Financial Inclusion and Poverty: The Case of Peru

Julian Schmied[1] and Ana Marr[2]

Abstract

Poverty is ostensibly a multi-dimensional issue. Economic, social and political forces play a role in its creation as well as in its eradication. Financial inclusion, understood as the provision of micro-loans to populations that have never before had access to lending, has for some time been considered a useful way to help reduce poverty. In this paper, we employ a panel data analysis based on a unique 2008-2010 database on financial inclusion in Peru. Exploiting the variation between departments, our regression results show that financial inclusion does have an alleviating effect on various indicators of poverty. However, coefficients are small and insignificant. Instead, the access to communication technology, such as the internet, plays a superior role in explaining poverty in Peru.

[1] Research Assistant at the Chair of Economic Policy at the Friedrich-Schiller University of Jena, Germany. Website: http://www.wipo.uni-jena.de

[2] Professor of International Development Economics at the University of Greenwich, London, United Kingdom. Website: http://www.gre.ac.uk/business/study/ibe/staff/ana-marr

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1. Introduction

Since the 1970s, microfinance, or the provision of small-scale financial services to low-income populations, has been hailed as helping to reduce certain aspects of poverty particularly in developing countries (Hermes *et al* 2011). Since the early 2000s, the concept of financial inclusion in microfinance circles has emerged more explicitly, perhaps in recognition of the fact that the role of microfinance is primarily in providing access to capital to individuals previously excluded from formal financial institutions – rather than in financially supporting those individuals who look for small-scale financial support even if they had access to capital before (Marr *et al* 2014). In this context, the link to poverty can be found in the fact that the majority of financially excluded people are members of the world's impoverished and disadvantaged populations.

Figure 1: Financial inclusion vs. poverty incidence by department in Peru 2008-2010

Source: INEI Peru (2010), Equifax (2010), own calculations

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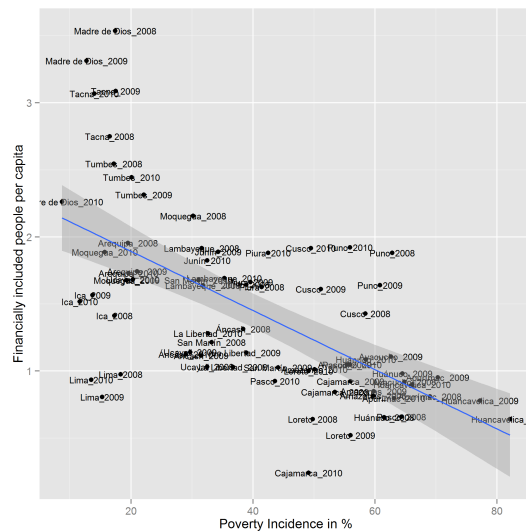
In its simplest form, financial inclusion can be defined as the provision of micro-credit to individuals who previously have not received credit from any formal financial institution. We use this definition to raise a better understanding of the relationship between financial inclusion and poverty. Although there is a long tradition of scholarly studies assessing the impact of micro-credit and microfinance on poverty,[3] to the best of our knowledge, academic studies measuring the degree of financial inclusion and its possible effect on poverty are still scarce. With this paper, we want to contribute to the body of literature and explore the power of financial inclusion in helping to reduce poverty by also taking into account other, more traditional forces such as economic growth, employment, development aid and technological progress.

The novelty of our approach resides in the following features: (i) we explicitly consider the link between financial inclusion in its simplest form, as defined above, and three measurements of poverty, i.e. incidence, severity and gap; (ii) we employ an original and unique database obtained during fieldwork in Peru and accounting for financial inclusion by all regulated microfinance institutions (MFIs) in the country during the years 2008, 2009 and 2010; (iii) in order to measure the impact of financial inclusion on poverty, we use the variation between the geographical departments of Peru instead of household or cross-country information. Exploiting this variation, our measure of financial inclusion is indeed negatively correlated with the incidence of poverty (See Figure 1). However, by applying a pooled OLS regression with time fixed effects, we find that this correlation is not significant. The access to communication

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[3] Singh and Strauss, 1986; Montgomery, 1996; Hulme and Mosley, 1996; Goetz and Sen Gupta, 1996; Zeller et al., 1997; Khandker, 1998; Marr, 2006; Collins et al. 2009; Gertler et al. 2009; Scheffer, 2009; Duvendack, et al. 2011.

technology, such as internet, plays a superior role in explaining poverty between departments in Peru.

The remainder is organized as follows. Section 2 describes the various concepts of defining poverty; section 3 approaches the question of whether financial inclusion has a poverty alleviating effect in Peru. In section 4, the main drivers of financial inclusion are identified. Section 5 concludes.

2. The definition of poverty and the concept of exclusion

Analytical approaches to the understanding of poverty have become increasingly complex in their conception of what poverty means. Early, narrow definitions of poverty based on income and consumption measurements have been broadened to include social and political dimensions in what is essentially a more dynamic conceptualisation of the problem. In the income/consumption approach, which has been extensively used in applied welfare economics (Ravallion, 1994; Lipton, 1996; Lanjouw, 1997), wellbeing is primarily conceived of as the fulfilment of material and biological needs that can be measured in terms of per capita income, consumption or expenditure in relation to an estimate of minimum necessary consumption. The basic human needs approach (Streeten, 1981, 1984), which produced a major shift in the 1970s and continues to influence current debates on human development, expands the concept to include basic needs in relation to nutrition, health, education and related areas. It improves on the income/consumption approach inasmuch as it avoids reliance on indirect methods of defining the poor, and seeks to set adequacy levels for each of the different basic human needs, e.g. life expectancy, mortality, education and nutrition levels.

The conceptual frameworks advanced by Sen (1984, 1993) and Chambers (1983, 1995),

meanwhile, have strongly challenged previous models by referring to them as narrowly defined and in danger of ignoring fundamental components of wellbeing. Sen's insights are particularly prominent in expanding knowledge about poverty, as deprivation is conceptualised in terms of certain basic capabilities to function. The underlying idea is that poverty is better understood when the analysis focuses on what people can or cannot do (capabilities) and what they are or are not doing (functions). Among the implications of this line of enquiry are that poverty measured as a shortfall in income captures only one input to an individuals' capability and functioning rather than the complex array of ingredients, and that there is a large set of entitlements to which people ought to have access in order to increase capabilities and permit functioning in a society. These entitlements include a variety of assets from food, education and health, to civil rights and freedoms (Sen, 1999).

Chambers' work, for its part, supports both a fundamental shift in the epistemology of poverty and a broadening of components of deprivation to include issues of powerlessness, vulnerability, and isolation. By popularizing the participatory approach, Chambers has greatly encouraged an epistemology of poverty, which relies on local understanding and perceptions: i.e. through participatory methods, poor people are actively engaged in the process of conceptualising what poverty is. Using these methods of analysis, definitions of deprivation, as perceived by poor people, often place greater weight on social than on physiological elements of poverty: factors such as lack of dignity, self-respect, security, justice and power figure prominently (Chambers 1995).

In recent years, the social exclusion approach (Rodgers and Figueiredo, 1995; de Haan,

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1997) has expanded on early relative deprivation concepts of poverty (Townsend 1979, 1985); it tends to define the poor as those who lack the resources to participate in activities and enjoy the living standards that are widely accepted in a society. Importantly, this produces a stronger emphasis on the process by which multiple deprivations occurs. Key spheres of exclusion include legal systems, markets, family, and community. In parallel with these developments, social capital has recently emerged as a fresh analytical concept that emphasises the importance of social networks in helping overcome poverty (Coleman, 1988). Proponents of the social capital approach understand poverty as the non-existence of linking social capital, or the lack of vertical ties between poor people and those in position of influence in formal organizations such as banks, schools, housing authorities, or the police (Woolcock and Narayan, 2000); the insufficiency of bridging social capital, or the weak ties between poor people from different ethnic, geographical, and occupational backgrounds (Narayan, 1999); and the deterioration of bonding social capital, or the weakening ties connecting immediate poor family members, close friends, and business associates.

Recently, researchers have re-visited the importance of a macro-level analysis of poverty and its link to loans. Beck (2009), for instance, relates the issue of having no access to financial support to the critical mechanisms for the generation of persistent income inequality, as well as slower economic growth. Furthermore, Loayza and Ranciere (2006) analyse potentially negative effects of financial depth in this context, e.g. by financial fragility and over-lending. Along similar lines, our paper links financial inclusion to macro-economic variables such as economic growth, employment, developing aid, and technological progress and poverty in particular.

3. The impact of financial inclusion on poverty measures

3.1 Brief background

Although it has to be stated that there exists a relatively large body of work on the specific issue of the impact of microfinance on poverty, the most convincing approach[4] appears to be an analysis of household data and the usage of difference-in-difference estimators in order to examine poverty impacts. In practice, however, this approach has commonly suffered from serious problems of selection bias due to unobserved skill variables; in particular the fact that people who received microfinance tend to be more skilled a priori and hence can achieve a higher income than others. By contrast, Beck, Levine and Lekvov (2007) undertook a unique analysis employing an approach that, by design, did not face this methodological problem. The authors examined how the liberalization of intra-state banking regulations in the United States of America, USA, from the 1970s to the 1990s, affected the distribution of income. More specifically, the authors scrutinised the variation of legal administration between the states of the USA.

Similar to this approach, we collected geography-based data, i.e. finance data from each geographical department in Peru, for the measurement of financial inclusion in Peru. In contrast to countries, geographical departments in a particular country are usually affected equally by macroeconomic dynamics such as national politics or price volatilities. Furthermore, if one examines department instead of household data, the regression

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[4] Here, one could also mention cross-country comparisons examining the variation of aggregated poverty data and microfinance volumes between countries. The results of these studies suffer however from reversal causality and identification problems. For an extensive overview see Armendriz de Aghion and Murdoch (2005) as well as Duvendack et al. (2011).

analysis is less likely to suffer from self-selection bias since it is not the department that chooses to provide first-time financial services to poor clients. If the assumption holds that banks select the departments randomly, linear models of regression can be applied.

3.2 Relevant impact channels

According to the endogenous growth theory for macroeconomic outcomes, macroeconomic income variables are affected by the dynamics arising from the country itself rather than from outside (Romer 1991). This suggests that financial inclusion is a significant driver of poverty reduction as it unleashes the economic potential of the population through human capital investments and innovations. By contrast, development aid, for example, as an external force does not reduce poverty significantly (Easterly 2006).

According to the investment theory (Beck 2007, Stiglitz 1990), financial exclusion affects poor people disproportionally, since they initially lack collateral and resources to secure bank loans. Hence, the poor segments of the population benefit the most from financial inclusion since it reduces collateral requirements as well as borrowing costs.

Every population has a certain share of skilled entrepreneurs. Those individuals have the potential to use loans to grow small and medium size companies. These companies enable not just employment opportunities for themselves but also for others. On the other hand, if those individuals are forced to take loans from local moneylenders, high interest rates might ruin their business. Hence, successful financial inclusion can unleash the entrepreneur potential of a population which in turn provides a way out poverty by generating jobs.

The final channel stems from the human capital theory: Parents can use loans to improve education opportunities for their children. Similarly, they can invest the money for on-the-

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job-training or similar measures for themselves. Both ways improve the human capital of relevant individuals. This is particularly relevant for poor people which are likely to be ex-ante poorly educated. Hence, financial inclusion can further be said to have a positive effect on poverty via the improvement of education (Beck 2007).

3.3 Measures of poverty

The aim of this study is to find significant factors that contribute to the reduction of poverty in Peru. To this end, we identified the many possibilities to measure poverty. The National Institute of Statistics and Information (INEI) of Peru provides three types of poverty measurements: first, the 'incidence of poverty', which is defined as the share of the population that cannot afford a pre-defined level of food basket.[5] This can be expressed as:

(1) $PI = \frac{N_p}{N}$,

where N_p is the number of poor people in the particular geographical department and N gives the total population of this department.

Secondly, the INEI cites the poverty gap index, which can be said to be a more sophisticated concept. Instead of only counting poor people, it takes into account the extent to which a household falls below the poverty line. It is constructed by first defining the poverty gap G

(2) $G_i = (z - y_i) * I(y_i < z)$,

where z refers to the monetary value of the food baskets and y refers to the income

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[5] The food basket provides a consumption of 2318 kcal per day per capita. This concept is also known as the poverty line. See Instituto National de Estadisticas e Informatica (2000) Metodología para le Medición de la Pobreaza en el Perú, Metodologías Estadísticas 1(2)

of the particular person. I is an operator which is 0 if the condition in the brackets that follow does not hold. Thus, if person i has an income above the poverty line, this individual does not add to G. In a second step, the poverty gap index is calculated using:

$$(3) \ PG = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^2 \quad ,$$

where N refers to the total population, z refers to the monetary value of the food baskets and y refers to the income of the person living below the poverty line. PG is expressed as a percentage (of the monetary value of the food basket).

The third measurement, i.e. the concept of the severity of poverty is closely related to the poverty gap index since it simply averages the squares of the poverty gap index. However, this way the index additionally takes into account the inequality level among the poor because people who are far away from reaching the poverty line are weighted more heavily.

$$(4) \ PS = \frac{1}{N}\sum_{i=1}^{n}\left(\frac{G_i}{z}\right)^2$$

In a nutshell, the incidence of poverty can be regarded as the most straightforward indicator for poverty but fails to account for the actual degree of poverty. This is addressed by the poverty gap index. However, to express the inequality among the poor in detail, the poverty severance index appears to be the preferable concept. In order to show the big picture, however, we will make use of all three indicators in our analysis.

Table 1: Descriptive statistics of poverty indices among the departments of Peru in 2010

	Incidence	Gap	Severity
		in %	
Amazonas	50.1	15.5	6.6
Áncash	29	6.5	2.1
Apurímac	63.1	19.8	8.2
Arequipa	19.6	4.6	1.7
Ayacucho	55.9	18.2	8.1
Cajamarca	49.1	15.3	6.5
Cusco	49.5	16.8	7.2
Huancavelica	66.1	19.6	8.2
Huánuco	58.5	20.4	9.5
Ica	11.6	1.7	0.4
Junín	32.5	8.2	2.9
La Libertad	32.6	10.3	4.5
Lambayeque	35.3	7.6	2.7
Lima	13.5	2.6	0.8
Loreto	49.1	15.2	6.5
M. de Dios	8.7	1.8	0.7
Moquegua	15.7	3.6	1.3
Pasco	43.6	12.2	4.8
Piura	42.5	11.3	4.3
Puno	55.9	18.8	8.2
San Martín	31.1	8.5	3.4
Tacna	14	3.4	1.3
Tumbes	20.1	3.8	1
Ucayali	20.3	4.4	1.5
Median	33.95	9.4	3.85
Mean	36.14	10.42	4.27

Source: INEI Peru (2010), own calculations

Interestingly, in our sample taken from the 24 departments of Peru, the three indicators behave quite differently and, as Table 1 indicates, there is indeed a large variation in the degree of poverty between the departments. If one takes into account the poverty incidence, for example, in the poorest department (Huancavelica) 66 percent of the population live below the poverty line – whereas in the department with the smallest share of poor people (Madre de Dios) around 9 percent cannot afford the food basket. If the poverty gap is used – which accounts for the distance between the income of poor people and the poverty line – the least poor department (Ica) has an Index of 1.7 percent whereas the poorest department has an Index of 20.4% (Huánuco). The poverty severity ranges between 0.4 and 9.5 percent with the same departments on the top/bottom. We want to exploit the enormous differences between the departments of Peru with respect to poverty levels to further understand the drivers of poverty.

3.4 Measuring financial inclusion and control variables

As shown in the previous section, there is a large variation of poverty between the departments of Peru. We want to find out if a part of this variation can be explained by financial inclusion. Since there is – to our best knowledge – no department-based data about financial inclusion, we gathered data during fieldwork in Peru. For this, we asked a large number (about 70 percent of the operating regulated banks) of different types of microfinance institutions how many of their clients received a micro-loan for the very first time and aggregated the data by department. To control for time constant effects, we asked the same institutions in 2008, 2009 and in 2010. We are aware that our approach might not take into account the entire concept of financial inclusion since financial services such as saving accounts and insurances are not included here; but, as mentioned in the Introduction section, we are defining financial inclusion in its simplest concept, i.e. provision of loans to people who never before had access to them. Therefore, our conceptualisation of financial inclusion can serve as a proxy variable, under the assumption that those other financial services exhibit the same dynamics as loans.

To allow for a ceteris paribus analysis and to avoid omitting variable bias, all variables that can possibly determine a department's poverty performance have to be included in the estimation model. Following the endogenous growth model (Romer 1994) we collected data for important macroeconomic variables from the INEI:

- a per capita income proxy, calculated by dividing the gross domestic product by the population size,

- the degree of technology, approximated by taking the share of people who have access to mobile phones or the internet,

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- the number of inhabitants per department,

- a proxy for education, determined by the share illiterate people

- a variable reflecting the employment situation, i.e. the labour participation rate

- access to health services, measured by the share of people who have health coverage

- the dominant industry, which is either agriculture, manufacturing, commerce, mining, electricity or water supply

Since Peru is a developing country, we included additional poverty-related indicators in the model:

- the intensity of development aid, approximated by the number of households where at least one member has benefited from food programs,

- and, even more importantly, the degree of rurality, measured by the share of people living in rural areas.

Table 2: Summary statistics of explanatory variables for departments in 2010

	Min	0,25	Median	0,75	Max	Mean
Financial inclusion per capita	0.2	1	1.6	1.9	3.1	1.5
Illiteracy rate in %	3.3	5.3	7.8	11.9	18.6	9.0
Development aid in Mio US Dollar	0	0	9.8	35.1	88.2	18.7
Rurality in %	2	17.5	35	46.5	68	33.1
GDP per capita in 1000 US Dollar	1.6	3.0	4,0	6.0	14.2	4.9
Internet access in %	0.4	2.5	5	9.5	23.9	6.7
Telephone access in %	2.4	6.6	14.6	21.1	52.1	16
Population size in 100,000	1.2	4.3	8	12.9	100.5	12.3
Health coverage in %	51.3	61.6	66.4	74.6	89.1	67.6

Source: INEI Peru (2010), Equifax (2010), own calculations

As shown in Table 1, financial inclusion, i.e. the share of people receiving a loan for the very first time divided by the population size, exhibits a high variation: At the minimum in 2010, in the department of Cajamarca, only 0.2 clients per capita were financially included, whereas the maximum of the index was 3.1 (Tacna). Furthermore, the median,

mean and percentiles of the financial inclusion measure suggest that approximately a normally distributed variable can be assumed.

The other variables in Table 2 show the heterogeneity of the departments of Peru. The most striking result in that matter is the fact that the richest department (Moquegua) generates a gross domestic product per capita that is about 9 times larger than the poorest one (Apurímac). Moreover, there are large differences with respect to access to technology. At the lowest (Apurímac), only 2.4 percent of people have the possibility to use telephone services, while at the highest, more than half of the population has access (Lima). Similarly, educational access is not equally distributed among the departments of Peru. At worst in Huancavelica, 18.6 percent of the population are illiterate whereas at best, within the department of Lima, only 3.3 percent have no school education. Even more remarkable is the difference in development aid and rurality: In Huancavelica 66 percent of the people live in rural circumstances in comparison to Lima (2 percent) or Tacna (9 percent). In Cajamarca 88,000 households benefited from food aid whereas in other departments there was no food aid allocated at all. Lastly, in departments like Junín or Madre de Dios only half of the population is covered by health insurance – in comparison to a 89 percent share in Apurímac.

3.5 Statistical inference

In this section we intend to examine the relationship between the variables described above. Our main intention is elaborate whether or not financial inclusion has a significant effect on poverty. The relatively high Pearson Correlation coefficient illustrated in **Error! Reference source not found.** suggests that there is a close connection (-0.56). As

suspected, the poverty-related indicators rurality and development aid correlate positively with poverty, the correlation degree being rather high. Furthermore, education is positively correlated with poverty incidence and financial inclusion – again with a rather high correlation degree. This does not, however, hold true for the labour participation rate. Employment, again, is moderately correlated with poverty (0.41) but not correlated with financial inclusion. Accessibility of internet and telephone exhibit a high degree of correlation with poverty. Being highly correlated between each other, it appears to be advisable to include only one of them in the model.

Table 3: Pearson Correlations, departments of Peru in 2010.

	Poverty	Financial Inclusion	Education	Aid	Rurality	GDP	Internet	Telephone	Population	Employment
Fin. Inclusion	-0.56**									
Education	0.87***	-0.55**								
Aid	0.60**	-0.50*	0.74***							
Rurality	0.87***	-0.59**	0.86***	0.66***						
GDP	-0.70***	0.26	-0.59**	-0.42*	-0.66***					
Internet	-0.68***	0.28	-0.59**	-0.38	-0.78***	0.75***				
Telephone	-0.66***	0.12	-0.64***	-0.36	-0.77***	0.54**	0.84***			
Population	-0.20	-0.23	-0.20	-0.03	-0.31	0.27	0.59**	0.71***		
Employment	0.41*	-0.05	0.43*	0.26	0.66***	-0.50*	-0.75***	-0.79***	-0.40	
Health	0.70***	-0.59**	0.69***	0.39	0.59**	-0.48*	-0.48*	-0.44*	-0.26	0.13

Note: degrees of freedom: 22, ***p=0.01 **p=0.05 *p=0.10, poverty is measured be the poverty incidence indicator; Source: own calculation Source: INEI Peru (2010), Equifax (2010), own calculations

Yet, as it is well known, results can be highly biased if a third variable which is not taken into account, affects the variable of interest. For this reason we applied a regression model in order to allow for ceteris paribus statements. To test the poverty-inclusion nexus – having a continuous normally distributed variable on the left hand side – we use the

following specification:

$$(5) \quad Poverty_{it} = \alpha + \beta Financial\ Inclusion_{it} + \gamma_k Controls_{it} + \partial_t + \epsilon_{it}$$

where i is the particular department and t is the time range between 2008 and 2010. We face a balanced panel data set. Concerning the model selection, it has to be questioned if there is heterogeneity across time. Figure 2 shows that there is a slight upswing of financial inclusion in 2010. Hence, time fixed effects are included in the model.

Figure 2: Average number of financial included people per year
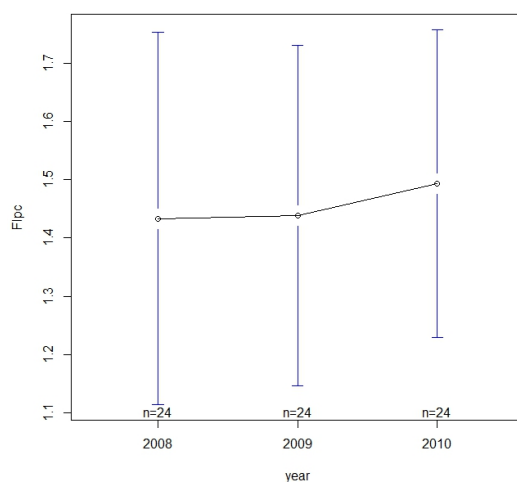
The second question, whether or not financial inclusion is heterogonous across the departments of Peru, is important with respect to the decision if a fixed effect model should be preferred over a simple pooled ordinary least square model (OLS). The F-Test, testing the null hypothesis that there are no individual effects across departments, indicates that this hypothesis has to be rejected (F=10.5, p<0.01). This suggests that the OLS model

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provides no better fit than a fixed effect model.

However, there are multiple reasons not to use fixed effects. At first, intuitively department-specific effects such as culture are unlikely to affect poverty. Despite that, we want to control for time constant characteristics, which do play an important role as the dominant industry of a department and rurality. Furthermore, the intention of the regression analysis was to exploit the variation between the departments and not within the departments. More concretely, we want to use the difference between the departments with respect to poverty and financial inclusion to identify the effect of financial inclusion and find the determinants of poverty in Peru. Moreover, with only three years of observation it is likely that the elimination of the unobserved department effect wrongly depends on the assumption that the effect is constant over time, which cannot be validated with such a short time horizon. In other words, with only three years of observations there will be too little variation to gain valuable insights. Taking these arguments into account we use a pooled OLS regression with time fixed effects, even though econometrical tests not necessarily support this approach.

Table 4: The determinants of poverty in departments of Peru 2008-2010

	Dependent variable:		
	Poverty incidence	Poverty gap	Poverty severity
	(1)	(2)	(3)
Constant	0.013	0.123	0.071
	(0.609)	(0.308)	(0.178)
GDP per capita (1000)	-3.240*	-1.140	-0.574
	(1.887)	(0.953)	(0.550)
Financial Inclusion	-0.500	-0.142	-0.054
	(0.355)	(0.179)	(0.104)
Internet access	1.671***	0.789***	0.417***
	(0.441)	(0.223)	(0.128)
Education	-0.761*	-0.270	-0.119
	(0.400)	(0.202)	(0.116)
Employment	0.584***	0.228***	0.106**
	(0.148)	(0.075)	(0.043)
Rurality	-0.120*	-0.054*	-0.028
	(0.062)	(0.032)	(0.018)
Poverty aid	0.163	0.043	0.009
	(0.162)	(0.082)	(0.047)
Health coverage	-7.111**	-2.303	-0.846
	(3.356)	(1.696)	(0.978)
Agriculture	-5.807*	-2.758	-1.313
	(3.445)	(1.741)	(1.004)
Manufacturing	-2.734	-1.726	-0.857
	(4.380)	(2.213)	(1.277)
Commerce	-8.213***	-3.228**	-1.513*
	(3.062)	(1.547)	(0.892)
Mining	-5.826	0.614	1.344
	(5.710)	(2.885)	(1.665)
Constant	68.925**	21.022	9.156
	(29.419)	(14.865)	(8.576)
Observations	72	72	72
R²	0.904	0.864	0.826
Adjusted R²	0.878	0.827	0.779
Residual Std. Error (df = 56)	6.655	3.363	1.940
F Statistic (df = 15; 56)	35.208***	23.687***	17.690***

Note: * 0.1 **0.05***0.01, pooled OLS Regression with time fixed effects, Source: INEI Peru (2010), Equifax (2010)

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From Table 4 it can be seen that financial inclusions indeed seems to have an alleviating effect on poverty. The coefficients are ranging between -0.5 and 0.05 depending on the measure of poverty. However, coefficients are statistically insignificant in every regressed specification. As expected, rurality and a low labour participation rate have negative effects on all poverty measures. Furthermore, and as expected, internet access plays an essential role in determining the degree of poverty. At least for the incidence of poverty, the results are consistent in that matter (i.e. there is a small but significant effect of the variable applying both models).

Nonetheless, one cannot evade the problem of causality when interpreting the results. MFI managers, in order to be financially sustainable, are likely to set up new branches in departments where certain standards (e.g. good physical infrastructure) can be expected. Hence it might be the MFIs which choose the most promising department. It is hard to say which characteristics are taken into account in that choices. Some are negatively related to poverty, e.g. education, some are positively related to poverty, e.g. leashed economic potential. Hence causal inferences cannot be drawn from our analysis.

4. Conclusion

With this study we demonstrate that financial inclusion has an alleviating effect on different measures of poverty. This stresses the importance for developing countries to avoid an exclusion of their poor people from financial services. The economic potential of individuals who have the skills to generate jobs for themselves and others can be unleashed by the provision of credits.

However, the effects we find are small and insignificant. Other variables such as the

access to internet, employment and health coverage have a larger degree of explanatory power. A proxy for development has no significant effect on poverty.

Internal as well as external factors matter in alleviating poverty, which is contrary to the endogenous growth theory. However, endogenous growth theory correctly emphasizes the role of technology in determining growth and poverty. This implies that Peru ought to allocate not only financial services but also communication technology towards the poor.

In order to make more general inferences more countries and years have to be taken into account. Also the identification problem caused by reversal causality has to be solved. We intend to address these issues in future work.

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ANNEX:

Figure 3: The departments of Peru

Source: www.worldofmaps.com

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