



Humanomics

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Rofikoh Rokhim George Adam Sukoco Sikatan Arief Wibisono Lubis Mohammad Irwan Setyawan

Article information:

To cite this document:

Rofikoh Rokhim George Adam Sukoco Sikatan Arief Wibisono Lubis Mohammad Irwan Setyawan , (2016), "Does microcredit improve wellbeing? Evidence from Indonesia ", Humanomics, Vol. 32 Iss 3 pp. 258 - 274

Permanent link to this document:

<http://dx.doi.org/10.1108/H-04-2016-0037>

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Does microcredit improve wellbeing? Evidence from Indonesia

Rofikoh Rokhim, George Adam Sukoco Sikatan,
Arief Wibisono Lubis and Mohammad Irwan Setyawan
*Department of Management, Faculty of Economics and Business,
Universitas Indonesia, Depok, Indonesia*

Abstract

Purpose – This study aims to investigate whether microcredit programme has a positive impact on productive poors. Several areas of investigation include clients' borrowing behaviour, level of savings and before-and-after psychological well-being comparison.

Design/methodology/approach – A case-study survey of 398 clients of a microcredit programme run by a charity organisation in Jakarta, Indonesia, was conducted in 2012. Descriptive statistics and cross-tabulation analyses were then performed to show the variation of different variables among the respondents and how they correlate with socio-demographic indicators.

Findings – The result shows an indication that microcredit brings positive impact on the clients' welfare; however, the effect is not linear and there might be an optimum borrowing frequency. Moreover, the output also suggests that age, level of income and level of savings are three important determinant of borrowing behaviour.

Research limitations/implications – Although the result can be justified, it is necessary to be cautious about its generalisability because of limited number of sample and non-randomised sample selection.

Originality/value – Although the microcredit programme examined in this study has been operating since 2010, there is by far no comprehensive study to assess its impact on the welfare of the clients. This study attempts to fill in the gap by providing an analysis on how microcredit programme increases the welfare of the clients. In addition, as part of the continuous improvement programme, the study also identifies a number of factors that might indicate the clients' borrowing behaviour.

Keywords Indonesia, Well-being, Household income, Microcredit, Household spending

Paper type Case study

Introduction

Indonesia is blessed with its demographic profile to have a huge labour potential workforce. Based on the World Bank data, between 2013 and 2020, the working-age population will reach 189 million, in which an almost 15 million increase is expected from the 2013 level of 174 million (World Bank, 2014b). With these sources and appropriate policies, Indonesia can achieve far better than its current position. Bank

JEL classification – I31, I32, R20

The authors would like to express their gratitude for the generous support from Veronica Colondam, Bobby Hartanto, and Rosita Ariel of Yayasan Cinta Anak Bangsa (Y CAB) during the research process, especially regarding data collection and tabulation. The authors are responsible for all the errors in this article.



Indonesia predicts that if structural reforms are able to make good progress, economic growth could reach 6.5 per cent in 2018 (Bank Indonesia, 2014).

However, the gap between the poor and the rich is still huge. There is a risk that growth is not inclusive enough. World Bank survey highlights that Indonesia's poor and vulnerable households have seen a much slower income growth than their most affluent counterparts, leading to a rise in inequality over the decade. There has been inequality in this economic growth. Between 2003 and 2010, it was recorded that the real annual growth of per capita consumption was only 1.3 per cent for those who are included in 40 per cent of the poorest households. This number is significantly low when we compared to 3.5 per cent for the next 40 per cent and 5.9 per cent for the top 20 per cent.

Another problem that has been realised is the limited access to financial system. According to World Bank (2010), there are less than 50 per cent Indonesians who use financial services (in terms of savings/credit) offered by banks. This percentage places Indonesia in a worse position compared to Sri Lanka, Thailand and Malaysia. Access to banking services among the poor is only around 20 per cent. The very low penetration of formal financial sector means that there is a huge potential for formal financial services in Indonesia's market. In the same survey, it was revealed that almost 40 per cent can be classified as financial excluded.

According to 2014 Data from the World Bank's Global Financial Index (World Bank, 2014a), approximately 2 billion working-age adults around the world did not have formal financial accounts, dropped around 20 per cent from the 2011 figure. This is an indication that there are still many people who do not access to formal financial services. They did not have any deposit account, debit card, insurance, college saving, home mortgage and other financial services. These people strongly relied on traditional mechanisms which are risky and often very expensive. We should not be surprised that many of them still live under poverty and face difficulties in improving their standard of living.

Microfinance is one of the useful tools to alleviate poverty among these people. Karlan and Zinman (2010) find that access to consumer credit can also improve welfare. It can help people who are excluded from formal financial services to get financial services that they need. Therefore, it is expected that they can generate additional income which can be used to finance their day-to-day expenditure and improve their quality of life. Ultimately, the main goal of microfinance is to provide people with low income an effective support to become self-sufficient by giving them access to savings and borrowing for money. This support will strengthen the whole economy of the country because prior studies have shown a positive impact of financial development to the economy (Levine, 1997, for a summary of the literature on this topic).

With the emergence of microfinance around the world, some scholars put the topic in the limelight of their research. Numerous studies tried to measure the impact of microfinance despite the difficulties and controversial aspects of evaluation processes (Maldonado and González-Vega, 2008). Some use a relatively direct measure from the perspective of microfinance suppliers, such as the repayment rate. However, because microfinance programme often targets human development as part of the economic and social enhancement, other criteria such as education, health and women empowerment have received many attentions (Kabeer, 2001; Maldonado and González-Vega, 2008; van Rooyen *et al.*, 2012). The results of these previous studies are inconclusive, with some

suggesting that microfinance leads to positive impact, whereas others are in doubt about these claims.

Indonesia is an interesting case study because the country has a long history of microfinance. *Badan Kredit Desa* (BKD or Village Credit Organisation), which are village-owned banks offering microcredit on commercial terms, was one of the pioneers of microfinance providers in the country. Probably the most well-known institution in the history of microfinance in Indonesia is Bank Rakyat Indonesia (BRI). BRI is a commercial bank which is owned by the government and has a specialisation on microfinance for the past decades. Indeed, there were several other players, which had a role in microfinance industry in Indonesia, including non-bank financial institutions such as the cooperatives. Despite the long history of microfinance in Indonesia, several studies have shown that there is still an unmet demand for microfinance services because most of rural households still do not have access to a source of funds from a semi-formal or formal institution (World Bank, 2010).

Non-governmental organisation (NGO) has a role to reach lower towards the end of these rural households. As a non-bank financial institution, they are not directly regulated by *Otoritas Jasa Keuangan* (OJK/financial services authority) but registered and licensed by other state authorities. As one type of the players in the semi-formal financial sector, NGOs still have limited role in the provision of microfinance in Indonesia. The vast majority of NGOs that provide financial services remain unsustainable and dependent on government or donor funds to operate.

This study aims to determine the following two important things:

- (1) First, we attempt to identify several factors that can be used as predictors of borrowing behaviour of the clients.
- (2) Second, whether microcredit leads to an improvement of the clients' welfare.

The focus of this study is on the microcredit programme channelled by Yayasan Cinta Anak Bangsa (YCAB) which is an NGO based in Jakarta, Indonesia, that has been providing microcredit for women entrepreneur since 2010. As per September 2013, it has 14,941 women entrepreneur as its clients. The result indicates that microcredit has a positive impact on clients' welfare. This effect of borrowing frequency on clients' quality of life is likely not to be linear, suggesting that there is an optimum borrowing frequency that let the clients manage their finance to improve their well-being. Another important result is that socio-demographic indicators such as age, level of income and level of savings are important predictors of borrowing behaviour.

The remaining of this paper is structured as follow: the second section provides a summary of previous literature, whereas third section explains the research methodology, particularly on the design of the questionnaire. In fourth section, we provide the results and discussions, and the last section concludes the paper.

Literature review

Demand factors for microcredit

There are several factors that affect the demand side for microcredit. We divide it into three main factors: individual factor, household factor and cost factor. Individual factors consist of age, gender, marital status and education. Household factors include level of income, asset size and family size. Finally, for cost factor, transaction cost will be the determinant.

The relationship between age and demand for credit can be explained using the life-cycle hypothesis (Modigliani, 1966). It argues that young individuals are more inclined to earn higher level of incomes and more active to engage in financial activities including savings and borrowing to accumulate wealth. These individuals are more likely to save and/or borrow rather than older individuals. The latter tend to rely on their past savings and accumulated wealth. The young are also more likely to invest in things that demand large capital outlay, which means they might have higher level of demand for credit. Therefore, we can expect that there is a negative relationship between age and demand for credit.

Gender is another social identity that has been shown to have an impact on demand for credit. In some regions, the social construction limits women's participation in the market activities, because traditionally they are expected to focus on their duties inside the households. Negative perception towards women who pursue non-traditional entrepreneurial role is strong in these areas (Fletschner and Carter, 2008). With a specific regards to demand for credit, women tend to have limited control on households assets which can be utilised as collaterals. In most of the cases, they need special permission from their spouses or other family members when they need to pledge certain assets as collaterals (Kamau, 2014). This is one reason of why many microfinance programmes, which aimed at minimising the access to funds' barriers, focus their on channelling their credit to women.

Tang *et al.* (2010) has found education as important variable that affect households demand for credit. Their finding shows that additional year of education by head can potentially increase the probability of borrowing by 2.5 per cent. Furthermore, they stated that while education increases households' probability to borrow from formal credit markets, it decreases or does not affect the informal credit demand at all. On the contrary, Chen and Chivakul (2008) argue that education at primary and secondary level may be affected positively, but, at four-year university level, education has negatively impacted yet insignificant effect. We can interpret this as an indication that those with high education have high income and or wealth and there is little need to borrow.

Household income is another important factor that can predict the demand for credit. Low levels of income lead to limited savings and lower demand for credits compared to a situation where one has higher income. We can then expect that households with high level of income are more likely and more frequently demand larger amount of credit (Chen and Chivakul, 2008). On the other hand, Ferede (2012) argues that because of the very high marginal utility of consumption among people with very low income, their demand for credit in general is higher.

In addition to income, households' assets have been shown to be an important determinant for microcredit demand. Duflo *et al.* (2008) show the negative relationship between the amount of livestock owned and demand for credit. The argument behind this is that having more livestock means less need for capital and thus credit. When talking about assets, we should not only talk about the quantity of assets but also the value of those assets. Mpuga (2004) shows that the value of assets rather than number of assets strongly determine demand for credit.

Hanna and Rha (2000) show that the change in family size and uncertainties in the future make a household's inter-temporal consumption pattern changes. Increase in consumption force them to apply microcredit loan. Also, larger households are more exposed to shock (e.g. illness) from higher number of household members. Tang *et al.*

(2010) have found other result that higher number of household member has a negative impact on microcredit demand. This is because of the fact that the larger households are likely to bigger portion of their income and thus have less collateralisable assets.

Finally, transaction cost has significant influence for households' credit demand. There are many components of transaction costs, including transportation cost. Those who live in villages usually face relatively high transportation costs, which increase their costs to access credit (Zeller *et al.*, 1997). For example, Tang *et al.* (2010) revealed that further distance between the village and the nearest bank will reduce the probability of borrowing.

Microcredit impact

With the emergence of microfinance that has been argued as a solution for poverty and inequality reduction, various attempts to determine the impact of such programme can be found in the academic literature. The results are inconclusive, in which some demonstrate that microfinance has an impact, whereas others doubt it and perceive that the positive impact is an overstatement.

In terms of income, Ashraf *et al.* (2009), Gubert and Roubaud (2005), Barnes *et al.* (2001b) and Nanor (2008) found that microcredit has a positive impact on business and household income. On the expenditure side, Nanor's (2008) research showed that microcredit has a positive effect on different types of expenditure. Microcredit loan is translated into children education and food expenditure, which are associated with activities that can improve quality of lives. This is particularly explains the finding of Goldberg (2005), who revealed that microcredit improved education of the borrowers' children. Banerjee *et al.*'s (2009) finding noted that there was no effect on average monthly expenditure per capita but expenditure on durable goods increased. Consumption was thus shifted from consumables to durable goods. There is a saving's effect of microfinance, in which Adjei *et al.* (2009), Barnes *et al.* (2001a), Dupas and Robinson (2013) and Ssewamala *et al.* (2010) stated that micro-credit have positive impact on the levels of poor people's savings. There is a unique finding in Ghana which community saving is mostly involuntary savings (Adjei *et al.*, 2009).

It is expected that financial improvement is translated into non-financial indicators. This particularly explains the numerous studies on whether there is a relationship between microfinance participation and non-financial indicators. van Rooyen *et al.* (2012) provide a summary of previous literature on the economic and social impact of microfinance in Sub-Saharan Africa. The dimensions included in their systemic review are income, savings, expenditure, health, nutrition, food security, education, child labour, women's empowerment, housing and job creation. The evidence indeed shows that microfinance has both beneficial and harmful effects on these dimensions. To look at more specific cases, Brannen (2010) and Barnes *et al.* (2001a) found microcredit participants are more likely to own their own home and make investments in the quality of their home than their control groups. For job creation factor, Gubert and Roubaud's (2005) finding stated that in 2001 the impact of microcredit on employment was positive and significant.

Among the negative voice against microcredit, Bateman (2010) argues that microcredit has not increased incomes but has driven poor households into a debt trap because of high interest rate, in some cases even leading to suicide. Barnes *et al.* (2001b) found an interesting fact that in Zimbabwe microcredit has a positive impact just for boy

and has negative impact for the girl. In another case microcredit does not appear to increase child labour, so we presume children are not being taken out of school to work but rather that clients have difficulties paying school expenses and therefore children (especially girls) are taken out of school (van Rooyen *et al.*, 2012).

Microcredit has been directed at women because it is believed that, compared to men, they are better as clients and that their access to microcredit has more favourable outcomes because women in general use the money from the credit for basic needs compared to men (Khandker, 2001). Barnes *et al.* (2001b) argue that microcredit empowers women. Microcredit contributes to women's decision-making power. Lakwo (2006) find evidences of women borrowers gaining financial management skills, owning bank accounts, gaining greater mobility outside their homes and taking pride in contributing to household income.

Research methodology

This study used cross-sectional data obtained from the welfare survey of microcredit programme of YCAB. The sample is formed by a group of women entrepreneur that are the clients of YCAB microcredit programme. As mentioned earlier, the total population is 14,941, i.e. the number of women entrepreneurs who receive loans from YCAB, whereas the recommended number of minimum sample using 95 per cent confidence level is 395. However, in this study we distribute the questionnaires to 398 respondents with 4.8 per cent margin of error. The survey took 11 working days, from 9-20 September 2013 and 4 October 2013.

The questionnaire was divided into several parts. The first part is intended to document a summary of the respondent's demographic characteristics, such as sex, age, marital status and education level. The following section asks some details regarding family's income, both before the respondents receive credit from YCAB and after receive the credit. To shed a light on the spending characteristics of the respondents, the respondents were asked to describe the pattern of different types of spending, including household spending (i.e. consumer goods spending), meal-related spending, cigarette, education, health, instalment and other spending. Similar to the structure of the part where we gather details of family income, both the ex-ante and ex-post loan spending were included in the questionnaire.

Because our clients are women entrepreneurs and borrowers of YCAB, the questionnaire also has a section about some information regarding respondents' business. In this section, we asked the capital, revenues, profit and number of employee of the respondents before and after the loan. The following part is one of the most important sections, which documents borrowing characteristics of the respondents. We gather information about the borrowing frequency, the use of loan, reasons of borrowing from YCAB and whether the respondents have ever failed in paying the instalments. We also collect data on several life aspects of the respondents, such as the status and physical condition of their house, food consumption pattern, education, health, savings and whether there is a change in these aspects before and after receiving the loan.

In analysing the data, we present the descriptive characteristics of several important variables and we conduct an informal comparison between the data before and after the loan. Because we are interested in looking how demographic characteristics might explain borrowing pattern and whether loans from YCAB have improved the

borrowers' welfare, we performed a cross-tabulation with chi-square analysis between some important variables.

Findings and discussion

This section provides the result of our analysis and the discussion. We divide it into four subsections: first we present the descriptive statistics and some analyses on them, followed by analyses on how socio-demographic and economic factors impact the borrowing behaviour of the clients, measured by the borrowing frequency. Afterwards, we analyse the relationships between borrowing behaviour and some welfare and household behaviour indicators.

Descriptive statistics

Table I presents the types of business, level of education and savings of our respondents, whereas Table II provides some additional statistical summaries regarding demographic characteristics, income, spending and borrowing behaviour. We can see that food producer dominates the sample of our survey and comprises more than 60 per cent of our total sample. The types of business that fall into the category of "others", which constitute more than 14 per cent of our total sample, are various and include non-staple foods (non-*sembako*) retailers, electronic services, laundry services and tailors. Most of our respondents did not have any formal education, and this is not surprising because most of them run the low-skilled businesses. Approximately 32 per cent of our respondent do not have any saving, but a significant majority of those with savings have less than IDR 1 million.

From Table II, we can see that the average number of person in a family among our respondents was four, with a maximum of ten and minimum of one. The average age of our respondent is 45 years, and the standard deviation is approximately 11 years. In

Variable	Response	<i>N</i>	(%)
Type of business	Food producer	242	60.8
	Goods producer	14	3.5
	"Sembako" (staples) retailer	45	11.3
	Credit	36	9
	Others	56	14.1
	Missing	5	1.3
Education	Total	398	100
	No formal education	353	88.7
	SD (elementary school)	23	5.8
	SMP (junior high school)	1	0.3
	SMA (senior high school)	3	0.8
	Missing	18	4.5
Savings (IDR)	Total	398	100
	1 million and less	266	66.8
	1.5 million	2	0.5
	5.1-10 million	1	0.3
	More than 10 million	1	0.3
	No savings	128	32.2
	Total	398	100.0

Table I.
Respondent's type of
businesses, education
and savings

Variable	N	Minimum	Maximum	Mean	SD
Age of main breadwinner (year)	391	19	88	45	11
Number of family	398	1	10	4	2
Total family income – before loan (IDR per month)	398	–	37,000,000	4,917,186	4,214,796
Total family income per person in family – before loan (IDR per month)	398	–	37,000,000	1,418,877	2,190,286
Total family income – after loan (IDR per month)	398	300,000	500,000,000	7,292,852	25,249,274
Total family income per person in family – after loan (IDR per month)	398	100,000	500,000,000	2,987,597	25,088,976
Household spending – before loan (IDR per week)	395	50,000	6,000,000	681,596	726,382
Household spending per person in family – before loan (IDR per week)	395	7,143	3,000,000	182,380	232,980
Household spending – after loan (IDR per week)	393	50,000	6,000,000	750,505	837,069
Household spending per person in family – after loan (IDR per week)	393	7,500	3,000,000	199,956	255,408
Consumption spending – before loan (IDR per week)	395	–	4,500,000	398,732	459,729
Consumption spending per person in family – before loan (IDR per week)	395	–	4,500,000	113,923	242,406
Consumption spending – after loan (IDR per week)	391	9,000	4,500,000	427,223	476,913
Consumption spending per person in family – after loan (IDR per week)	391	3,000	4,500,000	122,198	245,983
Cigarette spending – before loan (IDR per week)	293	2,000	1,350,000	108,003	119,526
Cigarette spending per person in family – before loan (IDR per week)	293	333	337,500	29,115	31,807
Cigarette spending – after loan (IDR per week)	291	2,000	1,350,000	112,065	126,231
Cigarette spending per person in family – after loan (IDR per week)	291	333	337,500	30,393	35,754
Education spending – before loan (IDR per month)	287	15,000	2,000,000	516,121	402,656
Education spending per person in family – before loan (IDR per month)	287	3,750	900,000	125,242	113,385
Education spending – after loan (IDR per month)	287	15,000	2,000,000	546,327	400,975
Education spending per person in family – after loan (IDR per month)	287	3,750	760,000	129,843	106,355
Health spending – before loan (IDR per month)	248	2,000	2,000,000	88,298	175,222
Health spending per person in family – before loan (IDR per month)	248	400	500,000	25,559	54,185
Health spending – after loan (IDR per month)	242	1,000	2,000,000	103,426	198,996
Health spending per person in family – after loan (IDR per month)	242	250	500,000	29,943	59,876
Capital – before loan (per week)	367	40,000	21,000,000	1,589,673	2,800,974
Capital – after loan (per week)	385	50,000	110,500,000	2,401,629	6,621,349
Revenues – before loan (per week)	367	40,000	28,000,000	2,182,722	3,385,430
Revenues – after loan (per week)	385	60,000	43,875,000	2,936,545	4,219,966
Profit – before loan (per week)	366	(300,000)	7,000,000	616,583	826,691
Profit – after loan (per week)	383	(160,000)	9,400,000	887,933	1,094,949
Number of employee – before loan (person)	19	1	420	100	150
Number of employee – after loan (person)	23	1	500	114	169
Borrowing frequency (times)	397	1	11	3	2

Table II.
Descriptive statistics

average, the respondents borrow three times from YCAB, whereas there was a respondent who borrowed 11 times. The table also provides comparisons of several variables before and after the loan. Because there are possibilities that the respondents borrowed more than one time from YCAB and the impact of the loan in each period is distinct, we took the maximum after loan value. As an illustration, when the family's income after loan one was IDR 3,000,000 and the income after loan four was IDR 4,500,000, we took the latter as the post-loan income value.

It is revealed that on average, the post-loan value of family income was higher than the pre-loan value, with a relatively significant increase of 48.31 per cent. When we take the average value of family income per person, we can see that the increase is much more significant, reaching a value of 110.56 per cent. Similar pattern is also found in all types of spending (i.e. household, consumption, cigarette, education and health), in which the post-loan spending was higher than the pre-loan values. Health spending experienced the largest increase in percentage term (17.13 per cent). Positive development between the pre- and post-loan value can also be found in all of our business indicators. Among those variables, capital has the highest percentage increase, which was more than 51 per cent. Profit's rate of increase was higher than the revenues, providing an indication that the clients have better operational efficiency. The post-loan average number of employees of our respondents was also higher, indicating that there is additional workforce employed as the result of credit provision.

Reflecting at these results, one might be tempted to make a direct conclusion that the positive development of our respondents, i.e. increase in income, savings, etc., was a consequence of receiving loans from YCAB. This is not necessarily the case because there are other potential variables, including the external conditions that interact with these variables.

Relationships between borrowing behaviour and welfare

To examine the relationships between borrowing from YCAB and borrowers' welfare, we perform chi-square analyses, with borrowing's frequency as the explanatory variable. Two indicators that can be used to see the borrowers' welfare are savings and income. Table III shows the cross-tabulation result between borrowing frequency and whether there is an increase in savings. In general, it is indicated that the higher the borrowing's frequency, the less likely there is an increase in borrowers' savings. This relationship is confirmed by the chi-square test, in which the result is significant at 5 per

Table III.
Cross-tabulation
between borrowing
frequency and
increase in savings

Variable	Response		Increase in savings		
			Yes	No	Total
Borrowing frequency	One-three times	<i>N</i>	229	44	273
		% within borrowing frequency	83.9	16.1	100.0
	Four times or more	<i>N</i>	93	31	124
		% within borrowing frequency	75.0	25.0	100.0
Total		<i>N</i>	322	75	397
		% total	81.1	18.9	100.0
Chi-square tests				4.39	
<i>p</i> -value				0.036	

cent. This finding is interesting because one might expect the opposite relationship, in which respondents with higher borrowing frequency will more likely to experience increase in savings. It might serve as an early indication that there is an optimum frequency of borrowing that will result in increase in savings.

A similar result is also found in the relationship between borrowers' frequency and increase in income (Table IV). The cross-tabulation result indicates that borrowers who borrow more frequently tend to less likely experience increase in their income. The relationship is statistically significant as shown by the chi-square test result. There is also an indication of optimum borrowing frequency that leads to increase in incomes. Therefore, it is difficult to confirm a similar conclusions by Ashraf *et al.* (2009), Gubert and Roubaud (2005), Barnes *et al.* (2001b) and Nanor (2008). However, to support this conclusion, one should further conduct a more thorough analysis, such as multivariate regression with other control variables.

Socio-economic factors and borrowing behaviour

In addition to see whether there are indications of positive impact of microcredit on the clients' welfare, as illustrated previously, our research also analyse how socio-demographic factors might affect demand for microcredit. We use age, marital status, education, income, saving and family size as variables to examine demand factors for microcredit, whereas borrowing frequency serves as the proxy of borrowing behaviour. We understand that borrowing frequency is not a perfect measure of borrowing behaviour. A respondent who has a lower borrowing frequency does not always mean to have a lower borrowing intensity because the nominal amount of loans that she borrows might significantly higher than those who borrow more frequently.

Table V provides the cross-tabulation result between borrower's age and whether there is an increase in demand for microcredit. Our finding suggests that there is a relationship between age and borrowing frequency, in which until the age of 55 years, the older the respondent, the less the borrowing frequency. However, one might note that interestingly, the respondents who are 56 years old or older are the ones who are most likely borrow more. The chi-square test result confirms that there is a significant relationship at 5 per cent between the two variables. This is partly in line with the life-cycle hypothesis that predicts the old are likely to borrow less and the young may tend to invest in off-farm activities, which require large capital outlays. Therefore, demand for credit is expected to vary positively with age (Modigliani, 1966; Zeller, 1994).

Variable	Response		Increase in income		Total
			Yes	No	
Borrowing frequency	One-three times	<i>N</i>	109	164	273
		% within borrowing frequency	39.9	60.1	100.0
	Four times or more	<i>N</i>	36	88	124
		% within borrowing frequency	29.0	71.0	100.0
Total		<i>N</i>	145	252	397
		% total	36.5	63.5	100.0
Chi-square tests				4.37	
<i>p</i> -value				0.037	

Table IV.
Cross-tabulation between borrowing frequency and increase in income

Table V.
Cross-tabulation
between age and
borrowing frequency

Variable	Response		Borrowing frequency		Total
			One-three times	Four times and more	
Age classification	0-35 years	<i>N</i>	52	32	84
		% within age classification	61.9	38.1	100.0
	36-45 years	<i>N</i>	84	35	119
		% within age classification	70.6	29.4	100.0
	46-55 years	<i>N</i>	95	28	123
		% within age classification	77.2	22.8	100.0
	56 years and more	<i>N</i>	39	25	64
		% within age classification	60.9	39.1	100.0
	Total	<i>N</i>	270	120	390
		% within total	69.2	30.8	100.0
Chi-square tests			7.99		
<i>p</i> -value			0.046		

Our result presented in [Table VI](#) shows that marital status is not a variable that affects demand for microcredit. With *p*-value 0.786, we can conclude that within the population, there is no significant difference of demand for microcredit among those who are married, single, divorced or widowed. This result is distinct from the study by [Mpuga \(2008\)](#) which states that with probit estimations, it was found that married individuals are more likely to demand credit because of changes in consumption. Based on marital status, YCAB borrower most likely come from people who have family.

[Table VII](#) examines the relationship between the level of education and the frequency of borrowing. In general, our result found no significant difference in borrowing frequency among those with different levels of education. This result is showed by *p*-value of chi-square test (0.476) which is not statistically significant, even at 10 per cent level of significance. This result rejected [Tang's \(2010\)](#) finding that found education as one important variable that affects households demand for credit. Their finding shows

Table VI.
Cross-tabulation
between marital
status and borrowing
frequency

Variable	Response		Borrowing frequency		Total
			One-three times	Four times and more	
Marital status	Married	<i>N</i>	244	100	344
		% within marital status	70.9	29.1	100.0
	Single	<i>N</i>	2	1	3
		% within marital status	66.7	33.3	100.0
	Divorced	<i>N</i>	6	4	10
		% within marital status	60.0	40.0	100.0
	Widowed	<i>N</i>	16	9	25
		% within marital status	64.0	36.0	100.0
	Total	<i>N</i>	268	114	382
		% within total	70.2	29.8	100.0
Chi-square tests			1.06		
<i>p</i> -value			0.786		

Variable	Response		Borrowing frequency		Total	Does microcredit improve wellbeing?
			One-three times	Four times and more		
Education	No formal education	<i>N</i>	244	109	353	269
		% within education	69.1	30.9	100.0	
SD		<i>N</i>	17	6	23	
		% within education	73.9	26.1	100.0	
SMP		<i>N</i>	0	1	1	
		% within education	0.0	100.0	100.0	
SMA		<i>N</i>	2	1	3	
		% within education	66.7	33.3	100.0	
Total		<i>N</i>	263	117	380	
		% within total	69.2	30.8	100.0	
Chi-square tests				2.50		Table VII. Cross-tabulation between education and borrowing frequency
<i>p</i> -value				0.476		

that additional year of education by head would increase the probability of borrowing by another 2.5 per cent and doubling land endowment would increase the probability by 5.6 per cent.

Table VIII presents the comparison of borrowing frequency among clients with different levels of income, with total family income as the explanatory variable, whereas Table IX uses family income per number of people in the family. Table VIII shows that family with higher income would tend to borrow in lesser frequency than the lower one. Chi-square test result also confirms that there is a significant relationship between level of income and frequency of borrowing. This result is not surprising because one might expect that families with better financial resources can cover their own spending without relying too much on external loan, including that from YCAB. Similar pattern is also found when we use the family income per number of people of family as the explanatory variable, as shown in Table IX. However, the chi-square test result is not significant.

Table X shows the result of cross-tabulation between savings level and borrowing frequency. In contradiction with the previous result on the relationship between income

Variable	Response		Borrowing frequency		Total	Income before loan and frequency of borrowing
			One-three times	Four times and more		
Income before loan (IDR month)	0-2,500,000	<i>N</i>	62	37	99	Table VIII. Income before loan and frequency of borrowing
		% within income	62.6	37.4	100.0	
	2,500,001-5,000,000	<i>N</i>	111	58	169	
		% within income	65.7	34.3	100.0	
	5,000,001 and more	<i>N</i>	100	29	129	
		% within income	77.5	22.5	100.0	
Total		<i>N</i>	273	124	397	
		% within total	68.8	31.2	100.0	
Chi-square tests				7.09		
<i>p</i> -value				0.029		

and borrowing frequency, which is straightforward, it is difficult to make a conclusion from this contingency table. This is particularly caused by the very limited sample who have savings over IDR 1 million. The chi-square test result confirms that there is a significant relationship between the two, however to claims that clients with higher level of income tend to borrow less is too risky.

Following Modigliani (1966) and Tang *et al.* (2010), we also examine whether there is a relationship between family size and borrowing intention. In our study, family size is proxied by the number of people in the family whose spending depend on the family income, whereas borrowing intention is measured by the borrowing frequency. Although from the table that is no clear pattern between family size and borrowing frequency, the result of chi-square test confirms a significant relationship in the sample (Table XI).

To understand whether there is change in the clients' self-assessment, we conducted a paired *t*-test analysis to examine the mean differences. We can see that in each of the self-assessment variable, there is a positive change between the post- and pre-loan value.

Table IX.
Income before loan
(per number of
people in family) and
frequency of
borrowing

Variable	Response		Borrowing frequency		
			One-three times	Four times and more	Total
Income before loan per person in family (IDR month)	750,000 and less	Count	92	50	142
		% within income	64.8	35.2	100.0
	750,001-1,500,000	Count	106	51	157
		% within income	67.5	32.5	100.0
	1,500,001 and more	Count	75	23	98
		% within income	76.5	23.5	100.0
Total	Count	273	124	397	
	% within total	68.8	31.2	100.0	
Chi-square tests			3.91		
<i>p</i> -value			0.142		

Table X.
Savings and
frequency of
borrowing

Variable	Response		Borrowing frequency		
			One-three times	Four times or more	Total
Savings before loan (IDR)	1 mio and less	<i>N</i>	179	87	266
		% within savings	67.3	32.7	100.0
	1-5 mio	<i>N</i>	2	0	2
		% within savings	100.0	0.0	100.0
	5.1-10 mio	<i>N</i>	0	1	1
		% within savings	0.0	100.0	100.0
	More than 10 mio	<i>N</i>	0	1	1
		% within savings	0.0	100.0	100.0
Total	<i>N</i>	181	89	270	
	% within total	67.0	33.0	100.0	
Chi-square tests			7.09		
<i>p</i> -value			0.029		

Variable	Response		Borrowing frequency		Total	Does microcredit improve wellbeing?
			One-three times	Four times and more		
Number of family member	1-3	<i>N</i>	98	40	138	271
		% within number of family member	71.0	29.0	100.0	
	4-5	<i>N</i>	131	66	197	
		% within number of family member	66.5	33.5	100.0	
Total	6 and more	<i>N</i>	44	18	62	Table XI. Number of people in house and frequency of borrowing
		% within number of family member	71.0	29.0	100.0	
Chi-square tests		<i>N</i>	273	124	397	
<i>p</i> -value		% within total	68.8	31.2	100.0	
				7.09		
				0.029		

We can see that the nominal largest change can be seen in the ability of future planning, whereas the smallest change was in the capability in defending his or her own opinion. The paired *t*-test shows *p*-values that are significant at 1 per cent level, suggesting that statistically there is an increase on clients' self-assessment (Table XIII).

Conclusion

This study attempts to examine the impact of microcredit provided by YCAB on the welfare of its women entrepreneur clients, as well as determine several characteristics that can be potentially used as predictors in borrowing behaviour. Previous studies have proven that several socio-economic indicators such as age, gender, marital status and education are important variables that might affect borrowing behaviour, i.e. the demand for microcredit. In this study, the frequency of borrowing was used as the proxy for borrowing behaviour. Other studies confirmed the positive impact of microcredit on the borrowers' clients.

Our descriptive statistics result show indications of the improvement of our clients' welfare between the pre- and post-loan period. The average values of post-loan welfare indicators, such as family income and various spending are higher than the pre-loan ones. However, to conclude that this is solely the result of the YCAB loan is premature. To analyse whether different borrowing intensity is associated with increase in welfare

	Difference in mean between post- and pre-loan	<i>t</i> -test	<i>p</i> -value	Table XII. Difference in self-assessment evaluation – before and after the loan
Future planning	1.692	-16.572	0.000	
Problem solving	1.504	-16.828	0.000	
Decision-making	1.477	-15.287	0.000	
Responsibility	1.250	-14.223	0.000	
Social life	0.909	-11.437	0.000	
Open to critic	0.929	-13.329	0.000	
Self-control	0.977	-12.196	0.000	
Positive thinking	0.952	-12.653	0.000	
Independence	1.327	-14.664	0.000	
Defend own opinion	0.921	-12.372	0.000	

(proxied by savings and income), we conducted the chi-square tests. Although the result is significant at 5 per cent level, there is no clear pattern of the relationship between the two. Our preliminary assessment suggests that there might be an optimum borrowing frequency that can increase welfare.

As we conducted the chi-square analysis to see whether socio-economic variables can serve as predictors of borrowing behaviour, we found that not all variables are significant. Among the significant ones are age, income before loans and family income. However, the contingency tables did not provide a clear whether the relationship is negative or positive. Finally, we performed the paired *t*-test to examine whether there is an improvement of self-assessment or the clients, and we found that for all of the aspects of self-assessment, positive impacts were confirmed.

Reflecting at the results above, further studies could be directed into focusing on how borrowing frequency correlates to increase in welfare, since current results are deemed inconclusive. A qualitative study that consists interviews and FGDs with the clients is expected to shed more lights on this relationship, including whether our suspicion about an optimum borrowing frequency can be confirmed or not.

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Corresponding author

Rofikoh Rokhim can be contacted at: rofikoh.rokhim@ui.ac.id

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