IJEM
International Journal of Economics and Management
Journal homepage: http://www.ijem.upm.edu.my

THE EFFECTS OF MICROCREDIT ACCESS AND MACROECONOMIC CONDITIONS ON LOWER INCOME GROUP

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ABSTRACT

This paper examines the impact of the microcredit access and macroeconomic conditions on the headcount of lower income group. By identifying the determinants that contribute to the successful impact can make the microcredit organization's evaluation more strategic and efficient that can leads to outgrow of the lower income group (proxy by Bottom 40 Headcounts) and move-up to the middle-income group. The study utilizes the panel data (fixed effect analysis) of 16-states and federal territories (Malaysia) from the year 2011 to 2015. Based on the overall findings of this study, it is crucial to analyze the impact from the microcredit access and macroeconomic condition on the headcount of lower income group. The study reveals that the number of loans per microcredit office has significant positive effect on lower income group headcount. The numbers of borrowings from the agriculture sector and female to male ratio borrowings have significant negative effect on the headcount of lower income group. The finding implies that the female has a higher tendency towards reducing the headcount of lower income group. Additionally the general macroeconomic condition also influences significantly the lower income group, as this group is vulnerable to economic shocks. This paper will contribute to the existing microcredit studies in the following dimension namely implications for academic, microfinance institutions and policymakers. Therefore, effective government fiscal policy as well as regulatory quality can be good instruments that may promote both uses and access as to microcredit that can be provided to reducing the lower income group headcount and develop family's economic wellbeing, besides narrowing the income inequality gap. The study has identified and unfolds determinants that are always the best choice for lower income group.

JEL Classification: G21, C33

Keywords: Microcredit access; macroeconomic condition; lower income group; microcredit organization

Article history:
Received: 1November 2017
Accepted: 10 Mac 2018

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INTRODUCTION

Microcredit is a way of providing flexible loans to the microenterprises because of the lack of collateral and weak business establishment practices based on the inability to secure repayments. Microcredit offers access to micro financial services and facilities such as loan provision, saving, deposit, insurance and repayment to those who are excluded by the mainstream financial system such as banks due to their poor income and cannot fulfil the regular loan criteria such as collateral (Ledgerwood, 1999; Robinson, 2001; Collins et al., 2009; and Littlefield and Rosenberg, 2004). Microcredit Organization (MO) is an important financing organization to assist micro entrepreneurs to increase their household income level, consumption expenditure, removing them from poverty by helping microentrepreneurs to develop their enterprises through microcredit initiatives (Mosley and Hulme, 2006; Ledgerwood, 1998; Littlefield et al., 2013; and Copestake, 2007). Therefore, this microcredit financial ecosystem is expected to assist the under qualified entrepreneurs in their existing new business and the implementation of their projects. On that note, many studies have also concluded that microcredit has contributed significantly in alleviating poverty and increasing the income levels (Littlefield et al., 2003; Roodman and Morduch, 2009; Armendáriz and Morduch, 2010; Bakhtiari, 2011; Odell, 2010; Roodman, 2012a). Besides that, some studies claim that there is no significant impact of microcredit on poverty and income (Angelucci et al, 2015; Donou-Adonsou and Sylwester, 2016; Rooyen et al., 2012). Therefore the past studies revealed two contradicting results: (i) alleviate poverty, and (ii) worsen poverty. This study will revisit the determinants using variables considered in the past studies that can contribute to future success of the lower income group.

In Malaysian scenario, one of the national agenda is ensuring equitable opportunities for all segments of society, especially the lower income group namely the Bottom 40 Category. This is because the lower income group should not miss out on the opportunities that come with national prosperity. Moreover, remaining in their current socio-economic status will affect society at large, This reduces the number of skilled workers needed to generate national output, lower the urban inequality, and limits the growth potential of rural and suburban areas (Economic Planning Unit (EPU) Malaysia, 2015). The lower income group has low educational attainment, and most household heads are either engaged in low-paying jobs, small-scale agriculture, or are self-employed in the informal sector. They are highly affected by inflation and rising cost of living, while some may not have benefited from the social safety nets (11th MP 2015-2020). They are also lacking in financial and nonfinancial asset ownership, highly reliant on government welfare benefits and services for their income generation and are easily affected by economic shocks.

Therefore, the role of the microcredit programs are important to help improve the delivery system of the Bottom 40 Category programs that have been implemented by the Government in order to support the lower income group and complement the Multidimensional Poverty Index (MPI). The current Financial Instituition, and credit cooperatives that have been complementing the existing MO's such as Amanah Ikhtiar

Malaysia (AIM), TEKUN Nasional (TN) and Yayasan Usaha Maju (YUM). They help promote the microcredit industry in Malaysia by providing micro enterprises to obtain financing from the formal financial system. Microcredit access principally allows to receive financial assistance up to RM50, 000 for business purposes without any collateral (BNM, 2016). Therefore the MOs that have been established provide credit to micro enterprises are keen on improving the welfare of the poor by increasing the families' income, narrowing down the income disparity, uplifting the wellbeing of these households and be more resilient to economic vulnerability. The micro enterprises with viable businesses will be able to access microcredit and all these initiatives are expected to develop microenterprises to next level (Bank Negara Malaysia (BNM), 2008).

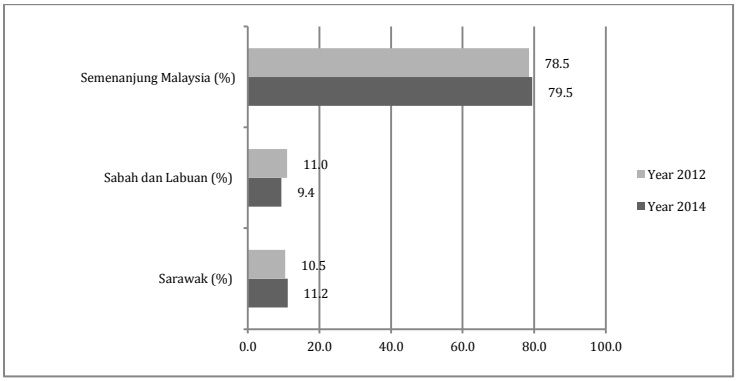
Therefore on that note, many studies in the Malaysian context, have indicated that the participants of microcredit program have shown positive relationship with increase incomes, better quality of life, and decreased vulnerability among the poor households groups in Malaysia (Al-Mamun et al., 2014; Samer et al., 2015; Chan and Ghani, 2011). Although the studies showed significant impact of Malaysian microcredit programs, there were also several weaknesses in the methodology such as bias selection and lack of controlling the effect of demographic characteristics.

Thus, the focus given by this study is to identify a number of microcredit access and macroeconomic determinants that have an impact on the lower income group. The lower income group here is a proxy of the Bottom 40 Category Household. Secondly, microcredit is also targeted towards developing micro-entrepreneurship in Malaysia. Thus, the sequence of this study begins with the introduction, literature review, results, discussion, conclusion and suggestions for further research.

Existing Lower Income Group and Microcredit Organization's Roles

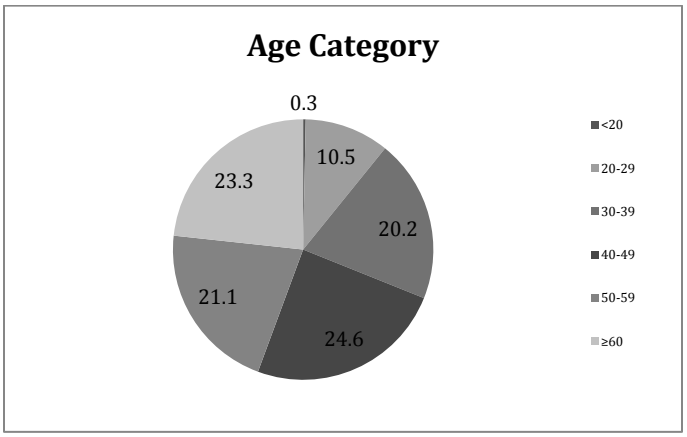
Based on the *statistical* data, in 2014, there are approximately 2.7 million in the lower income group with a mean monthly household income of RM2, 537. This income has increased to RM2, 848 in 2016 with a growth rate of 12.3% (11th Malaysia Plan 2016-2020, and DOSM, 2017). The propositions of lower income group household in Peninsular Malaysia and Sarawak have increased in 2014 compared to 2012; meanwhile has decrease in Sabah and Labuan. In 2014, the highest percentage in the lower income group bracket was between 40 and 49 years; and 80.7 per cent of lower income group were in the male category (EPU Malaysia, 2016). Refer to Figure 1, 2 and 3.

(i) Lower Income Group Analysis



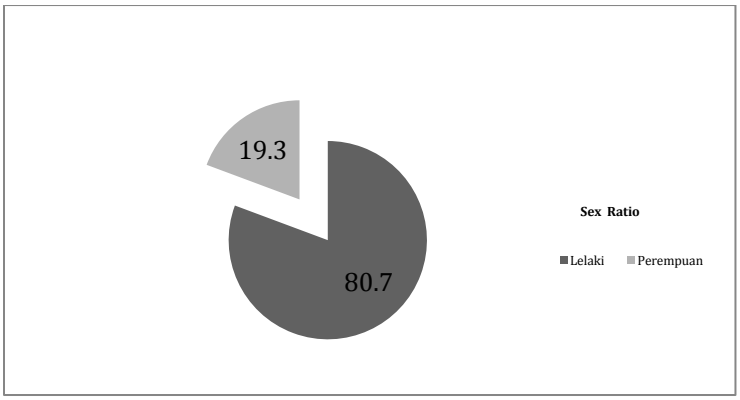
Source: EPU, Prime Ministers Department of Malaysia (2016)

Figure 1 Percentage of Lower Income Group Based on Territory, Malaysia for 2012 and 2014



Source: EPU, Prime Ministers Department of Malaysia (2016)

Figure 2 Percentage of Lower Income Group Based on Age Group, Malaysia, 2014



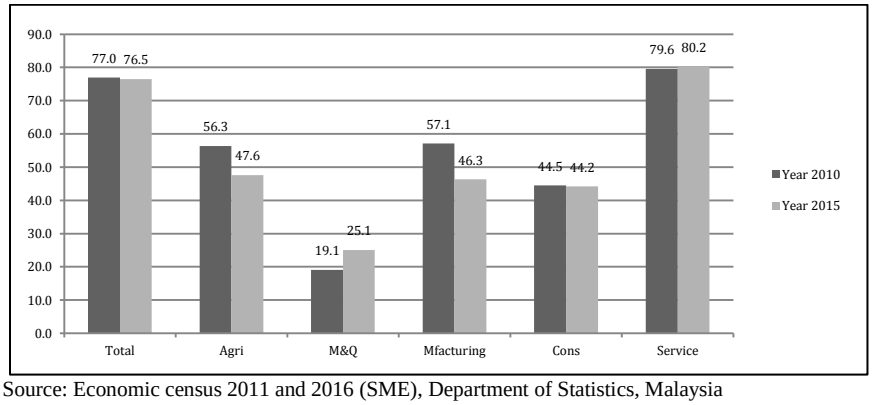
Source: EPU, Prime Ministers Department of Malaysia (2016)

Figure 3 Percentage Lower Income Group Based on Sex Ratio, Malaysia, 2014

Microcredit, since its inception in 2006 until end-of 2016, a total of 200,970 microenterprises have received RM3.5 billion via 10 participating FIs. The total financing outstanding by the Scheme stood at RM912.5 million as at the beginning of 2016 and grew further to RM921.8 million in 2017. As mid of 2016, AIM has provided microcredit financing to women entrepreneurs with the total number of borrowers being more than 3.7 million (SME report 2016/2017). Meanwhile TN provides financing facilities for micro entrepreneurs to start or expand the existing businesses with total number of borrowers at 460,000 (TN, Mac, 2016) and has also assisted 34,000 SMEs. Since its inception in June 1995, YUM has also assisted more than 10,000 families with its poverty alleviation program (YUM, 2014). Besides that, Budget 2017 has allocated RM6.7 billion for SMEs, and they will be focusing on developing entrepreneurship, microcredit allocation, assistance for the lower income group, increasing opportunities for Bumiputera entrepreneurs and internationalization of SMEs.

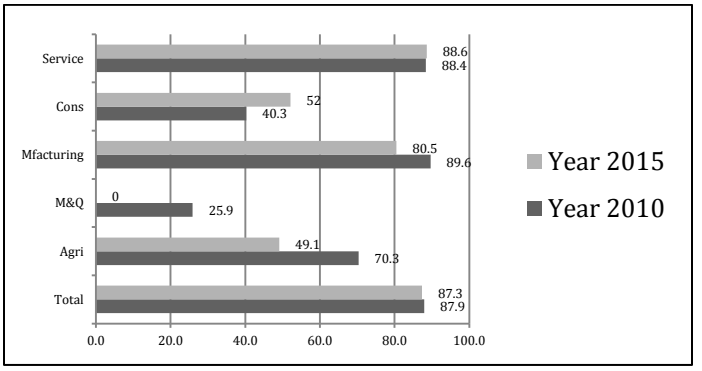
In terms of micro establishments and initiatives, statistics show that microenterprises play an important role in SME. The total number of SME's in the proposition of micro establishment in Malaysia was 77 per cent in 2010 and 76.5 per cent in 2015. In terms of sectors, the proposition of micro establishments in agriculture and manufacturing, to the total number of SMEs in agriculture and manufacturing sector respectively, decreased in 2015 (compared to the proposition in 2010). The proposition of micro establishments in the service sector to the total number of SMEs in service sector showed a slight increase in 2015 compared to the proposition in 2010. In the gender segment, the propositions of women-owned micro establishments to women-owned SME had slightly decreased from 87.9 per cent in 2010 to 87.3 per cent in 2015 (Department of Statistics Malaysia (DOSM), 2011 and 2017). Refer to Figure 4, 5 and 6.

(ii) Micro Establishments in Malaysia



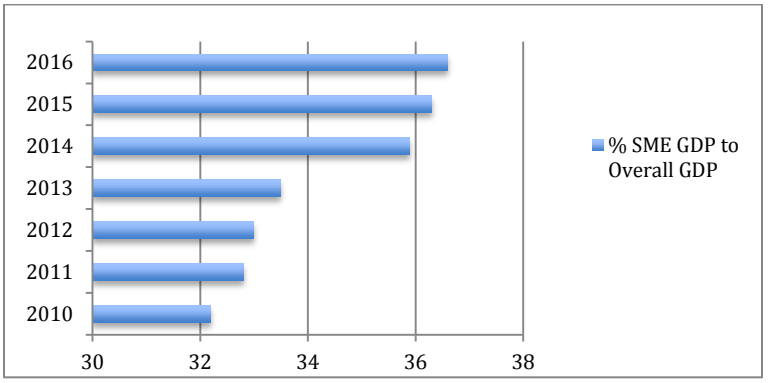
Source: Economic census 2011 and 2016 (SME), Department of Statistics, Malaysia

Figure 4 Proposition of Micro Establishments to Total SME's (By Sector), 2010 and 2015



Source: Economic census 2011 and 2016 (SME), Department of Statistics, Malaysia

Figure 5 Proposition Of Women-Owned Micro Establishments To Women-Owned SME (by Sector), 2010 and 2015



Note: 2016's GDP is preliminary estimation

Source: Department of Statistics, Malaysia

Figure 6 Percentage of SMEs to Overall GDP, Malaysia, 2010 to 2016

REVIEW OF LITERATURE

This section, highlights the determinants from microcredit access and macroeconomic condition that influence and impact the lower income group. Various studies have *been done* to assess the *effect of microcredit on the* economic and social aspect, and the results have been mixed. Additionally, there are also some studies that have incorporated the microcredit and macroeconomic conditions to examine the economic and social impacts using cross-country data and these have provide mixed results (Demirguc-Kunt et al., 2003; Ahlin et al., 2011; Miled and Rejeb, 2015; Imai et al., 2012). This paper is divided into two categories based on the existing literature. The first category examines the impact of microcredit access on the lower income group. Theoretically, microcredit assist the microenterprises to improve their productivity, accelerate growth and income level. On that note, any existing literature conducted on microcredit access mainly focuses in reducing the number of poor people by increasing their income level (Mosley and Hulme, 2006; Kabeer, 2005; Khandker, 2005; Imai, et al.; Arun, and Annim, 2010). Findings have shown that, the incomes of the microcredit

programme's borrowers have increased and helped in reducing the poverty (Mosley and Hulme, 2006; MkNelly et al., 1996; Mosley, 2001; Khandker, 2003; Islam and Maitra, 2012). Meanwhile some other studies, which examined the impact of microcredit access, have also found there were improvements in household incomes due to their improved revenue (Tarozzi et al., 2015; Awunyo-Vitor et al., 2012; Crepon et al., 2015). Grameen Bank for an example tracks the progress of its clients based on the ten determined indicators since 1997. Its reports showed that 55 per cent (Grameen used established clients with more than five years participation) had surpassed the poverty line before 2015. Recent findings in Bangladesh indicated that the microcredit sector had contributed to a 4.3 % increase in overall productivity from 2007–2012. Even though the depth of social outreach contributed to a better outcome compared to the breadth of social outreach, the little increase in the breadth of social outreach productivity was due to the lack of innovative savings programmes (Mia and Chandran, 2016).

Therefore, microcredit access is used as a tool to reduce the number of the lower income group household. One of the important elements in microcredit access is the breadth of loan. When there is an increase in the breadth of loan, more micro entrepreneurs (headcounts) will be able to access loans, and this will help to reduce the total lower income group household (poverty reduction). Thus, the breadth of loan can be bigger if the loan size (amount) is small, in which MO's are expected to outreach large number of borrowers. Generally outreach can be measured in many dimensions, but some *commonly used measures* are the total number of borrowers, degree of lending in rural areas and number of female borrowers (Mersland and Ström, 2009). According to institutionalist, breadth of loan outreach is an important element as it focuses on reaching more poor borrowers. (Otero and Rhyne, 1994; Morduch, 2000; Bhatt and Tang, 2001; Isern and Porteous, 2005). Findings show that the number of borrowers and borrowings (breadth of loan) obtained from Microcredit Information Exchange, Inc., 2005 Benchmarks reflects a figure about the outreach of MFIs. As an example as of March 2015, the breadth of female borrowers constitute 70 per cent of the total borrowing. It has also been have found that Asian MFIs demonstrate relatively good outreach with the largest number of borrowers are from Bangladesh and followed by India (Shastri, 2009). It can be concluded that, determinants of borrowing such as loan size, composition of women borrowers and rural borrowers, have been reported to have impact on poverty (Mersland and Strøm, 2010; Cull et al., 2009; Hermes et al., 2011).

The second category of the study has incorporated the impact of microcredit access and macroeconomic indicator on the lower income group. Several studies have focused on the relationship between the microcredit access and macroeconomic condition. In this context, findings from these studies show the affect of microcredit access and macroeconomic factors have on the mixed impact findings at the micro level. Microcredit activities have a positive relationship with the borrowers income level (Imai et al., 2010; Ghalib et al., 2014; Morris and Barnes, 2005) and have contributed positively on poverty reduction at macro level (Imai et al., 2012). Meanwhile, macroeconomic indicator, like the average gross loans per capita have negative

relationship on poverty headcount (Imai et al., 2012; Miled and Rejeb, 2015). The finds of Ahlin and Lin (2006), Loncar et al. (2009), Krauss and Walter (2009), and Ahlin et al. (2011) also show that macroeconomic condition (i.e Gross Domestic Product (GDP)) has an impact on the MO's performance. Meanwhile Gonzalez (2007), Muriu (2011), and Woolley (2008) find that the macroeconomic conditions such as GDP, GNI Per Capita and inflation have no impact on the MO's performances.

On the contrary, findings from some studies have mentioned microcredit is not the only factor that can contribute to the increase of the economic opportunities and reduce poverty (Banerjee et al., 2014; Karlan and Zinman, 2010). As an example, microcredit access determinants such as female borrowers did not significantly help them to escape poverty as there was no evidence in terms of increase in household income due to the microenterprises profit (Angelucci et al., 2015; Attanasio et al., 2015; Crepon et al., 2015). Findings in Sri Lanka and Ghana also showed that, the financial capital was not sufficient to increase the income level among the women owned micro-entrepreneurs (De Mel et al., 2009 and Fafchamps, 2011).

Therefore, this paper will study the impact of the microcredit access and macroeconomic condition determinants that affect the lower income group household in Malaysia. The main contribution of the study, which made the difference from the existing literature, is that the econometric methodology uses a dependent variable that captures the entire lower income group, which includes MPI that involves the secondary data from all the states and federal territory. Meanwhile the independent variable uses the various determinants proxy by breadth of loan. These reflect the true parameter of the lower income group household and also augment the breadth of loan determinants and macroeconomic indicators (independent variable) in the Malaysian context.

RESEARCH METHODOLOGY

Data Description

This study uses the annual time series data for the total lower income group household as the dependent variable; and selected microcredit access and macroeconomic condition data as the independent variables of Malaysia. All data were collected from the DOSM, EPU, Malaysia and a MO from Malaysia (a MO that complements the initiatives by the Financial Institutions in Malaysia (BNM, 2015)). This is the data set for the panel of 13 states and 3 federal territories in Malaysia between 2011 and 2015 which is represented in the Tenth Malaysia Plan, with 80 observations constituting a balanced panel data. A number of variables have been used to study MO's outreach among the population. The loan size is usually taken as a proxy for the depth of outreach, while the number of borrowers have been used to proxy breadth of outreach (Hermes et al., 2011; and Cull et al., 2007). The sample data for the microcredit access is proxy by the number of borrowings. Meanwhile the study did not use the depth of outreach (loan size) due to the unavailability of the data. This research looks into the

short-term (5 years) implications because extensive and reliable historical data on microcredit does not exist. Besides that, detailed lower income group household estimates by states are available only from 2009 in Malaysia. The lower income group household and mean monthly household income, data were interpolated (linear interpolation) for the other missing years based on data provided by EPU, Malaysia and DOSM for the year 2009, 2012 and 2014 respectively.

This study involves of the number of active borrowers who have been operating micro enterprises with viable businesses so as to overcome bias selection. In earlier studies there were unbalanced comparisons between clients (those who received these financial services) and non-clients, as they were from two different types of categories and it was denoted that the clients had been more entrepreneurial than non-client. Entrepreneurial skill is important as it helps entrepreneur to obtain easier loan approval due to business experience and training. These entrepreneur skill may lead to an increase income level compared to those starting a business. To overcome the above bias selection and the effect, two studies later used randomize sampling among applicant or participants (i.e, the likelihood to get more entrepreneurial borrowers). Some studies have also found that microcredit has no impact on poverty reduction (Banerjee et al., 2009; Karlan and Zinman, 2009). Studies have shown that the impact of microcredit on household income is inconsistent between clients and non-clients (Nanor, 2008). In contrast, a study in Zimbabwe, reflected a positive impact on poverty reduction, besides a higher average income for the microcredit clients compared to new clients or non-clients (Morduch and Graduate, 2002).

This study applied the panel data in estimating the impact breadth of microcredit access and macro-economic condition determinants on the lower income group. The independent variables of the research are grouped into two categories. First, microcredit access measures include the breadth of loan classified into various determinants namely average number of borrowing per microcredit office, female to male ratio, number of borrowing from agriculture, service and manufacturing sectors. Secondly, two macroeconomic indicators proxy by Gross Domestic Product and mean monthly household income are used in this study. Static Panel Techniques that include pooled OLS, random effects and fixed effects models are used to examine the impact of microcredit access and macroeconomic conditions towards the lower income group using two balanced panel datasets between 2011 and 2015. The regression model here adapted (based on the availability of data) the independent variable that incorporated the microcredit access and macroeconomic indicator on the lower income group.

Table 1 Variable Description

No	Variables	Descriptions	Source
DEPENDENT VARIABLE			
1.	B40HC	log total lower income group household unit in state ***i***-at time *t*	EPU, Malaysia

Table 1 Cont.

INDEPENDENT VARIABLES			
	Microcredit Access		
1.	ANO	average number of borrowing per microcredit office	MO, Malaysia
2.	FMR	female to male ratio of borrowing	MO, Malaysia
3.	AA	average age of total borrowers	MO, Malaysia
4.	NAGRI	number of loan from agriculture sector	MO, Malaysia
5.	NSRVC	number of borrowing from service sector	MO, Malaysia
6.	NMNF	number of borrowing from manufacturing sector	MO, Malaysia
	Macroeconomic Condition		
7.	GDP	log of gross domestic product by state	EPU, Malaysia
8.	MHI	log of mean monthly household income by state	DOSM

The Model for regression of Lower Income Group Household (B40HC) is shown as below:

$$\text{LnB40HC}_{it} = \beta_0 + \beta 1ANO_{it} + \beta 2AA_{it} + \beta 3NAGRI_{it} + \beta 4NSRVC_{i} + \beta 5NMNF_{it} + \beta 6FMR_{it} + \beta 7GLnGDP_{it} + \beta 8LnMHI_{it} + \varepsilon_{it} \quad \text{..... (i)}$$

$$\varepsilon_{it} = \alpha_i + u_{it} \quad \text{..... (ii)}$$

Based on the literature, it is expected that average borrowing per microcredit office (Hung, 2003 and 2006; and Neri, 2008) and age positively related to the lower income group (Ibekwe, 2007; and Wongnaa and Awunyo-Vitor, 2013). Meanwhile the number of loans from the agriculture sector (Nankhuni and Paniagua, 2013), service sector (Cotler and Woodruff, 2008) and manufacturing sector (Fagbenle et al., 2004), gross domestic product and mean monthly household income (Imai et al., 2010 and Miled and Rejeb, 2015) are negatively related to the lower income group. The lower income group (dependent variable) denotes the log of the total B40 household in states i at time t and each variable is expected to reduce the total lower income household. The independent variable of interest is grouped into two categories. Firstly, the microcredit access indicators (number of borrowings) proxy the average number of borrowing per microcredit office (ANO), average age of borrowers (AA), female to male ratio of borrowing (FMR), and by sector namely number of borrowings from agriculture sector (NAGRI), service sector (NSRVC) and manufacturing sector (NMNF) are by the state and federal territories respectively. Meanwhile the macroeconomic indicators (independent variable) proxy by the effect of log of Gross Domestic Product by State (GDP) and log of mean monthly household income (MHI) are by the state and federal territories respectively. The unobserved effects model appears like following with α and β are parameters, and ε_{it} is a stochastic error term. β_0 is a constant term, β measures the partial effect of independent or explanatory variables in period t for the state i X_{it} here represents the explanatory variables (microcredit and macroeconomic indicators). The variables, both dependent and independent, denote cross-section or state i at time

t, where i = state, (1 to n), and t = time (1 to 5 years). Table 1 shows the variable description for determinants of microcredit access (dynamic of breadth of loan) and macroeconomic conditions on the lower income group in Malaysia.

RESULTS AND DISCUSSION

Descriptive statistics for the dependent and independent variables, which comprises of nine variables data, are provided in Table 2. Overall the dependent variable and independent variable mean and median values are near to each other. The baseline model is estimated by using the E-View software since we have included panel data (adjusted) in our models.

Table 2 Descriptive statistics.

Variable	Observations	Mean	Median	Std. Dev.	Maximum	Minimum
BH40C	80	11.44072	12.01461	1.485675	12.79995	7.090077
ANO	80	299.7285	217.2885	341.3797	1960.000	5.600000
FMR	80	1.354808	1.259924	0.433708	3.300000	0.804494
AA	80	1.482902	1.447480	0.210918	2.019231	0.967168
NAGRI	80	203.5750	170.5000	190.8039	1037.000	0.000000
NSRVC	80	2336.325	1979.500	1578.517	6274.000	42.00000
NMNF	80	264.0750	207.5000	202.6826	948.0000	0.000000
GDP	80	24.50057	24.64743	1.116152	26.20377	22.07186
MHI	80	8.530855	8.457067	0.327423	9.383705	7.992043

Before proceeding with the regression analysis, the calculation of the correlation coefficients gives a first look at the relationship that may exist between the variables (Table 3). As can be seen from the table below, there is a low degree of correlation between the independent and dependent variables and also between the dependent variables. This index passes the statistical validity of a valid instrument as it shows (significant correlation coefficients ranging from 0.18 to 0.68).

Table 3 Correlation matrix

	BH40	ANO	FMR	AA	NAGRI	NSRVC	NMNF	GDP	MHI
BH40C	1.000000								
ANO	-0.566793	1.000000							
FMR	-0.189534	-0.044498	1.000000						
AA	-0.210390	0.166994	-0.120085	1.000000					
NAGRI	0.575078	-0.148888	0.278275	-0.271441	1.000000				
NSRVC	0.741835	-0.191214	-0.053259	-0.122755	0.605863	1.000000			
NMNF	0.661866	-0.155887	-0.031945	-0.044314	0.663783	0.680445	1.000000		
GDP	0.271112	0.153975	-0.314193	-0.000345	0.202090	0.302576	0.183553	1.000000	
MHI	-0.372256	0.341382	-0.170245	0.196731	-0.244696	-0.223554	-0.323323	0.635231	1.000000

Amongst the static models, there are three alternatives, i.e., pooled ordinary least square (POLS), fixed effect model alternatively known as the least square dummy variable model (LSDV) and random effect (RE) model to do the estimation. FE estimator is found better than RE and POLS for all the 3 models. Both the Hausman and theta statistics favor fixed effects over random effects. Almost every model has some endogenity issues; the FE-Estimation is the best choice and gives the best consistent estimates. Table 4 shows the Static Panel Regression Results of the effects of microcredit access and macroeconomic conditions on lower income group.

Table 4 Static Panel Regression Results: (Dependent Variable: Lower Income Group Household - B40HC)

	Expected coefficient sign	**POLS**	**RE**	**FE (adjusted)**
Explanatory Variables	**Log of B40HC**	**Log of B40HC**	**Log of B40HC**	**Log of B40HC**
Microcredit Access Indicators				
Average Borrowing Per Microcredit Office	+	-0.001794 ***	-0.000333***	0.000412**
Female to Male Ratio	-	-0.604014 ***	0.020412	-0.055294 *
Average Age of Borrowings	+	-0.090088	-0.005924	0.006361
Agriculture	-	0.001125 **	0.0000635	-0.000165 *
Service	-	0.000284	0.0000576 **	-0.0000231
Manufacturing	-	0.000815 *	0.000283	-0.0000497
Macroeconomic Indicators				
Log of Gross Domestic Product	-	0.478688 ***	0.527147 ***	2.573216***
Log of Mean Monthly Household Income	-	-1.581876 ***	-0.25261 **	-0.988813 ***
Constant		13.58845	0.539086	-43.12636
Total Panel (Balanced) Observations		80	80	80
R-squared		0.878	0.188	0.533
Cross-Sections Included		16	16	16
F-Statistic		63.77637	2.05376	1072.553
Prob(F-Statistic)		0	0.052061	0
F-Test		169.172039 (0.000)		
Breusch-Pagan			5.812554 (-0.0159)	
Hausman				383.383137 (0.000)

Note: ***Significant at one percent; ** significant at five percent; and *significant at 10 percent. *The standard errors for FE regression are adjusted (corrected) for heteroscedasticity and correlation across observation both over time and within the same period*

Generally, the results imply that the right component in the microcredit access benefits not only the poor but also the poorest. In sum, microcredit access from the three determinants namely the number of borrowing per microcredit office, number of borrowings from agriculture sector and female to male ratio of borrowing; have significant difference with the number of lower income group.

The coefficient estimate for the average number of borrowing per microcredit office (total borrowing/ microcredit office by state) is positive and significant, This indicates that when the number of borrowing assigned to a microcredit office is high, the total lower income group household increases, in which the options are more responsive to the monitoring of the project, usage of loan and coaching by the microcredit organization. Additionally, the results also reflect the borrower's awareness that their performance is being monitored. All these may lead to productivity increase as it's the essence which elevates a country to become a high-income economy. Studies have shown that microcredit organizations are accredited with performing an important role in the monitoring and enforcement since they are the main interface between the MO's and their borrowers (Hung, 2003 and 2006; and Neri, 2008)

As expected, the analysis shows that the female to male ratio (female/male) is negative and is significantly associated with the lower income group household. The findings are consistent with the literature that the female borrowers help to move up from lower income group household and also income increase. The findings explain that, increase of 1 unit in the sex ratio (female/male), decreases the growth of lower income group by 5.5%. Khandker (2005) highlighted that even though the microcredit program has reduced the poverty but the reduction aggregate poverty was mildly significant. According to Sharma and Zeller (1997), this choice is justified by the fact that, as long as "poor women usually have a very limited experience in the market to begin with, they are extremely cautious in their business ventures and are likely to choose projects that are relatively less risky".

As expected there is substantial variation of growth performance across individual sectors on the lower income group. For the agriculture sector, the analysis shows significance of the negative coefficient. The findings explain that, the increase of 1unit in the number of loan from the agriculture sector will cause decrease in the lower income group by 0.165%. Tan (1982); and Perumal (1989), found that lower income households mainly participated in the small-scale agriculture practices and have helped to increase the income. Nankhuni and Paniagua (2013) whose survey on obtaining credit in agribusiness showed positive relationship of microcredit through technology advancement, productivity and income, though with limited qualifications. The microcredit access for service sector, manufacturing sector and borrower's average age, didn't give any significant impact towards the total lower income group household. For the service sector, literature shows mixed results in which the sales and profit for the smallest retailers (service sector) is positive and significant, but has negative effect on the larger retailers (Cotler and Woodruff, 2008). De Mel et al. (2008) mention that even though there is a huge economic impact, confirm with other studies that look at the impact of grants for micro-entrepreneurs as like in Sri Lanka. These show differences of growth and performance across each sector and reflect the overall business environment, its functions and effects on sectorial structures, namely the financial and human capital aspect, value added productivity per employee, competition and price adaptation ability (Fafchamps and Gabre-Madhin, 2001). For example, the performances of manufacturing

sectors can be affected by inefficiency, poor regulation and other structural problems including seasonal fluctuations in operations (Fagbenle et al., 2004).

For the macroeconomic condition, the result for GDP variable is positive and significant, irrespective of the specification or the estimation method chosen. It has been observed that a 1% increase in GDP increases the lower income group household by 2.6%. This finding is consistent with the finance-poverty literature in some cases. According to BNM (2016), the economics have failed to deliver equitable growth, as they are open to economic shocks and dissaster as about two-thirds of the household are depend on a single source of income. It has been reported that in Asia, the average income inequality has risen by 4 points from 36 in 1990 to 40 in 2013 compared to 2 points in other countries. Hence the income inequality here didn't reflect the average GDP growth rate of 9.6 per cent that other Asia countries experienced. Meanwhile Shahrier (2015) , has found that a 10% shock in GDP growth has potentially worsened poverty incidence in Indonesia and Malaysia but the vice versa for Philippines and Thailand. Studies have also explained that the income increase is even better for the high-income participants and this has helped in curbing poverty based on the study done in Bangladesh, India, Sri Lanka and Indonesia (Mosley and Hulme, 2006). The finding for mean household income is negative and significant and in line with the finance-poverty literature. The study shows that there will be a reduction in the lower income group household when the mean monthly household increases.

CONCLUSIONS

This study attempted to identify a number of key microcredit access and macroeconomic condition determinants that affect the lower income group household in Malaysia. The main contribution of this study, which is different from the existing studies, is that this study it has used secondary data, which reflects the true parameter on lower income group (that complements the MPI) and augments the breadth of loan determinants in the Malaysian context. The findings from this study have several main contributions for the academics, microfinance institutions and the policymakers. From the academic point of view, this study has added new findings to the impact of the microcredit access and macro economy condition towards the lower income group. Overall, this study provides an insight about the determinants from the breadth of loan and macroeconomic condition that has contributed to the success of the lower income group from the perspective of Malaysia. The study indicates that, determinants from breadth of loan and macroeconomic indicators namely the average number of borrowing per office, agriculture sector borrowing, female borrowing and average household income have significant impact on the dependent variable (i.e. reduced the number of lower income group household). On the other hand the age of borrowers, borrowing of service sector and manufacturing sector respectively, have been identified as insignificant to the lower income group. Based on the results, the MO is able to strategically reach to the social bottom line of the population. Therefore, effective

government fiscal policy as well as regulatory quality by the MO could be good instruments that may promote both access and uses to loans provided, besides reducing the lower income group household, improving the family's economic wellbeing and narrowing down the *income.* Increasing the breath of loan (certain categories i.e female, agriculture) and a good access to loan are among the strategies to alleviate the lower income group that disturb the economy. Despite the significant impact on the lower income group, a large number of borrowers are still dependent on the MO's monitoring. This issue can be addressed by the policy-makers and as well as the MO in how to transform the strategy of socioeconomic wellbeing.

Therefore, future research should focus on identifying determinants that can move up the micro borrowers to the next level (productive and prosperous society). Therefore, this study recommends for further research the factors that have been identified such as the delivery system and the governance impact on outreach.

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