitation is lack of consensus regarding the extent of access to micro financing in empowering women. While there are evidences that micro financing has a positive impact on income, limitation of income improvement persists.

Other than credit access, numerous important characteristics also influence improvement of household income such as education, age, employment status, and marital status. Unlike number of children aged 7 or below which tend to decrease income level of a household. Once those children grows (aged 7-14), they would work to assist family in order to improve household income.

Analysis with panel data by (Khandker, 2005) estimated the existence of aggregate impact of MFI on consumption and poverty. As results, MFI would not only boost consumption since loan proceeds would increase participant's chances of exiting poverty, but MFI would also provide benefits to non-participant through local income growth. The existence of spillover impact in this study is detected by increasing the level of MFI intervention analysis, similar to those employed by Pitt and Khandker (1998) , by employing fixed effect area to capture slight differences existed at area level which might influence MFI intervention.

The results of other variables, which in this case become control variables, shows results according to general hypothesis that we have believed. Education has a positive and significant impact on the increase of Woman-led Household's Income at each level. This reinforces the importance of education in efforts to improve families and communities welfare. The variable age of the head of the family also has a positive effect on the increase in family income. But the weakness of this variable is tend to be non-linear. If you are at an unproductive age, over 65 years, then the income marginal tends to decrease. Table 2 shows test results using OLS method and fixed effect. The presence or absence of a spouse in the household also gives a positive influence on family income, although the effect is not too significant. This further demonstrates the dominance of women's role in earning a living for the family as head of the family. The number of children does not have a significant effect on household income, but the number of adults in the household has a positive effect.

Analysis results using fixed effect model showed that micro credit had a significantly positive and robust impact on women-led household's income in Indonesia. Several studies showed that by utilizing micro credit, its recipients would be able to improve their income through starting new businesses, expanding existing business or utilizing loaned fund for productive purposes in order to boost income (some of which are Wright 2000, Khandker, 1998, 2001; Robinson, 2001; Hulme & Mosley, 1997; Zaman, 2000). Education, employment status, and number of adult household family members also had a positive impact on household income, while the same could not apply to marital status. This fact shows that whether husbands exist or not, it would not influence income for women-led households.

Number of children also tend to be non-influencing. This could show that women as head of the household do not rely on their children for household income.

Table 2. Impact of Micro Credit on Woman-led Household's Income using OLS Model and Fixed Effect

VARIABLES	ln_income (OLS) (1)	ln_income (fixed HH) (2)	ln_income (fixed EA) (3)	ln_income (fixed Prov) (4)
lnloan	0.134***	0.0754***	0.130***	0.123***
	(0.0142)	(0.0291)	(0.0159)	(0.0107)
primary	1.537***	0.00539	1.289***	1.129***
	(0.265)	(0.771)	(0.304)	(0.316)
secondary	0.774**	-2.901**	0.480	0.703
	(0.369)	(1.278)	(0.433)	(0.424)
tertiary	1.423***	-0.0485	0.965**	1.097**
	(0.352)	(1.459)	(0.426)	(0.433)
university	0.403	2.598	0.0690	0.106
	(0.422)	(1.829)	(0.546)	(0.678)
agehead	0.0519***	-0.0262	0.0446***	0.0199**
	(0.00766)	(0.0278)	(0.00880)	(0.00900)
marriedhead	0.442**	0.310	0.351	-0.0343
	(0.222)	(0.716)	(0.268)	(0.383)
numchild1	-0.364	0.448	-0.536	0.0754
	(0.383)	(0.527)	(0.363)	(0.337)
numchild2	0.457***	0.269	0.479***	0.317
	(0.168)	(0.292)	(0.165)	(0.195)
numchild3	0.174	0.367	0.213	0.199
	(0.117)	(0.275)	(0.131)	(0.126)
numadult	0.669***	0.848***	0.665***	0.607***
	(0.0369)	(0.226)	(0.0436)	(0.0343)
not_employed	-4.068***	-2.314***	-3.761***	-3.781***
	(0.359)	(0.683)	(0.377)	(0.418)
Constant	6.442***	10.46***	7.047***	8.974***
	(0.503)	(1.732)	(0.603)	(0.636)
Observations	5,066	5,066	5,066	4,361
R-squared	0.167	0.056	0.154	0.134
Number of HH		3,939		
Number of EA			319	
Number of provid				21

Note: Robust standard errors in parentheses. *** $p_{val} < 0.01$, ** $p_{val} < 0.05$, * $p_{val} < 0.1$

The empirical results on women's status in order to improve child nutrition analyzed by (Smith et al., 2003) left little doubts that higher women status has a significant, positive effect on children's nutritional status in three developing regions (South Asia, Sub-Saharan Africa, and Latin America and the Caribbean). Furthermore, it was confirmed that women's status impacts child nutrition since women with higher status have better nutritional status themselves, are better cared for, and provide higher quality care to their children. The study defines women's status as women's power relative to men. Women with low status tend to have weaker control over household resources, tighter time constraints, less access to information and health services, poorer mental health, and lower self-esteem.

Impact of credit access also showed differences when granted to rural and urban households as shown in Table 3.

Table 3. Impact of Micro Credit on Woman-led Household's Income in Rural and Urban Areas

VARIABLES	(1) ln_income (rural sample)	(2) ln_income (urban sample)
lnloan	0.157***	0.108***
	(0.0217)	(0.0186)
primary	1.933***	0.713*
	(0.353)	(0.397)
secondary	0.732	0.482
	(0.529)	(0.511)
tertiary	1.354**	0.656
	(0.542)	(0.477)
university	0.326	-0.662
	(0.650)	(0.566)
agehead	0.0632***	0.0211*
	(0.0108)	(0.0109)
marriedhead	0.399	0.591*
	(0.308)	(0.314)
numchild1	-0.992*	0.498
	(0.551)	(0.474)
numchild2	0.582**	0.300
	(0.226)	(0.246)
numchild3	0.343**	-0.00561
	(0.166)	(0.165)
numadult	0.724***	0.591***
	(0.0566)	(0.0484)
not_employed	-3.917***	-3.958***
	(0.518)	(0.505)
Constant	4.991***	9.608***
	(0.707)	(0.723)
Observations	2,694	2,372
Prob. F	0.000	0.000
R-squared	0.184	0.144

Note: Robust standard errors in parentheses. *** $p_{val} < 0.01$, ** $p_{val} < 0.05$, * $p_{val} < 0.1$

Number of women-led household samples was greater in rural compared to urban areas, thereby in terms of impact, micro credit provides greater impact on household income in rural compared to urban areas. A study by Sanjaya and Nursechafia (2016) on financial inclusion across provinces in Indonesia found that despite the success achieved in terms of economic growth and poverty level, large differences existed in poverty rates between rural and urban areas, with extreme poverty in urban areas is usually higher than in rural

areas. In spite of borrowing from banking facilities, poor households tend to use informal financial services. The dominant role of non-formal financial institutions in Indonesia, especially in rural areas, indicates that the financial markets do not function properly. Therefore, credit access would provide greater benefit in rural areas compared to urban areas.

CONCLUSION

Numerous empirical studies have corroborated the existence of behavioral differences between men and women in managing their household assets, including in this case, access to credit. Welfare improvement from various aspects, such as income, health, as well as education of household members (primarily children) became better when women have higher status in household decision making.

This article employed IFLS data waves 4 and 5 in order to determine whether there were improvements in women-led household's income when women were granted credit access to micro financial institutions. Analysis by means of fixed effect model was applied to control for probability of bias. Analysis results showed that micro credit access had a positive and very significant effect on improvement of household income. This could be explained as credit access provides women as head of the family an opportunity to start new business, expanding existing business, or utilizing loaned fund for productive purposes in order to improve income.

REFERENCES

Alderman, Harold et al. (1995). Unitary versus Collective Models of the Household: Is It Time to Shift the Burden of Proof?. *The World Bank Research Observer*, 10 (1),1-19

Becker, Gary. (1974). A Theory of Social Interactions. *Econometrica*, 82 (X), 1063–1093.

Buttenheim, Alison. (2006). Microfinance Programs and Contraceptive Use: Evidence from Indonesia. *California Center for Population Research On-Line Working Paper Series*

Crépon, Bruno, Florencia Devoto, Esther Duflo and William Parienté. (2011). Impact of microcredit in rural areas of Morocco: Evidence from a Randomized Evaluation. *Unpublished Working Paper*

Demirguc-Kunt, Asli, Leora Klapper, Dorothe Singer. (2017). Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence. *Policy Research Working Paper* No. 8040. World Bank, Washington, DC.

Demirguc-Kunt, Asli, Leora Klapper, Dorothe Singer, and Peter Van Oudheusden. (2015). The Global Findex Database 2014 Measuring Financial Inclusion around the World. *Policy Research Working Paper* No. 7255. World Bank, Washington, DC.

Ejrnaes M and C. Pörtner. (2004). Birth Order and the Intrahousehold Allocation of Time and Education. *Review of Economics and Statistics*, 86,1008-1019

Fuwa, Nobuhiko et al. (2006). Introduction to A Study of Intrahousehold Resource Allocation and Gender Discrimination in Rural Andhra Pradesh, India. *The Developing Economies*, 44 (4)

Hazarika, Gautam and Sarangi, Sudipta. (2005). Household Access to Microcredit and Child Work in Rural Malawi. *IZA* DP No. 1567

Khanker, Shahidur R. (2005). Microfinance and Proverty: Evidence Using Panel Data from Bangladesh. *The World Bank Economic Review*, 19(2),263-286

Mandiri Institute. (2015). *Financial Inclusion in Indonesia*. Policy Paper on Financial Inclusion

Norwood, Carolette. (2014). Women's Empowerment and Microcredit: A Case Study from Rural Ghana. *J Int Stud Dev*, 4, 1–22

Pitt, M.M and Shahidur R. Khanker. (1998). The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter?. *Journal of Political Economy*, 106(5), 958-996

Prawihatmi, Chatarina Yekti. (2018). Acceleration of Poor Women Capability in Increasing Income Through Self-Help Group. *Jejak*, 11 (1), 123-137

Quisumbing, Agnes R. and John A. Maluccio. (1999). Intrahousehold Allocation and Gender Relations: New Empirical Evidence. *The World Bank, Development Research Group*, Working Paper Series, No. 2 Policy Research Report on Gender and Development

Sanjaya, I. M., & Nursechafia. (2016). Financial Inclusion and Inclusive Growth: Cross-Province Analysis in Indonesia). *Bulletin of Monetary and Banking Economics*, 18(3), 281-306.

Sutton, C.N., Jenkins, B., n.d. The Role of the Financial Services Sector in Expanding Economic Opportunity 48.

Steele, Fiona. Sajeda Amin, and Ruchira T. Naved. (1998). The impact of an Integrated Micro-Credit Programme on Women's Empowerment and Fertility Behavior in Rural Bangladesh. *Population Council Working Papers* No. 115, 1-43.

Setyari, Ni Putu Wiwin. (2012). Micro Credit Impact Evaluation to the Household Welfare in Indonesia: Panel Data Analysis. *Applied Economic and Quantitative Journal*, 5(2), 79 - 150

Smith, Lisa C., Usha Ramakrishnan, Aida Ndiaye, Lawrence Haddad, and Reynaldo Martorell. (2002). The Importance of Women's Status for Child Nutrition in Developing Countries. Research Report 131. International Food Policy Researcb Institute

Thomas, Duncan. (1994). Like Father, Like Son; Like Mother, Llike Daughter: Parental Resources and Child Height. *The Journal of Human Resources*, 29 (4), 950-988

Thomas, Duncan; Contreras, Dante; Frankenberg, Elizabeth. (1999). Distribution of Power Within the Household and Child Health. *Unpublised manuscript*, download at www. rand.org

United Nations. (2009). World Survey on the Role of Women in Development: Women's Control over Economic Resources and Access to Financial Resources, including Microfinance. *United Nations*. New York.

World Bank. (2010). *Improving Access to Financial Services in Indonesia.* Washington, DC.