The Philippine Review of Economics
Vol. LII No. 2, December 2015 pp. 170-191

Households' access to financial services: some evidence from survey data

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Many studies look at financial inclusion from the supply side. The discussion in those studies revolves around the different types of financial services being developed to provide the excluded segment of the population with access to such services and the evolving regulatory frameworks supporting those innovative financial services.

This paper views financial inclusion from the perspective of households who use financial services and asks what factors determine access to financial services. It provides a quantitative estimation of the factors affecting household decision to participate in the formal financial markets and the impact of the utilization of financial services on household incomes. It uses micro-data from the Annual Poverty Indicators Survey in the estimation.

The empirical findings provide useful information for designing policies and interventions to foster inclusive finance. It points to financial education of households as a key intervention in financial inclusion strategies.

JEL classification: D14, G21
Keywords: financial inclusion, inclusive finance, access to banking services, financial education

1. Introduction

Financial inclusion presently occupies center stage in global discussions of development interventions, and it has drawn the attention of policy makers, regulators, financial service providers, other stakeholders, and even the support of the nobility who are concerned with the negative impact on households of the

inaccessibility of financial services.[1] The importance given to financial inclusion globally is motivated by the belief that financial inclusion is important for inclusive growth and poverty reduction. Empirical studies tend to provide some evidence of the beneficial impacts of financial inclusion at the macroeconomic, household, and firm level. For this reason, the Global Partnership for Financial Inclusion was established by the G20 as the main implementing mechanism of the G20 Financial Inclusion Action Plan. In a recent report on financial inclusion, the World Bank points out that at the country level about two-thirds of regulatory and supervisory agencies in many countries are now working on ways to enhance financial inclusion, while some 50 countries have set formal targets and goals for financial inclusion [World Bank 2014]. Financial inclusion is an important strategy for inclusive growth in the 2011-2016 Philippine Development Plan; the Bangko Sentral ng Pilipinas, taking the lead in expanding the accessibility of financial services, created the Inclusive Finance Advocacy Staff to work with various stakeholders in achieving the objectives of financial inclusion.

The Bangko Sentral ng Pilipinas (BSP) defines financial inclusion as "a state wherein there is effective access to a wide range of financial services for all Filipinos" [BSP 2013:1]. This follows the standard definition of financial inclusion in the literature. The Consultative Group to Assist the Poor [2011] defines financial inclusion as a state in which all working-age adults, including those currently excluded by the financial system, have effective access to a range of financial services provided by formal financial institutions: credit, savings (including current account), payments, and insurance. Effective access involves convenient and responsible service delivery at a cost affordable to the customer and sustainable for the provider, while "financially excluded" refers to those who do not have access to or are underserved by formal financial services [CGAP 2011]. Effective access requires that financial services are appropriately designed, of good quality, relevant for actual use, and beneficial to the target market [Llanto 2015:1].

Access to financial services satisfies economic agents' demand for consumption smoothing, productive investments, and ways to help them cope with exogenous shocks, e.g., catastrophic risk. However, a large segment of the global population, especially poor households and micro-enterprises in developing countries, has been financially excluded. According to the latest World Bank estimates, half of the world's adult population—more than 2.5 billion people—do not have an account at a formal financial institution. Globally, about 50 percent of adults have one or more bank accounts, and a nearly equal

[1] Queen Maxima of the Netherlands, UN Secretary General's Special Advocate for Inclusive Finance for Development, lent her presence and support to the launch of the Philippines' National Strategy for Financial Inclusion on July 1, 2015 at the Philippine International Convention Center.

share are unbanked. In 2011, adults who were banked included the 9 percent of adults who received loans and the 22 percent of adults who saved through financial institutions [World Bank 2014:1-2]. In the Philippines, the 2009 Consumer Finance Survey of the BSP found that 8 in 10 Filipino households did not have a deposit account, only 10.5 percent of adults in the country had a loan from a formal financial institution, and 93 percent of those without any deposit account said they did not have enough money for bank deposits [BSP 2012].

To address these issues, innovative financial services intended to address the problem of financial inclusion—e.g., mobile money, branchless banking, and e-money—are in varying stages of development and utilization in many developing countries. For example, in the Philippines low-income households are primarily using mobile money to send and receive domestic remittances: on average sending US$57 and receiving US$48 [Pickens 2009]. In Malawi, Opportunity Bank took two years to develop m-banking service, which was launched in 2010. Also in 2010, M-PESA and Equity Bank in Kenya announced the a low-cost, low-entry microsavings account called M-Kesho. The objective is to convert the majority of M-PESA's 9.4 million users into account holders at Equity Bank. There are further plans to offer microinsurance and microloans to account holders [Kumar, McKay, and Rotman 2010]. Such innovative financial services will require supportive regulatory frameworks. In this area, Peru and Philippines have been cited as being more advanced than other developing countries in the development of such frameworks. According to the BSP [2015], the Philippines ranked first in Asia and top three in the world in 2014 in terms of having a conducive environment for financial inclusion based on the Economist Intelligence Unit maiden survey on financial inclusion environments globally.

The literature has documented a positive relationship between finance and economic development at the macro level. It has been pointed out that the lack of access to financial services could lead to a poverty trap and to an increase in the inequality gap (Cámara and Tuesta [2015]; Beck, Demirguc-Kunt, and Levnie [2007])[2], that inequality decreases as financial markets deepen [Clarke, Xu and Zou 2006], and that, in the case of India, an all-inclusive financial system would facilitate the process of human development by addressing the basic distortions in the level of human development [Kuri and Laha 2011]. Among others, research at the household level revolves around the link between financial inclusion and reduction of poverty rates (Honohan [2008]; Park and Mercado [2015]) and improvements of household welfare with an important function assigned to financial services as a tool for consumption smoothing and social protection as in the case of micro-insurance.

[2] The literature on the impact of financial inclusion at the macro and household level is well summarized in Cámara and Tuesta [2015]. A more copious literature is in World Bank [2014].

If financial exclusion could have deleterious effects as explained in the literature, it is important to understand why households, especially poor households and microenterprises, fail to access financial services. Many studies on financial inclusion look at it from the supply side. The discussion in those studies revolves around the different types of financial services being developed to provide the excluded segment of the population with access to such services and the evolving regulatory frameworks supporting those innovative financial services. Financial inclusion is not the same as providing access to financial services although certainly the first step towards the goal of financial inclusion is to make those financial services very accessible to the excluded. Financial products and services could be accessible to the population, but utilization of such financial services could be low. Thus, there would be a large segment of the population that will continue to be financially excluded despite the accessibility of financial services. Financial inclusion is about providing access to financial services and the excluded households' and firms' utilization of those services.

This paper takes it from the perspective of users of financial services, that is, the households. What prevents those households from accessing financial services? What influences their decision to use or not to use financial services? Several demand-side factors have effectively excluded poor households from accessing and using financial services. There is a range of factors that prevent access and utilization: socio-economic and cultural factors; the lack of formal identification needed to satisfy the "know your client" policy imposed on banks by the regulator; low levels of financial literacy in addition to the absence of appropriate consumer protection mechanisms (Alliance for Financial Inclusion [2010]; Llanto [2015]) and lack of awareness of available services; inappropriateness of certain services to the needs of the low-income sectors; and the risks of dealing with poor customers [ESCAP 2014]. It is important to understand the socio-economic characteristics conditioning the use of financial services by households, which enable such households to smoothen income cycles generated by unexpected shocks or discontinuous income flows [Cámara and Tuesta 2015].

Using micro-data from the Annual Poverty Indicators Survey, the paper provides a quantitative estimation of factors affecting household decision to participate in the formal financial markets and the impact of utilization of financial services on household incomes. It also shows that vulnerable groups—comprised of women, rural dwellers, and young people—find it most difficult to access banking services.

The empirical findings provide useful information for designing policies and interventions to foster inclusive finance. It points to financial education of households as a key intervention in financial inclusion strategies.

The paper is organized as follows. Section 2 provides an overview of the Philippine financial sector and the state of financial inclusion in the country, with a focus on the critical role of an enabling environment in promoting inclusive finance. Section 3 discusses the methodology and data used in the empirical estimation. Section 4 analyzes the empirical findings, and the concluding section provides some recommendations for fostering financial inclusion and comments on further research on the subject.

2. Current status of financial inclusion

2.1. Brief profile of the financial sector[3]

In 2014, the Philippine banking system remained strong and stable despite external challenges—especially in international capital markets—with continuing growth in resources, deposit liabilities, and loans. The total resources of the whole banking system increased by 11.8 percent to more than ₱11 trillion from ₱10.3 trillion in the preceding year, 2013. This can be attributed to growth in loans, financial assets, and equity investments (Table 1). Total deposits of banks rose to ₱8.52 trillion in the same period, a 12 percent year-on-year increase from end-December 2013. The number of banking institution head offices decreased to 648 as of end-December 2014 from the previous year's 673 head offices, signifying a consolidation of banks and the closure of weaker banks in the sector (Table 2). The number and types of banking offices are also shown in Table 2. The notable information here is the growth at 11 percent of micro-banking offices of mostly microfinance-oriented banks. Together with microfinance- oriented branches, they cater to the lower-income groups and are the access points that are accessible to the excluded segments of the population.

Asset quality indicators also improved with the decline of the banking system's gross non-performing loan ratio from 2.8 percent as of end-December 2013 to 2.3 percent as of end-December 2014. Likewise, net non-performing loans were reduced. Capital adequacy ratios remained above the international standards imposed under the Basel III framework, which became effective on January 1, 2014. As of end-September 2014, the capital adequacy ratios of universal and commercial banks stood at 17 percent, while overall the capital adequacy ratio for all types of banks stood at 16.7 percent at end-September 2014 (Table 1).

[3] This paragraph was drawn from Llanto [2015].

TABLE 1. Resources, deposits, and loans outstanding, all banks, December 2014

	All	Universal Commercial Banks	Thrift Banks	Rural Banks
Number of Banks				
Total number of Banks	10,361	6,330	1,920	2,608
Head offices	648	51	69	543
Other Offices	9,713	6,279	1,851	2,065
Resources (₱ billion)	11,128	10,398	916	208
Deposits Liabilities (₱ billion) billion)	8,522	7,680	696	144
Loans Outstanding (₱ billion)	5,532	4,822	571	138
GNPL to Total Loans (%)	2.3	2.3	4.4	11.9
NNPL to Total Loans (%)	0.6	0.6	1.95	5.9
Capital Adequacy Ratio (%)	16.7*	17.0**		

* As of end-June 2014; ** As of end-September 2014
Source: Bangko Sentral ng Pilipinas.

TABLE 2. Number of banking offices, by type, 2013 and 2014

	2013	2014	Growth Rate (%)
TOTAL	9,935	10,361	4.3
Head Offices	673	648	-3.7
Branches/Other Offices	9,262	9,713	4.9
Regular Branch	8,077	8,442	4.5
Micro-finance Oriented Branch	98	99	1.0
Regular Other Banking Office (ROBO)	420	448	6.7
Microbanking Office (MBO)	465	517	11.2
Extension Office (EO)	166	176	6.0
Representative Office	15	13	-13.3
Remittance Desk Office	16	14	-12.5
Marketing Office	2	2	0.0
Sub-Branch	2	1	-50.0
Limited Purpose Branch	1	1	0.0

Sources: Bangko Sentral ng Pilipinas

The regional distribution of banking offices in Table 3 gives a rough idea of the spatial distribution of access to banking facilities. A finer distribution by municipalities and cities is available at the BSP web site. The population residing in richer regions, which have more banking facilities, have easier access to financial services. Those residing in poorer regions with fewer banking facilities do not have this advantage. Cities/municipalities/provinces/regions with a higher bank density have more financially included individuals in their respective

populations than those with lower bank density. The leading regions from this perspective are the National Capital Region, Regions III and IV-A in Luzon, and Regions VI and VII in the Visayas. The regions in Mindanao have fewer banking offices and presumably have a bigger share of the financially excluded segments of the population.

TABLE 3. Regional distribution of banking offices, 2010-2015[P]

	2010	2011	2012	2013	2014	2015*	Growth 2012-2013	Growth 2013-2014	Percent Share (%) 2014
Philippines	8,843	9,015	9,375	9,884	10,315	10,410	5.4%	4.4%	100.0
NCR	2,876	2,892	2,993	3,141	3,275	3,299	4.9%	4.3%	31.7
CAR	138	146	148	150	155	156	1.4%	3.3%	1.5
Region I	403	401	413	436	456	466	5.6%	4.6%	4.4
Region II	257	272	286	310	329	337	8.4%	6.1%	3.2
Region III	914	940	975	998	1,033	1,050	2.4%	3.5%	10.0
Region IV-A	1,314	1,350	1,406	1,509	1,566	1,575	7.3%	3.8%	15.2
Region IV-B	184	189	206	220	234	236	6.8%	6.4%	2.3
Region V	271	281	315	353	380	383	12.1%	7.6%	3.7
Region VI	515	531	543	572	600	604	5.3%	4.9%	5.8
Region VII	580	584	627	653	683	688	4.1%	4.6%	6.6
Region VIII	165	172	174	183	186	187	5.2%	1.6%	1.8
Region IX	171	181	190	199	201	202	4.7%	1.0%	1.9
Region X	320	328	328	347	368	372	5.8%	6.1%	3.6
Region XI	333	338	355	388	396	400	9.3%	2.1%	3.8
Region XII	190	192	195	197	214	216	1.0%	8.6%	2.1
Caraga	193	199	201	207	218	218	3.0%	5.3%	2.1
ARMM	19	19	20	21	21	21	5.0%	0.0%	0.2

Note: * - as of March 2015
Source: BSP Statistics

2.2. Financial inclusion

The latest data on financial inclusion are those reported by the BSP from data gathered through the National Baseline Survey on Financial Inclusion [BSP 2015]. During the launch of the National Strategy for Financial Inclusion on July 1, 2015, the BSP reported the following statistics: 25 percent of Filipino adults have never saved; 32 percent used to save; and only 43 percent presently have savings. Of those with savings, only 32 percent save in banks, while 68 percent keep their savings at home. Around 65 percent of unbanked adults cited lack of money as the main reason for not having a bank account. About 47 percent of adults have outstanding loans. The main source of borrowing is informal: 62 percent borrow from family, relatives, or friends; while 10 percent borrow from informal lenders. About 44 percent of adults sent or received money, while 42

percent made payments. Only 3.2 percent of adults have a microinsurance coverage [BSP 2015].

There are several salient findings of the National Baseline Survey on Financial Inclusion. In terms of access, the BSP [2015] reports that among the available access points, Filipino adults are most aware of banks (98.3 percent), pawnshops (95.7 percent), and automated teller machines (93.5 percent). Seemingly, there is a relatively low awareness of other access point, e.g. microfinance nongovernment organizations (30.5 percent), e-money agents (25.6 percent), and non-stock savings and loan associations (13.6 percent). As of end-December 2014, 36 percent of municipalities do not have a banking office. While the physical network of banks and ATMs continues to experience sustained growth, there are disparities in the regional distribution of access points.

In terms of usage, most of those who are aware of the access points had also conducted transactions using the previously mentioned top access points. Nonetheless, only 5 out of 10 Filipino adults have conducted transactions with banks. Also, there are certain access points which are more frequently used than others depending on the geographic location (i.e. island group) of the user. For instance, adults in Mindanao tend to transact more often with cooperatives and microfinance nongovernment organizations; in Visayas, the majority of adults have transacted with non-stock savings and loan associations and pawnshops. Significant usage disparity was also evident between users in urban rural areas [BSP 2015].

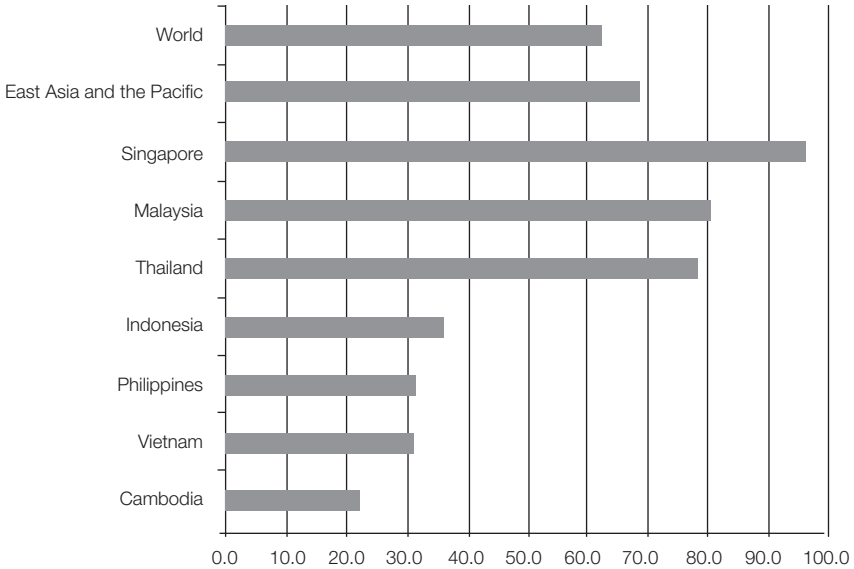
Meanwhile, the proportion of Filipino adults who save remains small at 43.2 percent; while 32.3 percent of the respondents used to save in the past, and the remaining (24.5 percent) have never experienced saving money. It is worth noting that the majority (7 out of 10 adults or 68.3 percent) prefer to save their money at home; 32.7 percent save through banks; and the remaining through other financial institutions and informal savings group. It seems that such behavior among most of the Filipino adults stems from the main reasons for saving, i.e. to use in case of emergencies (63.8 percent); for future expenses on food (55.6 percent); and education (47.4 percent). This may imply that a significant percentage of Filipinos would rather forgo the interest income from savings deposits in banks in exchange for easier access to savings, that is, keeping cash at home. Some of the other reasons cited for not saving in the banks were lack of money (65 percent), limited knowledge and capability to manage an account (16.8 percent), cost (11.2 percent), proximity of the banks (7.6 percent), and failure to meet documentary requirements (4.6 percent), among others. In terms of loans, 47.1 percent of adults borrow money of whom 61.9 percent borrow from family, relatives, or friends, and 10.1 percent borrow from informal lenders. Among the main considerations for borrowing are interest rate and loan amount. On insurance, most are aware of health and life insurance. Results showed that the most common reasons for not enrolling in life, health, or accident insurance are lack of money and perception of high cost.

More than half who have accessed banks and automated teller machines are only somewhat satisfied with their transactions. This is most common in automated teller machines, cooperatives, and microfinance nongovernment organizations. Finally, on welfare, the results of the survey indicated that 86 percent of the Filipino adults perceive access to financial products and services is important, while 88 percent believed that it is beneficial to them. Also, majority of the adults believe that saving, borrowing, and insurance are important to them as well. Nonetheless only half of the (potential) borrowers would want to borrow from financial institutions. The findings of the first National Baseline Survey on Financial Inclusion indicate that much work has to be done to achieve financial inclusion in the country. This includes extensive information dissemination, financial education especially for poor households, and development of financial products and services that are responsive to the financial needs of the excluded segment of the population.

It is good to benchmark financial inclusion levels in the Philippines relative to other countries in order to provide a good perspective and understanding of the local situation. Data are sourced from the 2014 Global Findex. Account penetration in the Philippines was lower than all of the countries within the peer group (ASEAN), except in Vietnam and Cambodia (Figure 1). Account penetration in the Philippines was lower than all of the countries within the peer group (ASEAN) except in Vietnam and Cambodia (Figure 1). The percentage of adults who have savings in a financial institution was lower than all countries within the peer group except Cambodia. The Philippines and Viet Nam have more or less the same percentage of adults with savings in a financial institution. (Figure 2). Surprisingly, the percentage of adults with loans obtained from a financial institution was lowest in the Philippines (Figure 3).

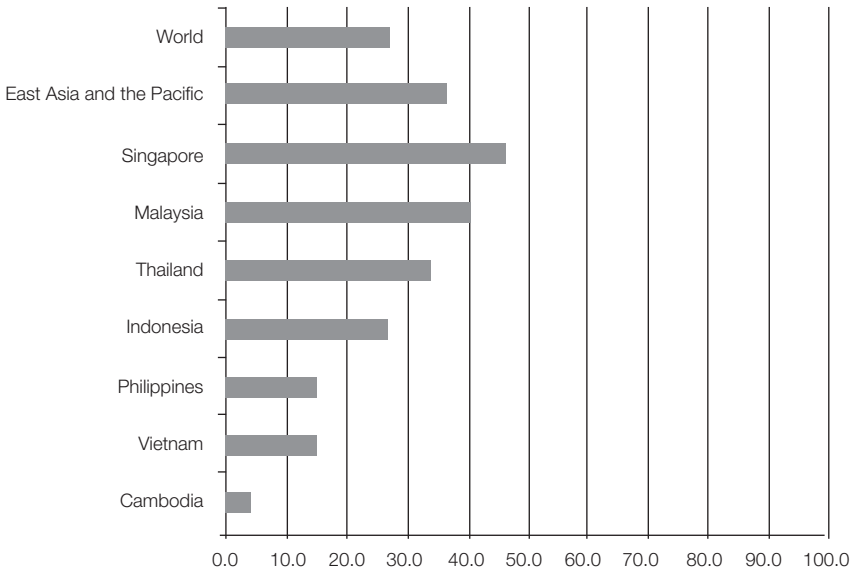
3. Data and methodology

The methodology for estimation is as follows. Using the Heckman selection model estimation, the likelihood of availing of loans regardless of the source of loans—that is, loans from formal institutions or informal lenders—was first tested, followed by the likelihood of getting a formal loan (access to formal credit), as a series of Probit models for households. Both procedures used Full-Maximum Likelihood estimation. Here the observations were limited to those households with access to formal loans. The Heckman selection model estimation addressed the sample selection problem that could arise from the use of samples that include those that did not avail of loans. The other reason is that it will be interesting to find out what factors matter for household access to loans from formal and informal sources, and to loans from a formal financial institution, e.g., a bank.



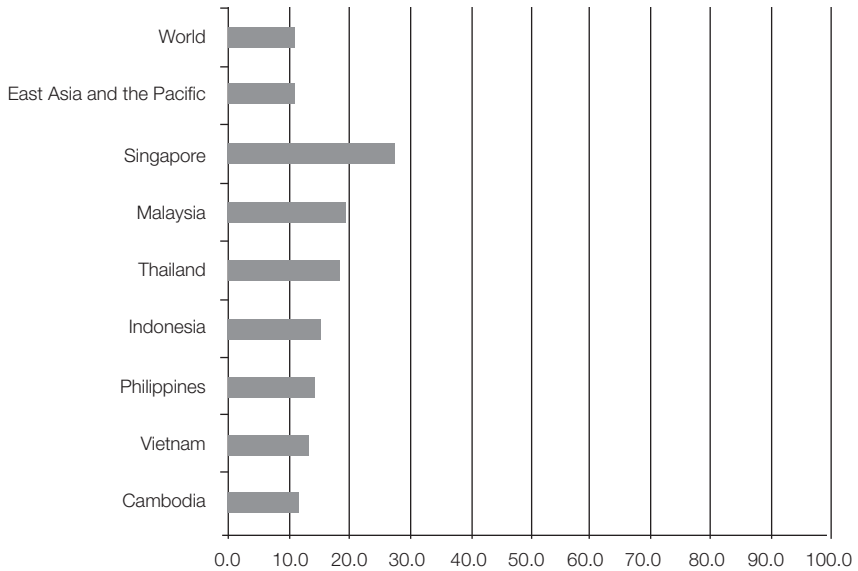
Source: Global Findex, 2014

FIGURE 1. Percentage of adults with a formal account



Source: Global Findex, 2014

FIGURE 2. Percentage of adults with savings in a formal financial institution



Source: Global Findex, 2014

FIGURE 3. Percentage of adults with loans from a formal financial institution

The second step is to test whether or not financial inclusion helps improve household income using a two-stage instrumental variable approach to take care of the possible endogeneity problem between financial inclusion (proxied by access to formal credit) and household income. Using the number of formal lending institutions (i.e., universal, thrift, and rural banks) as instrument, the Two-Stage Least Squares estimation was employed upon satisfaction of the weak identification and heteroskedasticity tests.

3.1. Heckman selection model

The first step is to test which factors significantly influence a household's decision to access financial services (proxied by access to formal credit). To take into account the endogenous borrowing decisions of households, the Heckman selection model, which is specified as follows, is employed:

$$q = \mathbf{x}\beta + u \tag{1}$$

$$D_{loan} = I(\mathbf{z}\delta + v > 0) \tag{2}$$

Equation 1 estimates the probability of a household using formal financial services; that probability is determined by a set of exogenous variables included in vector **x**. β is a vector of parameters while *u* is a normally distributed error term

with mean 0 and variance 1 and is assumed to be independent from **x**. Equation 2 is the first-stage equation—or the so-called "selection" equation—that estimates the probability of a household availing of a loan (regardless of type), conditional on a set of exogenous variables included in vector **z**. D_{loan} is a dummy variable taking the value of 1 if the household availed of a loan and 0 otherwise. $I(\mathbf{z}\delta + v > 0)$ is an indicator function that takes the value of 1 if the inequality inside the function holds and 0 otherwise. **z** contains the same set of variables as in **x** plus an instrumental variable, which is an exclusion restriction. δ is a vector of parameters and v is assumed to have a standard normal distribution and is independent from **z**.

Essentially, Equation 1 is estimated when q is observed or when $D_{loan} = 1$. Thus, taking the expectation of Equation 1, conditional on **z** and $D_{loan} = 1$, with u and v being jointly normal with mean 0, the conditional mean can be written as follows:

$$E(y \mid \mathbf{z}, D_{loan} = 1) = \mathbf{x}\beta + [\rho^{*}\lambda(\mathbf{z}\delta)] \tag{3}$$

where $\lambda(c) = \Phi(c) / \Phi(c)$ is the inverse Mills ratio, which is the ratio of the standard normal probability density function to the standard normal cumulative density function, and ρ is the coefficient. In Equation 3, the inverse Mills ratio is evaluated at **z**δ.

3.2. Instrumental variable regression model

The second step is to test whether financial inclusion (proxied by access to credit) is a significant factor affecting household income. To address the potential endogeneity between access to credit and household income, the two-stage instrumental variable regression model is estimated, with the number of banks in a province as the instrument. The specification of the two equations are as follows:

$$ln(y) = w\theta + \mathbf{x}\beta + \varepsilon \tag{4}$$

$$w = \mathbf{z}\alpha + \tau \tag{5}$$

Equation 4 is the outcome equation that estimates the natural logarithm of household per capita income, $ln(y)$, conditional on the credit variable, w, and a vector of **x**, which includes household head profile, household composition and location. θ and β are the coefficient of the credit variable and a vector of coefficients of the other explanatory variables, respectively, while ε is the error term that is assumed to have a standard normal distribution and is independent from the explanatory variables. Equation 5 is the credit equation that measures access to credit. Like in Equation 2, **z** contains the same set of variables as in **x** plus an instrumental variable, which is the number of banks in a province. The number of banks is assumed to have a significant effect on the credit variable but

has no direct effect on the outcome variable or per capita income of a household. α is a vector of parameters and τ is assumed to have a standard normal distribution and is independent from **z**.

The estimations of factors conditioning the likelihood of using financial services by households and the impact of financial inclusion on household income used micro-data from the 2013 APIS. The survey provides rich data on the households' socio-economic characteristics and other aspects of the household economy,e.g., access to formal and informal loans. A chief limitation is the absence of information on types of financial products or services used or accessed by households, e.g., use of savings accounts, remittances services, and the like. Hence, in this paper, access to formal credit was used as proxy for access to various types of financial services.

Data used for the estimation come from the APIS, a nationwide survey that collects information on poverty-related indicators, such as those pertaining to the socioeconomic and living conditions of households and their members, their access to government programs, and the impact of economic crisis, among others. This particular sample survey is used for the estimation of the country's poverty statistics during years when the Family Income and Expenditure Survey has not been conducted.[4] Although the APIS does not collect comprehensive information on household income and expenditure compared to what the Family Income and Expenditure Survey does, nevertheless it gathers information on a number of non-income indicators that are important in poverty monitoring and assessment. The APIS is one of the nationally representative sample surveys in the country that gathers household-level information on both income and credit availment for the operation of economic activities of households (PSA [2015]).

The 2013 APIS has a sample size of 10,864 households, which is relatively lower than the sample size of the earlier rounds. In addition, this survey was the first round of the APIS that included the income module of the Family Income and Expenditure Survey. The 2013 APIS was conducted by the Philippine Statistics Authority in July 2013 and was funded by the Department of Budget and Management (Balamban et al. [2013]).

4. Estimation results

Several regression analyses were done, and the following provided the best empirical results. Annex A shows the variables used and their definition.

[4] The Family Income and Expenditure Survey is conducted every three years.

4.1. Heckman selection model estimation[5]

The first-stage equation looked at the characteristics of households having access to a loan, regardless of the source of loans. The first-stage regression results show what matters to households in getting a loan, regardless of the source of loans (Table 4). The age of the household head matters in accessing loans. Bigger family size and a high dependency ratio lead household heads to borrow, while being employed is also a significant factor. The presence or availability of banks does not necessarily matter in household decisions to borrow at this stage. The source of loans could be informal lenders, which, as the literature shows, are mostly the source of loans for poor households.

The second-stage equation looked at the characteristics of households which had access to formal credit. In the second-stage regression, shifting to a formal loan source (a bank) household decision to use financial services is positively and significantly correlated with family size as well as sex, age, marital status, and educational attainment of the household head (Table 4). The dependency ratio, measured as the number of dependents below 15 years old, exerts a negative and significant influence on the decision to use financial services. The bigger family size means there are more members in the households, and they may not necessarily be dependents.

Primary and secondary education and more so with tertiary education help household heads in deciding to access loans from formal financial institutions. Data tabulations reveal that there are more households with heads having tertiary level education who availed of formal loans than the household heads with primary and secondary education. The results seem to indicate that level of education—more properly, tertiary education—is a significant factor in household decisions to access formal loans. Similar results by Honohan and King [2012] indicate that income and education are key demand side determinants of access to formal banking. On the other hand, level of education does not matter to households in accessing loans, regardless of source.

Poor households located in the National Capital Region do not necessarily approach a formal financial institution, such as a bank, to borrow money. In the first-stage regression, the location of households does not matter in accessing loans, regardless of the source of loans.

[5] Using the Full-Maximum Likelihood (ML) estimation; at the second stage where access to formal credit is the dependent variable, the observations are limited to those with access to such credit.

TABLE 4. Estimated models on access to any type of loans and on access to formal loans

First-stage equation:
Dependent variable: Access to loans

Regressor	Estimate	
Constant	-1.1210	***
	(0.1681)	
Natural logarithm of number of banks	-0.0600	***
	(0.0118)	
Profile of household head		
Sex	0.0251	
	(0.0440)	
Age	0.0142	**
	(0.0064)	
Square of age	-0.0000	***
	(0.0001)	
Married	0.0636	
	(0.0433)	
At least elementary graduate	0.0257	
	(0.0381)	
At least high school graduate	-0.0140	
	(0.0395)	
At least post-secondary/ college graduate	-0.0300	
	(0.0488)	
Employed	0.2390	***
	(0.0437)	
Household Composition		
Household size	0.0552	***
	(0.0074)	
Dependency ratio	0.2200	***
	(0.0737)	
Location		
Within National Capital Region	-0.0410	
	(0.0498)	

Second-stage equation:
Dependent variable: Access to formal credit

Regressor	Estimate	
Constant	-0.0922	
	(0.1151)	
Profile of household head		
Sex	-0.0861	***
	(0.0314)	
Age	0.0144	***
	(0.0041)	
Square of age	-0.0001	***
	(0.0000)	
Married	0.0878	***
	(0.0299)	
At least elementary graduate	0.0805	***
	(0.0232)	
At least high school graduate	0.1904	***
	(0.0245)	
At least post-secondary/ college graduate	0.3784	***
	(0.0319)	
Employed	0.0358	
	(0.0329)	
Household composition		
Household size	0.0147	***
	(0.0051)	
Dependency ratio	-0.1909	***
	(0.0501)	
Location		
Within National Capital Region	-0.1532	***
	(0.0281)	

Notes: Figures in parentheses are analytical standard errors;
* significant at 10% ** significant at 5% *** significant at 1%

4.2. Two-stage instrumental variable estimation

Turning now to the impact of financial inclusion on household income, Tables 5 and 6 show the results of a two-stage instrumental variable estimation. In the first-stage regression, a model on access to credit was estimated with the number of banks in a province as instrument. Among the borrowing households, the availability of banks and level of education (secondary and tertiary) are significant positive factors in accessing formal credit, while those with a large

family size and high dependency ratio do not access formal credit. Intuitively, the demand for formal credit tends to increase with the number of formal lending institutions in the area. While this is true, an increase in the number of banks does not necessarily stimulate household borrowing. The presence of banks is a distinct advantage but not a sufficient condition for access to credit. Poorer and less educated households may decide not to transact with a bank for a variety of reasons, e.g., lack of information or familiarity with banking procedures, high transaction cost.

The finding on the education variable is consistent with the findings of Honohan [2008] and Park and Mercado [2015], who noted that primary education completion and literacy rates do not have a significant effect on the level of financial inclusion in developing Asia. It seems that it takes more than just primary education for households to be able to use financial services.

A high dependency ratio acts as a barrier to financial inclusion. This echoes the finding of Park and Mercado [2015] that higher age dependency ratio significantly reduces financial inclusion. This is because a larger segment of the population is either too young or above the retirement age, which impedes their access to financial services as they do not earn income.

Although not significant, the signs of the coefficients indicate that households with very young and very old heads either have higher probability of not availing of loans, regardless of source, or of accessing formal credit. The seemingly counterintuitive results on the employment variable is explained as follows. An inspection of the data showed that as households move from a situation where all the loan sources are informal lenders (*loan2*=0, Annex A) to where households do not borrow at all (*loan2*=2, Annex A), the proportion of households with employed heads increases slightly from 88.6 percent to 89.9 percent and then drops significantly to 79.4 percent. On the other hand, the proportion of households with heads who were not employed decreases slightly from 11.4 percent to 10.1 percent and then increases substantially to 20.6 percent.

In the second-stage regression, Table 6 shows the results on the impact of financial inclusion on household income. Financial inclusion (here proxied by access to credit) has a positive and significant impact on household income. Higher-income households may not necessarily be availing themselves of formal loans because they most likely have demand for other financial services, such as savings with a formal institution, payment services with a bank, insurance, and others. The financial inclusion survey of the BSP revealed that the proportion of adults who keep their money in banks is significantly higher in classes A, B, and C (around 71 percent) than in class D (32.7 percent) and class E (17.2 percent). Among those who borrow, higher-income households tend to have higher access to formal credit. Education at any level—whether primary, secondary, or tertiary—similarly has a positive and significant influence, and the magnitude of the impact increases with educational level. Apparently, the households with more educated heads tend to have higher-paying jobs relative to those with less educated heads.

TABLE 5. Estimated model on access to credit (first-stage regression)

First-stage equation:
Dependent variable: Access to credit

Regressor	Estimate	
Constant	1.6328	***
	(0.0882)	
Natural logarithm of number of banks	0.0284	***
	(0.0068)	
Profile of household head		
Sex	-0.0323	
	(0.0222)	
Age	-0.0023	
	(0.0032)	
Square of age	0.0000	
	(0.0000)	
Married	-0.0135	
	(0.0224)	
At least elementary graduate	0.0125	
	(0.0223)	
At least high school graduate	0.0668	***
	(0.0228)	
At least post-secondary/college graduate	0.1197	***
	(0.0255)	
Employed	-0.0981	***
	(0.0208)	
Household Composition		
Household size	-0.0240	***
	(0.0043)	
Dependency ratio	-0.1714	***
	(0.0415)	
Location		
Within National Capital Region	-0.0234	
	(0.0269)	

Notes: Figures in parentheses are robust standard errors;
* significant at 10% ** significant at 5% *** significant at 1%

The location variable, the National Capital Region, which can be broadly interpreted as an urban location variable, is also a significant and positive determinant of household income. Jobs seem to be more available in dense urban settings than in the rural areas.

The age of the household head seems to matter also on the level of household income. The sign of the coefficient of the squared age variable implies that household income increases with the age of the household head up to a certain point and then decreases thereafter. Very young household heads are at the start of their career, and it is reasonable to assume that they are earning relatively less compared to the older ones. On the other hand, very old household heads are no longer working and earning. Both of these cases result in a lower per capita income of a household.

Meanwhile, a higher dependency ratio has a significant negative correlation with household income for obvious reasons. Households with married and/or employed heads have greater chances of improving household incomes.

TABLE 6. Estimated model on the impact on household income (second-stage regression)

Second-stage equation:
Dependent variable: Natural logarithm of per capita income

Regressor	Estimate	
Constant	4.4746	***
	(1.3101)	
Access to credit	3.0266	***
	(0.7345)	
Profile of household head		
Sex	-0.0413	
	(0.0724)	
Age	0.0179	*
	(0.0100)	
Square of age	-0.0002	**
	(0.0001)	
Married	0.1209	*
	(0.0691)	
At least elementary graduate	0.2004	***
	(0.0701)	
At least high school graduate	0.4113	***
	(0.0912)	
At least post-secondary/college graduate	0.9286	***
	(0.1246)	
Employed	0.1919	*
	(0.0994)	
Household composition		
Household size	-0.0089	
	(0.0223)	
Dependency ratio	-0.3362	*
	(0.1856)	
Location		
Within National Capital Region	0.3119	***
	(0.0729)	

Notes: Figures in parentheses are robust standard errors;
* significant at 10% ** significant at 5% *** significant at 1%

5. Concluding remarks

Current policy discussions hold that financial inclusion is important for inclusive growth and poverty reduction. Theoretical and empirical studies have looked at the beneficial impacts of financial inclusion at the macroeconomic, household, and firm level. The present study paid special attention to households, especially poor households, to get a better understanding of what factors drive financial inclusion at this level.

The empirical findings showed what factors significantly influence household decision to access financial services. The findings clearly showed robust and significant correlation between household decision to use financial services (proxied by access to formal credit, due to data limitations) on the one hand, and the age of the household head, marital status, family size, and educational attainment of the household head, on the other. Poor households with more dependents (those below 15 years of age) tend not to use financial services. This probably has to do with weaker incomes or the financial capacity of households with too may mouths to feed to repay loans. There is a need to underscore the importance of a higher level of education (secondary and tertiary) as a positive and significant factor in household decisions to access and use formal financial services. On the other hand, households may be able to access informal loans regardless of the level of education of the household head.

The empirical findings from a two-stage instrumental variable estimation supports the hypothesis that financial inclusion improves household income. Financial inclusion (here proxied by access to formal credit) has a positive and significant impact on household income. The empirical findings of the paper lead to certain policy implications.

First, expanding access to and use of financial services by low-income households/individuals may have a positive effect on household/individual welfare. Access and use of financial services are an important tool of households for consumption smoothing, making productive investments, and coping with catastrophic risks. Based on evidence of a strong correlation between financial inclusion and higher household income, there is a need for policies and interventions that reduce barriers to financial inclusion.

Second, a key measure to address the financial exclusion of poor households is financial education. Education at any level—primary, secondary, or tertiary—builds human capacity and has a positive and significant influence on household income. This is an important finding in view of the fondness of some politicians to use credit subsidies to address the problem of lack of access and utilization of financial services by poor households, small farmers, and similar economic agents, e.g., microenterprises. It is good to pay attention as well to non-financial

factors, such as education, to equip such small economic agents with the capacity to access and use financial services.

Philippine Institute for Development Studies (PIDS)

The author acknowledges the invaluable research assistance provided by Christian Mina. The views and opinions in this paper are solely the author's and do not in any way reflect those of the Philippine Institute for Development Studies.

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ANNEX 1. Definition of variables for Heckman selection odel

ln_pcinc = natural logarithm of per capita income of the household
avail_loan = 1 if the household availed of a loan during the past 6 months, regardless of source; 0, otherwise
formal_loan = 1 if the household availed of a loan from during the past 6 months and at least one of the sources is a formal lending institution; 0, otherwise
sex = 1 if household head is male; 0 if female
age = age of household head
agesq = squared age of household head
educ1 = 1 if head attained at most elementary undergraduate (base category)
educ2 = 1 if head attained at least elementary graduate and at most high school undergraduate
educ3 = 1 if head attained at least post-secondary or college graduate
married = 1 if household head is married; 0, otherwise
employed = 1 if household head is employed; 0, otherwise
fsize = number of members in the household
dep_ratio = proportion of household members aged below 15
ncr = 1 if the household is located within the National Capital Region; 0 if located outside NCR. In the absence of an urbanity variable, this variable was used to represent the location variable.
imr = inverse Mills ratio, or ratio of the standard normal probability density function to the standard normal cumulative distribution function of the predicted value of *avail_loan*; addition of this in the model as a regressor addresses sample selection bias
ln_banks = natural logarithm of the number of banks within a province (instrument)
_cons = constant term
The following variables were used in the two stage instrumental variable estimation, in addition to those listed above.
ln_pcinc = natural logarithm of per capita income of the household
loan2 = 2 if the household did not avail of a loan during the past 6 months; 1 if the household availed of a loan and at least one of the sources is a formal lending institution; 0 if the household availed of a loan and all of the sources are informal lenders[6]

[6] The definition of the loan variable was based on the following observations from the data set:
the mean per capita income of households that did not avail of a loan was ₱32,696.79;
the mean per capita income of households that availed of a loan and at least one of the loans was sourced from a formal lending institution was ₱30,009.64; and
the mean per capita income of households that availed of a loan and all loans were sourced from informal lender(s) was ₱18,318.37.