Does Household Access To Financial Services Help Reduce Poverty In Indonesia?

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Abstract:
This research aims todetermine propensity of household access to financial services and to examine their impact on helping reduce poverty in Indonesia, Nov-2018 until Feb-2019 by the National Socioeconomic Survey (SUSENAS), March 2019, around 315,672 households. To determine the propensity of household access to financial services, we use a probit model integrated with propensity score matching. With a quasi-experimental design, data were analyzed using the average treatment effect on treated (ATT) by household access to financial service within 77,602 households with access (treated) and 238,070 households without access (control) to financial services. Estimation of propensity score was used to reduce selection bias of ATT on the outcome variables. The empirical findings show that household poverty status was reduced which would have occurred if they had access to financial services. Accessing financial services as transitory income has a negative impact, thus we conclude it was an unfavorable income. For the poor, it is not yet significant enough but has a positive impact on increasing their expenditure per capita a month, averagely. Thus, the decrease or increase in their incomes didn't increase or decrease their expenditure in the short-run, but in the long-run, it occurred.

Keywords: Financial Inclusion, Consumption, Poverty, Quasi-Experimental, SUSENAS.

1. Introduction

For the last couple of decades, Indonesia has been experiencing a modest reduction in the poverty rate of 14.38 percent point per year, from 1999-2019. However, the declining percentage of poor in urban areas is relatively faster than in rural. In urban, it was recorded that the percentage of poor across 19.41 percent in 1999 and decreased to 6.69 percent in 2019. Meanwhile, in rural areas, the percentage of poor reached 26.03 percent in 1999, and it decreased in 2019 but only around 12.85 percent (BPS, 2020). This record of poverty reduction since the last decade of the nineteenth century does give some hope of achieving an important target of the poverty reduction set in the Sustainable Development Goals (SDGs). Therefore, the *National Team for Acceleration of Poverty Reduction* (TNP2K, 2019) in Indonesia has emphasized the resource mobilization efforts that need to be intensified to realize the SDGs and poverty reduction goals. However, the resources required for achieving these goals are beyond the capacity of the Indonesian government both in the short-run and long-run. Hence, the implementation of these programmes may be successful with substantial development in the financial sector which will attract resources from external sources.

The *Financial Service Authority* (OJK) has started an initiative to prepare a National Strategy for Financial Inclusion (SNKI, 2019) since 2012 which was aimed at accelerating poverty reduction. The implementations related to institutions and agencies are urgently needed to improve access to any kind of formal financial services. To strengthen these policies, the Indonesian government has issued Presidential Regulation No. 82/2016 concerning SNKI. It is a national strategy that contains several goals, ways to achieve the financial inclusion goals, and targets in a wide context, such as encouraging economic growth; accelerating poverty reduction, and reducing inter-individual also inter-regional inequalities to realize welfare. To support the SNKI implementations and improve financial inclusion in Indonesia, OJK issued regulation No. 76/POJK. 07/2016. The National Survey of Financial Literacy and Inclusion (SNLKI, 2019) with three years periodically mapping evaluation of adult populations (15-79 years) who have access to financial services. The result implies a positive trend, the rate of financial literacy and inclusion reached about 38.03 percent and 76.19 percent in 2019, respectively. It indicates that the results exceeded the target of covering 35 percent and 75 percent of the adult population to be literate and inclusive, respectively.

In addition, the National Socioeconomic Survey (SUSENAS, 2019) has released around 25.14 million or 9.41 percent of the 267.31 million of the total population lived below of poverty lines, considering the definition of poverty provided by the National Bureau of Statistics and World Bank with $1.90 per day (BPS, 2020). By the SUSENAS-2019 sampling frames and using the importance weighted of 315,672 households, it was recorded that around 43.54 percent of populations ($\geq$ 5 years old) who have an account in a formal bank or cooperative are banked and 56.46 percent of the others are unbanked. Furthermore, around 28.86 percent of the population ($\geq$ 15 years old) have access to financial institutions and 71.14 percent of the others were categorized without access to financial services. So, if we recorded the intersections, just 15.15 percent, or 40.49 million who have an account in a formal bank/cooperative, also have access to financial services even if the population is categorized as poor, just about 5.48 percent, or 1.38 million (17.79 percent have a bank account and 20.43 percent have access to financial services). However, those accesses only related to the source of credit or loans, because SUSENA*S*-2019 just classifies the kind of access to financial services, e.g., access to *Kredit Usaha Rakyat* (KUR); microcredit by a commercial bank, *Bank Perkreditan Rakyat*, microcredit by cooperative (*Koperasi*); personal loans with interest rate; microfinance by *Pegadaian* and leasing; *Kelompok Usaha Bersama* (KUBE); *Badan Usaha Milik Desa* (BUMDes); and another kind of credits or loans (BPS, 2020).

Indeed, financial services needed by the people in Indonesia include savings, payments and money transfer services, loans for working capital or small investments, as well as crop and livestock insurance. In many cases, a group of people (particularly those in more remote locations and with low incomes) have to rely on their family members, friends, and informal money lenders for financial services. Survey on Financial Inclusion and Access (SOFIA, 2017), illustrates most adults in the four provinces in the eastern Indonesia that save and borrow money just to cover basic needs and education (i.e., to manage liquidity and to smooth consumption, both personally within their households). A high proportion of the population in these provinces (41 percent) use banking services, but less than half (almost 47 percent) of them own a bank account – a significant proportion of people – who use banking services, do so by using bank accounts that belongs to other peoples. Related to SUSENAS (2019), SNKI (2019) or SNLKI (2019) was justified by the OJK that the level of financial inclusion is still dominated by the use of financial products and services in the banking sector. Increasing the expenditure per capita has unfortunately not been matched by the pattern of good financial planning. Based on the National Bureau of Statistics (BPS) data, for 11 years since 2003, it shows that the public's marginal propensity to save tended to decline, while over the same period, the marginal propensity to borrow and to consume went up (OJK, 2021; Suleiman et al., 2022).

As might be expected, access to financial services is needed by households-mostly poor people to smooth their consumption patterns and increase their standards of living (Barr et al., 2007; Peachey & Roe, 2004; Pitt & Khandker, 2002). But, in many cases, these just financed by credits or loans and can affect households to be more consumptive (Banerjee & Duflo, 2007; Bhandari, 2009; Bocher et al., 2017; Rao, 2001). It should be a concern that low-income households not anymore trapped in the vicious cycle of poverty and debt (Akotey & Adjasi, 2016; Islam & Maitra, 2012; Khandker & Samad, 2013; Kraay & McKenzie, 2014; Loría, 2020). Because those have affected to expenditure and income of households-mostly poor but do not appear to alleviate poverty or its consequences (Moav & Neeman, 2012). It can be more costly, limited, and unsafe (Karlan et al., 2014) or worsen the standards of living (Morduch, 1994) for households (mostly poor). It has a more significant effect on the poor, but they do not receive government support for poverty alleviation (Jiang & Liu, 2022); significant among the richest but limited among the poorest people (Coleman, 1999; Luan & Bauer, 2016); or successfully reached the target and helped to improve the standard of living more but still low covered (Bhandari, 2009). The urban poorest were more likely to be borrowers, whereas rural borrowers were more likely to be the poorest (Jain & Munoz, 2017). Hence, financial development may not serve the purpose of poverty reduction (Uddin et al., 2014).

So, the question of this study is how can household access to financial services help reduce poverty or may not serve the purpose of a poverty reduction program or be trapped in the vicious cycle of poverty and debt. This research is intended to determine the propensity of household access to financial services, and examine their impact on reducing poverty in Indonesia from Nov-2018 to Feb-2019 based on SUSENAS, March 2019. To assess those questions, we use a quasi-experimental design to examine the impact of household access to financial services as a treatment on household poverty status between poor and non-poor. It's important to determine how household characteristics, i.e., socio-demographics, asset ownership, literacy of writing and reading alphabet, sources of financing, using internet services, having formal bank accounts, the beneficiary of social protections, and residential islands. Those will affect the poverty

alleviation strategies as targeted, not excluding the other outcomes (expenditure per capita, food and non-food consumption per capita, budget share of food and non-food). It's related to household characteristics of those at the bottom of pyramid (low and irregular incomes, isolation, living with disabilities, undocumented workers, disadvantaged communities), who typically don't have a formal bank and cooperative account and limited access to financial services in developing economies.

2. Research Framework

Financial inclusion is a broad concept, as a process that ensures the ease of access, availability, and usage of formal financial systems for all members of an economy (Sarma & Pais, 2011). Many studies have defined financial inclusion in terms of access, usage, and the quality of formal financial services (Allen et al., 2016; Barr et al., 2007; Beck et al., 2009; Demirgüç-Kunt & Klapper, 2013; Honohan, 2005). Access is understood as the ability to use the products and services offered by the formal financial institutions, then, usage as the depth or extent of financial services and product use. Quality would indicate whether the attributes of products and services meet the needs of users and whether product development takes such needs into account. Finally, welfare is defined as "the positive impact that a financial device or service has had on the lives of users" (Demirgüç-Kunt & Klapper, 2013). Financial inclusion and access to finance are different issues, because of financial inclusion is focused on use, but a lack of use does not always mean a lack of access (Honohan, 2008; Peachey & Roe, 2004; World Bank, 2010). Many people lack access to financial services in the sense that these services have prohibitive costs or that there are barriers to their use: like as the regulations requiring onerous paperwork, travel distance, legal hurdles, or other market failures (Demirgüç-Kunt & Klapper, 2013; Karlan & Morduch, 2010). And others may choose not to use financial services despite having access at affordable prices (Basu, 2006; Bhandari, 2009; Karlan & Zinman, 2010). Nevertheless, there is growing recognition that most of the barriers that limit access to services can be overcome by better policies (Allen, 2012; Sarma & Pais, 2011; World Bank, 2010).

In many developing countries, just less than half the population has access to formal financial services, mostly in the Africa and Sub-Saharan countries less than one in five households has access. Lack of access to finance is often the critical mechanism for generating persistent income inequality and increasing poverty levels, as well as slower economic growth (Beck et al., 2009; Honohan, 2008). Without inclusive financial systems, poor people need to rely on their personal wealth or internal resources to invest in their education, become entrepreneurs, or take advantage of promising growth opportunities. It seems plausible, therefore, that an inclusive financial system might be associated not only with lower social and economic inequality but also with more dynamic economy as a whole (Allen, 2012; Sarma & Pais, 2011; World Bank, 2010). That is not to say that more borrowing by poor people is always a good thing. Abuses revealed in the United States subprime mortgage crisis of 2007-2008 underline the danger of overborrowing, whether by individuals misled through predatory lenders or by over-optimistic entrepreneurs. However, it is related to financial inclusion as the antithesis of financial exclusion. The processes of financial exclusion prevent poor or disadvantaged social groups from gaining access to the financial system because of a lack of accessibility, collateral, credit histories, and connections (Robinson, 2001; World Bank, 2010).

To understand access to financial services, let us know the importance of the Microfinance programs served by formal financial institutions. Most of the undertaking of financial inclusion for the eradication of poverty relies on the promise of Microfinance (Morduch & Haley, 2002). The Microfinance programs have reported significant gains where previous efforts through bank-led models and interventionist approaches failed (Charitonenko et al., 2003). Whilst Microfinance, in principle, is a holistic approach that seeks to include the provision of all types of financial services for the poor, a large proportion of literature is dedicated to examining the impact of microcredit. Based on the *Grameen Bank* in Bangladesh, the first Microfinance institution to attract international attention indicates that the average household income of members was 43 percent higher than non-members in non-*Grameen* villages and 28 percent higher than eligible non-members in *Grameen* villages. Then, spending per capita on food for *Grameen* members was 8 percent higher than non-members in *Grameen* villages, and 35 percent more on food and 32 percent more on clothing than non-members in non-*Grameen* villages (Banerjee et al., 2015; De Silva, 2012; Hossain, 1988). Various models have been developed to provide credit for the poor, the first and most sophisticated econometric study on the impact of Micro-credit on poor households was done by Pitt & Khandker (2002); Khandker (2005). The results, in 1991-1992 (Pitt & Khandker, 2002) raised the confidence of Microfinance by demonstrating highly positive effects on bank members and their families. In 1998-1999, the results

showed that moderate poverty in all the villages was declined by 17 points, by 18 points in villages with Microfinance, and by 13 points in non-program villages (Khandker, 2005).

Even Coleman (1999) involved two Microfinance institutions in the Northeast Thailand – the most unique Microfinance evaluation tackled the selection bias issue. To determine who in the comparison villages would have chosen to participate in Microfinance programs had they been available and interested the individuals sign up a year in advance – to compare borrowers with people with the same entrepreneurial spirit who had not been offered credit. It showed a zero impact on Microfinance programmes, but a positive impact using naive estimates (De Silva, 2012). Later, Coleman (2006) disaggregated participation and found that selected program participants were significantly wealthier than non-participants even before program intervention, the wealthiest villagers were almost twice as likely to participate in the program as poorer villagers. Moreover, some of the wealthiest villagers obtain a disproportionate share of program loan volume by holding influential positions as village bank committee members. A positive impact is seen largely in this wealthier group (Coleman, 2006; De Silva, 2012). Tilakaratna et al. (2005) in Sri Lanka and Bocher et al., (2017) in Ethiopia, also found that although microcredit benefitted middle and rich-income households in terms of increasing the level of income, assets and housing, but impacted the poorest households only in the consumption levels. Nevertheless, there is recently growing evidence suggesting that this might be true or side effects of programs that may hurt the fight against poverty and that the social mission may have been lost in the competitive rush by Microfinance institutions. Moreover, there is substantial literature that shows, such as, that microcredit is being used for consumption rather than for productive investment, resulting in over-indebtedness in many households (Robinson, 2001; Simatele, 2021).

However, the existing literature has not yet identified a direct association between household access to financial services and improvement in household welfare. But, many studies have recently advanced the conclusion that overall world poverty has fallen substantially since the early 1990s (Berry & Serieux, 2006; Bhalla, 2002; Chen & Ravallion, 2010; Sala-i-Martin, 2006), with a central basis for this view that poverty fell in India and China (Reddy & Minoiu, 2007), although these still being debated. There are more reasons to believe that poverty reduction has been less rapid elsewhere in the world (particularly, in Latin America and Sub-Saharan Africa countries) (Chen & Ravallion, 2010). In addition, providing access to financial services has been considered as a tool for economic development and poverty reduction (Beck et al., 2009; Demirgüç-Kunt & Klapper, 2013; Khandker, 2005; Morduch & Haley, 2002; World Bank, 2010). Having access to financial services, e.g. credits or loans has a positive impact on welfare and poverty reduction (Banerjee et al., 2015; Khandker, 1998; Pitt & Khandker, 2002; Quinones & Remenyi, 2014). It can help poor and low-income clients increase and stabilize their incomes, build assets, or invest in their future (Helms, 2006; Honohan, 2005). Financial inclusion has been treated as a matter of interest by the different policies which a strong correlation between poverty and financial exclusion by formal financial services. It has an impact on reducing poverty or vulnerability of low-income households by giving them ability to smooth their consumption pattern and welfare (Allen et al., 2016).

3. Quasi Experimental Design and Empirical Method
3.1 Data and Sample Selection
This research used raw data from *Survei Sosial Ekonomi Nasional* (SUSENAS) in March 2019, carried out in the National Bureau of Statistics of Indonesia (BPS) between Nov-2018 to Feb-2019 (crossectional data). SUSENAS-2019 consists of 32.000 census blocks (7.500/blocks) or 1.204.466 population by household cores survey or 315.672 households by expenditure module survey. This survey was designed to collect the social population data, which is relatively in wide scope, i.e., household cores (general information of households, education, employment, gender, and socio-economics including asset ownership and access to financial services). SUSENAS consists of 3 modules, i.e., the expenditure modules (food, non-food, and expenditure per capita); socio-culture modules; education, health, and housing modules (Johar et al., 2019). The implicit stratification with probability proportional to size and systematic sampling was used to estimate the samples. So that, to use the households as the unit analysis, we must aggregate the individual samples by household cores which are related to the head of households ($R403 = 1$, Block IV. Demographic Sections). Therefore, we estimate across 315.672 households 77,602 households with access and 238, 070 households without access to any kind of financial services, which was conducted in the 34 provinces and 514 regencies or munipacilities with sub-samples by multi-stage selection based on raw data SUSENAS, March 2019.

3.2 Determinant of Household Access to Financial Services

The household access to financial services in this study tends to relate to usage as the depth or extent of financial services and product use (Demirgüç-Kunt & Klapper, 2013). But, those linked to source of credits or loans in SUSENAS-2019 which classified kind of access to financial services or microfinance, e.g., *KUR*; commercial bank, *Bank Perkreditan Rakyat*, *Koperasi*; personal loan with interest rate; *Pegadaian* and leasing; KUBE; BUMDes; and others (BPS, 2020). So, they have used or accessed one or more products and services that were realized between Nov-2018 to Feb-2019. Theoretically, the Neo-Classical consumption function as a core of modern economics implies that consumers' preferences are invariant to their current consumption. It will investigate households' consumption choices based on utility, related to the allocation of household incomes (y) between consumption (c) and saving (s) given the rate of return, other constraints (socio-economic and demographic characteristics). Keynes (1936) stated that the main requirements must be met for the absolute income hypothesis to be formed, since the function of $c = f(y) = a + by + e$; real consumption expenditure is a stable function of real income; marginal propensity to consume ($\partial c/\partial y$) is positive but less than one, ($\partial c/\partial y$) is less than average propensity to consume $[(a/y) + b]$; and $[(a/y) + b]$ will decrease as y increases. It is true in the short run, but in the long run, we will all die, then increasing consumption can be more than income, respectively. Even though the households have no income ($y = 0$), they still consume at a or autonomous consumption. Thus, c is directly proportional to y and s, therefore $c = y - c$ (Syahruddin, 1981; Mankiw, 2010; Romer, 2012).

This is caused by difference in time between time to live and time to work in household behaviors or consumption under uncertainty. The trend of consumption will increase over time where households have various reasons to increase their consumption in the long run, e.g., migration, shifts in income distribution, and increases in living standards (Romer, 2012; Syahruddin, 1981). The consumption expenditures will change over time or relative to increases in the average household incomes or ($\partial c/\partial y$) it doesn't always less than $[(a/y) + b]$ (Duesenberry, 1949). The household consumption behavior will be influenced by permanent income or expected income in the long-run (expected labor incomes, expected income from assets, and human/non-human wealth) not income received currently (Romer, 2012). The consumption expenditure is irreversible, and the pattern of expenditure when the income increases is different from when it decreases due to the consumption behaviors. The decrease or increase in their incomes didn't increase or decrease their consumption levels in the short run, but in the long term, it occurred (Romer, 2012). Friedman (1957) said that the measured incomes (y) component is unobservable, it was related to permanent incomes (y_p) and transitory incomes (y_t), even in the measured consumption (c) component that consists of the permanent consumption (c_p) and transitory consumption (c_t). The permanent incomes represent the effect per unit of all factors that determine the value of human or non-human wealth, personal attributes, and economic activity attributes (A_0). The transitory incomes represent the effect per unit of all other factors of incomes which are "*accidentals* or *changes*", and it can be positive if either one factor is favorable, respectively (Romer, 2012).

With the permanent income hypothesis postulate and consider an individual or household who lives for t periods whose anytime utility is assumption. They can save or borrow at the exogenous interest rate, subject only to the constraint that any outstanding debt must be repaid and the interest rate set to zero (Romer, 2012). In this research, household uses as a unit analysis that contains household sizes (N). For simplicity, the impact of household access to financial services is therefore :

c	$= f(y, N, A_0)$	(1)
c	$= f(y_p, y_t, N, A_0)$	(2)
outcomes	$= f(\text{exp\_cap}, \text{access\_fin}, \text{household size}, \text{household characteristics})$	(3)

Where : *outcomes* are the endogenous variables as impacts, i.e., expenditure per capita, food and non-food consumption per capita, food and non-food budget share, and household poverty status; *exp_cap* is the income per capita as a proxy of the household expenditure per capita. To identify the household characteristics who have access to financial services (*access_fin*), i.e., income per capita; household head characteristics; household characteristics; asset ownerships; source of financing; literacy of writing and reading alphabet; use internet services, owned bank accounts; the beneficiary of social protections, and household residentials. Each parameter is analyzed by the two-sample t-test method (unequal standard error of means) because it's considered to represent the difference of the average sample that is estimated by the total populations at a level of significance ($\alpha = 0,1; 0,05; 0,001$). To examine the determinant of household access to any kind of financial services, we use probit regression to get the best unbiased estimator of predictor that can be determined in further estimations. This model can solved by the cumulative distribution function of the normal distribution. Thus, the probit model obtained can be written as $\theta^{-1}(\pi_i) = 1, 2, \ldots, n$;

where : $x_i^T = (1, x_1, x_2 ,..., x_k)$ is vector of predictor at the-i observation, $\beta = (\beta_0, \beta_1, \beta_2, ..., \beta_k)$ is parameter; $\theta^{-1}(\pi_i)$ is probit linked function; and $\pi_i = P(Y_i = y)$ is the probability of the response variable at the-i observation having the category $y(0,1)$ (Mehmetoglu & Jakobsen, 2017), as follows :

$$Y_i^* = \beta_i X_i + \varepsilon_i, \text{ where : } Y_i^* = \begin{cases} 1 \text{ if } Y_i^* > 0 \\ 1 \text{ if } Y_i^* \le 0 \end{cases} \tag{4}$$

Where : Y_i^* is household access to financial services (*access_fin*), if they have access = 1 and if they have no access = 0; X_i is predictor, β_i is coefficient; ε_i is error term with assumes: $E(\varepsilon_1) = E(\varepsilon_2) = 0$; $var(\varepsilon_1) = var(\varepsilon_2) = 1$; and $cov(\varepsilon_1, \varepsilon_2) = \rho$. Then, we can solve the probability of households who have access to financial services $= \frac{\partial P(Y=1|x_i)}{\partial x_i} = [\theta(\gamma - \beta^T x_i)\beta]$ and without access $= \frac{\partial P(Y=0|x_i)}{\partial x_i} = -[\theta(\gamma - \beta^T x_i)\beta]$. Therefore, we use the average change in odds value provided by the Average Marginal Effect (AME) in the probit model to reduce unobserved heterogeneity with delta-method standard error (Mehmetoglu & Jakobsen, 2017).

3.3 Impact of Household Access to Financial Services on Poverty

Household access to financial services is not simply distributed randomly, but they must meet various requirements in access, usage, and quality of formal financial institutions (Demirgüç-Kunt & Klapper, 2013), thus often occur to endogeneity problems (Mehmetoglu & Jakobsen, 2017). To investigate the causality effect of household access to financial services on endogenous, it needs to control bias selection in the estimations. It can be analyzed using the treatment effect method to get these impacts (Karlan et al., 2014). Unfortunately, SUSENAS-2019 (cross-section) doesn't perform the household characteristics at the baseline in their access to several kinds of financial services as counterfactual but only provides actual or follow-up. Therefore, it is not possible to estimate the impact using a randomized trial. Thus, we use a quasi-experimental design within a non-equivalent control group between treated and control in the treatment model (Pitt & Khandker, 2002; Banerjee et al., 2015. To compare the average of propensity scores between groups, we use propensity score matching which is more representative to reduce the bias selection between groups. The propensity score, $E(x_i)$ is an observation the-i ($i = 1, 2, ..., n$) as a conditional probability between treated ($D_i = 1$) and control ($D_i = 0$) with observational covariates x_i (Arpino & Mealli, 2011) :

$$E(x_i) = P(D_i = 1 | X_i = x_i) \tag{5}$$

In the treatment model with household access to financial services (*access_fin*), we use probit regression that integrated with propensity score matching method by equations (4) and (5) to control their intercession on outcomes between the actual and counter-factual observations in equation (3) (Garrido et al., 2014), therefore written as follows :

$$y_i = Y_{1,i} D_i + y_{0,i}(1 - D_i) \tag{6}$$

Where : $D_i \varepsilon(0,1)$ is treatment (*access_fin*); if $D_i = 1$, treated (with access) and if $D_i = 0$, control (without access); y_i is the potential outcome of household observation the-i, if $y_i = 1$ is the potential outcome of the household with access and $y_i = 0$ is the potential outcome of the household without access to financial services. We assume only one of the potential outcomes is realized and the others are missing (unobserved). So, the difference in the average potential outcome between groups :

$$E(y_i | D_i = 1|) - E(y_i | D_i = 0|) \tag{7}$$

As we know SUSENAS, March 2019, just performs the household conditions after they have access to any kind of financial services, whereas, in the baseline conditions, it is not identified, then the average potential outcome (PO means) of treated is $E[(y(1)|access_{fin} = 1)]$ and PO means for counter-factual is $E[(y(0)|access_{fin} = 1)]$. Therefore, we wonder whether equation (5) will be used to estimate the Average Treatment Effect on Treated (ATT) units (Imbens & Wooldridge, 2009). The ATT means the difference in average potential outcome between treated and control, if both household groups have probability access to financial services as a treatment, as defined :

$$\text{ATT} = E[(y(1)|access_{fin} = 1)] - E[(y(0)|access_{fin} = 1)] \tag{8}$$

To reduce bias selection in the probit model based on propensity score matching within ATT estimation, we use multi-alogaritms (before and after matching) with Nearest-Neighbor (NN) and Kernel Matching. Furthermore, we choose the best-unbiased selection between the two algorithms that shows the

bias-corrected percentage with a smaller range at 95% Confidence Intervals (CI's). The treatment model must meet the requirements to get an accurate treatment effect as well as the goodness of fit, model, i.e., the conditional independent assumption (ATT only determined by the treatment) and the common-support (the matching density between two groups have close to similar characteristics that not overlapping each other) (Cunningham, 2021; Roodman et al., 2019). NN with replacement one-to-one matching is used to get the average of propensity score and common support to classify the on-support and off-support as quality matching in the distribution blocks. After these, we estimate the Kernel-matching density with replication and bandwidth procedures, multiple checks on the level of significance, and sensitivity testing of the treatment effect (Imbens & Wooldridge, 2009). The estimated treatment effect will provide an observed coefficient resulting from the average difference in potential outcomes between the treated and control groups of households if both groups have the possibility of access to financial services. The ATT coefficient impressed by the equation (8) with a p-value at the level of significance (King & Nielsen, 2019).

4. Empirical Findings
4.1 Household Access to Financial Services in Indonesia
The SUSENAS-2019 was designed to cover the household's access to financial services, just for general kind of financial services, in particular for their access to credits or loans. Table 1 below shows the several kinds of financial services that provide credit or loan accessings to households or are served by formal financial institutions, i.e., microcredit or microfinance by *Kredit Usaha Rakyat* (KUR); commercial banks, rural banks or *Bank Perkreditan Rakyat* (BPR), *Koperasi*; personal loans with interest rates; pawn-brokers and leasings; government microcredit programmes by *Kelompok Usaha Bersama* (KUBE) and *Badan Usaha Milik Desa* (BUMDes); and other credits or loans.

Table 1. Household Access to Financial Services in Indonesia (Credit or Loan), 2019

Credit or loan has been served by Financial institutions (1 = Access)	Household (N = 315,672)	Poor (N_1 = 29,581)	Non-Poor (N_2 = 286,091)	Mean Difference	Std. Error
1) Kredit Usaha Rakyat (KUR)	6.32	3.23	6.63	-3.40***	0.001
2) Microfinance by commercial bank	6.10	1.88	6.53	-4.65***	0.001
3) Rural bank microcredit by BPR	1.35	0.60	1.42	-0.82***	0.001
4) Microcredit by Koperasi	4.25	3.61	4.31	-0.70***	0.001
5) Personal loan with interest rates	1.58	1.72	1.57	0.15	0.001
6) Microfinance by Pegadaian	1.01	0.65	1.04	-0.39***	0.001
7) Microfinance by leasing	3.35	1.08	3.58	-2.50 ***	0.001
8) Microcredit program for KUBE	0.51	0.46	0.52	-0.06	0.000
9) Microcredit program for BUMDes	0.57	0.49	0.58	-0.09	0.000
10) Other kind of credits or loans	3.21	2.80	3.25	-0.45***	0.001
Accessing for several kinds of financial services[a]	**24.58**	**14.81**	**25.60**	**-10.79*****	**0.002**

Note : *) p < 0.01; **) p < 0.05; ***) p < 0.001; [a]) The household access to financial services could be more than one.
Source : Raw Data SUSENAS, March 2019, *Author's estimation*.

On average, only 77,602 households (24.58 percent) in Indonesia have access to financial services and 238,070 households (75.42 percent) the others didn't have access. In this study, we find the number of banked are about 133,168 households (42.19 percent) and 182,504 households (57.81 percent) the others are unbanked. This means that about 43,336 households (13.73 percent) have a formal bank account and also access to any kind of financial services. Meanwhile, there are 89,832 households (28.46 percent) were banked but without access. It shows the differences are not significant in the SUSENAS-2019 as aggregate and individual (population). Although this phenomenon is related to the kind of financial services that have been distributed just about credit or loan by the ten institutions above, it can reflected that average household access to several kinds of financial services in Indonesia is still low percentages. Even if the households are categorized as poor, just about 14.81 percent have access to any kind of financial services, or around 10.79 percent less than non-poor. The average household access tends to be high frequently in the KUR (6.32 percent), commercial banks (6.10 percent), Koperasi (4.25 percent), and leasing (3.35 percent). Indeed, access to financial services by the non-poor is still higher than poor (25.60 percent), overall more than the average of household access. Whereas, all the financial institutions that are accessed by households are a part of the government financial programmes on reducing poverty strategy and supporting the development of real sector and SMEs empowerment, e.g., KUR since 2007; KUBE since 2015; and BUMDes since 2018 (TNP2K, 2021). In general, credits/loans served by those financial institutions are mostly used by non-poor,

except personal loans with interest rates (e.g. payday loans, private loans, *julo-julo*, etc.) which are high-interest rates and cost of borrowing but fast withdrawing and uncomplicated provisions.

4.2 Household Poverty Status and Access to Financial Services in Indonesia

The measurement of poverty is relatively straightforward. It involves, establishing a poverty line (i.e., a numerical value that constitutes an agreed minimum acceptable standard of living). The next step is to measure poverty incidence, typically the headcount poverty rate, or the percentage of individuals or households whose measured consumption falls below the line. This, in turn, requires accurate expenditure and income data desirably (Hill, 2021). Describing the household poverty status in Indonesia related to SUSENAS that was designed by the National Bureau of Statistics (BPS). The bureau has constructed a poverty line based on what it considers to be an individual's minimum basic needs. The poverty line is the sum of food and non-food items. The food poverty line is currently the expenditure required to obtain 2,100 kilo calories per capita per day, spread across 52 different food types (Adji et al., 2020; Hill, 2021). Then, the non-food poverty line covers mainly housing, clothing, education, and health. There was collected in a twice-yearly household survey and there have been changes in measurement and basket composition (Adji et al., 2020; Hill, 2021; Johar et al., 2019).

Table 2. Household Poverty Status and Access to Financial Services in Indonesia, 2019

Outcome Variables	Sub-Samples[b]	Household (N = 315,672)	Access (N₁ = 77,602)	No-Access (N₂ = 238,070)	Mean Difference	Std. Error
Expenditure per capita (*Rupiah/*month)	40% lowest	504,355	518,592	500,661	17,931***	953.61
	40% middle	1,029,775	1,042,293	1,025,437	16,856***	1,339.02
	20% highest	2,478,717	2,476,487	2,479,590	-3,103	13,020.30
Food consumption per capita (*Rupiah/*month)	40% lowest	315,775	320,298	314,602	5,696***	668.76
	40% middle	581,693	575,022	584,005	-8,983***	969.34
	20% highest	1.017.012	971,091	1,034,995	-63,904***	3,195.87
Budget share of food (%)	40% lowest	62.98	62.15	63.20	-1.05***	0.001
	40% middle	56.92	55.63	57.36	-1.73***	0.001
	20% highest	45.09	43.52	45.70	-2.18***	0.001
Non-food consumption per capita (*Rupiah/*month)	40% lowest	188,580	198,295	186,060	12,235***	559.28
	40% middle	448,081	467,270	441,431	25,839***	1,037.72
	20% highest	1,461,705	1,505,396	1,444,595	60,801***	12,041.27
Budget share of non-food (%)	40% lowest	37.01	37.84	36.80	1.04***	0.001
	40% middle	43.08	44.36	42.64	1.72***	0.001
	20% highest	54.91	56.48	54.30	2.18***	0.001
Household poverty status, 1 = Poor (%)	40% lowest	27.43	19.72	29.43	-9.71***	0.003
	40% middle	No more observations in both levels, because the 40% middle and 20% highest households by expenditure per capita are categorized as non-poor				
	20% highest					

Note : *) p < 0.01; **) p < 0.05; ***) p < 0.001; [b] Households categorized by sub-samples of expenditure per capita deciles.
Source : Raw Data SUSENAS, March 2019, Author's estimation.

The living needs of households will increase or decrease following their characteristics and time changes. Households not only consume food but also non-food, and when their food needs reach a saturation point, the increase in their income will be used to meet non-food needs or save of course. It depends on consumption pattern, if their preferences assumed *cateris paribus*, then the proportion of food consumption tends to decrease along with an increase in income. In 2019, we focused on household poverty status, 40% lowest expenditure per capita shows about 27.43 percent that categorized as poor and about 9.71 percent of the mean difference between poor and non-poor who have access to any kind of financial services. The average expenditure per capita for the 40% lowest is *Rp.* 504,355 a month, with food consumption still less than non-food consumption per capita in comparison with the other sub-samples. It can be indicated by the budget share of food greater than non-food, although these would be related to food security the household welfare is still not reached. It means that the greater proportion of the budget share of food implies the household opportunities to access financial services. Because, they no longer focus on sufficing their basic needs for food, e.g., rice, fish, meat, egg and milk, vegetables, legumes, oil, fruits, spices, cigarettes, etc. However, they have to allocate their incomes for non-food, e.g., goods and services, housing, clothing, tax and insurance, durable goods, education, health, parties, and ceremonies. Household access to financial services in this case can be related to non-food consumption as a stimulus for increasing financial inclusion. Nevertheless, the poor often tend to decrease their human capital expenditures like access to financial

services, to maintain food and non-food consumption when any income shock occurs. Households who have a budget share of non-food greater than food also tend to increase their access to financial services. We can show that the poor in Indonesia between, still didn't have access to financial services about 29.43 percent and only 19.72 percent had access to financial services with a budget share of food greater than non-food or prioritized food in their basket consumption than the others basic needs.

4.3 Determinant of Household Access to Financial Services in Indonesia

Those empirical results are quite consistent with the general analytical model, factors that influence the poverty status become predictors of household access to financial services. The income per capita (*Rp.*) a month has a statistical influence on their access to financial services, whether they are poor and non-poor. The household income as a proxy of their expenditure has a positive and significant correlation, which means a higher income per capita tends to increase the probability of households accessing several kinds of financial services. Head of households who are male, married, have years of schooling ($\geq$ 9 years), and have educational attainment ($\geq$ SMA), also contribute to decision-making in their probability of accessing financial services. As simple as that, we can conclude that the educational covariates are still related to the determinant of poverty in Indonesia and cause the probability of the poor accessing several financial services to become less. However, a characteristic of poverty in Indonesia is that still an increasing number of poor who work in the agricultural field, so their opportunities to access financial services are increasingly less than the non-poor. This means that not because of the occupation field where they worked, all of these related to their occupation sector as formal even informal workers. Overall, households who worked as self-employees, unpaid or paid workers, laborers, and casual employees tend to reduce their opportunities to access financial services, these are not significant for the poor.

Apart from the things above, according to statistical tests, several factors can determine the high or low probability of households accessing financial services. The characteristic of households with more than five members, use of electricity and LPG fuel can increase their chances of accessing financial services compared to those who live in rural areas with a house floor area of more than 8 m^2 which tends to reduce these opportunities. The asset ownerships, e.g., land, car, motorcycle, gold or jewelry $\geq$ 10 gr, flat TV $\geq$ 30', computer or laptop, and mobile phone also tend to increase their opportunities to access several financial services. It is because asset ownership has an economic value and is easier to sell or pawn to make money as an income when they have difficult times. The wage-based sources of financing, and having bank accounts are positive and significant in increasing their access to financial services, even though the poor do not. Internet services used by households in Indonesia are still low about 39.69 percent, resulting in reduced opportunities for them to access financial services.

Table 4 below, also shows us how the Indonesian Government takes several policies within the social protection programs which are positively linked to increasing household access to financial services, particularly the poor. All social protection in Indonesia which is implemented through non-contribution schemes has a positive and significant impact on increasing their access, e.g., the family welfare cards, school-age children via smart cards, and family hope programme. Contrarily, in the contribution schemes, e.g., the health insurance and labor insurance are negative so their chances to access financial services become less. The same thing was also done in the accelerating equitable development in Indonesia carried out by the government policies, which experienced trade-offs, particularly inter-islands or between western-center-eastern Indonesia regions. In this case, all households have a significant possibility of increasing access to financial services even though they live in the Sumatra, Java, Bali-Nusa Tenggara, Kalimantan, and Sulawesi islands. We can assume that through social protection programs and equitable development will bring proportional accessibility between poor and non-poor and eliminate the Javanese centrism development to access several kinds of financial services in the future. These empirical findings fulfill the requirements of fit probit model statistically to determine their probability to access financial services, even more appropriate for the characteristics of the poor which are determined around 83.30 percent.

Table 4. Determinant of Household Access to Financial Services in Indonesia, 2019

Indicators	Household (N = 264,343)			Poor (N$_1$ = 23,209)		Non-Poor (N$_2$ = 241,134)	
	β_0	$\partial y/\partial x$	$\partial(err.)$	β_1	std. err.	β_1	std. err.
Income per capita (*ln*)	0.202***	0.061***	0.002	0.154**	0.061	0.182***	0.007
Gender	-0.069***	-0.021***	0.003	-0.100**	0.040	-0.065***	0.010
Age	-0.003***	-0.001***	0.000	-0.003**	0.001	-0.004****	0.000
Working-age population	0.169***	0.051***	0.004	0.040	0.050	0.180***	0.014

	β	∂y/∂x	∂(err)	β	∂(err)	β	∂(err)
Marital status	0.547***	0.166***	0.007	0.342**	0.141	0.538***	0.023
Years of schooling	0.012**	0.004**	0.001	0.032**	0.016	0.012**	0.004
Educational attaintment	-0.227**	-0.069**	0.009	-0.284	0.143	-0.219***	0.030
No schooling	0.017	0.005	0.005	0.049	0.063	0.020	0.016
Primary school	0.004	0.001	0.004	0.007	0.057	0.007	0.014
High school	0.139***	0.042***	0.006	0.171	0.108	0.133***	0.020
Occupation field	-0.149***	-0.045***	0.002	-0.168***	0.026	-0.145***	0.007
Self employee	-0.127***	-0.039***	0.008	-0.087	0.102	-0.131***	0.029
Unpaid worker	-0.123***	-0.037***	0.008	-0.131	0.102	-0.122***	0.029
Paid worker	-0.125***	-0.038***	0.009	-0.160	0.124	-0.125***	0.031
Labor	-0.164***	-0.050***	0.008	-0.073	0.104	-0.171***	0.029
Casual employee	-0.101***	-0.031***	0.009	-0.131	0.105	-0.100**	0.030
Household size	0.065***	0.020***	0.001	0.039***	0.006	0.073***	0.002
Household domicile	-0.072***	-0.022***	0.002	0.014	0.027	-0.074***	0.007
Housing status	0.014	0.004	0.003	-0.049	0.036	0.018**	0.009
Floor area per capita	-0.076***	-0.023***	0.002	-0.131**	0.048	-0.059***	0.008
Electricity source	0.390***	0.118***	0.007	0.294***	0.051	0.376***	0.028
Cooking fuel	0.108***	0.033***	0.002	0.084***	0.026	0.107***	0.008
Land	0.079***	0.024***	0.002	0.110***	0.028	0.074***	0.008
Car	0.104***	0.032***	0.003	0.234**	0.103	0.109***	0.010
Motorcycle	0.248***	0.075***	0.002	0.270***	0.025	0.234***	0.008
Boat/Motorboat	-0.019	-0.006	0.005	-0.014	0.066	-0.023	0.018
Gold/jewelry ≥ 10 gr	-0.110***	-0.034***	0.002	-0.216**	0.066	-0.107***	0.008
Flat TV ≥ 30 inch	-0.093***	-0.028***	0.003	0.190**	0.068	-0.093***	0.009
Computer/laptop	0.026**	0.008**	0.003	0.100	0.066	0.026**	0.009
Mobile phone	0.023**	0.007**	0.002	-0.007	0.024	0.023**	0.008
Source of financing	0.176***	0.053***	0.006	0.073	0.073	0.185***	0.020
Literacy of alphabet	0.030	0.009	0.007	0.086	0.063	0.028	0.024
Use of internet services	-0.062***	-0.019***	0.002	-0.057	0.037	-0.060***	0.008
Bank/cooperative account	0.355***	0.108***	0.002	0.458***	0.026	0.350***	0.007
Health insurance	0.002	0.001	0.002	0.021	0.023	-0.001	0.007
Labor insurance	-0.118***	-0.036***	0.005	-0.414**	0.192	-0.109***	0.018
Family welfare card	0.056***	0.017***	0.003	0.015	0.029	0.060***	0.011
School-age children	0.121***	0.037***	0.003	0.102***	0.027	0.124***	0.010
Family hope programme	0.029**	0.009**	0.003	0.066**	0.030	0.020*	0.012
Food assistance	-0.016	-0.005	0.002	-0.002	0.025	-0.012	0.009
Sumatera	0.306***	0.093***	0.004	0.580***	0.046	0.257***	0.015
Jawa	0.593***	0.180***	0.004	1.028***	0.051	0.535***	0.015
Bali-Nusa Tenggara	0.780***	0.237***	0.004	1.176***	0.050	0.719***	0.016
Kalimantan	0.161***	0.049***	0.005	0.351***	0.065	0.116***	0.016
Sulawesi	0.471***	0.143***	0.004	0.764***	0.051	0.419***	0.015
Constanta	-5.557***	-	-	-4.924***	0.823	-5.221***	0.119
Wald Chi-square			**21,302.03**		**2,221.86**		**17,992.61**
Number of covariates			**45**		**45**		**45**
Prob. > chi-square			**0.000**		**0.000**		**0.000**
Pseudo R-square			**0.0734**		**0.1154**		**0.0671**
Log-pseudolikelihood			**-142,288.9**		**-9,190.0**		**-132,866.2**
Corrected classified			**73.26 percent**		**83.30 percent**		**70.40 percent**

Notes : Omitted variables are *secondary school; some colleges; family workers; occupational sector*; and *maluku-papua* are eliminated because of collinearity;

Missing are 51.329 observations (*listwise deletion by variables*) to require the goodness of fit model;

β is the coefficient of probit model;

$\partial y/\partial x$ = *average marginal effect*;

$\partial(err.)$ = delta-method of standard error.

Source : Raw Data SUSENAS, March 2019, *Author's estimation*; *) p < 0.01; **) p < 0.05; ***) p < 0.001.

4.5 Impact of Household Access to Financial Services on Poverty in Indonesia

The nearest-neighbor matching uses one-to-one with replacement, kernel-matching with replications (50) and bandwidth (0.02072897) strengthens the ATT estimation results. Both algorithms show percentile and bias-corrected at the level of Confidence Intervals (CI's), 95% two-tailed. Which of these methods to compute confidence intervals should we use? Based on Author's estimation, Kernel-matching has yielded a smaller bias and standard of error at CI's with diminished or narrowed interval distances compared to NN match. It has a goodness of fit to reduce bias and variations in the ATT and expected potential outcomes. The ATT with propensity score kernel-matching yield balancing plots and matching statistics or common

supports over the 45 covariates as predictors of expected potential outcomes. Overall, we choose kernel matching, which more closely approximates the requirements of the fit model, conditional independent assumptions, and common support. *First*, the balancing plots have met the requirement of the conditional independent assumption which the potential outcomes are only determined by treatment with 45 covariates. *Second*, the balancing plots show common-support that the kernel-matching density between households with access and without access have close to similar characteristics or there are no-overlapping each other after matching.

Table 6. Impact of Household Access to Financial Services on Poverty in Indonesia

Outcome Variables	ATT	std. err.	Y_0	Y_1	Normal-based (95% CI's)	
					Household (N = 264,343)	
Expenditure per capita (*Rp.* /month)	-22,598***	5,480.7	1,293,820	1,271,222	-33,339.9	-11,855.9
Food consumption per capita (*Rp.* /month)	-12,802***	1,536.9	626,239	613,437	-15,814.5	-9,789.7
Non-food consumption per capita (*Rp.* /month)	-9,795*	5081.6	667,580	657,785	-19,755.5	164.0
Budget share of food (%)	-0.68***	0.001	55.20	54.52	-0.8166	-0.5360
Budget share of non-food (%)	0.68***	0.001	44.80	45.48	0.5360	0.8166
Household poverty status, 1 = poor (%)	**-0.70***	**0.001**	**6,37**	**5,67**	**-0.9720**	**-0.4297**
Several Kinds of Financial Services :						
KUR, 1 = access (%)	-1,64***	0.002	6.28	4.64	-2.0009	-1.2747
Commercial Bank, 1 = access (%)	-0.68***	0.001	3.64	2.96	-0.9714	-0.4009
BPR, 1 = access (%)	-1.08***	0.004	5.42	4.34	-1.8066	-0.3452
Koperasi, 1 = access (%)	-1.29***	0.003	8.63	7.34	-1.8513	-0.7374
Personal loan, 1 = access (%)	-0.36***	0.005	9.78	9.42	-1.3794	-0.6494
Pegadaian, 1 = access (%)	-0.92***	0.005	6.86	5.94	-1.9222	-0.0788
Leasing, 1 = access (%)	0.09***	0.002	2.91	3.00	-0.2734	0.4611
KUBE, 1 = access (%)	-2.18***	0.008	9.32	7.14	-3.7783	-0.5771
BUMDes, 1 = access (%)	-0.66***	0.008	8.44	0.78	-2.1453	0.8276
Other kinds, 1 = access (%)	-0.63***	0.003	8.26	7.63	-1.2893	0.0269
Outcome Variables					**Poor (N_1 = 23,209)**	
Expenditure per capita (*Rp.* /month)	-733	1,229.0	351,445	350,712	-3,141.5	1,676.2
Food consumption per capita (*Rp.* /month)	-3,005**	932.9	225,910	222,905	-4,833.2	-1,176.2
Non-food consumption per capita (*Rp.* /month)	2,272**	914.2	125,535	127,807	480.1	4,064.0
Budget share of food (%)	-0.74***	0.002	64.56	63.82	-1.1312	-0.3323
Budget share of non-food (%)	0.74***	0.002	35.44	36.18	0.3323	1.1312
Outcome Variables					**Non-Poor (N_2 = 241,134)**	
Expenditure per capita (*Rp.* /month)	-18,580**	7,991.8	1,351,076	1,332,496	-34,243.6	-2,916.3
Food consumption per capita (*Rp.* /month)	-11,002***	1,836.8	649,251	638,249	-14,601.9	-7,401.7
Non-food consumption per capita (*Rp.* /month)	-7,578	7,010.6	701,824	694,246	-21,318.8	6,162.4
Budget share of food (%)	-0.65***	0.001	54.56	53.91	-0.8448	-0.4571
Budget share of non-food (%)	0.65***	0.001	45.44	46.09	0.4571	0.8448

Notes : Kernel matching method with replications = 50 and bandwidth = 0.02072897;
Y_0 = Potential outcome means of baseline (counter-factual);
Y_1 = Potential outcome means of treated (treatment sample);
ATT = [E (Y_1|D = 1) – E(Y_0|D = 0)].
Source : Raw Data SUSENAS, March 2019, *Author's estimation*; *) $p < 0.01$; **) $p < 0.05$; ***) $p < 0.001$.

The discrepancy in time between living and working leads to changes in household behaviors and consumption during periods of uncertainty. The trend of consumption will increase over time as households have various reasons to increase their consumption, such as increasing their standard of living or trying to get out of poverty. A decrease in their expenditure per capita because they have to allocate some price after accessing several financial services, e.g., credit or loans, as a contribution scheme. The permanent income hypothesis postulates and considers a household that lives for a certain period of time and whose utility is assumed. They can borrow at the exogenous interest rate, subject only to the constraint that any outstanding debt must be repaid. Household access to financial services in this case, we assume as transitory income which represents the effect per unit of all other factors of incomes which are "*accidentals* or *changes*". It can be positive but the empirical finding in this research has a negative impact, thus we conclude it is an unfavorable income. We can see that household access to financial services has reduced their average food consumption of *Rp.* 12,802 greater than non-food consumption of Rp. 9,795 a month. It implies that income changed by their access to financial services affects the allocation of food expenditures will reduce and add to other allocations because accessing financial services is categorized as a non-food expenditure. But why do we say it can help reduce poverty? This is because household access to financial services has a positive

impact on the budget share of non-food. As we know, these will relate to *Engel's law* (Nicholson & Snyder, 2009) said that the poorer the group, the greater the percentage of their budget that went to food, while a lesser percentage went or budget share on other goods and services increased. These conditions will indicate that households, and moreover poor, gain income changes by accessing financial services and increasing their living standards.

Access to financial services such as credits or loans enables households to use resources to meet their expenditure requirements and make some profitable activities, which can contribute to the accumulation of assets and help reduce poverty. Households can also face credit constraints, due to institutional factors as well as household-specific characteristics, e.g., income per capita, household size, education, occupational, asset ownership, and location that might not allow them to smooth their consumption, make profitable investments, and cope with shocks that could destabilize. As a consequence, households need to turn to other sources of funds to meet their credit requirements. If we see in Table 6, from the ten kinds of household access to financial services, we found that KUBE, KUR, Koperasi, and BPR microcredit have a greater impact on helping reduce poverty in Indonesia. Exception for leasing microfinance, which has a positive effect, all kinds of credits or loans can reduce the household poverty status. It depends on the socioeconomic characteristics that were accessed, as well as the amount of the repaid price on credit returns. Household access definitely has an impact on all low-income households, particularly poor, it is not yet significant enough but has a positive correlation to increase the poor expenditure per capita, averagely. The decrease or increase in their incomes didn't increase or decrease their expenditure in the short run, but in the long term, it occurred (Romer, 2012; Syahruddin, 1981).

5. Conclusions and Remarks

These empirical findings show that household access to financial services definitely has an impact and is significant on all households, even the non-poor, moreover poor. Household poverty status was reduced which would have occurred if they had access to financial services. In addition, their access can reduce the expenditure, food and non-food consumption per capita a month, and change their budget share of food and non-food which would have occurred if these households had access. Accessing financial services as transitory income has a negative impact, thus we conclude it is an unfavorable income. For the poor, it is not yet significant enough but has a positive impact on increasing their expenditure per capita a month. All kinds of financial institutions that are accessed by households are contributed schemes and require some price/cost to repay the credit or loan terms. Thus, the decrease or increase in their incomes didn't increase or decrease their expenditure in the short run, but in the long run, it occurred. The KUBE, KUR, Koperasi, and BPR have a greater impact on helping to reduce poverty in Indonesia. Exception for leasing microfinance, which has a positive effect, all kinds of credits or loans can reduce their poverty status. These outcomes would have occurred if they had been able to increase their deprivation in the determinant household access to financial services, e.g., household income per capita, household characteristics, asset ownership, internet services, source of financing, a formal bank/cooperative accounts, social protection, and island residentials.

Consequently, these empirical findings have some important policy implications. *First*, There are more policies that help reduce poverty directly, but the educational covariates are still related to the determinant of poverty in Indonesia and cause the probability of the poor accessing financial services to become less. *Second*, The Indonesian government is supposed to have more microfinance programmes with non-contribution schemes, low-rate repays, and pro-poor programme participants, such as KUR, KUBE, and BUMDes. *Third*, Credits or loans are sometimes provided through in-kind schemes, e.g., seed, fertilizer, equipment, and land ownership because most of the poor in Indonesia are still living and occupying the agriculture field and informal sector with asset ownership limitless. *Fourth*, Among households that use financial services to meet a range of needs, they borrow money to cover basic needs and pay for education, i.e., to manage liquidity and smooth consumption, both personally and their households. *Furthermore*, efforts to increase access to financial services, such as giving them education about formal finance and facilitating the opening of bank accounts, thereby increasing formal credit and reducing informal credit, especially for the poor, e.g., personal loans with interest rates, payday loans, *julo-julo*, etc.

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