

**FINANCIAL INCLUSION OF THE POOR IN PERU:  
EXPLANATORY FACTORS AND DETERMINANTS<sup>1</sup>**MARR, Ana<sup>2,3</sup>,LEON, Janina<sup>4</sup>PONCE, Fatima<sup>5</sup>

**Abstract.** Following current debate about possible trade-off between financial sustainability and social performance of microfinance institutions (MFIs), this paper explores the extent to which these institutions are capable of expanding ‘financial inclusion’ i.e. provision of financial access to those with no prior access to the financial system. By looking at one of the most dynamic microfinance markets in the world, Peru, the study analyses the factors that help explain the degree of financial inclusion by MFIs of previously-excluded clients, usually poor people. The research shows that statistically significant determinants of financial inclusion are related to MFIs’ asset value and maturity. Importantly, it is also found that alliances established by MFIs with nationwide domestic financial institutions contribute to MFIs’ ability to reach a greater number of people, while there is no statistical significance about the specific economic activity in which the micro-credit is used. Consequently, research findings support our policy recommendations of introducing mechanisms to help strengthen MFIs’ assets and their ability to engage in working relations with other actors in the microfinance system.

JEL Codes:

Keywords:

**1. Introduction**

Contemporary microfinance, or the provision of small-scale financial services to low-income populations, has since the 1970s been hailed as helping reduce poverty particularly in developing countries. Based on initial and perhaps insufficient evidence on its power to improve the position of the poor, microfinance, for the past decade or so, has been expected to achieve those social goals in a financially sustainable manner and without subsidies. The present claim in microfinance circles that it is possible to do both, i.e. to help reduce poverty and to become financially sustainable as an institution, brings obvious concerns about the possibility of potential tensions, if not trade-offs, between the two objectives. Understandably, this has generated a degree of debate among academics. There appear to have emerged two opposing schools of thought, one defending each side

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<sup>1</sup> *Acknowledgement:* The authors appreciate the interesting feedback and comments received in the 17<sup>th</sup> LACEA-LAMES Annual Conference 2012.

<sup>2</sup> Dr Ana Marr is Director of the International Microfinance Research Group and Associate Professor in International Development Economics at the University of Greenwich, London, UK. ([a.marr@gre.ac.uk](mailto:a.marr@gre.ac.uk)) <http://microfinance.gre.ac.uk>

<sup>3</sup> *Acknowledgement:* We are grateful for the financial support of the UK Leverhulme Trust to the research project ‘Optimising the Dual Goals of Microfinance.’

<sup>4</sup> Dr Janina León is professor at the Pontificia Universidad Católica del Perú – Department of Economics, Lima. Perú. ([jaleon@pucp.edu.pe](mailto:jaleon@pucp.edu.pe))

<sup>5</sup> Mg Fátima Ponce is professor at the Pontificia Universidad Católica del Perú – Department of Management, Lima. Perú. ([fponce@pucp.edu.pe](mailto:fponce@pucp.edu.pe))

of the argument, but recent literature supports the view that there might be synergies between the dual aims of microfinance, suggesting therefore that it might be possible to achieve both goals simultaneously. Yet, evidence remains mixed and thus the debate continues. Under either approach, it is clear the necessity to enhance financial access by most of the population. The present paper analyses the main determinants of financial inclusion in Peru, exploring possible linkages with poverty. Inspired on recent research results, our main research hypothesis is that financial inclusion implemented by microfinance institutions is mostly related to their operation and performance characteristics as well as their location aspects.

## **2. Origins of microfinance and the rise of its dual goals**

Studies of financial markets abound and have helped identify key constraints in the provision of finance for the poor over the last half-century. An early diagnosis of financial systems in the 1950s and 1960s was that the poor ought to have access to conventional banks rather than depend on moneylenders who, it was then believed, exploited their monopoly power and charged excessive interest rates. The policy recommendation was to subsidise interest rates targeted at the poor primarily for productive agricultural purposes. Development Financial Institutions, such as the Bank of Agriculture and the Industrial Bank, were created and cooperatives and credit unions were established in developing countries as mirror images of those in developed countries.

Evidence of the effectiveness of this approach showed, however, that subsidies seldom reached the poor and that fixed interest rates undermined the financial institutions, which led in many cases to insolvency. The unsatisfied demand for finance in the restricted formal markets spilled over into the informal markets, creating a fragmented financial system wherein the poor remained operating in the informal financial markets. Here, finance was largely obtained from moneylenders and also from Rotating Savings and Credit Associations (ROSCAs), which are self-formed groups that come together to save into a common pot of money that is in turn lent to members one by one. Academic literature attests that ROSCAs have been in existence for centuries in the informal financial markets and played a key role in the provision of finance for the poor.

The financial liberalisation policies that followed in the 1970s and 1980s were a response to the continuing constraints in financial systems. However, free interest rates failed to improve access to formal financial markets by the poor. In this context, persuasive theoretical arguments emerged to help explained the systemic financial exclusion of poor people. Notably, Stiglitz and Weiss (1981) advanced the concept of asymmetric information between borrowers and lenders to explain why credit rationing occurs even when interest rates are free. Given inability to identify borrowers' risk attitudes, free and high interest rates discourage low-risk clients from applying for loans (i.e. adverse selection) but encourage existing clients to become risky (i.e. moral hazard). Furthermore, in the presence of costly contract enforcement and high transaction costs, particularly when dealing with small loan sizes, it becomes expensive for banks to extend finance to the poor especially if these lack traditional collateral to back up loans with.

Meanwhile, in the 1980s and 1990s, widespread disillusion with government programmes for poverty reduction, including financial schemes, led to the mushrooming of non-governmental organisations (NGOs) as channels for donors' assistance. Building on informal financial practices such as ROSCAs, NGOs experimented with savings and

credit groups following a bottom-up, demand-led approach. In Bangladesh, a university project that resulted in the now well-known Grameen Bank, also worked with groups for the delivery of financial services. Modern microfinance, as we understand it today, was hence born in the image of those enduring informal financial arrangements – and its fundamental aim was to achieve the social development goals of helping reduce poverty. Such microfinance practices also encouraged further theoretical analysis of finance for the poor. As one of the first and most influential studies, Stiglitz (1990) contended that joint-liability lending schemes – such as the Grameen Bank groups where members share responsibility for loan repayment – can induce peer monitoring that leads to the overcoming of some of the main constraints to finance for the poor. By making group members liable for one another's loan defaults, they have the incentive to monitor each other's loan usage to ensure that default risks are minimised. Information asymmetries are hence reduced by tapping information that exists between group members and by allowing them to act upon that information in order to ensure loan repayment. In addition, through groups it is possible to minimise transaction costs inherently high due to the small size of loans. This line of thinking spawned, in the 1990s and 2000s, a large number of studies that look closely at how joint-liability schemes work and how they can ensure loan repayment and hence envision microfinance as a potentially profitable enterprise (Besley and Coate 1995, Conning 2000, Ghatak *et al* 2005).

Thus, academic investigation, practitioner discovery and political ideology converge to deem microfinance as a poverty tool that can be run as a financially sustainable business. An international political agenda supportive of market-based instruments and the prospect of declining subsidies persuaded microfinance initiatives to state as an important goal (together with the existing poverty-reduction goal) that of attaining financial sustainability. The rationale was that, in order to make lasting and great impacts on poverty, microfinance institutions needed to become financially sustainable – which would enable them to stay in the financial market in the long run, independent from subsidies that might stop in the short term. Academic and empirical understanding of the design of microfinance contracts and institutions appeared to support those arguments and hence in the last decade or so, microfinance has embraced the twin objectives (those of trying to reduce poverty while becoming financially sustainable) as the main purpose of its existence today.

### **3. The dual goals of microfinance: Trade-offs or synergies?**

The expectation that microfinance should attain both of its twin goals appears to have given rise to two distinctive schools of thought: the *institutionalist* or financial systems approach and the *welfarist* or poverty reduction approach (Morduch 2000, Robinson 2001, Hermes and Lensink 2007). The so-called *institutionalists* support the view that financial sustainability is of paramount importance and that subsidies should be phased out quickly, while the *welfarists* assert that microfinance ought to concentrate on helping communities overcome poverty even if this means maintaining subsidies for longer. The significance of these ostensibly contrasting approaches is not only that they clearly place more emphasis on one goal over the other – but also that the debate seems to uncover a fundamental suspicion that there might be trade-offs between attempting to achieve both goals simultaneously. Academic studies that explicitly explore whether there are trade-offs between poverty reduction versus the strife for financial sustainability are still scarce

although rapidly growing. Since the mid-1990s, there has been some evidence to suggest that trade-offs exist (von Pischke 1996, Montgomery 1996, Marr and Awaworyi 2012) while more recent work has been mainly case-study driven (Khandker 2005, Lafourcade *et al* 2005, Marr 2006, Marr 2012, Marr and Tubaro 2013). Navajas *et al* (2000) for example, show that microfinance institutions in Bolivia that have been successful in achieving financial sustainability are only serving those individuals who are just above or just below the poverty line, i.e. the marginally poor, suggesting that these institutions encounter difficulties in reaching poorer customers or that their pursuit for financial sustainability have driven them away from the original target.

Most recently, Balkenhol (2007), Cull *et al* (2007), Mersland and Strom (2008, 2010) and Hermes, Lensink and Meester (2011) have attempted to address the issue of potential trade-offs more overtly and by use of larger samples. Balkenhol (2007) looks at 45 microfinance institutions (MFIs) in 24 countries and finds that the evidence on trade-offs is mixed. Some MFIs perform well in achieving one goal but not the other, suggesting that there is proof in support of existing trade-offs between trying to reduce poverty while becoming financially sustainable. Yet again, some other MFIs perform well on both accounts while others perform badly in each. The reasons for this mixed result are related to the differing internal management of MFIs but also, and importantly, to contextual factors such as the diverse level of market competition that MFIs face in their own localities. The study also finds that donor subsidies are conditional to MFIs achieving either poverty impact or financial performance but not both, and proposes an improved approach to the use of subsidies that would help MFIs attain both goals in tandem.

Cull *et al* (2007), meanwhile, based their analysis on 124 MFIs in 49 countries to find evidence of a trade-off between the depth of outreach to the poor and the pursuit of profitability by MFIs. As such, this study focuses on a specific aspect of poverty reduction, i.e. depth of outreach, which represents the ability of the MFI to reach people at the bottom end of the poverty spectrum. For measurement purposes, the authors use a simple proxy, i.e. average loan size, which in turn assumes that very small loan sizes are held only by very poor people and large-size loans by wealthier customers. The proxy variable is evidently a rough estimate of depth of outreach and highlights the current difficulties in identifying quantitative indicators to measure poverty-reduction outcomes accurately, particularly for cross-country analyses.

Measuring financial returns is relatively straightforward. Thus, in this study, profitability is proxied by the commonly used financial self-sufficiency ratio,<sup>6</sup> which indicates the MFI's ability to generate sufficient revenue to cover its costs without ongoing subsidies including soft loans and grants. An important aspect of the research is that it examines the relevance of 'institutional design' with respect to the trade-off between financial performance and depth of outreach of MFIs. Institutional design, in this case, is understood by the type of loan-delivery methods that the MFI employs. These can be group-based (whereby loans are delivered through groups); individual-based; or village banking (where teams are larger than group-based models and participants take on more managerial responsibilities).

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<sup>6</sup> Financial Self-Sufficiency (FSS) ratio = Adjusted financial revenue divided by the sum of adjusted financial expenses, adjusted net loan loss provision expenses and adjusted operating expenses.

The findings are generally in line with existing anecdotal evidence and common opinion amongst microfinance practitioners. That is, individual-based MFIs appear to perform better in terms of financial profitability but least well on measures of outreach, compared to group-based institutions. Table 1, in the Annex, shows some striking differences: while individual-based MFIs have the highest level of financial self-sufficiency, they extend loans that are eight times larger than those offered by village banks (i.e. US\$1,220 versus US\$148), which implies that they serve wealthier people than those catered by village banks. By contrast, village banks show high dependency on subsidies with 30% of their loan portfolios comprise of donations but appear to be able to reach poorer customers and a very large fraction (88%) of women who, in developing countries, are considered amongst the poorest of the poor.

Another interesting finding is that the size of the MFI, and to a lesser extent its age, is associated with extent of outreach. The study shows that larger individual-based MFIs as well as larger group-based MFIs tend to extend larger loans and serve fewer numbers of female clients. Similarly, older individual-based MFIs perform worse on outreach measures than younger institutions. These findings need a note of caution however: as the research has not investigated MFIs over time, a dynamic element is missing. This is especially crucial when trying to determine whether there is “mission drift” or re-orientation from poorer to wealthier clients as MFIs strive to attain financial sustainability over time. In other words, the finding that as MFIs mature and grow they extend larger loan sizes, may demonstrate that existing clients’ businesses have also matured and grown and hence larger loans are needed – rather than assuming that MFIs have abandoned the clients that were originally poor in favour of richer customers. Therefore, the findings of the study seem to show evidence in support of the existence of trade-offs but firm results are still lacking.

Mersland and Strom (2008), on the other hand, question whether ownership matters when assessing MFI performance and the presence of trade-offs. To this end, they look at 54 countries and compare the performance of 132 NGOs to that of 68 shareholder firms (SHFs) in order to test the underlying hypothesis that NGOs are more socially oriented (and hence achieve higher outreach to the poor) while SHFs are more profit oriented (and hence achieve less outreach). The definition of outreach follows Schreiner’s (2002) six dimensions, i.e. depth, breath, length, cost, scope and worth.<sup>7</sup> SHFs are those microfinance institutions that have transformed themselves from NGOs into commercial financial institutions under formal regulations.

A major finding is that there is minimal difference in performance between SHFs and NGOs that can be attributed to the type of ownership. This might be explained by the fact that most equity holders in SHFs are the NGOs that originated them, donors and socially-oriented investors (Ivatury and Abrams 2005, Matthäus-Maier and von Pischke 2007) and hence SHFs appear not to be much more profit-oriented (and not less socially oriented) than the NGOs selected for the study. Results could also be explained by the type of

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<sup>7</sup> Breath of outreach=number of clients served. Depth of outreach=clients’ poverty level proxied by average loan size and percentage of women served. Length of outreach=timeframe of the supply of microfinance, proxied by profits. Cost=monetary costs to clients. Scope=number of types of financial products. Worth=value of financial products to the client.

chosen NGOs – in order to have reliable data for the study NGOs were selected from the ones reporting to global rating agencies; this might have hence resulted in a degree of selection bias by which the chosen NGOs are generally those that have a more business-like approach to microfinance and therefore do not differ much from SHFs.

The authors conclude, therefore, that ownership does not influence the performance of microfinance institutions, as none is more socially- or financially-oriented than the others, suggesting that trade-offs between poverty reduction and financial sustainability goals could not be confirmed. However, they found that in terms of breadth and scope of outreach (i.e. number of clients served and types of financial products), SHFs perform better than NGOs. The reason for this is not related to the different ownership status but due to their dissimilar regulatory status. SHFs, being regulated microfinance institutions, are allowed to offer savings products while NGOs are not.

The ability to mobilise savings, in turn, gives SHFs a comparative advantage over NGOs in that the former can access new funding and reach larger numbers of clients with a wider portfolio of financial products. The implication is that synergies rather than trade-off may rise between financial sustainability and breadth (scale) of outreach when regulatory constraints on microfinance operations are lifted.

Hermes, Lensink and Meester (2011), meanwhile, examine whether there is trade-off between depth of outreach and cost efficiency. Depth of outreach is measured by average loan balance and the percentage of female borrowers; while costs efficiency is understood in terms of how close the actual costs of the lending activities of the microfinance institution are to what the costs of a best-practice MFI would have been in case it produces identical output under the same conditions. The authors use 1997-2007 data for 435 MFIs and find evidence to suggest that outreach is negatively related to efficiency. In other words, they find that MFIs that have lower average loan balances and more female borrowers are less efficient – further suggesting that there is a clear trade-off between the financial and social goals of microfinance.

In parallel to these developments, the term ‘financial inclusion’ in microfinance circles has emerged more explicitly since the early 2000s, perhaps in recognition that the role of microfinance is primarily in enabling access to finance by individuals previously excluded from formal financial institutions – whereby the link to poverty is due to the fact that it is perceived that the majority of financially-excluded people are those impoverished and disadvantaged populations of the world. In its simplest form, financial inclusion in the context of microfinance can be defined as the provision of micro-credit to people who have previously not received credit from any formal financial institution (although they might have received credit from informal sources such as petty moneylenders), although access to finance, more broadly defined, includes savings and insurance services (Karlan and Morduch 2010).

To the best of our knowledge, scholarly studies measuring financial inclusion are still scarce, most likely due to limitations in data collection and availability.

In this sense, this paper attempts to contribute to academic knowledge by studying the determinants of financial inclusion in the context of Peru, exploring whether these correlate to levels of poverty. The main concern is about the outreach and more specifically about the extent to which the poor becomes financially included by microfinance institutions.

#### **4. The Peruvian Microfinance Experience**

Peru has become an important reference in terms of efficient development of microfinance in Latin America and the world. Peruvian microfinance institutions have performed successfully expanding their activities along the overall country and increasing their clientele quickly (Navajas and Tejerina 2006, Marr 2012). Despite internal and foreign economic and financial crises, Peruvian microfinance has been consistently growing along the last three decades, overcoming temporary problems and challenges in terms of indebtedness, lack of liquidity, increasing delinquency, lack of funding and bankruptcy. Prudential regulation of the Peruvian microfinance institutions and activity has played a key role for the financial sustainability shown currently. Still some concerns have been posed regarding outreach and specifically the poverty status of their clientele, questioning how far financial inclusion is a goal met by the Peruvian microfinance institutions. This is the main issue we document in this section and analyze with detail in the rest of the present paper.

##### *Financial System and Microfinance- a previous glance*

Until late 1980s, Peru faced a low financial deepening scenario, with low population share participating of the financial system, with controlling interest rate policies and macroeconomic policies alike. Among institutions, commercial and small private financial institutions operated mostly for large firms. Public development banks were in charge of channeling financial resources to the poor through subsidized microcredit with specific economic activity orientation (e.g., Banco Agrario), most of them facing usual problems of outreach, political clientele and corruption; probably one exception was the Financial Corporation of Development (Cofide). By early 1980s the Peruvian municipal banks (or Cajas Municipales del Peru CMAC) were created, to be soon managed under German cooperation technical assistance, following the mandate to provide financial access to the population with no financial access along the countryside but Lima; these CMAC have been among the most successful Peruvian and Latin American microfinance institutions. Aside, non-government organizations (NGO) with microcredit products focusing on the poor and extremely poor became large along the country channeling local and foreign transfers. As in other developing countries, most of Peruvian population funded many of its activities with informal finance, e.g, relatives and friends, input suppliers, moneylenders, ROSCA as “panderos” and “juntas” (Alvarado et.al. 2001).

By early 1990, various problems related to lack of sustainability, economic recession and hyperinflation, macroeconomic policy changes, new focus of the international cooperation, etc. resulted in bankruptcy and disappearance of the public development banks. With challenging delinquency and management problems, most of the cooperatives disappeared having today minimum share in the market, while CMAC cope these problems with minimum losses. While several NGOs closed, most of them engaged into diverse strategies including agreements with formal institutions, to continue operating into the new microfinance scenario (Leon 2009, Portocarrero2004); the largest NGO joined into Copeme (Consorcio de la Pequeña y Microempresa) for collaboration purposes. The new financial law –inspired in a modern view and Basilea I international agreement on prudential regulation, transformed Cofide into an apex institution key as financial source for the rest of financial institutions (Segura 1995). New rules were set for the microfinance activity generating a new context favoring the financial growth under self-sustainable conditions; this characteristic has been persistent along these years and

even today. Among the changes, it was remarkable the (*i.e.*, *upgrading*) possibility for NGO to become private regulated institutions called Edpyme (Entidad de la pequeña y microempresa), with diverse results. One large NGO became a microfinance bank Mibanco, with private local and foreign capital (Accion International) and rapid and sustainable growth of its financial activity. Under the new financial rules and increasing profitability of regulated microfinance, new and existing commercial banks also started to supply financial services, mostly under special agreements with experienced NGOs and other small institutions. Because most of the offices of commercial banks have been located in Lima city and main urban cities (SBS 2000), it may be inferred that most of these institutions served urban clientele. By the 1990s the CMAC operated just in their location in minor cities out of Lima, but since the early 2000 they are legally allowed to operate everywhere in the country including Lima city. About the rural population financially underserved in historical terms, above changes did not affect them; Rural Cajas were created with private capital and rotating funds to serve agriculture small producers with moderate results (Valdivia 1995), while microcredit funds were delivered as part of social programs through diverse state organizations (*e.g.*, Foncodes) reaching peasants with failed results (Coordinadora Rural del Peru 1994). The 1998 international crisis impacted the Peruvian economy; formal credit for agriculture became expensive, worse with some natural shocks (El Niño), with serious economic losses and large delinquency and self-rationing of the rural clientele (Trivelli 2001). The formal microfinance sector was challenged by these events and most of its institutions were able to survive and grow quickly since then. In the meantime informal microfinance has been persistent, with relatives, friends, ROSCAs, input suppliers and moneylenders serving to urban and rural poor and microenterprises, with their own lending technology and rules, operating at low scale, locally along the whole country over recent decades.

#### *Microfinance in Regulated Institutions- recent experience*

Currently microfinance activity in Peru is performed by regulated institutions as well as non-regulated organizations and channels. The country's regulatory authority, the SBS (Superintendencia de Banca, Seguros y Fondos de Pensiones), has stressed its prudential regulation principles through policies framed by the new financial law implemented over the last two decades. The sustained economic growth experienced in Peru over this period may have been another favorable element for microfinance institutions to develop their activities by increasing the microfinance activity. The 2008 international crisis challenged these institutions but still they have successfully overcome negative effects, partially thanks to the stimulus program implemented by the Peruvian government by 2009 (MEF 2009). Because of the present study interest to understand financial inclusion among those providing formal microfinance services, here we focus the analysis just in the regulated institutions. Most of them are financial intermediaries supplying microfinance products, either those specialized or not, municipal or private organizations. By late 2008, those regulated microfinance institutions operating under different organizational and managerial arrangements could be identified as: CMAC (12), the Metropolitan Caja of Lima (1), Rural Cajas (10), Edpyme (11), specialized bank Mibanco (1), development bank BancoAgrario (1) and commercial banks and financial entities (*financieras*). The Peruvian formal financial system supplies up to four types of loan products (SBS 2010): *i.e.*, commercial loans, microcredit, real estate loans and family consumption loans, with these last loans usually overlapped to microcredit. Regarding the financial products, all the mentioned institutions offer microcredit, mainly individual (instead of group-based)



loans. All but Edpymes are legally allowed to mobilize deposits, either as savings accounts, term deposits and so. Additional products recently offered include microinsurance, factoring and microleasing, although these are new products with still limited acceptance. All these diverse microfinance products have grown at different pace by type of institution, increasingly tailored to the specific requirements of their clientele. Thus microcredit has been the most dynamic financial product offered by the regulated institutions, with significant differences about interest rates, fees, terms, declared destinations and uses. The main targeted clientele with these various microcredit products have been microenterprises, having the financial institutions competing for these clients through supplying specialized microfinance products. Typical microcredit products have been for working capital microcredit, capital improvement and capital investment and infrastructure; others that may become important –mainly among CMAC and Cajas Rurales- are small real estate loans, microcredit for livestock, agriculture and fishing activities and some pawnshop microcredit. Still because of money fungibility, final use of loans by clients may differ. The dynamism of the microfinance in Peru has resulted in a rapid change in the degree of participation by the different institutions in the market. Institutional reforms as well as increasing competition among the regulated institutions, along with increasing demand for microcredit in the regulated financial system, all have contributed to have the current participation of various suppliers, with commercial banks having the largest share in the microcredit supply, as shown by Table 2 in he Annex. According to Table 2, the Peruvian financial system is largely concentrated in the commercial banks' segment. Banks have the largest share of loan volumes, regardless the loan type; practically all the loan amount to corporations and large firms, for real estate, for consumption and most (52%) of the microcredit are issued by commercial banks. As Table 2 reports, around 56% of the bank loan portfolio is issued to corporations, while their loans to microcredit are the least important (10%) for their overall portfolio. About the other regulated financial institutions analyzed here, CMAC, Cajas rurales and Edpymes are clearly specialized in microfinance, issuing around 70% of their own loan portfolio to microcredit, although they only count for one third of the total microcredit resources traded in the regulated financial system. The different size of loans by type and the number of clients behind these different types of loans may explain such figures, with microfinance institutions facing the largest numbers of clients. These aspects along with increasing regulatory measures associated to the 2008 international financial crisis and the exit of some financial institutions may evidence the increasing concentration of the financial markets along the last years.

#### *Poverty in Peru – main features*

How far are the Peruvian families financially excluded or with no access to the financial system? Because it is usual to associate poverty to financial exclusion of families, this section depicts some characteristics of the poor. The different Peruvian families have multiple income sources, with labor being the main source, while public and private transfers as well as access of the families to public utilities and local activity may be important. Over the last decades Peruvian families have experienced changing (nominal and real) incomes and expenses, with periods of volatility and others of invariability: between the 1980s and the 1990s the per-capita incomes dropped 19% at national level and 23% in rural areas, and fell again around 20% between late 1990sand 2004, to increase slowly since 2005 to now. Various hypotheses explain changes on poverty in

Peru: macroeconomic recovery of the 1990s and sustained growth of the economic activity with volatile increases in per-capita incomes over the 2000s, volatile growth rate in the long run, a national productive structure of predominant primary exports with low labor intensity, poor investment in agriculture and other rural activities, low growth of a native manufacture sector, increasing concentration of economic and political authorities and power in Lima, continuous rural-urban migration of workers, several legal and institutional framework changes, etc. to mention few of possible determinants (Figuerola 2006, Gonzales 2008, Francke and Iguiniz 2006, Perry et.al. 2006). Instead of implementing policies dealing with the consequences of these variables on poverty, social policies were designed to target the incumbent population directly, consistent with the current policy approach.

**TABLE 3: POVERTY RATES BY AREA**

| Year        | National | Urban | Rural | Year        | National | Urban | Rural |
|-------------|----------|-------|-------|-------------|----------|-------|-------|
| <b>1981</b> | 51.2*    | 32.9* | 83.6* | <b>2003</b> | 54.7     | 43.1  | 76.0  |
| <b>1993</b> | 53.9*    | 39.2* | 88.2* | <b>2004</b> | 48.6     | 37.1  | 69.8  |
| <b>1995</b> | 45.3     | 37.4  | 59.8  | <b>2005</b> | 48.7     | 36.8  | 70.9  |
| <b>1996</b> | 44.1     | 36.9  | 57.0  | <b>2006</b> | 44.5     | 31.2  | 69.3  |
| <b>1997</b> | 47.6     | 33.7  | 72.7  | <b>2007</b> | 39.3     | 25.7  | 64.6  |
| <b>1999</b> | 48.6     | 36.1  | 72.5  | <b>2008</b> | 36.2     | 23.5  | 59.8  |
| <b>2001</b> | 54.8     | 42.0  | 78.4  | <b>2009</b> | 34.8     | 21.1  | 60.3  |

\* Figures based in the Unsatisfied Basic Need methodology, as reported by the Instituto Nacional de Estadística e Informática INEI (1994), Table 8. The other years reported poverty line defined in monetary terms. Sources: [www.inei.gob.pe](http://www.inei.gob.pe) INEI (1994) and INEI (2009) Informe Técnico de la Evaluación de la Pobreza .

Table 3 shows the changes on monetary poverty rates in the last three decades: higher than 50% by the early 1990s, dropped to 44% in 1996, to then increased and then fell back to 44% ten years later (2006). Since 2005 the national poverty rate has decreased slowly but continuously, reaching almost 35% by 2009. By areas, it is notorious the urban bias of poverty fluctuations over the last decades; since 2004 the urban poverty has followed a decreased pattern, falling from 37% to almost 20% by 2009. Far different is the case for rural areas: by 1990s, more than 80% of rural population was poor; twenty years later, this rate reached 60%. Similar conclusions may be obtained from the Table 4, in the Annex, with figures of extreme poverty. At national level, population under extreme poverty has dropped to half in the last three decades (from 23% to 11.5%) with ups and downs in between years. The urban bias of these changes is notorious: first, the highest urban extreme poverty rates have been around 10%, second the drop of this rate has been drastic to almost 3% by 2009, being this reduction more important in the urban Coast. Extreme poor population isolated in rural areas, mostly in the rural Sierra and rural Jungle, where changes have been limited. Despite the recent economic changes in the country, extreme poverty has been reduced in few points (33% in the rural Sierra and almost 25% in the rural Jungle). More detailed information indicates that poverty is concentrated in some specific departments (political divisions) of Peru, as Graph 1, in the Annex, shows. Eight out of 24 departments (i.e., Madre de Dios, Ica, Lima, Tacna, Moquegua, Arequipa, Tumbes and Ucayali) have up to 20% of their population poor and being located in the Coast or in the gold-production Jungle areas. In the opposite side,

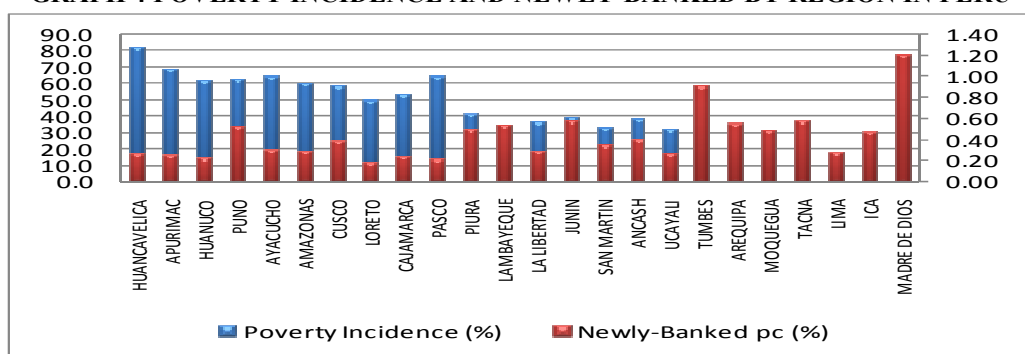
there are five out of the 24 departments with more than 50% of their population poor: Ayacucho, Puno, Huánuco, Apurímac and Huancavelica, all of them located in the Andes, in the South Sierra. For developing countries like Peru, poverty might be linked to unequal distribution of income and wealth. Figueroa (2003: 201-205) points out that in Peru the poor have no access to diverse types of assets (e.g., financial, human, cultural and political capital) inducing most poor people to preserve their low incomes wherever initial capital distribution stays. How far these hypotheses are long-term empirically consistent is hard to say because of the limited disaggregation of the available data about incomes, assets and capital. In the last decade, income inequality and expense inequality showed some reduction. Lopez-Calva and Lustig (2010) find similar results for other countries and postulate that economic growth and inequality reductions are connected. The authors postulate that most of these countries (including Peru) had implemented economic reform policies in the 1990s, and that the current inequality is still too large that there is room for additional policies, mainly tax reforms with higher tax collection and public expenditure in redistributive variables like public education. Saavedra and Diaz (1999:24) had reported decreasing income and expenses Gini coefficients in Peru (see Table 5 in the Annex); by location, urban areas had larger inequality than rural areas. In the last years, further disaggregation reveals that Lima and the urban Sierra have been the most unequal zones while the rural Coast and Sierra being the least unequal. Jaramillo (2010) confirms these results for Peru in 2006: lower inequality in monetary incomes and assets (e.g., primary education), associated to low inflation, high economic growth, stable public expenditure and increasing budget for social program transfers, that raise access to public goods and physical infrastructure, proposing more investment in education coverage and quality. Escobal (2010) questions the significance of these results because of the bias from low response of rich people to household surveys; he rather observed opposite results from national accounts dataset, recalculated poverty rates and inequality finding higher inequality in the country and regions and larger disparities among Gini within regions, being rural areas the poorest persistently, and lower reduction of Gini coefficients between 2004 and 2009.

#### *Financial Inclusion and Microfinance in Peru – some indicators*

How far are the financial services equally available along the country? It is hardly to expect a uniform distribution of microfinance supply given the different distribution of the population in terms of its number and its poverty status, as discussed in previous sections. Here the Graph 2 shows that by 2010, the existing financial institutions had different importance for the departments to provide loans. Thus banks supply more than 90% of the loans issued, in Lima (the richest department); bank participation share is larger than 50% of total loans issued in the rest of departments in the country. Microfinance institutions like CMAC, Cajas rurales and Edpymes put most of their loan portfolio in the central and southern (poorer) departments of the country, while Financieras allocate their portfolio in the northern Coast (richer) departments. Although these results of Graph 2 are referred to the overall portfolio, it is possible to expect that microloans supplied by regulated financial institutions are more concentrated in the richer departments, with higher economic development and higher financial services provided. Similar conclusions are obtained from the information about deposit mobilization among departments, as seen in the Graph 3. It is clear that financial institutions mobilize deposits wherever it is possible, practically in the whole country. It is notorious that they are

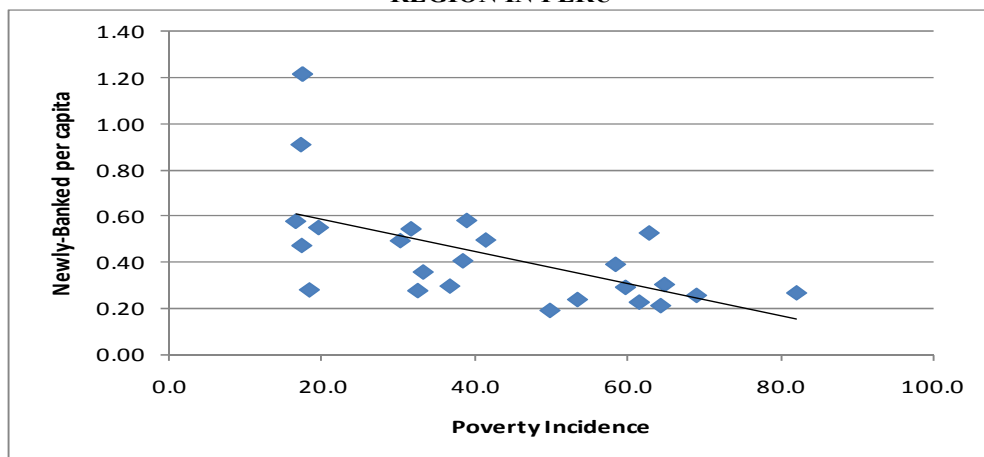
heavily concentrated in Lima, followed by other less poor departments, with large amounts of savings deposits and term deposits. Under the current institutional frame, it is a rational behavior of the institutions given their nature of financial intermediaries (but Edpyme), that mobilize deposits to accrue these resources as loanable funds. The low amount of deposits mobilized in poorer departments becomes a negative incentive for these institutions to increase their presence in those locations. In addition to geographical differences in the availability of microfinance services provided by regulated financial institutions, there are also differences by the type of economic activities of the clients. Banks, mostly commercial banks, allocate their loans to large firms operating in mining and agriculture oriented to international trade, manufacture, private education and health, communication and hotels and restaurants. On the other hand (Aguilar 2011) CMAC, Cajas Rurales and Edpymes issue loans to those working in retail commerce, low scale construction, electricity and sanitation, and small scale manufacture, all being activities with large participation of microenterprises. Moreover Table 6, in the Annex, and graphs 4 and 5 show a reverse relationship from what it has been discussed so far between financial inclusion and poverty levels.

**GRAPH 4 POVERTY INCIDENCE AND NEWLY-BANKED BY REGION IN PERU**



Source: INEI. Own elaboration.

**GRAPH 5 SCATTERPLOT: POVERTY INCIDENCE AND NEWLY-BANKED BY REGION IN PERU**



Given the ranking of poverty incidence by regions (or departments) in Peru of 2010 (i.e. Graph 1), it can be observed that it is in the poorer regions (such as Huancavelica, Apurímac, Huánuco, Ayacucho and Amazonas) where there are less numbers of newly-banked people, while the wealthier regions show larger number of people who for the first time have been included in the financial system. Graph 5 shows an initial statistical relationship between poverty incidence and newly-banked people: a negative relationship between the two variables and a significant level of dispersion. In other words, the higher the incidence of poverty the lower the number of people who are included in the financial system, although the data dispersion is high. Equally, a simple regression, shown at the bottom of graph 5, also reveals a negative relationship between newly-banked people (NBpc) and poverty incidence (PI) which is statistically significant. Although it is possible to improve this analysis with the inclusion of control variables (such as MFI profitability, size, maturity and location), in order to obtain more robust statistical results, this exercise was not undertaken due to limited data availability regarding MFIs' operations by region/department

$NBpc = 0.79 - 0.0079 PI$ ;  $R^2 = 0.39$ ;  $F = 14.6$ ;  $t\text{-test } 8.2 \text{ } -3.8$  [significant level to 5%.]

In summary, it may be said that after an interesting evolution, the current Peruvian microfinance sector shows a mature market with efficient regulated financial institutions, providing an array of financial products that include not only microcredit but also deposits and microsavings, microinsurance, microleasing, etc. and reaching an increasing number of clients. The microfinance sector has grown rapidly in the last three decades, mostly over the last ten years of sustained macroeconomic growth, and under a prudential regulatory and financial supervision law. However along with these features of success, the persistent poverty of large part of the Peruvian population pose a question about the outreach, and whether most of them have currently higher access to these microfinance services. That is the main issue to be analyzed in this paper exploring the importance of financial inclusion problems in Peru.

## 5. Research questions and hypotheses

As said in previous sections, the main goal of the present paper is to understand to what extent the overall Peruvian population has gained financial access to the services provided by its microfinance sector and the regulated institutions. For this purpose, the present paper analyzes the main determinants of financial inclusion in Peru; it is also considered how far financial inclusion is correlated to poverty.

Considering the number of people newly-banked by MFIs (i.e. previously not banked by the formal financial system) as an indicator of financial inclusion, our main hypothesis is that financial inclusion is mostly related to the MFIs' operational and performance characteristics as well as location aspects. More specifically, we postulate a positive relationship between the newly-banked clients and the MFIs' main operational characteristics and social performance, but negative relationship between the newly-banked ones and the MFIs' profitability. Our hypothesis also considers poverty as pertinent for financial inclusion through higher connection between newly-banked people and poverty status. Because usually microfinance institutions work with few offices over the country while the potentially-bankable clients are largely disperse, we wonder how far

and significant strategic alliances of microfinance institutions with other financial organisations help to enhance financial inclusion or not.

In the Peruvian case, the state-owned Banco de la Nación has more offices and branches than any other financial institution in the country. This institution has set agreements to provide a window for microfinance institutions to issue loans and mobilise deposits even in very far and remote areas. While this strategy may reduce costs, it may increase the MFIs' ability to reach people. Thus here we explore the significance of such a connection. A summarised version of the proposed hypothesis is presented here and discussed in detail in the next methodological section:

*Financial inclusion = f (MFI characteristics; MFI profitability; MFI social performance; MFI strategic relations, economic sectors with micro-credit,  $\mu$ ).*

## 6. Methodology, variables and data

### Model

In order to analyse financial inclusion in Peru, we start with the basic specification of the model, considering it is determined by the main characteristics of microfinance institutions (MFI), their profitability, their social performance, their strategic connections with other financial institutions in order to gain more clientele, and the economic sectors where microcredit is oriented.

*Financial inclusion = f (MFI characteristics; MFI profitability; MFI social performance; MFI strategic connections, economic sectors micro-credit be used,  $\mu$ ).*

The expected signs are:

- Positive relation with the MFI characteristics given that the larger the MFI (in terms of assets, branches and age), the greater the number of newly-banked people.
- Negative with MFI profitability provided that wealthier past clientele are more attractive and less expensive to make business with.
- Positive with social performance of MFI; as the literature refers, social performance is associated to those non-banked population, e.g., women, poor.
- Positive with the strategic arrangements with other nationwide financial institutions like Banco de la Nación because these agreements may allow the MFI gain more clients that otherwise may not be reached, mainly in remote areas of the country.
- Unclear (positive or negative) linkage with the specific economic activity in which the microcredit is used.

Thus:

*Financial inclusion = f (MFI characteristics; MFI profitability; MFI social performance; MFI strategic connections, economic sectors micro-credit be used,  $\mu$ ).*

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### Variables and Proxies:

**DEPENDENT VARIABLE:** Financial inclusion (or *bancarización* as it is commonly known in Peru) is measured by:

TOTPER= Total number of newly-banked people.

## **EXPLANATORY VARIABLES:**

### ***About MFI Characteristics:***

ANOSA2008= number of years of operation of the MFI since 2008

ANTIGUO= Level of MFI maturity, based on the previous variable

ANOSA2008: 1 (0 to 10 years), 2 (11 to 20 years) and 3 (21 years and mores)

NSUC= Number of MFI branches

ASSETS= Total assets in millions of Nuevos soles

### ***About MFI Profitability:***

ROE2008= Profitability 1= Year Net Profits over Average Equity (%)

ROA2008= Profitability 2= Year Net Profits over Average Assets (%)

### ***MFI Social Performance – by loan size and gender:***

WOMEN= %Women borrowers in 2008

AVLOAN= Average loan balance per borrower / GNI per capita (%)

Information refers to MFIs as defined by the global microfinance website MixMarket, <http://www.mixmarket.org>. Average loan balance per borrower / GNI per capita is a percentage and is defined as:(Gross Loan Portfolio / Number of Active Borrowers)/Gross National Income (GNI) per-capita. It is a measure of outreach (lower average loans with respect to per capita income are more likely to target the poor.

### ***About the MFI strategic connections – links with the Banco de la Nación (BN):***

RBN9= connection with Banco Nación:

= 1 the MFI has connection with BN,

= 0 the MFI does not have it.

NLOANBYBANC= Measure of cost efficiency = ratio  $nloanbn / totpers$  ,

with NLOANBN= Number of BN loans by April 2009

### ***MFI microcredit use – economic activity the microcredit to be used in:***

S\_ACTEC = Portfolio of new banked clients by economic activity

P\_ACTEC = Number of newly-banked clients by economic activity.

Economic Activity:1 = Primary, 2 = Manufacture and Construction, 3= Hotels y Restaurants, 4= Commerce, 5= Transport, 6= Public Services and Others

## **Data**

Our unit of analysis is the individual microfinance institution MFI.

Here we include 33 regulated MFIs,<sup>8</sup> distributed as: 13 CMAC, 8 CRAC, 10 EDPYME, one Financiera (Edyficar) and one bank (Mibanco).

The period of analysis is the quarter October - December 2008. Main sources of data included: MixMarket; Superintendencia de Banca, Seguros y AFPs (SBS); Banco de la Nación (BN) and Equifax. Most of the information for MFI was provided by them during field research in July 2010 and January 2011. Additional primary and secondary information sources are later referred.

In this study, we perform a cross-section analysis with 33 observations.

## **Analysis of results**

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<sup>8</sup>Although we recognise that other MFIs that are not yet regulated by the country's formal regulatory body can have perform financial inclusion, e.g. NGOs/Charities/Informal, the very limited information about them made it impossible to include them in the analysis.

- **Bivariate Analysis** of all the newly-banked clients reached by MFI with pertinent variables through basic correlations and dispersion diagrams.

The results from Graph 6, in the Annex, show the strong positive correlation of our dependent variable newly-bankable clients (or people who have been financially included during the period of analysis, measured by TOTPERS) and the postulated explanatory variables MFI profitability (measured by ROE), number of MFI branches (labeled NSUC) and the MFI total asset value (labeled ASSETS). This last relationship implies that the greater the MFI asset value, the larger the number of newly-banked clients.

It is also observed that the linear relationship between TOTPERS and ASSETS shows low dispersion, as well as the relationship between TOTPERS and NSUC, but larger dispersion is found between TOTPERS and profitability. The MFI Mibanco appears as an outlier.

Table 7, in the Annex, shows a simple correlation analysis between the dependent and the explanatory variables with results consistent with Graph 6. Clearly there are strong positive linear correlations between newly-banked clients (TOTPERS) and the MFI assets ASSETS (it equals to 0.95), the MFI number of branches NSUC (it equals 0.92) and the MFI profitability ROE (it equals 0.73). The relationships between the newly-banked clients and the rest of postulated variables are represented in the Graph 7.

As Graph 7, in the Annex, shows, there are correlations between the dependent variable of newly-banked clients and the rest of the explanatory variables postulated, but such correlations are low and with larger dispersion. Thus there is a positive relation between the number of newly-banked clients and the average loan size (AVLOAN), the predominant female gender of clients (WOMEN) and the economic activity of new clients (P\_ACTEC). There is practically null linear correlation between our variable of newly-banked clients and MFI maturity. It is also observed a negative correlation between newly-banked clients and portfolio for economic activities undertaken by these clients. It is worth mentioning that the economic activities may have different significance level if we were to use, as dependent variable, the portfolio of newly-banked clients (instead of number of people TOTPERS). It is found that a larger proportion of newly-banked clients use their loans in public services and commerce activities. Still the greater proportions of loan volume of these newly-banked clients are used in economic activities of commerce, manufacture and construction.

- **Multivariate Analysis:** In this section, we present the final exploratory regressions postulated in the study:

*Financial inclusion* =  $f(\text{MFI characteristics; MFI strategic relations}, \mu)$ .<sup>9</sup>

More specifically:  $TOTPERS = f(ASSETS, ANTIGUO, RBN9, \mu)$ . where:

TOTPERS= Total number of newly-banked clients

ASSETS= Total asset value (millions of New soles S/.)<sup>10</sup>

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<sup>9</sup> Note that NSUC (number of offices) is postulated as an important variable in estimating bivariate to explain TOTPERS. Still limited data available for NSUC by the time of the study prompted us to instead preserve the variable ASSETS in the final regression relying on the large correlation between NSUC and ASSETS (0.855).

<sup>10</sup> New Soles is the domestic currency of Peru.



ANTIGUO= Level of MFI maturity, based on the previous variable

ANOSA2008: 1 (0 to 10 years), 2 (11 to 20 years) and 3 (21 years and more)

RBN9= connections with Banco de la Nación (BN), for the MFI to issue loans through BN offices: = 1 if the MFI has connection with BN, = 0 if the MFI does not have it.

Because there are significant size differences among the microfinance institution activity, possible bias might be considered. We deal with this issue taking the two largest institutions, Mibanco and Edyficar, as outliers in the estimations. More specifically the newly-banked clients of both institutions are treated as two dummy variables (DMB and DEDIF) in order to obtain robust estimators, with:

DMB= Mibanco effect in Total number of newly-banked clients

= 1 if Mibanco, = 0 otherwise.

DEDIF=Edyficar effect in Total number of newly-banked clients

= 1 if Edyficar, = 0 otherwise.

These considerations are all incorporated in the estimation of the postulated equation, with final results provided as:

^

$$TOTPERS = 1216.1 + 5.5 ASSETS - 533.4 ANTIGUO + 604.9 RBN9 + 13074.5 DMB + 8255.2 DEDIF$$

|        |      |      |      |      |      |      |
|--------|------|------|------|------|------|------|
| t-stat | 2.69 | 0.9  | -2.2 | 1.9  | 7.4  | 8.8  |
| prob   | 0.02 | 0.00 | 0.04 | 0.07 | 0.00 | 0.00 |

$R^2 = 0.98$        $F = 246.2$  ( $prob = 0.00$ )

All slope coefficients except RBN9 have significant level to 5%, RBN9 have significant level to 10%. This regression does not have problems with residuals (provided that Durbin-Watson statistics near to 2 and White's Heteroskedasticity Test accepts homocedasticity)<sup>11</sup>. See tables 8 and 9 in the Annex.

From the results, we can conclude that there is a positive relationship between the newly-banked clients and the value of total assets of MFI: for each million of New Soles increasing the MFI assets, over five new clients will be banked, *ceteris paribus*. It may be also inferred that the MFI growth is associated to the increase in the number of newly-banked clients, although the estimated value is still small. The strategic alliances with the Banco de la Nación also appear significant, with more than 600 newly-banked clients, a large number probably associated to the potential market in unbanked, faraway areas. The significant negative coefficient of the variable referring to MFI maturity may be explained by the MFI experience and costs involved in banking new clients: each ten additional years of maturity reduce in around 530 the new people that may be banked. Finally, the two large microfinance institutions reinforce their position in terms of the

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<sup>11</sup> To 1%  $d_L = 0.936$  y  $d_U = 1.594$  <  $DWs = 1.76$ , and prob. Chi-square(10) = 0.1955 > 5%.

new clientele they bank. Mibanco and Edyficar have near thirteen thousand and eight thousands of new clientele, respectively.

## 7. Conclusions

We set out to study the determinants of financial inclusion in Peru. In the historical context of theoretical progress in understanding why poor individuals and households are conspicuously excluded from financial markets, we explain the importance of overcoming asymmetric information and uncover the virtues of microfinance. Although including the poor has been an implicit aspiration since contemporary microfinance emerged in the 1970s, recent pressures to become financially sustainable as institutions have led to an on-going debate on whether there are trade-offs between those two objectives. In this context, the term 'financial inclusion' has become more explicit since the 2000s perhaps in recognition that microfinance needs to be accountable for the number of 'new' people to whom they extend financial products (i.e. those with no prior access to financial markets) rather than just to those with existing accessibility to finance. Against this background, Peru emerges as an interesting case study for various reasons. First, it is demonstrably one of the most advanced and mature microfinance markets in the world. Second, its regulatory financial body has made significant progress in recent years leading to a clear and robust set of rules that enables microfinance institutions to become regulated in a systematic and orderly manner. Third, there exists a credible system for reporting and collecting sound data on the extent of financial inclusion by each of the regulated microfinance institutions in the country. However, studies on what determines financial inclusion are still scarce.

Consequently, in our analysis, we consider that the formal microfinance sector in Peru has grown rapidly in the last three decades, mostly over the last ten years of sustained macroeconomic growth, and under a prudential regulatory and financial supervision law. However along with these features of success, the persistent incidence of poverty for a large part of the population pose a question about the outreach of microfinance, and whether or not most of these people have currently higher access to microfinance services and why.

Our statistical exploratory research shows that significant determinants of financial inclusion are related to the microfinance institutions' asset value, maturity and alliances with nationwide institutions. More specifically, it is found that the size of the microfinance institution (measured by the level of asset value) is positively related to financial inclusion (measured by the number of people newly included in the market), which contradicts the findings by Cull *et al* (2007) but is partly supported by findings by Mersland and Strom (2008) who, in their research, find that regulated microfinance institutions are more likely to extend finance to larger number of people because, by law, they are able to offer a wider range of financial products. Still it is important to mention that because of the great influence of the two large microfinance institutions -Mibanco and Edyficar- here they are considered as outliers.

The research we undertook also finds that more mature microfinance institutions are less likely to increase financial inclusion. In other words, the variable maturity of microfinance institutions displays a statistically-significant negative relationship with financial inclusion. This might be explained by the costs involved in extending finance to potentially poor people and the higher opportunities for mature institutions to engage with wealthier clients that are already familiar/included in the financial system. This finding is

supported by results of research conducted by Cull *et al* (2007) who concluded that older microfinance institutions perform worse on outreach measures than younger ones.

Interestingly, alliances established with nationwide domestic institutions such as the Banco de la Nación show a statistically-significant positive relationship with financial inclusion, which means that by using branches of a nationwide bank, microfinance institutions have been able to increase the number of people they could reach and who had never before had access to finance. Increasingly, the importance of working with/through business correspondents, such as local shops in remote areas or nationwide banks as in Peru, is becoming evident in the strive to enhance financial inclusion in developing countries where the costs of opening new branches are too high.

The rate of interest and other common-sense determinants (e.g., economic activity nature) appear to be of low significance, consistent with hypothesis of segmentation of the microfinance markets, as pointed by the early literature presented in the first sections. The determinants analysed here become more significant than the credit interest rate or the economic activity, when issuing a loan to newly banked clients. Still a more detailed analysis by clientele clusters may help to achieve more conclusive results in future research analysis.

Our research findings suggest, therefore, the need to introduce mechanisms to help strengthen the asset-base of microfinance institutions and their ability to engage in strategic relationships with other –public or private- stakeholders in the microfinance market, when the creation of new branches is too costly. Such mechanisms could include: (1) more cost-effective ways to reach the currently- unbanked population who are usually poor and located in remote areas, such as employing alternative collateral instruments; (2) explore the benefits and costs of various innovative technologies for extending financial services, such as mobile banking; and (3) develop relationships with large private banks and local businesses that might have the resources to help reach wider areas in the country. Evidently, this implies further research in the field in order to evaluate the usefulness and validity of these possibilities.

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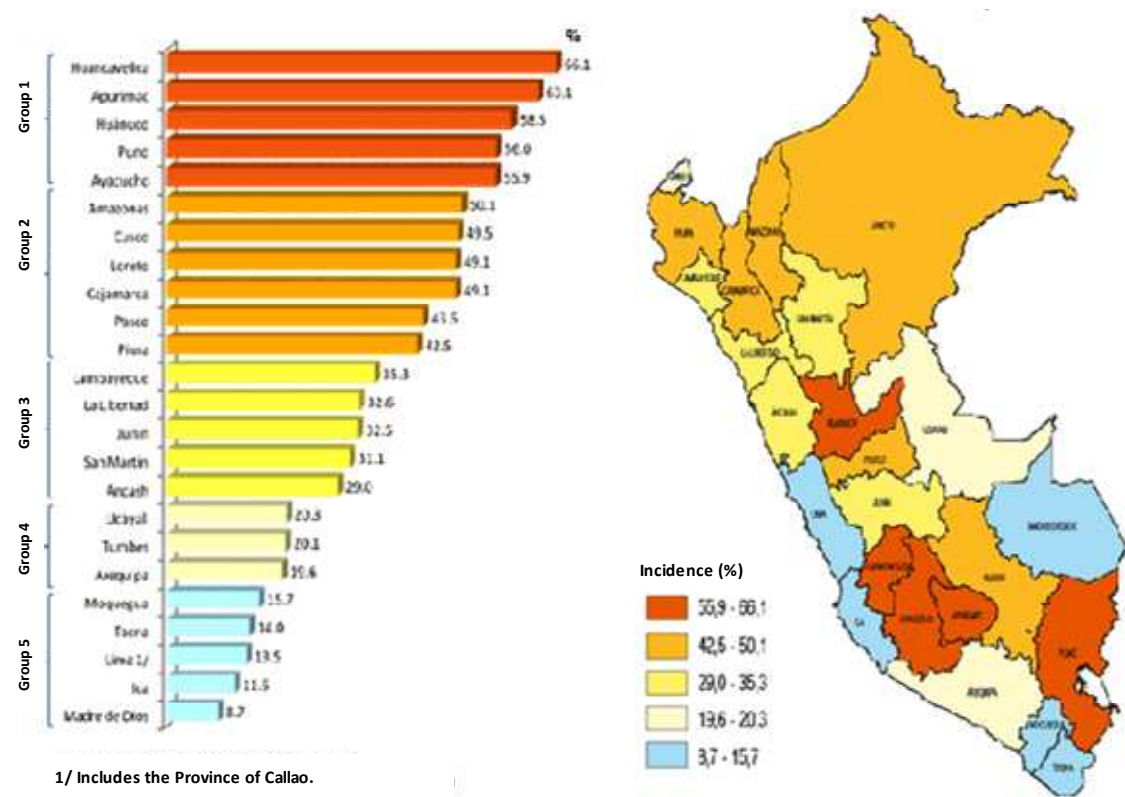
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Annex

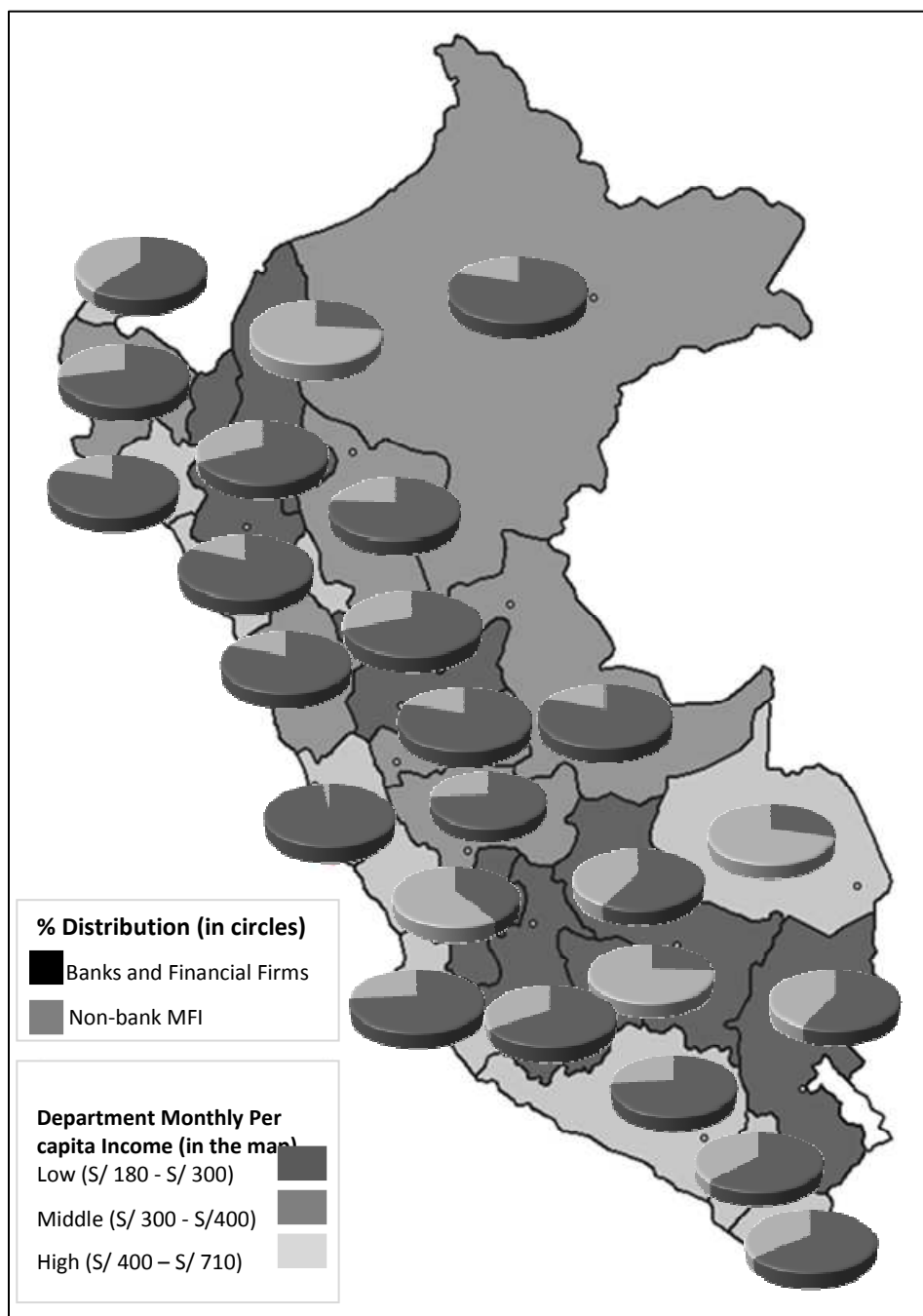
1. Graphs

GRAPH 1: PERUVIAN DEPARTMENTS BY INCIDENCE OF POVERTY, 2010



Source: INEI – ENAHO (2010).

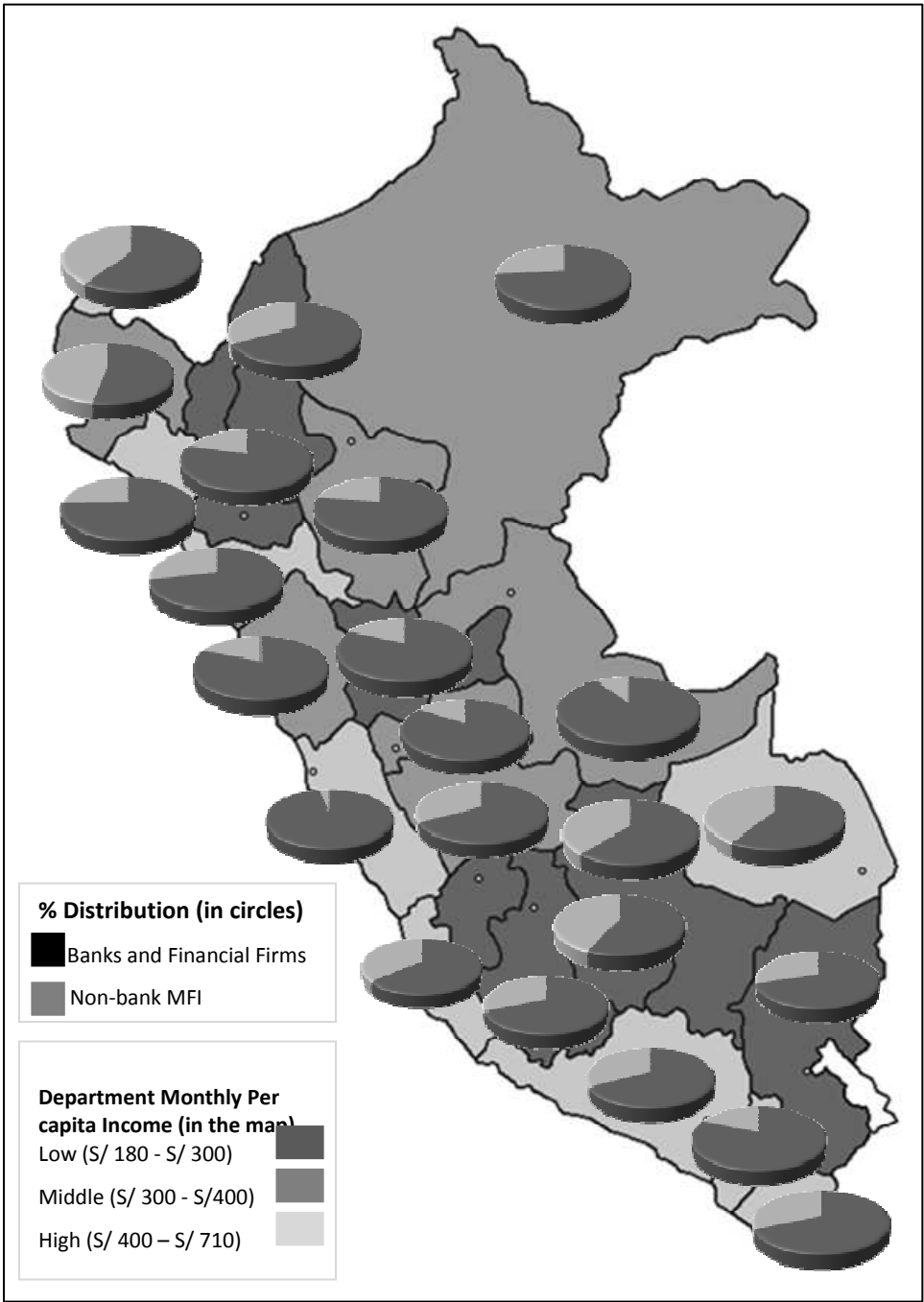
**GRAPH 2. PERU - DISTRIBUTION OF TOTAL CREDITS BY DEPARTMENTS AND POVERTY LEVEL**



Source: Superintendencia de Banca, Seguros y AFP (SBS) – December 2010. Own elaboration



**GRAPH 3: DISTRIBUTION OF TOTAL DEPOSITS BY DEPARTMENTS AND POVERTY LEVEL**



Source: Superintendencia de Banca, Seguros y AFP (SBS) – December 2010. Own elaboration.

## 2. Tables

**TABLE 1.FINANCIAL SUSTAINBAILITY versus DEPTH OF OUTREACH**

|  | <b>Individual-based</b> |         | <b>Group-based</b> |         | <b>Village Banks</b> |         |
|--|-------------------------|---------|--------------------|---------|----------------------|---------|
|  | Mean                    | St.Dev. | Mean               | St.Dev. | Mean                 | St.Dev. |
| Financial self-sufficiency                           | 1.11                    | 0.20    | 0.98               | 0.32    | 0.95                 | 0.47    |
| Operational self-sufficiency                         | 1.23                    | 0.28    | 1.12               | 0.35    | 1.09                 | 0.75    |
| Age  | 11.12                   | 8.67    | 8.60               | 5.85    | 6.95                 | 3.71    |
| Size of MFI indicator                                | 2.23                    | 0.67    | 2.00               | 0.72    | 1.60                 | 0.60    |
| Donations to loan portfolio                          | 0.02                    | 0.06    | 0.17               | 0.43    | 0.30                 | 0.47    |
| Average loan size/ GNP per capita of the poorest 20% | 4.80                    | 4.92    | 1.63               | 1.97    | 0.63                 | 0.39    |
| Average loan size (US\$)                             | 1220.23                 | 1184.51 | 430.98             | 499.56  | 148.69               | 126.61  |
| Women borrowers                                      | 0.46                    | 0.16    | 0.75               | 0.21    | 0.88                 | 0.21    |

Source: Adapted from Cull *et al* (2007)**TABLE 2.DISTRIBUTION BY TYPE OF CREDIT AND FINANCIAL INSTITUTION (%)**

| Type               | FI   | Banks |  | CMAC |  | CRAC |  | EDPYMES |  | Financial Entities |  | Total |
|--------------------|------|-------|--|------|--|------|--|---------|--|--------------------|--|-------|
| Commercial         | 56.1 |       |  | 9.1  |  | 6.6  |  | 3.0     |  | 11.0               |  |       |
|                    |      | 97.5  |  | 1.3  |  | 0.2  |  | 0.1     |  | 0.9                |  | 100   |
| Mortgage           | 15.0 |       |  | 4.2  |  | 2.5  |  | 6.9     |  | 1.3                |  |       |
|                    |      | 96.7  |  | 2.2  |  | 0.3  |  | 0.4     |  | 0.4                |  | 100   |
| Microcredit        | 10.9 |       |  | 66.9 |  | 69.7 |  | 79.4    |  | 53.1               |  |       |
|                    |      | 52.0  |  | 26.2 |  | 5.7  |  | 3.6     |  | 12.5               |  | 100   |
| Family consumption | 18.0 |       |  | 19.9 |  | 21.2 |  | 10.6    |  | 34.7               |  |       |
|                    |      | 82.6  |  | 7.5  |  | 1.7  |  | 0.5     |  | 7.8                |  | 100   |
| Total              | 100  |       |  | 100  |  | 100  |  | 100     |  | 100                |  |       |

Source: Superintendencia de Banca, Seguros y AFP (SBS) – December 2010. Own elaboration.

**TABLE 4: EXTREME POVERTY RATES BY AREAS AND REGIONS**

| Location           | 1981  | 1993  | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--------------------|-------|-------|------|------|------|------|------|------|
| <b>National:</b>   | 22.7* | 23.3* | 17.1 | 17.4 | 16.1 | 13.7 | 12.6 | 11.5 |
| <b>Area:</b>       |       |       |      |      |      |      |      |      |
| Urban              | 8.9*  | 13.2* | 6.5  | 6.3  | 4.9  | 3.5  | 3.4  | 2.8  |
| Rural              | 47.2* | 46.7* | 36.8 | 37.9 | 37.1 | 32.9 | 29.7 | 27.8 |
| <b>Region:</b>     |       |       |      |      |      |      |      |      |
| Coast              |       |       | 4.0  | 3.8  | 3.0  | 2.0  | 2.0  | 1.8  |
| Sierra             |       |       | 33.2 | 34.1 | 33.1 | 29.3 | 27.3 | 23.8 |
| Jungle             |       |       | 25.0 | 25.5 | 21.6 | 17.8 | 14.5 | 16.9 |
| <b>Region-Area</b> |       |       |      |      |      |      |      |      |
| Urban Coast        |       |       | 5.6  | 4.0  | 3.0  | 2.1  | 2.4  | 2.3  |
| Rural Coast        |       |       | 13.8 | 13.4 | 14.4 | 10.5 | 7.9  | 9.2  |
| Urban Sierra       |       |       | 13.6 | 11.6 | 10.3 | 8.5  | 9.2  | 6.8  |
| Rural Sierra       |       |       | 44.0 | 46.6 | 46.5 | 40.8 | 37.4 | 33.2 |
| Urban Jungle       |       |       | 18.7 | 22.5 | 18.1 | 11.0 | 7.2  | 8.8  |
| Rural Jungle       |       |       | 30.4 | 28.0 | 24.6 | 23.4 | 20.7 | 23.8 |
| LimaCity           |       |       | 1.3  | 2.0  | 0.9  | 0.5  | 0.7  | 0.2  |

\* Figures based in the Unsatisfied Basic Need methodology, as reported by INEI (1994), Table 8. Source: [www.inei.gob.pe](http://www.inei.gob.pe) Informe Técnico de la Evaluación de la Pobreza - INEI (2009)

**TABLE 5: EXPENDITURE INEQUALITY – GINI COEFFICIENT by GEOGRAPHIC AREAS**

| Area             | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------|------|------|------|------|------|------|
| <b>National</b>  | 0.41 | 0.41 | 0.42 | 0.41 | 0.38 | 0.39 |
| Urban            | 0.37 | 0.37 | 0.38 | 0.36 | 0.34 | 0.35 |
| Rural            | 0.32 | 0.32 | 0.32 | 0.33 | 0.32 | 0.31 |
| <b>Sub areas</b> |      |      |      |      |      |      |
| LimaCity         | 0.38 | 0.38 | 0.38 | 0.35 | 0.33 | 0.34 |
| Rest – Urban     | 0.35 | 0.35 | 0.34 | 0.35 | 0.33 | 0.33 |
| Rural            | 0.32 | 0.32 | 0.32 | 0.33 | 0.32 | 0.31 |
| <b>Regions</b>   |      |      |      |      |      |      |
| Urban Coast      | 0.33 | 0.33 | 0.32 | 0.34 | 0.31 | 0.31 |
| Rural Coast      | 0.30 | 0.28 | 0.29 | 0.29 | 0.27 | 0.28 |
| Urban Sierra     | 0.37 | 0.38 | 0.35 | 0.36 | 0.36 | 0.34 |
| Rural Sierra     | 0.31 | 0.32 | 0.32 | 0.32 | 0.31 | 0.29 |
| Urban Jungle     | 0.34 | 0.35 | 0.36 | 0.36 | 0.33 | 0.34 |
| Rural Jungle     | 0.29 | 0.29 | 0.3  | 0.32 | 0.31 | 0.32 |
| LimaCity         | 0.38 | 0.38 | 0.38 | 0.35 | 0.33 | 0.34 |

Source: [www.inei.gob.pe](http://www.inei.gob.pe) Informe Técnico de la Evaluación de la Pobreza - INEI (2009)

**TABLE 6. POVERTY INCIDENCE AND NEWLY-BANKED BY REGION IN PERU**

|              | <b>Newly-Banked<br/>*/</b> | <b>Population<br/>2008 (inhab)</b> | <b>Poverty<br/>Incidence (%)</b> | <b>Newly-Banked<br/>pc (en %)</b> |
|--------------|----------------------------|------------------------------------|----------------------------------|-----------------------------------|
| HUANCAVELICA | 1246                       | 467700                             | 82.1                             | 0.27                              |
| APURIMAC     | 1128                       | 441507                             | 69.0                             | 0.26                              |
| HUANUCO      | 1837                       | 811989                             | 61.5                             | 0.23                              |
| PUNO         | 6997                       | 1329272                            | 62.8                             | 0.53                              |
| AYACUCHO     | 1927                       | 635167                             | 64.8                             | 0.30                              |
| AMAZONAS     | 1189                       | 408629                             | 59.7                             | 0.29                              |
| CUSCO        | 4902                       | 1256770                            | 58.4                             | 0.39                              |
| LORETO       | 1827                       | 957992                             | 49.8                             | 0.19                              |
| CAJAMARCA    | 3531                       | 1485188                            | 53.4                             | 0.24                              |
| PASCO        | 609                        | 287913                             | 64.3                             | 0.21                              |
| PIURA        | 8628                       | 1740194                            | 41.4                             | 0.50                              |
| LAMBAYEQUE   | 6442                       | 1185684                            | 31.6                             | 0.54                              |
| LA LIBERTAD  | 5045                       | 1703617                            | 36.7                             | 0.30                              |
| JUNIN        | 7442                       | 1283003                            | 38.9                             | 0.58                              |
| SAN MARTIN   | 2707                       | 758974                             | 33.2                             | 0.36                              |
| ANCASH       | 4475                       | 1103481                            | 38.4                             | 0.41                              |
| UCAYALI      | 1246                       | 451284                             | 32.5                             | 0.28                              |
| TUMBES       | 1947                       | 214439                             | 17.2                             | 0.91                              |
| AREQUIPA     | 6550                       | 1192932                            | 19.5                             | 0.55                              |
| MOQUEGUA     | 825                        | 167616                             | 30.2                             | 0.49                              |
| TACNA        | 1793                       | 311038                             | 16.5                             | 0.58                              |
| LIMA         | 27339                      | 9767087                            | 18.3                             | 0.28                              |
| ICA          | 3445                       | 730767                             | 17.3                             | 0.47                              |
| MADRE DE DI  | 1393                       | 114791                             | 17.4                             | 1.21                              |

\*/MFI as Edpyme Crear Trujillo, CRAC Nor Peru and CRAC Quillabamba are not included because of lack of information for some of their variables. **Source:** INEI. Own elaboration

**TABLE 7: SIMPLE CORRELATIONS BETWEEN NEW BANKED CLIENTS (TOTPERS) AND THE POSTULATED EXPLANATORY VARIABLES**

|                 | anosa<br>2008 | Anti<br>guo | assets | Av<br>loan | nsuc  | rbn9  | Nloan<br>bybanc | Roa<br>2008 | Roe<br>2008 | Wo<br>men | p_<br>actec | s_<br>actec |
|-----------------|---------------|-------------|--------|------------|-------|-------|-----------------|-------------|-------------|-----------|-------------|-------------|
| anosa<br>2008   | 1             | 0.93        | 0.33   | 0.73       | 0.211 | 0.06  | -0.38           | -0.07       | 0.38        | -0.36     | -0.35       | -0.34       |
| antiguo         | 0.93          | 1           | 0.24   | 0.56       | 0.21  | 0.19  | -0.25           | -0.05       | 0.50        | -0.48     | -0.23       | -0.34       |
| assets          | 0.33          | 0.24        | 1      | 0.47       | 0.85  | 0.36  | -0.22           | 0.14        | 0.70        | 0.09      | 0.08        | -0.25       |
| avloan          | 0.73          | 0.56        | 0.47   | 1          | 0.28  | -0.02 | -0.36           | -0.17       | 0.15        | -0.31     | -0.56       | -0.37       |
| nsuc            | 0.21          | 0.21        | 0.85   | 0.28       | 1     | 0.50  | -0.01           | 0.40        | 0.80        | 0.13      | 0.15        | -0.38       |
| rbn9            | 0.06          | 0.19        | 0.36   | -0.02      | 0.50  | 1     | 0.57            | 0.21        | 0.63        | -0.12     | 0.59        | -0.16       |
| Nloan<br>bybanc | -0.38         | -0.25       | -0.22  | -0.36      | -0.01 | 0.57  | 1               | -0.05       | 0.07        | -0.12     | 0.34        | 0.39        |
| roa2008         | -0.07         | -0.05       | 0.14   | -0.17      | 0.40  | 0.21  | -0.05           | 1           | 0.24        | 0.50      | 0.14        | -0.25       |
| roe2008         | 0.38          | 0.50        | 0.70   | 0.15       | 0.80  | 0.63  | 0.07            | 0.24        | 1           | -0.22     | 0.33        | -0.34       |
| women           | -0.36         | -0.48       | 0.09   | -0.31      | 0.13  | -0.12 | -0.12           | 0.50        | -0.22       | 1         | 0.05        | 0.01        |
| p_actec         | -0.35         | -0.23       | 0.08   | -0.56      | 0.15  | 0.59  | 0.34            | 0.14        | 0.33        | 0.05      | 1           | 0.22        |
| s_actec         | -0.34         | -0.34       | -0.25  | -0.37      | -0.38 | -0.16 | 0.39            | -0.25       | -0.34       | 0.01      | 0.22        | 1           |
| totpers         | 0.11          | 0.06        | 0.94   | 0.24       | 0.91  | 0.40  | -0.07           | 0.17        | 0.72        | 0.17      | 0.19        | -0.20       |

Table 8.

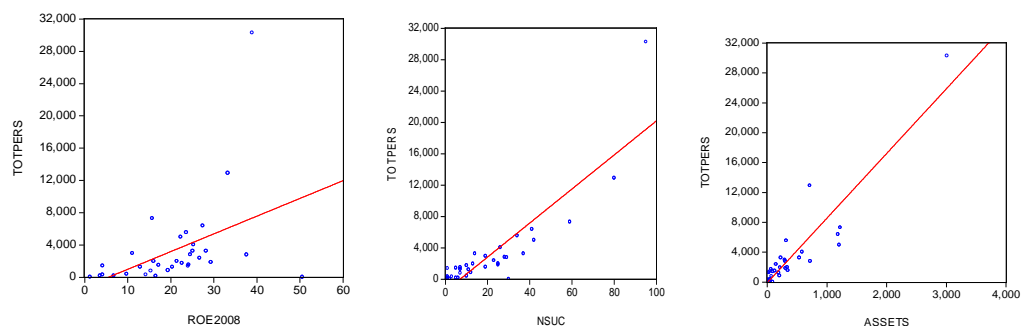
| Dependent Variable: TOTPERS. Method: Least Squares. Sample: 1 36<br>Included observations: 33 |             |                       |             |          |
|---|-------------|-----------------------|-------------|----------|
| Variable  | Coefficient | Std. Error            | t-Statistic | Prob.    |
| C   | 1216.078    | 471.6140              | 2.578545    | 0.0157   |
| ASSETS  | 5.463724    | 0.550812              | 9.919404    | 0.0000   |
| ANTIGUO   | -533.4301   | 242.1698              | -2.202711   | 0.0363   |
| RBN9  | 604.9159    | 318.1654              | 1.901262    | 0.0680   |
| DMB   | 13074.52    | 1759.038              | 7.432766    | 0.0000   |
| DEDIF   | 8255.183    | 939.2856              | 8.788789    | 0.0000   |
| R-squared   | 0.978541    | Mean dependent var    |             | 3268.364 |
| Adjusted R-squared  | 0.974567    | S.D. dependent var    |             | 5520.407 |
| S.E. of regression  | 880.3723    | Akaike info criterion |             | 16.56153 |
| Sum squared resid   | 20926497    | Schwarz criterion     |             | 16.83362 |
| Log likelihood  | -267.2653   | Hannan-Quinn criter.  |             | 16.65308 |
| F-statistic   | 246.2456    | Durbin-Watson stat    |             | 1.758907 |
| Prob(F-statistic)   | 0.000000    |                       |             |          |

Table 9.

Heteroskedasticity Test: White

|                     |          |                      |        |
|---------------------|----------|----------------------|--------|
| F-statistic         | 1.528915 | Prob. F(10,22)       | 0.1948 |
| Obs*R-squared       | 13.53053 | Prob. Chi-Square(10) | 0.1955 |
| Scaled explained SS | 13.80259 | Prob. Chi-Square(10) | 0.1822 |

## 3. Graphs

**GRAPH 6: SCATTER PLOT BETWEEN: TOTPERS and PROFITABILITY, TOTPERS and NUMBER of BRANCHES, AND TOTPERS and ASSETS**

Source: Own elaboration.

**GRAPH 7: SCATTER PLOT BETWEEN TOTPERS and OTHER EXPLANATORY VARIABLES**